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List of Agenda Items for the 69th meeting of the Planning Committee

Agenda Item No. 1: Confirmation of the Minutes of 68th Planning Committee Meeting of the Board held on 16.03.2020

1.1 The Minutes of the 68th Meeting of the Planning Committee held on 16.03.2020 were circulated vide letter No.K-14011/02/2020-NCRPB dated 18.03.2020 to the members of the Planning Committee. Copy of the Minutes are at **Annexure-1/I.**

1.2 No comments have been received on the Minutes. Accordingly, Minutes of the 68th Meeting are placed before the Planning Committee for confirmation.

Action Point:

Minutes of the 68th Meeting of the Planning Committee may be confirmed.

Agenda Item No. 2: Action Taken Report on the decisions taken in 68th Planning

Committee Meeting held on 16.03.2020

The 68th Meeting of the Planning Committee was held on 16.03.2020 under the Chairpersonship of Member Secretary, NCRPB. Action Taken Report on the issues/decisions taken in the Meeting are as follows:

SI. No.	Agenda Item/decisions	Action Taken/Status
1.	Agenda Item No. 2: ATR on decisions of 67 th Meeting of the Planning Committee held on 15.07.2019	
	Committee noted the information on action taken on decisions on agenda items 2 (sub agenda item 3.2 & 10), 3, 8, 9, 11, 18, 19 and 20 of the 67 th Planning Committee Minutes.	No further action required.
	Also noted that remaining Agenda Items were placed for information and/or dealt at main Agenda Items of the 68 th meeting of the Planning Committee.	
2.	Agenda Item No. 13 (ATR): Delineation and ground truthing of NCZ and Notices issued under Section 29(2) regarding NCZ	Matter is placed separately as Agenda Item No. 4
3.	Agenda Item No. 12 (ATR): Operational effectiveness of NCR Planning & Monitoring Cells in NCR participating States	
	It was directed that the NCR Cells need to get the vacant posts filled at the earliest as per decisions of the 67 th	Status of filling up of all vacant posts of each NCR Planning and Monitoring Cells is still awaited.
	Planning Committee	All NCR Cells may provide the updated status in the matter.
4.	Agenda Item No. 14 (ATR): Population density of Master Plans/ Development Plans & Density norms of RP-2021 and notices	

SI. No.	Agenda Item/decisions	Action Taken/Status
	issued U/s 29(2) of NCRPB Act, 1985.	
	It was requested all concerned participating States to expedite the submission focusing on target populations for year 2021 in the respective Master Plans and steps/initiatives undertaken by States to meet the suggestive densities of RP 2021 for the towns.	The replies received from Govt. of Haryana, Rajasthan & U.P. were placed before the 39 th meeting of the Board held on 05.10.2020. The Board accept the replies and directed the Board Secretariat to withdraw the notices. States were also advised to ensure including strategies for increasing population densities in future detailed plans.
		Accordingly, NCRPB has communicated the withdrawal of Notices issued under Section 29(2) of NCRPB Act, 1985 for violation observed in the Master Plans w.r.t. Density norms provided in RP-2021 to Govt. of Haryana on 28.12.20, Rajasthan on 18.12.20 and U.P. on 22.12.20.
5.	Agenda Item No.15 (ATR): Matter related to CMA	
	Committee directed that all Counter Magnet Areas (CMAs) need to submit the Plan of Actions within a month so that NCRPB has on record, the activities planned to be undertaken in CMAs for which financial assistance can also be provided by NCRPB if required.	Plan of Actions for Jaipur, Kota and Patiala CMAs have been received by NCRPB. However, Plan of Actions for Ambala, Hissar, Dehradun, Bareilly, Kanpur-Lucknow corridor, Gwalior are awaited. Representatives from Govt. of Haryana, Uttar Pradesh, Madhya Pradesh and Uttarakhand may provide the status.
	Further, Patiala to immediately take action regarding notification of Patiala- Rajpura Corridor as CMA of NCR, as	Govt. of Punjab has notified the CMA area on 03.06.2020 <i>Matter is placed for information.</i>

SI. No.	Agenda Item/decisions	Action Taken/Status
	already approved in 38 th Board meeting of NCRPB.	
6.	Agenda Item No. 17 (ATR): Action Taken on the directions of the Hon'ble High Court of Allahabad in the matter of Raghuraj Singh vs. State of UP & 10 Ors. (Civil misc. PIL. No29004 of 2016)	
	Committee suggested that it may be checked again if the case has been concluded and matter reserved for judgment /order, as was being suggested by representatives from Uttar Pradesh.	As per the Nakal Sawal obtained on 06.10.2020 the Contempt Petition No. 1724 arising out of PIL No. 29004/2016 is still pending. It may be noted that NCRPB had issued a Notice U/s 29(2) for non- conformity of zoning regulations of Sub-Regional Plan (SRP) -2021 for U.P. Sub-region with the zoning regulation of Regional Plan-2021, in this matter. Proposed amendments in the published UP SRP-2021 as submitted by NCR Planning and Monitoring Cell, U.P. were placed before the Board in 39 th Meeting held on 05.10.2020. The Board noted that the approval of Government of Uttar Pradesh was issued on 01.10.2020 and decided to close the matter and drop the Notice. Accordingly, NCRPB vide letter dated 19.01.2021 has communicated the withdrawal of Notice <i>Matter is placed for information.</i>
7.	Agenda Item No. 20 (ATR): Status of Reciprocal Common Transport Agreements,	

SI. No.	Agenda Item/decisions	Action Taken/Status
	Committee suggested that NCR Planning & Monitoring Cells who have to act as catalysts, may follow-up the	Matter was discussed in the meeting of Committee of Transport secretaries (CoTS) held on 15.09.2020.
	matter regarding Combined Transport Agreements (Stage Carriage & Contract Carriage) with the respective Transport Departments and ensure necessary submissions by end of March, 2020. Further, representatives of Delhi and Haryana were also requested to follow up on the matter of making public buses tax- free to encourage public mobility modes.	Further the status was updated to the Board in its 39 th Board meeting. In the meeting, it was decided that a Committee chaired by AS, MoHUA shall look into all aspects of transportation. AS, MoHUA shall call the first meeting of the Principal Secretaries, Transport/ Transport Commissioners of all the States in the next one month. The report of the Committee shall be presented before the next Board meeting.
		Comments from NCT of Delhi, Govt. of Rajasthan and Govt. of Uttar Pradesh have been received, and were also discussed in CoTS meeting held on 23.12.2020 wherein it was decided that States may submit their para-wise comments on draft Combined RCTA (Stage Carriage and Contract Carriage).
		Further, as per direction of Ministry dated 12.01.2021 and Member Secretary, NCRPB, a separate meeting was held under the chairmanship of Chief Regional Planner on 22.01.2021. Minutes of the said meeting are being circulated.
		Matter is placed for information.
8.	Agenda Item No. 21 (ATR): Any other items with the permission of the Chair regarding constitution of a Committee with Secretary / Commissioners of Tourism Department of NCR States and Ministry of Tourism, ASI	

SI. No.	Agenda Item/decisions	Action Taken/Status
	As nominations from Govt. of Haryana, U.P, Delhi & Rajasthan and ASI Circle Rajasthan were still awaited, representatives from the States were requested to ensure and expedite the same at the earliest, and NCR Cells to follow up on the matter.	Nomination from Ministry of Tourism, UP Tourism Department, Haryana Tourism Department, ASI of Govt. of India, Archaeology and Museum Department, Department, Haryana has been received.
	It was decided that similar action will be taken with respect to Health, Sanitation and Water sector as well, after the Committee on Tourism initiates its actions.	Nominations from Govt. of Rajasthan and Govt. of NCT Delhi & ASI of Govt. of NCT Delhi and Rajasthan Circles is awaited.
		Representatives from Govt. of NCT Delhi and Rajasthan may provide the status.
9.	Agenda Item No. 3: Preparation of Regional Plan 2041 for NCR	Matter is placed separately as Agenda Item No. 7.
		Further, action taken report on the decision are as follows:
	Committee decided that Maps of RP- 2041 can be in form of 'Schematic Maps', wherein it may be clarified that	Maps of draft RP-2041 being prepared as per the decision of the Planning Committee.
	it is 'not to scale'.	Matter is placed for information.
10.	Agenda Item No. 3.1: Stakeholder Conclave & Workshops held for preparation of RP- 2041 Committee decided that while States are welcome to offer their further suggestions/comments for RP 2041, the sub-region wise conclaves may not be required, owing to, time constraints, exhaustive comments of states and various stakeholders being captured extensively during the workshops	No further action required.

SI. No.	Agenda Item/decisions	Action Taken/Status
11.	Agenda Item 3.2: Core Advisory Committee (CAC) for RP 2041 Committee appreciated the efforts and requested NCR participating states to expedite the submission of necessary comments and suggested the respective NCR Cells to follow-up.	Last Core Advisory Committee meeting was held on 05.01.2021 and as per the decisions of the CAC, the Draft RP-2041 has been shared with NCR participating States on 6 th -7 th January, 2021 with a request to submit their comments within two weeks by 20.01.2021.
12.	Agenda Item 3.3: Status of Data Collection for RP 2041 for NCR NCR participating states were requested to expedite the submission of pending data which need to be duly signed and owned by them. Haryana, Delhi and Rajasthan assured to send all pending data within a week.	Data provided by the States have been used in preparation of Approach Papers of related sectors / Draft Regional Plan 2041 chapters. <i>Matter is placed for information.</i>
13.	Agenda Item No. 4: Status of Sub-Regional Plan-2021 For NCR States Agenda Item No. 4.1: Haryana Sub Region - Newly Added Areas	Matter is placed separately under Agenda Item No. 3
14.	Agenda Item No. 4.2: Sub Regional Plan For Delhi 2021	Matter is placed separately under Agenda Item No. 3
15.	Agenda Item No. 4.3: Sub Regional Plan 2021 for Rajasthan Sub Region Newly Added Areas	
	Committee suggested that in case there are any modification in SRP post Board approval, the same will have to be taken up to the Board again. Govt. of Rajasthan may like to send a reasoned proposal and may also request for revised extension of time	Request from Govt. of Rajasthan was received on 15.06.2020. The same was placed before the 39 th meeting of the Board. Changes made by Govt. of Rajasthan were noted and time extension

SI. No.	Agenda Item/decisions	Action Taken/Status
16.	for reimbursement of SRP preparation expenses as it was approved only till August 2019 for Rajasthan. Agenda Item No. 4.4: Sub Regional Plan 2021 for Uttar Pradesh sub- region- Newly Added Areas	requested by Govt. of Rajasthan was accepted by the Board. As approved by the Board, sanction order for reimbursement the Consultancy fee as submitted by Govt. of Rajasthan for preparation of SRP- 2021 of Bharatpur district has been issued. <i>Matter is placed for information.</i> Matter is placed separately under Agenda Item No. 3
17.	Agenda Item No.5: Status of Delineation of NCR Committee noted that comments of Govt. of Rajasthan & NCR Cell, UP	Matter is placed separately as Agenda Item No. 6
	were received. Haryana, Delhi and Uttar Pradesh assured to send their Comments on the Report by 25 th March, 2020.	
18.	Agenda Item No.6: Status of implementation of Projects envisaged in Regional Plan-2021 & Functional Plans	
	Committee directed that NCR participating States may submit their comments along with ballpark cost estimates for proposals they intend to implement, as this shall help NCRPB to have a tentative pipeline of projects for which funds could be arranged. The submissions may be made by 31 st March 2020.	The desired information is awaited from the NCR participating States.

Agenda Item No.3: Status of Sub-Regional Plans from NCR participating States

3.1 Sub-Regional Plan-2021 for NCT Delhi

3.1.1 Planning Committee in its last (68th) meeting requested GNCT of Delhi to expeditiously examine and process the submission, and submit the SRP- Delhi 2021 to NCRPB after its approval. GNCTD representative assured that the matter will be taken up in the Chief Secretary's meeting on 18.03.2020 and will be sent early, to NCRPB.

3.1.2 The matter was discussed in the 39th Meeting of the Board and the Board directed that SRP of Delhi shall be sent within a month by GNCT-Delhi with changes as deemed fit, to enable timely processing for the next Board meeting for consideration of the Board.

3.1.3 Subsequently, NCRPB pursued with the Govt. of NCT Delhi for expediting the work of pending SRP.

Action Point:

Govt. of NCT-Delhi, may provide the status on finalization of draft SRP for NCT Delhi sub-region.

3.2 Sub-Regional Plan-2021 for additional districts of Haryana Sub-Region

3.2.1 Planning Committee in its last (68th) meeting directed that action on the SRP be completed expeditiously and Govt. of Haryana may like to request for revised extension of time for reimbursement of SRP preparation expenses as it was approved only till September 2019 for Haryana.

3.2.2 The status was discussed in the 39th Meeting of the Board, wherein it was decided that Govt. of Haryana would finalize the area under NCZ as per the Satellite Imagery, revenue records and the ground truthing as per definition/ categorisation of NCZ provided in the Regional Plan-2021. As far as the delineation of Aravalli on the basis of MoEF Notification dated 07.05.1992 is concerned, Govt. of Haryana will decide on the basis of revenue record, satellite imagery and ground truthing. Thereafter, the same will be intimated to the Board for information as per the NCRPB Act.

3.2.3 NCRPB has not received desired information.

Action Point:

Govt. of Haryana, may provide the status on finalization of SRP -2021 for Haryana sub-region.

3.3 Sub-Regional Plan-2021 for additional districts of Uttar Pradesh Sub-Region

3.3.1 Planning Committee in its last (68th) meeting suggested that Govt. of UP may also request for extension of time for reimbursement of SRP preparation expenses as its Report was getting delayed.

3.3.2 Govt. of UP had sent a draft SRP for NCRPB comments on 03.10.2020. It was apprised to the Board in its 39th meeting. The Board directed that NCRPB may convey its comments on draft SRP to Govt. of UP within two weeks and U.P. shall there after submit its final SRP within a month. The matter be put up in the next Board meeting.

3.3.3 Accordingly, NCRPB vide letter dated 20.10.2020 had sent comments to Govt. of U.P. for necessary action. Subsequently, vide letter dated 22.01.2021 GoUP has been requested for expediting action.

Action Point:

Govt. of Uttar Pradesh, may provide the status on finalization of SRP for additional districts of U.P. sub-region.

Agenda Item No.4: Status of Delineation and Ground Truthing of Natural Conservation Zone (NCZ) and Notices issued under Section 29(2) regarding NCZ

1. The Board in its Special meeting held on 25.04.2014 while considering the Draft Sub-Regional Plan for Haryana Sub-Region of NCR-2021, decided that Natural Conservation Zone (NCZ) in NCR be delineated by each participating State based on detailed ground truthing, along with verification of State revenue records. Thereafter, the SRPs would stand amended.

2. While review and revision of Regional Plan (RP)-2021, variations in NCZ (area as well as Map sheet wise tentative location of places), were observed by NCRPB in conjunction with NRSC. Accordingly, Notice(s) under Section 29(2) of the NCRPB Act, 1985 for violation of RP-2021 were issued to all NCR participating State Govts. on 23.04.2014 seeking a detailed reply within 15 days.

3. It was placed before the Board in its 35th meeting held on 09.06.2015 that further action in this regard may be taken after the delineation exercise is completed by the States.

4.1 Notice issued to Govt. of NCT Delhi

4.1.1 In the last (68th) meeting of the Planning Committee, Special Secretary, UD, GNCTD informed that the Report was sent to DDA, however, DDA has sent it back to UD Department stating that DDA has done its part and for the other areas, UD Department is to get the work done from the concerned Departments. He further informed that a meeting has been scheduled for 18.03.20 under the Chairmanship of Chief Secretary Delhi, on this matter.

4.1.2 This matter was placed before the Board in its 39th meeting. The Board deferred this matter as one month time for compliance along with SRP, was given to Govt. of NCT Delhi.

4.1.3 NCRPB is yet to receive SRP for Delhi from Govt. of NCT-Delhi.

Action Point:

Govt. of NCT-Delhi, may provide the status on delineation of NCZ in NCT Delhi subregion.

4.2 Notice issued to Govt. of Haryana

4.2.1 In the last (68th) meeting of the Planning Committee, Director, T&CP, Haryana informed that their Report on NCZ is under submission to the State Govt. and is expected to be submitted to NCRPB and to the Committee chaired by Secretary, MoHUA, within 10 days.

4.2.2 This matter was placed before the Board in its 39th meeting wherein it was decided that State Govt. of Haryana would finalize the area under NCZ as per the Satellite Imagery, revenue records and the ground truthing as per definition/ categorisation of NCZ provided in the Regional Plan-2021. As far as the delineation of Aravalli on the basis of MoEF Notification dated 07.05.1992 is concerned, Govt. of Haryana will decide on the basis of revenue record, satellite imagery and ground truthing. Thereafter, the same will be intimated to the Board for information as per the NCRPB Act.

4.2.3 NCRPB has not received desired information.

Action Point:

Govt. of Haryana, may provide the status on delineation of NCZ in Haryana subregion.

4.3 Notice issued to Govt. of Rajasthan

4.3.1 Chief Town Planner, NCR Cell, Rajasthan, in the last (68th) meeting of the Planning Committee stated that the state was taking up the matter on high priority and Principal Secretary, UDH had also directed DC, Alwar to expedite the matter. She added that the matter was being followed up but was unable to give a clear timeline by which the works were expected to be completed.

4.3.2 This matter was placed before the Board in its 39th meeting wherein it was apprised by the representative of Govt. of Rajasthan that replies to NCZ notices for Alwar, and NCZ proposals for Bharatpur have been sent to the Board recently.

4.3.3 In this matter, the Board decided that final details and replies may be submitted by the Govt. of Rajasthan within the one month to the Board for consideration in the next Board meeting.

4.3.4 Accordingly, NCRPB has received reply from Govt. of Rajasthan vide letter No. TPR/NCR/NCZ/20/1 dated on 01.01.2021. The matter has been examined and the observations are as under:

- a. Govt. of Rajasthan vide letter dated 01.10.2020 and 05.10.2020 has submitted that NCZ area shown in SRP-2021 of Alwar district was superimposed on the satellite imagery of 2012 (provided by NSRC, Hyderabad) and identified 59 locations, where variation appeared in NCZ areas of SRP-2021 and Satellite Imagery-2012 which were demarcated and prepared maps with GPS Coordinates.
- b. Ground Truthing of identified areas has been done by Govt. of Rajasthan and according to the NCZ Ground Truthing report, no variation has been found in NCZ area from Existing landuse 1999 and 2012. Govt. of Rajasthan also submitted a

detailed Ground Truthing report of these sites signed by District Collector Alwar on each page.

- c. Govt. of Rajasthan vide letter dated 01.01.2021 has again submitted the information as communicated vide letter dated 01.10.2020 and 05.10.2020 in response to the Minutes of 39th Board meeting circulated vide letter dated 04.12.2020. Further, communicated that Govt. of Rajasthan also tried to identify the 138 location as mentioned in the notice dated 23.06.2014. Status of 87 locations has been submitted and mentioned that no variation has been found in these locations. With regard to remaining sites which could not be identified by Govt. of Rajasthan, request has been made by them to NCRPB to send coordinate of these location so that exact analysis may be done. NCRPB vide letter dated 02.02.2021 has requested for clarification on the observations of Chief Regional Planner that how the NCZ has been delineated, if these locations could not be identified. Clarification from Chief Town Planner, Rajasthan has been received vide letter dated 10.02.2021. It has been informed that location mentioned in the letter dated 23.06.2014 has been checked in the Office.
- d. However, based on the Ground Truthing report submitted by District Collector Alwar, Govt. of Rajasthan has submitted that no variation is found in NCZ area 2237 sq. km. shown in SRP-2021 (Alwar district). Therefore, Govt. of Rajasthan has requested NCRPB to withdraw the notice regarding NCZ.

It may be noted that SRP-2021 of Alwar district has more NCZ area (2237 sq. km.) than RP-2021 (1295.46 sq.km.).

Action Point:

Matter is placed before the Planning Committee for information and further directions.

Agenda Item No. 5: Continuation of NCR Planning and Monitoring Cells in NCR Participating States

5.1 NCR Planning Board approved the setting up of the NCR Cells in its 5th meeting held on 17.2.1987. The Board in its 37th meeting held on 04.12.2017 approved the proposal for continuation of NCR Planning & Monitoring Cells for the period from 01.04.2017 to 31.03.2021, with the following:

- Member Secretary, NCRPB is authorized to work out Action Plan for the Cells from time to time as per requirement including sanction of posts and take any administrative/ financial decision for smooth functioning of the Cells within the approved frame work, after due examination.
- NCRPB shall continue to reimburse 100% of expenditure on pay & allowances and recurring office expenditure. The upper limit for reimbursement of recurring office expenditure may be increased from Rs.3,25,000/- p.a. to Rs.5,00,000/- p.a. for NCR Cells of Haryana, Rajasthan & U.P. and Rs.75,000/-p.a. to Rs.1,25,000/- p.a. for NCR Cell of NCT Delhi.
- NCRPB will also reimburse the taxi hiring charges (maximum upto Rs.25000/- per month) to NCR Cells of Haryana, Rajasthan and U.P. over and above the recurring office expenditure.

5.2 Work Programme/Action Plan for the NCR Planning & Monitoring Cells for the period 2017-21 is placed at **Annexure-5/I.**

5.3 Accordingly, the Staff Strength vis-a-vis Sanctioned Posts of all NCR Planning and Monitoring Cells was reviewed and deliberated in the 67th meeting of the Planning Committee held on 15.07.2019 effectiveness of NCR Planning & Monitoring Cells in NCR participating States. Presently, in NCR Cell Rajasthan, sanctioned post is 21, out of which 7 posts are vacant and conversion are proposed for 6 posts. In NCR Cell Haryana, sanctioned post is 30, out of which 15 posts are vacant and conversion are proposed for 13 posts. Regarding, NCR Cell Uttar Pradesh, sanctioned post is 30, out of which 17 posts are vacant and conversion are proposed for 13 posts. In NCT Delhi, all 5 sanctioned posts are vacant.

5.4 It may be mentioned that draft Regional Plan-2041 is under preparation. NCR Planning and monitoring Cells is playing a pivotal role in preparation of said Regional Plan by providing required data of the State and coordination with concerned State Govts. While Regional Plan is being finalised and it comes into force, the NCR participating States through the NCR Planning and Monitoring Cells need to work in parallel to initiate work for preparation of their respective Sub Regional Plans for 2041. Further, NCR Planning and Monitoring Cells of NCR participating states will also assist in Functional Plan preparation, have to play a key role, in ensuring implementation of Regional and Sub Regional Plans in NCR. In addition to-this, there are certain tasks wherein continuous engagement of NCR Cells would be required. E.g. (a) monitoring of implementation of the Regional Plan and in case of any violations, bringing the same to the notice of the Board; (b) examining project proposals and to ascertain if they are in conformity with the Regional Plan; etc.

5.5 However vacancies need to be filled expeditiously to ensure all the above action at 5.4 above.

Action Point:

Matter is placed before the Planning Committee for consideration and making recommendation for continuation of the NCR Planning and Monitoring Cells for an initial period of six months with same condition as approved by the Board in its 37th meeting. Further, extension can be considered subject to filling up vacancies by June, 2021.

Agenda Item No.6: Status of Delineation of National Capital Region

6.1 Planning Committee in its last (68th) meeting noted that comments of Govt. of Rajasthan & NCR Cell, UP were received. Haryana, Delhi and Uttar Pradesh assured to send their Comments on the Report by 25th March, 2020.

6.2 The status was placed before the 39th meeting of the Board and it was decided that Secretary, MoHUA shall hold consultation with the States in the next two weeks on NCR delineation and present status before the Board expeditiously. Meanwhile the present extent of NCR area shall be used as the basis for preparation of forthcoming RP-2041.

6.3 The meeting on NCR Delineation has been held on 18.11.20 under AS (D) followed by meeting on 12.01.21 under the Chairmanship of Secretary, HUA. Formal comments of Govt. of UP and Govt. of Haryana are awaited.

6.4 During the meeting, Secretary, HUA/ Chairman, while sharing his views stated that he was in favour of Option II, simply because the option was more inclusive, taking various transit corridor routes under consideration, do not affect the farmers much and also includes new areas, as well. Representative from Haryana were to discuss their proposal, separately with him.

Action Point:

Govt. of Haryana and Uttar Pradesh, may provide the status. Planning Committee may take a view.

Agenda Item No. 7: Draft Regional Plan-2041 (RP-2041)

7.1 The Board in its 39th (last) meeting agreed the proposal of Agenda, that after the draft chapters are reviewed by the SPA, they shall be placed before the Core Advisory Committee which has members from all the four States (apart from experts); thereafter the draft chapters shall be shared with NCR States and will be accordingly placed before the Planning Committee and the Board. Hon'ble Minister and Chairman of the NCRPB also directed that a special session for the draft RP-2041 can be held, which should ideally have participation of Chief Ministers of four States apart from the concerned Central Ministries.

7.2 Accordingly, the first draft of Regional Plan 2041 prepared in-house was shared with SPA Delhi for its first Review in late October /early November, 2020. SPA, Delhi presented its reviewed Draft RP-2041 in the meeting of Core Advisory Committee, on 05.01.2021, which suggested that the Final First Reviewed Chapters and Annexures be shared with NCR participating States for their views. The Draft RP-2041 was compiled into two volumes (Vol-I constituting the Main Chapter and Vol-II containing the policy and Data Annexures). The Draft RP-2041 has been shared with NCR participating States on 6th -7th January, 2021 with a request to submit the comments within two weeks by 20.01.2021. Comments from Govt. of Rajasthan have been received on 21.01.2021. More time has been sought by Govt. of NCT Delhi (1 month) vide letters dated 20.01.2021 Haryana (2-3 months) and Uttar Pradesh (15 days) vide letter dated 22.01.2021. The Draft RP-2041 shared with NCR participating States is placed at **Annexure-7/I.**

7.3 It may be noted that comments/ suggestions received over the weblink provided in the NCRPB website since the Inaugural conclave held in November 2019 have also been taken into consideration, while drafting the plan.

Action Point:

- Govt. of NCT Delhi, Haryana and Uttar Pradesh may apprise the status regarding comments on draft RP-2041
- Matter placed for consideration of the Planning Committee
- The recommendation of the Planning Committee will be placed before the Board for approval for inviting objections/suggestions from the public under Section 12 of the NCRPB Act, 1985

Agenda Item No. 8: Geo-Portal for National Capital Region

8.1 NCR presently spread over 55,083 Sq. Kms covering the areas of four NCR participating States (24 Districts and entire NCT of Delhi). For the purpose of effective utilization of Remote Sensing and GIS technology, a web geo-portal has been developed through National Informatics Centre (NIC) for use by NCR Participating states and the Office of NCRPB.

8.2 NIC has been instrumental in steering Information and Communication Technology applications in Government Departments at Central, State and Districts in government services for wider transparency in government functions, and improvement in decentralized planning and management.

8.3 As regard to the development of said web geo-portal discussions/meetings were held between NCRPB and NIC. NCRPB requested NIC to submit a proposal for development of Geo Portal for NCR which may be used as a resource portal. Accordingly, NIC submitted its proposal for 'Geo-Portal for National Capital Region Planning Board' on 31.08.2019.

8.4 Further, Project Sanctioning & Monitoring Group-II (PSMG-II) under the chairmanship of Member Secretary, NCRPB in its 14th meeting held on 10.10.2019 approved the proposal for creation of Geo-Portal for NCR, received from Remote Sensing & GIS Division National Informatics Centre (NIC), Ministry of Electronics & IT, Govt. of India, New Delhi, at a nominal cost of Rs. 9,97,454.2. A copy of the Minutes of the meeting of the PSMG-II are placed at **Annexure 8/I.**

8.5 The Terms of Reference were prepared on 15.01.2020 which were mutually agreed by NCRPB and NIC. A copy of Terms of Reference is placed at **Annexure 8/III.**

8.6 Accordingly, with data provided by NCRPB, collected from various authentic sources, NIC has now developed the draft Geo-Portal with web-link as <u>https://ncrpbgis.nic.in</u> and the same has been tested in-house by the officers of NCRPB and further the web-link has been shared with individual login credentials of the officers of NCR participating states on 17.09.2020 with request to examine the Portal and provide comments & observations accompanied with relevant data, which will be suitably incorporated. The Portal consists of around 176 Layers/Sub-layers presented as Line, Point & Polygon feature covering details of various sectors like Land Use, Transport, Industries, Water, Power, Health, Shelter, Heritage & Tourism, Disaster Management, etc. A detailed list of layers is placed at **Annexure 8/III**.

8.7 The comments from the participating states have been received and are being suitably incorporated by NIC. As per the Terms of Reference, NIC will also provide GIS training /extend User Hand-Holding & Maintenance Services and regular updation of the data on Geo-Portal during the project implementation period.

Matter is placed before the Planning Committee for information.

Agenda Item 9: Any other item with the permission of the Chair

Annexure-1/I





राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड NATIONAL CAPITAL REGION PLANNING BOARD प्रथम तल, कोर-IV बी, / 1st Floor, Core-IV B, भारत पर्यावास केन्द्र, / India Habitat Centre, लोधी रोड, नई दिल्ली-110003 / Lodhi Road, New Delhi-110003 आवासान और शहरी कार्य मंत्रालय / Ministry of Housing and Urban Affairs दूरमाष/Phone: 011-24642284, 24642287 फेक्स/Fax: 011-24642163

Speed Post

No.K-14011/02/2020-NCRPB

Dated: 18.03.2020

Sub: Minutes of the 68th Meeting of the Planning Committee of the NCR Planning Board held on 16.03.2020 at 11:30 AM at NCR Planning Board, New Delhi

The 68th Meeting of the Planning Committee of the NCR Planning Board under the chairpersonship of Member Secretary, NCR Planning Board was held on 16.03.2020 at 11.30 AM in the Conference Room of NCR Planning Board, Core-4B, 1st Floor, India Habitat Centre, Lodhi Road, New Delhi-110003.

2. The Minutes of the meeting are enclosed for information and necessary action.

(Satish Parasher) **Chief Regional Planner**

To:

Members

- 1. Additional Secretary (D), Ministry of Housing & Urban Affairs, Govt. of India, Nirman Bhawan, New Delhi.
- 2. Principal Secretary, Department of Urban Development & Housing, Govt. of Rajasthan, Rajasthan Secretariat, Jaipur-302005, Rajasthan.
- 3. Principal Secretary, Town & Country Planning Department, Govt. of Haryana, Haryana Mini Secretariat, Sector -17, Chandigarh, Haryana-160017.
- 4. Principal Secretary, Housing &Urban Planning Department, Govt. of Uttar Pradesh, 3rd Floor, Bapu Bhawan, Uttar Pradesh Secretariat, Lucknow-226001, Uttar Pradesh.
- 5. Vice-Chairman, Delhi Development Authority, Vikas Sadan, New Delhi-110023.
- 6. Director General, Town & Country Planning Department, Government of Haryana, SCO 71-75, Sec.17C, Chandigarh-160017.
- 7. Principal Secretary (UD), Govt. of NCT-Delhi, 9TH & 10TH Level, Delhi Secretariat, I.P. Estate, New Delhi-110002.
- 8. Chief Planner, Town & Country Planning Organisation, Govt. of India, E-Block, Vikas Bhawan, I.P. Estate, New Delhi-110002.

P.T.O

- 9. Chief Town & Country Planner, Uttar Pradesh, Town & Country Planning Department, Govt. of Uttar Pradesh, 7 Bandaria Bagh, Lucknow-226001, Uttar Pradesh.
- 10. Chief Town Planner (NCR), Town & Country Planning Department, Govt. of Rajasthan, Nagar Niyojan Bhawan, Jawaharlal Nehru Marg, Jaipur-302004, Rajasthan.

Co-opted Members

- 11. Joint Secretary (UT), Ministry of Housing & Urban Affairs, Govt. of India, Nirman Bhawan, New Delhi.
- 12. Joint Secretary (IA), Deptt. of Environment, Ministry of Environment, Forest & Climate Change, Govt. of India, Indira Paryavaran Bhavan, Jor Bagh Road, New Delhi-110003.
- 13. Senior Advisor (HUD), NITI Aayog, Sansad Marg, New Delhi-110001.
- 14. Chairman & Managing Director, Housing & Urban Development Corporation, HUDCO House, Lodhi Road, New Delhi-110003.

<u>CMA</u>

- 1. Secretary, Housing, Govt. of Uttarakhand, 4, Subash Road, Dehradun-248001, Uttarakhand
- 2. Chief Executive Officer, NCR Special Area Development Authority (Counter Magnet), Sheetla Sahai Administration Bhawan, Sojna Tighra, **Gwalior**-474001 (M.P.)
- 3. The Chief Administrator, Patiala Urban Planning & Development Authority, PUDA Complex, Urban Estate, Phase-II, **Patiala**-147002.

Copy to:

- 1. Consultant Planning, NCRPB
- 2. All officers from Planning Wing
- 3. FAO, NCRPB
- 4. PS to MS, NCRPB
- 5. PA to Director (A&F)

MINUTES OF THE MEETING

68TH MEETING OF THE PLANNING COMMITTEE HELD ON 16.03.2020 AT 11.30 A.M. IN THE OFFICE OF N C R PLANNING BOARD, NEW DELHI.

1. Chairperson welcomed the members and participants to the Planning Committee meeting and after a brief round of introduction, requested Sh. Satish Parasher, Chief Regional Planner (CRP), NCRPB to initiate the discussion. After a brief background to the meeting from CRP, NCRPB, Sh. Abhijeet Samanta, Deputy Director (Tech), NCRPB gave a short presentation on the various agenda items of the meeting. Agenda wise brief of discussions on the agenda items, along with the decisions taken are on the same, are as presented below:

List of participants is at Annexure-I.

AGENDA ITEM NO.1: CONFIRMATION OF THE MINUTES OF THE 67th MEETING OF THE PLANNING COMMITTEE

Planning Committee noted that no comments have been received on the Minutes of its 67th meeting held on 15.07.2019.

Minutes of the 67th Meeting of the Planning Committee were confirmed.

AGENDA ITEM NO. 2: ACTION TAKEN ON THE DECISIONS OF THE 67th MEETING OF THE PLANNING COMMITTEE

- 2. The Committee noted the information on action taken on decisions on agenda items 2 (sub agenda item 3.2 & 10), 3, 8, 9, 11, 18, 19 and 20 of the 67th Planning Committee Minutes.
- 3. It was informed that most of the balance agenda items discussed in the last meeting were being dealt as separate agenda item.
- 4. During deliberations on the 'Operational effectiveness of NCR Planning & Monitoring Cells in NCR participating States, it emerged that despite repeated requests to States, the vacancies in all the four NCR Planning and Monitoring Cells were still to be filled up.
 - a) Special Secretary, UD, GNCT of Delhi while conveying its issues regarding staff and space for Cell, assured that necessary action regarding filling up of the vacancies in NCR Cell of Delhi by March 2020. It was also suggested that matter could be raised in the meeting with Chief Secretary, Delhi as well, to expedite filling up the posts.
 - b) Director, T&CP, Haryana, also assured that the action for 15 vacant posts of NCR Cell of Haryana will be taken up by next month.

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- c) Additional Commissioner, NCR Cell, Uttar Pradesh, informed that the action for its 15 vacant posts of its NCR Cell had been taken up with the State Government and possibility of filling the posts through NCRPB was also being explored as an alternative.
- d) With respect to NCR Cell Rajasthan, CTP, Rajasthan, submitted that as few posts are related to promotions in Town Planning Department, Rajasthan, and action was to be taken by the State. State Government has already been requested for the same.

It was clarified that NCR Planning and Monitoring Cells have been established under administrative control of respective State Governments to carry out duties and functions assigned by NCRPB, and therefore, the pay & allowances and recurring office expenditures are being reimbursed by NCRPB. These posts are not under the regular promotion structure of the State Governments and cannot be kept vacant due to delay in promotions in State Governments. The Cells have to act as a bridge between NCRPB and respective State Governments. It was reiterated that the NCR Cells need to get the vacant posts, filled at the earliest as per decisions of the 67th Planning Committee.

(Action: NCR Participating States)

- 5. On the aspect of Delineation and Ground Truthing of Natural Conservation Zone (NCZ) and Notices issued U/s 29(2) OF NCRPB ACT, 1985 regarding NCZ, representatives from the State informed their status as follows:
 - a) Director, T&CP, Haryana reiterated that their Report on NCZ is under submission to the State Govt. and is expected to be submitted to NCRPB and to the Committee chaired by Secretary, MoHUA, within 10 days.
 - b) With respect to NCT of Delhi it was noted that the matter was being coordinated by UD, Department, GNCTD with other Departments in Delhi. Special Secretary, UD, GNCTD informed that the Report was sent to DDA, however, DDA has sent it back to UD Department stating that DDA has done its part and for the other areas, UD Department is to get the work done from the concerned Departments. He further informed that a meeting has been scheduled for 18.03.20 under the Chairmanship of Chief Secretary Delhi, on this matter.
 - c) CTP, NCR Cell, Rajasthan stated that the state was taking up the matter on high priority and Principal Secretary, UDH had also directed DC, Alwar to expedite the matter. She added that the matter was being followed up but was unable to give a clear timeline by which the works were expected to be completed.

(Action: Govt. of Haryana, Rajasthan and GNCT of Delhi)

6. The Committee was apprised with the decision of the 38th Board meeting with regard to the matter on Population density of Master plans/ Development plans & Density norms of RP-2021 and notices issued U/s 29(2) of NCRPB Act, 1985.

After deliberations, it was observed that appropriate replies were still awaited from Govts. of Rajasthan, Uttar Pradesh and Haryana, and State representatives were again requested to expedite the submission focusing on target populations for year 2021 in the respective Master Plans and steps/initiatives undertaken by States to meet the suggestive densities of RP 2021 for the towns. Representatives from Uttar Pradesh and Haryana assured to send the replies in a week.

(Action: NCR participating States of Rajasthan, Uttar Pradesh and Haryana)

7. With respect to Counter Magnet Areas, the Committee was informed about the decision of the 38th Board meeting and concerned participants provides updates on the status of action taken by them. It emerged after deliberations that necessary Plan of Action was still to be submitted by Haryana (for Ambala & Hisar), Uttar Pradesh (for Bareilly, Kanpur corridor), Dehradun, Gwalior and Patiala. Representatives from Patiala informed that they were in process of Notifying the Patiala – Rajpura Corridor area as CMA as was approved in the 38th Board meeting, and the same was expected within this month. The Committee expressed its extreme displeasure on the delays in the process of Notification, by Patiala and cautioned that the matter cannot be kept pending for so long despite Board approvals and Board may be constrained to reconsider its approval, if it is delayed any further.

After deliberations, the Committee directed that all CMAs need to submit the Plan of Actions within a month so that NCRPB has on record, the activities planned to be undertaken in CMAs for which financial assistance can also be provided by NCRPB if required.

Further, Patiala to immediately take action regarding notification of Patiala- Rajpura Corridor as CMA of NCR, as already approved in 38thBoard meeting of NCRPB.

> (Action: Go Haryana, Uttar Pradesh, Madhya Pradesh, Punjab & Uttarakahnd)

8. With respect to directions of the Hon'ble High Court of Allahabad in the matter of Raghuraj Singh vs. State of UP & 10 Ors. (Civil misc. PIL. no.-29004 of 2016), the Committee suggested that it may be checked again if the case has been concluded and matter reserved for judgment /order, as was being suggested by representatives from Uttar Pradesh.

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- 9. While appraising the Committee regarding the status of Reciprocal Common Transport Agreements, it was informed that RCTA for Contract Carriage is currently valid till April 2020 (after extensions), while the RCTA(Stage Carriage) was also ending in April 2020. Accordingly, a Combined Agreement was discussed in last CoTS meeting held on 06.03.20 wherein all participating States had informally agreed. Draft Combined Agreement was circulated to the States on 11.03.20 for necessary comments.
 - After deliberations, Committee suggested that NCR Planning & Monitoring Cells who have to act as catalysts, may follow-up the matter regarding Combined Transport Agreements (Stage Carriage & Contract Carriage) with the respective Transport Departments and ensure necessary submissions by end of March, 2020. Further, representatives of Delhi and Haryana were also requested to follow up on the matter of making public buses tax-free to encourage public mobility modes.

(Action: NCR Participating States)

10. Discussing the action taken on the decision in last meeting regarding, constitution of a Committee with Secretary / Commissioners of Tourism Department of NCR States and representative of Ministry of Tourism, ASI (Centre & State both), etc. to discuss and resolve issues related to tourism sector in NCR, on the pattern of Committee of Transport Secretaries/Commissioners, it was informed that the said committee was constitute by NCRPB vide its order dated 08.08.19. NCRPB vide letter dtd. 08.08.19 had requested for nominations for the same. Subsequently reminder was sent on 03.10.2019. Nomination from Mo Tourism, ASI, Dept. of Archaeology & Museum, Haryana & ASI, Agra Circle, U.P. were received.

As nominations from Govt. of Haryana, U.P, Delhi & Rajasthan and ASI Circle Rajasthan were still awaited, representatives from the states were requested to ensure and expedite the same at the earliest, and NCR Cells to follow up on the matter.

It was decided that similar action will be taken with respect to Health, Sanitation and water sector as well, after the Committee on Tourism initiates its actions.

(Action: NCR Participating States & NCRPB)

AGENDA ITEM 3: PREPARATION OF REGIONAL PLAN 2041 FOR NCR

11. Participants were briefed about the action taken w.r.t. work regarding RP-2041 preparation, the same being placed in 38th Board meeting (13.09.19) and decisions of the Board regarding

its considering the Final Review Reports of Study Groups w.r.t. RP-2021 and recommendations of 'Report on Population Projections for NCR-2041' and approving them to be used as one of inputs for RP-2041.

12. Committee was also apprised about the Board decision that Regional Plan need not have satellite imagery based maps with tentative details and that it may have schematic maps presenting the broad policies and proposals. Detailing of the maps at the scale of 1:10,000 and below along with ground truthing and detailed planning may be left to the States through their Sub Regional Plans and Master Plans.

Additional Chief Planner, TCPO, Govt. of India, mentioned that any schematic map would have certain scale. After discussions, Committee decided that Maps of RP-2041 can be in form of 'Schematic Maps', wherein it may be clarified that it is 'not to scale'.

AGENDA ITEM 3.1: STAKEHOLDER CONCLAVE & WORKSHOPS HELD FOR PREPARATION OF RP- 2041

- 13. Committee was also apprised about the series of discussions & dialogues initiated by NCRPB, which included the Inaugural Conclave on NCR-2041 Planning for Tomorrow's Greatest Capital Region" chaired by Secretary, MoHUA organized on 11.11.19 at Vigyan Bhavan and the 17 Stakeholder Workshops covering probable sectors & topics for RP-2041 formulation that were organised from 03.12.19 to 24.01.20 with active participation from all NCR States, concerned Ministries/Departments of Govt. of India, Knowledge Institutions, Industry & Housing Associations, Experts, Field Officers from Districts, and other stakeholders.
- 14. On the aspect of planned State level Conclaves, the Committee, after deliberations, decided that while States are welcome to offer their further suggestions/comments for RP 2041, the sub-region wise conclaves may not be required, owing to, time constraints, exhaustive comments of states and various stakeholders being captured extensively during the workshops, with a dedicated session for NCR States and the evolving issue of Corona pandemic, which warrants necessary precautions for all.

AGENDA ITEM 3.2: CORE ADVISORY COMMITTEE FOR RP 2041

15. The Committee was informed that with a view to coordinate and monitor preparation of Regional Plan 2041 for National Capital Region, a Core Advisory Committee for Regional Plan 2041, was constituted. Two meetings dated 29.01.2020 and 25.02.2020 were already held for the same. It was indicated that as RP-2041 seeks to address aspects of Quality of life, Ease of living & doing business etc. and overall achievement of harmonious development of NCR,

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Minutes of the 68th Meeting of the Planning Committee

efforts were being made to explore if the Regional Plan 2041 could be an Outcome Based Plan and accordingly a different chaptarization plan was under discussion. Comments were requested to CAC members on the suggested chapterisation.

After deliberations, the Committee appreciated the efforts and requested NCR participating states to expedite the submission of necessary comments and suggested the respective NCR Cells to follow-up.

(Action: NCR Participating States & NCRPB)

AGENDA ITEM 3.3: STATUS OF DATA COLLECTION FOR RP 2041 FOR NCR

16. It was informed that sector wise and district wise Data was requested from NCR States, on specially designed formats, which were circulated in May, 2019. Sub-region wise status on data collection indicated that data gaps remained for all NCR Participating states, for various districts despite repeated reminders. It was also updated that a lot of data has been received from Uttar Pradesh, recently.

After deliberations, NCR participating states were requested to expedite the submission of pending data which need to be duly signed and owned by them. Haryana, Delhi and Rajasthan assured to send all pending data within a week.

(Action: NCR Participating States/ Respective NCR Planning & Monitoring Cells)

AGENDA ITEM NO. 4: STATUS OF SUB-REGIONAL PLAN-2021 FOR NCR States AGENDA ITEM NO. 4.1: HARYANA SUB REGION - NEWLY ADDED AREAS

- 17. Committee was informed that the Modified draft Sub Regional Plan-2021 for extended area of Haryana Sub-Region along with action report on observation was submitted by the GoHaryana in September 2019 and was thereafter examined in NCRPB & placed before Board in its 38th meet. The Board considered the submission as per Section 19(2) of NCRPB Act, 1985 subject to detailed NCZ delineation by Haryana & compliance of observations with respect of Karnal and Kaithal.
- 18. Director, T&CP, Haryana informed that while the action on observation with respect of Karnal and Kaithal had been taken, the publication of approved SRP for additional districts (without NCZ) is delayed due to some issue. He indicated that Haryana may send a proposal regarding SRP for consideration in the Board meeting. Further, necessary action regarding NCZ shall be undertaken after the delineation report is accepted.

Committee directed that action on the SRP be completed expeditiously and Govt. of Haryana may like to request for revised extension of time for reimbursement of SRP preparation expenses as it was approved only till September 2019 for Haryana.

(Action: Govt. Of Haryana)

AGENDA ITEM NO. 4.2: SUB REGIONAL PLAN FOR DELHI 2021

19. Additional Commissioner, DDA informed that the SRP 2021 had been prepared and submitted to GNCT of Delhi on 12.03.2020.

Committee requested GNCT of Delhi to expeditiously examine and process the submission, and submit the same to NCRPB after its approval. GNCTD representative assured that the matter will be taken up in the Chief Secretary's meeting on 18.03.2020 and will be sent early, to NCRPB.

(Action: GNCT of Delhi)

AGENDA ITEM NO. 4.3: SUB REGIONAL PLAN 2021 FOR RAJASTHAN SUB REGION NEWLY ADDED AREAS

20. CTP, NCR Cell, Rajasthan, informed that the SRP 2021 had been notified on18.02.20 but while finalizing the Draft SRP, an Annexure had been added due to minor factual errors and important suggestions received in meetings of CE&RC and various stakeholder/ organizations of Bharatpur district.

Committee suggested that incase there are any modification in SRP post Board approval, the same will have to be taken up to the Board again. Govt. of Rajasthan may like to send a reasoned proposal and may also request for revised extension of time for reimbursement of SRP preparation expenses as it was approved only till August 2019 for Rajasthan.

(Action: Govt. of Rajasthan)

AGENDA ITEM NO. 4.4: SUB REGIONAL PLAN 2021 FOR UTTAR PRADESH SUBREGION- NEWLY ADDED AREAS

21. CCP, NCR Cell, Uttar Pradesh, informed that the Draft report was expected from Consultant, within a week and same shall be thereafter forwarded to NCRPB after examination.

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Minutes of the 68th Meeting of the Planning Committee

Committee suggested that Govt. of UP may also request for extension of time for reimbursement of SRP preparation expenses as its Report was getting delayed.

(Action: Govt. of Uttar Pradesh)

AGENDA ITEM NO. 5: STATUS OF DELINEATION OF NATIONAL CAPITAL REGION

22. The Committee was informed that the Report on NCR Delineation, was duly placed in 38th Board for consideration, wherein action taken by Committee constituted for Delineation of NCR was appreciated by Board. As Chairman, NCRPB had suggested that a workshop be organised inviting experts & stakeholders to discuss Options suggested in report, a Conference was organised on 17.01.20 in Vigyan Bhawan, wherein experts & Stakeholders were invited.

After Deliberations, Committee noted that comments of Govt. of Rajasthan & NCR Cell, UP were received. Haryana, Delhi and Uttar Pradesh assured to send their Comments on the Report by 25th March, 2020.

(Action: Govt. of Haryana, UP and NCT of Delhi)

AGENDA ITEM NO. 6: STATUS OF IMPLEMENTATION OF PROJECTS ENVISAGED IN REGIONAL PLAN-2021 & FUNCTIONAL PLANS

23. During discussions regarding status of implementation of project envisaged in Regional Plan and Functional Plans, it was agreed that States need to clearly bring out the status of implementation of projects that emerged from various plans already prepared for NCR. States may review the list already circulated, to examine and indicate the items for which action have already been taken; items for which they plan to take up implementation as well as identify items which may not be relevant anymore owing to changing scenarios. The proposals being submitted to NCRPB for financial assistance should also focus on the projects/ schemes proposed under the prepared plans

After Deliberations, Committee directed that NCR participating States may submit their comments along with ballpark cost estimates for proposals they intend to implement, as this shall help NCRPB have a tentative pipeline of projects for which funds could be arranged. The submissions may be made by 31st March 2020.

(Action: NCR Participating States)

The meeting ended with a vote of thanks to the Chair.

ANNEXURE-I

Chair	person
1	Smt. Archana Agrawal, Member Secretary, NCR Planning Board
Memb	er
2.	Shri Kuldip Pakad, Spl. Secretary, Govt. of NCT Delhi- representing Principal
	Secretary, UD, GNCT Delhi
3.	Shri Makrand Pandurang, Director, Town & Country Planning Deptt., Govt. of
	Haryana, also representing Principal Secretary, Town & Country Planning Deptt.,
	Govt. of Haryana
4.	Shri Rajesh Prakash, Addl. Commissioner, NCR Cell, UP, Ghaziabad- representing
	Principal Secretary, Housing and Urban Planning Deptt., Govt. of UP
5.	Smt. Indira Choudhary, Chief Town Planner (NCR), Govt. of Rajasthan also
	representing Principal Secretary, Department of Urban Development & Housing,
	Govt. of Rajasthan
6.	Dr. K. Srirangan, Addl. Commissioner (Plg.) III, Delhi Development Authority-
	representing Vice Chairman, Delhi Development Authority
7.	Shri S. Surendra, Addl. Chief Planner, Town & Country Planning Organisation
8.	Shri S C Gaur, Chief Coordinator Planner, NCR Planning & Monitoring Cell, UP,
	Ghaziabad- representing CT&CP, Town & Country Planning Deptt., Govt. of UP
Со-ор	ted Member
9.	Shri Satish Parasher, Chief Regional Planner, NCRPB
10.	Dr. Manika Negi, GM (P), HUDCO
Count	er Magnet Areas
11.	Ms. Seema Kaushal, Town & Country Planning Deptt. Patiala
12.	Shri Nawal Singh Rajput, Planning Officer, SADA Gwalior, Madhya Pradesh
Other	Participants
13.	Shri Ajay Kumar, Asstt. Director, UD Deptt. GNCTD

List of the participants of the 68th Meeting of the Planning Committee held on 16.03.20

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Minutes of the 68th Meeting of the Planning Committee

14.	Shri Mahendra Meena, Assistant Town Planner, Town Planning Deptt., Govt. of
	Rajasthan
NCRPB	
14.	Shri Jagdish Parwani, Director (A&F)
15. april	Shri J.N. Barman, Consultant (Ex- Director (Tech))
16.	Shri Abhijeet Samanta, Deputy Director (Tech.)
17.	Shri Nabil Jafri, Deputy Director (T-GIS)
18.	Shri Ramesh Dev, Deputy Director (URP)
19.	Smt. Nilima Majhi, Deputy Director (Tech.)
20.	Shri Naresh Kumar, Assistant Director Tech)

ANNEXURE-

Work Programme/Action Plan for the NCR Planning & Monitoring Cells for next Four Years i.e. 2017-21

The major tasks of Planning & Monitoring Cells functioning in the Haryana, Uttar Pradesh, Rajasthan and NCT Delhi sub-regions of NCR would be as follows:

- 1. Assist the Board in preparation of the Regional Plan and Functional Plan(s) by means of collecting & collating data, information, maps etc. from various Departments/Agencies at the State level; verification of maps and analysis of data, etc.
- 2. Prepare and/or coordinate preparation of Sub-Regional Plan

- 3. Coordinate with various Departments/Agencies at the State level for enforcement and implementation of the Regional Plan, Functional Plans, Sub-Regional Plan and Project Plans.
- 4. Monitor implementation of Regional Plan and in case of any violation, bringing the same to the notice of NCRPB.
- 5. Coordinate with the State Government for preparation of Master/Development Plans of settlements to ensure conformity with the Regional Plan and Sub-Regional Plan.
- 6. Prepare and/or coordinate preparation of Project Plans, after carrying out systematic programming with regard to project formulation, determination of priorities in the sub-region and phasing of development on the basis of existing situation analysis, proposed development scenario, etc.
- 7. Assist the implementing agencies and parastatals for preparation of projects/schemes and forward/ recommend such projects/schemes to the NCRPB for financing, after thorough examination/scrutiny.
- Monitor the NCRPB assisted projects plans/schemes and submit periodic reports/ returns in this regard. Maintain & update the data of physical and financial progress of each project/scheme and upload it on their website.
- Coordinate with implementing agencies/State Govt. for timely repayment of principal and interest on NCRPB's financial assistance/loan.
- 10. Monitor and adhere to the Environmental and Social Management Safeguard (ESMS) guidelines in every project/scheme in the sub-region through the respective implementing agencies.
- 11. Ensure compliance of procurement/ disbursement guidelines of multilateral and bilateral aid Agency, for sub loan to implementing agencies/parastatal/State Govt. etc.
- 12. Any other work as assigned by the Member Secretary, NCR Planning Board/Board Secretariat.

Annexure-7/I

Volume- I



JANUARY, 2021



NATIONAL CAPITAL REGION PLANNING BOARD MINISTRY OF HOUSING & URBAN AFFAIRS, GOVERNMENT OF INDIA

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CONVERSIONS Non-Metric to Metric

Linear	
To convert	Multiply by
Inches into millimetres	25.4
Inches into centimetres	2540
Inches into continiores	2540×10
Fact into metres	2340 X 10
Feet into centimetres	30.48
Feet into metres	0.3048
Yards into metres	0.9144
Miles into metres	1609.344
Miles into kilometres	0 609344
Whes hito knohedes	0.007544
Area	
To convert	Multiply by
Square inches into square centimetres	64516
Square feet into square centimetres	929.03
Square feet into square metre	0.002002
Square reet into square metre	0.092903
Square yards into square metres	0.8301
Square miles into square kilometres	2.58999
Square miles into hectares	258.999
Acres into square metres	4046.856
Acres into hectares	0 4069
	011009
Volume and capacity	
To convert	Multiply by
Cubic inches into cubic centimetres	16.3871
Cubic inches into litres	0.016387
Cubic feet into cubic metres	0.028317
Cubio vorde into cubio metros	0.020317
Cubic yards into cubic metres	0.7646
Pints into litres	0.56826
Quarts into litres	1.13652
UK gallon into litres	4.54609
US gallon into litres	3 7854
en ganon men na en	Metric
Linear	
To convert	Multiply by
Millimetres into inches	0.03937
Millimetres into fact	2.281×10
	0.2027
Centimetres into inches	0.3937
Metres into feet	3.281
Metres into yards	1.09361
Kilometres into yards	1093.61
Kilometres into miles	0.62137
Area	M 1.: 1 1
10 CONVERT	Multiply by
Square millimetres into square inches	1.550x10
Square centimetres into square inches	0.1550
Square metres into square feet	10.7639
Square metres into square vards	1.19599
Square metres into acres 2.47105×10	/
Square kilometres into square miles	0.3861
Square knometres into square miles	0.3801
Square kilometres into acres	247.105
Hectares into acres	2.47105
X 1 0 ¹	
volume & capacity	Malant
10 convert	Multiply by
Cubic centimetres into cubic inches	0.06102
Cubic metres into cubic feet	35.3147
Cubic metres into cubic yards	1.30795
Litres into cubic inches	61.03
Litres into pints	1 7598
Litres into pints	1.7370
Litres into quarts	0.8799
Litres into UK gallon	0.219976
Litres into US gallon	0.264178
Mass	16 1.
10 convert	Multiply by
Grams into ounces	0.3527
Grams into grains	15.4324

To convert	
	Multiply by
Ounces into grams	28.3495
Pounds into grams	453.6
Pounds into kilograms	0.4536
Ton into kilograms	1016.047
Tahils into grams	37.799
Kati into kilograms	0.60479
Grains into grams	0.648
Velocity	
To convert	Multinly by
Feet per second into centimetres per second	30.48
Feet per second into retres per second	0.3048
Miles per hour into kilometres per hour	1.609344
Power	
To convert	Multiply by
Horsepower into kilowatts	0.7457
Horsepower into metric horsepower	1.01387
Foot pounds force/Second into kilowatts	0.001350
Force	
To convert	Multiply by
Pounds force into newtons	4.44822
Pounds into newtons	0.138255
Degree Fahrenheit = 9/5 (°C+32) Aetric	
Grams into tahils	0.02646
Grams into tahils Kilograms into pounds	0.02646 2.2046
Grams into tahils Kilograms into pounds Kilograms into tons	0.02646 2.2046 0.000984
Grams into tahiis Kilograms into pounds Kilograms into tons Kilograms into katis	0.02646 2.2046 0.000984 1.553
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Grams into tahils Kilograms into pounds Kilograms into tons Kilograms into katis Kilograms into stones Kilograms into hundredweights	0.02646 2.2046 0.000984 1.553 0.1575 0.01968
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Grams into tahis Kilograms into pounds Kilograms into tons Kilograms into stones Kilograms into hundredweights <u>Velocity</u> <i>To convert</i> Centimetres per sec. into feet per second Metres per second into feet per second Metres per second into feet per minute Kilometre per hour into miles per hour <u>Power</u> <i>To convert</i> Kilowatts into horsepower Metric horsepower into horsepower Metric house power into feet pounds force/second <u>Force</u>	0.02646 2.2046 0.000984 1.553 0.1575 0.01968 <i>Multiply by</i> 0.03281 3.281 196.9 0.6214 <i>Multiply by</i> 1341 0.98632 542.48
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UNITS

ha.	Hectare
KM	Kilometre
KV	Kilo Volt
lpcd	Litre Per Capita Per Day
MCM	Million Cubic Metre
MGD	Million Gallon per Day
mld	Million Litre Per Day
MT	Metric Tonnes
MW	Mega Watt
sq km	Square Kilometre

Chapter 1 INTRODCUTION : Aims and Objectives

Introduction

- 1.1 Providing a decent Quality of Life while managing the rapidly growing a large population in the metropolitan cities, has been a major challenge as well as a concern to Government, on the one hand, and metro-city corporators, planners, demographers and social scientists, on the other. The Census 2011 reveals that the number of million-plus cities in India has increased more than four times over the last four decades, rising from 12 cities in 1981 to 23 in 1991, 35 in 2001 to 53 cities in 2011. The aggregate population of these metro cities accounts for more than a third (37.81%) of the country's total urban population, which is spread over more than 5,000 towns. Therefore, it is imperative that these metro (or millionplus) cities need to be the focus of a sustained, country-wide effort to manage and contain runaway urban growth by channelising the flow and direction of economic growth along more balanced and spatially-oriented paths. National Capital Region (NCR) Planning Board has been attempting to plan and develop the region, accordignly through its Regional Plans, since 1989.
- 1.2 About two out of every three people are likely to be living in cities or other urban centres by 2050 in the world. This will increase the demand for resources in the cities and cities will need to look for more sustainable urban planning and public services. While Tokyo remains the world's largest city with 37 million inhabitants, *Delhi agglomeration is projected to surpass Tokyo as the world's largest agglomeration by the year 2030.*
- 1.3 The Global Metro Monitor report¹, 2018 The Emerging Asia Pacific nations, outside of China, also housed some of the fastest-growing metro areas in the world. Together, large metro areas in this region averaged 2.8 percent annual employment growth (above the region's 1.6 percent) and 4.9 percent annual GDP per capita growth (below the region's 5.1 percent). Strong performers in India included Delhi and Hyderabad, with Delhi achieving the largest employment increase. Delhi ranks sixth on its Economic Performance Index (EPI) out of the world's 300 largest metro areas. Mumbai ranks 23rd overall and fourth among Indian cities. During 2014 to 2016, Delhi generated the most jobs of 6.2 lakh jobs, nearly a third more than Mumbai's 4.7 lakh. Hyderabad generated 3.4 lakh jobs during this dustion while Kolkata came fourth with 3.2 lakh jobs. In terms of growth rate, Mumbai falls further behind as a generator of employment. The city's jobs grew by 2.9% during 2014-2016 whereas. Delhi clocked up a growth rate of 4.7%.

¹¹ Global Metro Monitor 2018, Brookings, United States

Draft RP-2041 for NCR



- 1.4 NCR, with about 1.67% of the total geographical area accommodates 4.8% of the total population (581.57 lakh) of the country as per Census 2011 is highly urbanized area. It constitutes 8.41% of country's total urban population and 3.81% of the rural population living in 230 urban areas/ towns of various size and 11774 villages.
- 1.5 For the vision to make India USD 5 trillion economy by 2024 and beyond, there should be a Region driven effort and the Mega Region of NCR could be one of the prominent ones to play that role. The enormous task of planning for a vast and diverse region, and of making it "Future-Ready", can be achieved only through an inclusive, consultative exercise with active participation of all stakeholders.

2 The NCR Planning Board Act, 1985 and National Capital Region

2.1 Important Provisions of the NCRPB Act, 1985

Time and again the need was felt to plan Delhi in the regional context under a suitable legislation which would control and regulate development in the region and finally Parliament enacted the National Capital Region Planning Board Act in 1985 with the concurrence of the constituent States, namely, Haryana, Uttar Pradesh & Rajasthan "to provide for the constitution of a Planning Board for the preparation of a plan for the development of the National Capital Region and for coordinating and monitoring the implementation of such plan and for evolving harmonised policies for the control of land uses and development of infrastructure in the National Capital Region so as to avoid any haphazard development of that Region and for matters connected therewith or incidental thereto" (refer Annexure D-1.1 for the composition of the NCR Planning Board and Annexure D-1.2 for the composition of Planning Committee).

- 2.1.1 Section 7 of the NCR Planning Board Act, 1985 provides with the functions of the NCR Planning Board.
- 2.1.2 Section 10 of the Chapter IV of the NCRPB Act, 1985 outlines the provisions for the preparation of the Regional Plan:
- 2.1.3 Section 15 of the Act, 1985 gives directions regarding the review and how the revision is to be carried out.
- 2.1.4 For the preparation of the fresh Regional Plan under Section 15(2) of the Act, 1985 the procedures have been laid down in Section 12 of the Act, 1985. A copy of the NCRPB Act is plaed at **Annexure D-1.3**.

2.2 The Region - National Capital Region

2.2.1 National Capital Region (NCR) is a unique example of inter-state regional planning and development for a region with national capital Delhi as its core. NCRPB had prepared the

Regional Plan (RP)-2021 for the then notified area of NCR i.e. 34,144 sq. km which was notified in the Gazette of India on 17.9.2005. Subsequently, Govt. of India vide Gazette Notifications dated 01.10.2013, 24.11.2015 and 16.04.2018, an area of 20,839 Sq. km. have been added to NCR and the area has increased from 34,144 sq.km. to 55,083 sq. km. The NCR presently includes 14 districts in Haryana, 8 districts of Uttar Pradesh, 2 districts of Rajasthan. Sub-region wise area share indicates Haryana (25,327-sq.km) constitutes 45.98%, followed by Uttar Pradesh (14,826 sq' km) with 26.92%, Rajasthan with 24.41% (13,447 sq.km) and NCT of Delhi (1483 sq.km.) 2.69%. Constituent areas of NCR and reorganization of costitutuent areas/districts are given at Annexure D-1.4. Map showing the Constituent areas of NCR is at Annexure D-1.5.

2.3 Plans for Development of NCR

2.3.1 **Regional Plan 2001**

The Regional Plan-2001, approved by the Board in November 1988 and notified on 23rd January, 1989, envisaged the important goal of "*a balanced and harmoniously developed region, leading to dispersal of economic activities and inmigrants to Delhi, thereby leading to a manageable Delhi*". The Plan proposed "*a policy of strict control on creation of employment opportunities within the Union Territory of Delhi, moderate control in the Delhi Metropolitan Area and, encouragement with incentives, in the areas outside Delhi Metropolitan Area within the NCR". Review of Regional Plan-2001 carried out in 1999, recommended that future of Delhi lies in the sequential development of its metropolitan region and a lot remains to be accomplished in the coming decades.*

2.3.2 **Regional Plan 2021**

- 2.3.2.1 The Regional Plan-2021 was approved by the Board in its 28th meeting held on 09.07.2005 and notified on 17.09.2005. The Plan was prepared with active participation of the NCR constituent States of Haryana, Rajasthan, Uttar Pradesh & NCT-Delhi, the Central Ministries/ Departments concerned and Subject Experts, aimed to promote growth & balanced development of NCR, to be achieved through providing suitable economic base for future growth, providing efficient and affordable rail and road based transportation networks including Mass Transit System, providing urban infrastructure facilities, rational land use pattern and promoting sustainable development by minimizing the adverse environmental impact of development.
- 2.3.2.2 It contained policies & proposals on various inter-related sectors of Demographic Profile & Settlement Pattern, Economic Activities, Transport, Power, Water, Sewerage, Solid Waste Management, Drainage & Irrigation, Telecommunications, Shelter, Social Infrastructure (Health & Education), Heritage & Tourism, Environment, Disaster Management, Rural Development, Regional Landuse, etc.
- 2.3.2.3 Subsequent to the notification of RP-2021 on 17.09.2005, additional districts namely Bhiwani (including Charkhi Dadri) and Mahendragarh districts of the State of Haryana and Bharatpur district of the State of Rajasthan, were included to NCR vide Government of India, Gazette Notification dated 01.10.2013. Further, the districts of Jind & Karnal of the State of Haryana and Muzzaffarnagar district of the State of Uttar Pradesh were included in NCR vide Govt. of India Gazette Notification dated 24.11.2015. The district of Shamli, of the State of Uttar Pradesh was included in NCR vide Govt. of India Notification dated 16.04.2018. The total additional area of NCR is now 20,939 sq.kms.

For these additional districts, an Addendum to RP-2021, was approved in the 38th Meeting of the NCR Planning Board held on 13th September, 2019 and notified on 28th November, 2019.

2.3.2.4 Further, in addition to the existing five Counter Magnet Areas (CMAs) to NCR, namely, Bareilly (Uttar Pradesh); Gwalior (Madhya Pradesh); Hisar (Haryana); Kota (Rajasthan) and Patiala (Punjab), four new CMAs, namely, Ambala (Haryana), Dehradun (Uttarakhand), Kanpur (Uttar Pradesh) and Jaipur (Rajasthan) were also identified and approved by the Board. At present there are total nine CMAs to NCR.

2.3.3 Sub-Regional Plans

- 2.3.3.1 Under the provisions of Section 17(1) of the Act, 1985 "Each participating State shall prepare a Sub-Regional Plan for the sub-region within that State and the Union Territory shall prepare a Sub-Regional Plan for the sub-region within the Union Territory". Section 19 of the Act, 1985 provides the directions for the submission of Sub-Regional Plan to the Board and Section 20 provides for the implementation of Sub-Regional Plans by each participating State. The constituent States are expected to finalize their respective Sub-Regional Plans in conformity with the Regional Plan.
- 2.3.3.2 Within the policy framework of Regional Plan-2001, Sub-Regional Plans of Uttar Pradesh and Rajasthan sub-regions were finalized by the respective State Governments and were considered by the Board in 1992 and 1994 respectively.
- 2.3.3.3 Regional Plan-2021 was notified in 2005 and subsequently Sub-Regional Plan were prepared for the presective yer of 2021 by the respective NCR States. The status is provided in Table 1.1 as under:

Sub-Region	Status
NCT Delhi	Board decided that the Master Plan for Delhi-2021 should be
	treated as SRP for NCT Delhi sub-region. However, the
	Master Plan must clearly bring out issues related to inter-state connectivity.
	Subsequently, it has been decided by the MoHUA that DDA/
	other agency may be involved in creating Sub-Regional Plan as per the provisions of NCRPB Act, 1985, which may be
	approved by GNCTD and NCRPB before its adoption as Sub-
	Regional Plan of Delhi. Accordingly, Govt. of NCT Delhi &
	DDA. has prepared the Draft Sub-regional Plan 2021.
Uttar Pradesh	Govt. of U.P. has published the Sub-Regional Plan on
	31.12.2013.
	Further, Govt. of U.P. has also prepared the Draft Sub-
	regional Plan 2021 for the newly added two districts in U.P.
	sub-region.
Rajasthan	Govt. of Rajasthan has approved the Sub-regional Plan for
	Rajasthan Sub-region 2021 (Distt. Alwar) on 10.11.2015.
	Further, the Sub-regional Plan 2021 for the newly added
	district (Bharatpur) has also been published by the Govt. of
	Rajasthan on 18.02.2020, after considered by the Board in 38 th
	Board meeting.
Haryana	Govt. of Haryana informed that the Sub-regional Plan for

Table 1.1: Status of preparation of Sub-Regional Plans 2021

Sub-Region	Status
	Haryana Sub-region 2021 was finalized in 2014. However,
	Govt. of Haryana has to resolve certain issues with
	MoEF&CC.
	The Sub-regional Plan 2021 for the newly added four district
	(including Charkhi Dadri) has also been considered by the
	Board in 38 th Board meeting. The Plan is to be notifed by
	Govt. of Haryana.

2.3.4 **Functional Plans**

2.3.4.1 Section 16 of the NCRPB Act, 1985 provides for the preparation of Functional Plans to elaborate one or more elements of the Regional Plan for the proper guidance of the participating States and the Union Territory. Functional Plans prepared and approved by the Board after the notification of Regional Plan-2001 are given in Table 1.2.

Fable 1	.2:	Preparation	of Fun	ctional	Plans u	under	Regiona	l Plan-	2001

S. No.	Functional Plan	Approval Year
1	Transport	1995
2	Power	1996
3	Telecommunication	1997
4	Industry	1998

2.3.4.2 Functional Plans prepared and approved by the Board after the notification of Regional Plan-2021 are given in Table 1.3.

S. No.	Functional Plan	Approval Year
1	Transport	2009
2	Ground Water Recharge	2009
3	Drainage	2016
4	Economic Development	2016
5	Micro and Household Enterprise	2019

 Table 1.3: Preparation of Functional Plans under Regional Plan-2021

2.3.4.3 These Functional Plans have been circulated to the participating States for implementation.

2.3.5 **Project Funding from NCRPB**

- 2.3.5.1 Under section 8 (e) of the NCRPB Act, the Board can select and approve comprehensive schemes and provide assistance for the implementation of such schemes. The Board under the provisions of the above section has been financing various projects for implementation by the Participating States/Agencies within the NCR and its Counter Magnet Areas (CMAs) outside NCR with the over-arching goal of achieving the balanced development of the Region. NCR Planning Board provides financial assistance to the NCR constituent States (including NCT of Delhi), its CMAs and their implementing agencies through long term soft loan/low interest rate, up to a maximum of 75% of the estimated cost of Projects, while the balance share is to be borne by them.
- 2.3.5.2 As on 30th June 2020, the Board has provided financial assistance to 360 infrastructure development projects like water supply, sewerage & sewage treatment, transport, power etc.with an estimated cost of Rs. 31,464 crore, out of which an amount of Rs. 15,105

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crore has been sanctioned as loan. The Board has released a loan amount of Rs. 12,361 crore till June, 2020. Of the 360 projects financed by the Board, 265 projects have been completed and 95 are at various stages of implementation. The sector-wise summary of approved projects indicating estimated project cost and loan sanctioned is graphically presented in Figures 1.3 and 1.4 respectively. Overview of projectrs financed by NCRPB is as placed at **Annexure D-1.6**.



2.3.6 Preparation of Regional Plan -2041

- 2.3.6.1 A Review of Regional Plan-2021 was carried out, as per provision under Section 15 of the NCRPB Act, 1985, through a Steering Committee constituted for the purpose under the chairpersonship of the Member Secretary of the Board, assisted by fourteen Study Groups for specific sectors wherein representatives from NCR participating States, concerned Central Ministries/ Departments, academicians etc. were members. The recommendations of the Study Groups have been used for preparation of the Regional Plan 2041 as one of the inputs, in accorcance with the decision of 38th Board meeting.
- 2.3.6.2 NCRPB carried out a comprehensive analysis through an Former Addl. Director, Office of the Registrar General, Census of India, for foreseeing population of upcoming deaccdes. The study of 'Population Projections for National Capital Region 2016-2041' was carried out using varous methods and the report was deliberated in the 67th Planning Committee held on 15.07.19 and by 'the Board' in its 38th Meeting held on 13.09.2019 and population projection through Exponential Growth Rate method was approved by the Board for 2041 comes out to be 11.3 crores.
- 2.3.6.3 NCRPB circulated detailed formats for data collection for various sectors to all the NCR participating States in May, 2019 and requested to provide the requisite data. The district wise data recieved from the NCR participating States was analyzed and utilized for the preparation of the draft Regional Plan-2041. Futher, case studies of about 21 global metropolitan areas/ regions like Tokyo, Shanghai, Beijing, Hong-Kong, New York, London, Sydney, Seoul, Singapore, etc. was also undertaken utilising their respective plan as available online.
- 2.3.6.4 The Board in its 38th meeting also decided, that the Regional Plan need not have satellite imagery based maps with tentative details. It may have schematic maps presenting the

broad policies and proposals. It was further directed that the detailing of the maps at the scale of 1:10,000 and below along with ground truthing and detailed planning may be left to the States through their Sub regional Plans and Master Plans. In the meeting, Chairman NCRPB suggested that NCRPB should organize brain storming sessions and hold consultation with NCR States and Urban & Regional Planning Experts towards policies & reccomendations of Regional Plan 2041. Accordingly, a series of discussions and dialogues were initiated for formulation of the Regional Plan-2041 and "Inaugural Conclave on NCR-2041- Planning for Tomorrow's Greatest Capital Region" chaired by Shri D.S. Mishra, Secretary, MoHUA, was organized on 11th November, 2019 and participated by Senior level representatives from Central-Govt, NCR States and subject experts amogest other stakeholders.

- 2.3.6.5 Subsquently, NCRPB conducted a series of discussions & dialogues through various workshops covering the probable sectors and aspects that could be included in the Regional Plan 2041 formulation. The seventeen full day Workshops had participation from all NCR States, concerned Ministries/Departments of Govt. of India, Knowledge Institutions, Industry and Housing Associations, Experts, District Magistrates/ Collectors, ULBs, Field Officers from Districts, NGOs and other concerned stakeholders. A brief about Workshops Schedule including Key Participants and Speakers is at **Annexure-D-1.7**. The topics/ themes for the workshops were arrived at after due deliberations and considering the chapters of RP-2021 and keeping in view the globalization, changes in technological advancement, digital revolution, economic activities, socio-economic conditions and emerging requirements of the people of As the need was felt to cover more elements of in the RP 2041, the NCR. deliberations were held on the various elements of regional planning & development of NCR in seventeen Workshops and has brought out certain new elements/ aspects namely, Digital infrastructure, Agriculture, Income Genration, Sports & Social Support and Safety & Security that to be incorporated in the RP 2041.
- 2.3.6.6 Accordingly, Regional Plan-2041 seeks to address the aspects of "Quality of life", "Ease of Living (EoL)" and "Ease of Doing Business (EoDB)" and overall, achievement of harmonious development of NCR. It strives to be "Citizen Centric" especially factoring in the aspirations of NCR inhabitants.
- 2.3.6.7 The NCR States were also suggested to have necessary consultations with elected representatives of their areas, for a more comprehensive, fruitful, all inclusive, dialogues during the workshops, as this brain storming could save lot of time during plan implementation. Hence, at the backend, NCR participating States were also requested to have appropriate brain storming sessions. The matter was further taken up in 68th Planning Committee held on 16.03.20, wherein after deliberations, it was decided that while States are welcome to offer their further suggestions/comments for RP 2041, the sub-region wise conclaves may not be required, owing to, time constraints, exhaustive comments of States and various stakeholders being captured extensively during the workshops, with a dedicated session for NCR States and due to issue of COVID-19 pandemic.
- 2.3.6.8 In order to monitor, coordinate and advise in preparation of Regional Plan 2041 for NCR, a Core Advisory Committee (CAC), was constituted vide Office Memorandum no. No. K-14011/24/2019-NCRPB (Vol I) dated 04.12.2019 and dated 29.01.2020 (*Minutes of the 1st meeting of CAC*). The CAC has Member Secretary, NCRPB as Chairpersonship, Vice Chairman, Delhi Development Authority, four Nodal Principal Secretaries of NCR States; Director, School of Planning and Architecture-New Delhi;

Director General, The Energy & Resources Institute (TERI); Managing Director, National Capital Region Transport Corporation Limited (NCRTC); Director General, Bureau of Energy Efficiency, Ministry of Power; Director, National Institute of Urban Affairs (NIUA); Executive Director, National Health System Resource Centre (NHSRC) an Urban & Regional Planning Expert, Prof. Anil D. Sahasrabudhe, Chairman, All India Council for Technical Education (AICTE), as members, and Chief Regional Planner, NCRPB as its Member Convenor.

2.3.6.9 Based on the above inputs and general research on the subjects, Draft Approach Papers/ Chapters of Regional Plan-2041 were prepared in-house by NCRPB and regular meetings of CAC were held. Further, School of Planning and Architecture (SPA), Delhi was engaged to review the draft chapters for Regional Plan-2041. Accordignly, SPA Delhi has undertaken the review of all draft chapters, incorporated comments/ suggestions and the draft Regional Plan-2041 has been prepared.

3 Major Challenges and Issues

3.1 Inter-State Region

3.1.1 NCR is the only multi-state region in the country, spread over the territories of three States Governments (Haryana, Uttar Pradesh, Rajasthan) and NCT Delhi. The concept of NCR development is based on the joint and participatory approach arriving at consensus on the various issues, policies and proposals for the planned development of this inter-state NCR in a federal system is a challenge.

3.2 Largest National Capital Region of the World

- 3.2.1 The complexity of the Region due to its vastness (55,083sq.km) and spatial expanse covering the National Capital, Delhi and three States with 24 districts is a challenge for integrated development. The size of the region which was 30, 242 sq.km. as per RP-2001 (notified in 1989) has increased to 34,144 sq.km.in 2004 and further increased to 55,083 sq km. in 2018, is a matter of concern as obsereved during the review of RP 2021. NCR is now more than the size of States like Punjab (50,363 sq.km) & Uttrakhand (53,483 sq.km) and more than the combined area of Sikkim (22,429 sq.km) & Kerala (38,863 sq.km). Based on Census 2011 figures, in terms of population NCR is larger than the States like Andhra Pradesh (495.77 lakh) & Odisa (9419.74 lakh) and larger than the combined population of Haryana (253.51 lakh) & Punjab (277.43 lakh). Further, globally, NCR is larger than the countries like Denmark (42,924 sq.km), Holland (41, 543 sq.km), Switzerland (41,285 sq.km), Taiwan (36,193 sq.km), Costa Rica (51,100 sq.km), Slovakia (49,037 sq.km), Bhutan (38,394 sq.km), etc. Hence, planning and development of such a vast area is major challenge.
- 3.2.2 An NCR Delineation exercise was undertaken, which gave two options, both propagating corridor development after a contiguous region at 100 km and 150 km radius from Delhi, repectively, on current NCR, giving options of around 35,500 sq.km and 45,500 sq.km. Consensus is however to be reached, and meanwhile fresh requests for addition of more areas also come in, without understanding the gravity of the issue.

3.3 Rapid Urbanisation

3.3.1 Urbanisation level in NCR has increased from 50% in 1991 to 56% in 2001 and further increased to 62.6% in 2011 of the then NCR.With the rapid growth of Central NCR (CNCR) area, Metro Centres & Regional Centres, proposed Delhi-Mumbai Industrial

Corridor (DMIC) and Dedicated Freight Corridors (DFC), urbanization level of NCR is expected to increase to about 68% by 2041 of the current NCR. New townships like YEIDA in Uttra Pradesh and Panchgrams being envisaged by Haryana, will call for massive physical and social infrastructure push and pressures on scare resources that may include water, power etc. Providing planned urban spaces and adequate physical and social infrastructure for such a vast urban population in NCR is a major challenge.

3.4 Imbalance in development / urbanisation

3.4.1 The vast hinterland of Delhi NCR, which lies mostly outside the CNCR, continues to experience a very slow rate of economic development even while the core CNCR which includes NCT Delhi, Faridabad, Gurgaon and Bahadurgarh, Ghaziabad and Noida urban areas, is witnessing a phenomenal surge of physical and economic growth. Induced growth and development of the areas outside CNCR is another major challenge. The towns of NCR not being able to adgere to proposed densities and imbalances being observed like Gurugram overtly exceeding the RP 2021 densities and impacting expected densities on other towns around Delhi and its own vicinity, are areas of concern. Although, settlement characteristics defines the urbanization and density levels it can achieve, it need to be undersood that land is scares and precious resource and new/additional areas, should only be looked into for urbanization, after the existing urban areas achieve the planned densities and redevelopment and redensification measures have been adopted as per applicability.

3.5 Earthquake Proneness

3.5.1 Entire NCR region falls in seismic zone IV as per seismic zone map of Indian Standard IS 1893. This makes the area liable to MSK intensity of "VIII" and is considered as High Risk Zone. Seven earthquakes of Richter magnitude 5.5 to 6.8 are known to have occurred in NCR and its surrounding areas since 1720 AD. Two major lineaments, namely Delhi-Hardwar ridge and Delhi-Moradabad fault, pass through the territory, both having potential of generating earthquakes of magnitude up to 6.5 to 6.7 and normal depth of 30 kms. Hence, while disaster management should be a key concern, the technological interventions and developments which are enabling multi-storey building in earthquake prone areas like in Japan, shall have to be looked into for making NCR earthquake resilient.

3.6 Planning & Conservation of Environmentally Sensitive areas and Pollution

- 3.6.1 NCR is endowed with environmentally sensitive areas like Aravalli ridge, forests, wildlife/bird sanctuaries, rivers, lakes, ponds, wetlands which are facing constant threat of encroachment by urban/construction activities. The ternd of reducing green cover, and NCR states being much below the national average, demands judicious and careful planning for conservation of these environmentally sensitive areas and their adjoining areas especially within the urbanisable areas and notified controlled/ development areas of cities/towns is a major challenge.
- 3.6.2 The Air pollution levels in Delhi NCR have been alrming especially in winters, since almost a deacade. While Central Government has taken initiative to set up a statutory authority to look into the matter, the responsibility, ultimately lies with thye citizens and respective State governments. With the increase of urbanization and industrialization in NCR pollution other than Air i.e water, noise and land pollution, etc. related issues need to be address to provide quality life to the citizens of NCR.

3.7 Integrated Water Management

- 3.7.1 NCR is endowed with four perennial rivers namely the Yamuna, Hindon and Kali and Ganga skirting its eastern boundary. Main sources of water supply in the region are surface and ground water (e.g. rivers, canals, tubewells, hand pumps and open wells). Ground water levels in the area west of river Yamuna comprising the districts of Gurgaon, Rohtak, Sonepat, Jhajjar and most part of Faridabad district in Haryana, Alwar in Rajasthan and large part of NCT-Delhi have reached critical level and the water is often brackish. In U.P. Sub-region, ground water resources are also depleting fast even though it is sandwiched between rivers Ganga and Yamuna. Delhi draws its water needs mostly from the river Yamuna and Western Yamuna canal and partly from ranney wells and tubewells in Yamuna belt and Upper Ganga canal system.
- 3.7.2 Water is an essential component in every aspect of life. NCR is a water scarce region, if, water resources are conserved and managed properly, the NCR could become a water surplus region. There is a wide demand-supply gap of water in NCR and the problem becomes acute in dry summer months. It has also been observed that significant shares of water supplied is under Unaccounted for Water (UFW) category, probably lost during conveyance, leakeges or unmetered. Reducing this UFW is a challenge and actions will be required to reduce them.

3.8 Commuting across NCR

3.8.1 People move to cities/ towns in search of employement, education & health facilities and better quality of life. However, if better, fast and cheap commuting facilities are made available between areas of original residences and work places in towns/ cities, the level of services and infrastructure required in either of the places, i.e origin and destination can have balanced development. Fast commuting facilities can help a long way in having an harmonized and even spread of development within the region. While efforts like expressways and metro rail links have contributed to connectivity, NCR still needs to have faster mobility facilities such as high speed trains. The necessary rail infrastructure upgradation, in this direction is an aspect of concern as even current efforts of RRTS shall provide more than 100-120 minutes in journey time amongst few of major towns of NCR. Fast and affordable travel facility at macro level and hasslefree and seamless movement at micro level, are still eluding inhabitants and is a matter of concern.

3.9 Economic growth and income generation

3.9.1 Economic growth of an area and its prospects of generating income are the common parameters, that often define the status of development of an area/settlement. Large cities & towns often demonstrate high potential in this regard and hence become attraction points for people, not only from its hinterland, but even from far off towns. For, harmonized development of the region, the potentials of each of the existing settlements need to be realized and if required, new township with a objective to tap the potentials, be planned for induced development. This shall be a major challenge with various sectors competing for the scarce resources, and especially due to the impact, the nation has faced owing to the Covid -19 pandemic.

3.10 Integration of District Plan with Regional Plan (74th Amendment)

3.10.1 The 74th Constitution Amendment Act provided for a mechanism wherein District Planning Committee (DPC) were to consolidate the plans prepared by the Panchayats and

the Municipalities in the district, to prepare a Draft Development Plan for the District as a whole. Similarly, Metropolitan Planning Committee (MPC) are prepare a Draft Development Plan for the metropolitan area as a whole. It goes without saying that the provision of preparation of Plans for the District/Metropolitan Area would be under the overall Regional Plan framework & programmes and the proposals in these district / metropolitan area plans would be in accordance with the policies & proposals of the Regional Plan. Thus, it is felt that the preparation of the Development Plan/Metropolitan Development Plan and District Development Plans need to be undertaken in an integrated manner within the overall framework of Regional Plan/ respective Sub-Regional Plans. This will ultimately help in the integrated development of the Sub-regions, including rural areas and will also honour the provision of Constitution in this regard. The areas beyond urbanisable limits, often undergo unplanned development and need to be checked, through appropriate planning and enforcement measures.

4 Aims and Objectives

- 4.1 To develop a planned, harmonized, balanced and Citizen Centric Smart National Capital Region of Global excellence with a sound economic Hub, quality infrastructure where all sections of people enjoy work, travel and live a Quality Life with Ease of Living in a sustainable environment.
- 4.2 The above aim is sought to be achieved through the following objectives:
- *i) Providing suitable economic base for future growth by identification and development of regional settlements capable of absorbing the economic development impulse of Delhi.*
- *ii)* Providing fast, efficient and economic rail, road, air and water based transportation networks (including mass transport systems) well integrated with the land use patterns to support balanced regional development and provide better physically & digitally connected region with competitive and efficient Freight and logistics network.
- Developing selected urban settlements as internationally competitive investment and business activity centres with quality physical infrastructural facilities such as transport, power, communications/digital services, drinking water, sewerage, drainage, solid waste management etc. and social infrastructural facilities such as health, education, sports, safety & security, etc.
- iv) Providing a rational land use pattern in order to provide for and harness socio-economic potential of the world greatest megapolis and to also make this development sustainable by protecting and conserving environmentally sensitive natural features.
- v) Provide for planned and harmonious development of urban and rural areas of NCR.
- vi) Providing sustainable and inclusive living conditions in the region where all citizens feel safe & secure and live a Quality Life.
- vii) To find innovative ways of financing the massive development requirements needed to provide world class physical and socio-economic infrastructure of the world's largest capital agglomeration.
- 5 While, in near future, technology is expected to overshadow need for physical presence of individuals, for various activities, the concept of having 'zones' has been continued with, as the region like the country, has populations with needs and aspirations that are from across the spectrum of income groups as well as education and skills. Overall, the policy proposals, while primarily cover the macro aspects and concerns, the direction/ guidelines

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/indicators for micro level policy initiatives have also been provided in each of the chapters concerning the specific element. Although, the national capital and the surrounding areas i.e. Centrel NCR outside NCT Delhi have been understood to be the engine for development of the region, the policy initiatives have also been provided to capture the individual potentials of settlements in rest of NCR. Focus has also been given to areas not currently covered under controlled /development plan limits and also the District Development Plans etc. While transport corridors are the reasons making vast areas accessible and prompt development along its sides, the compact high density planned development along transit corridors.

Chapter 2

DEMOGRAPHY AND SETTLEMENTS PATTERN

2.1 Introduction

- 2.1.1 Demography is the critical pivot of any development plan because spatial planning and development policies largely hinge on demographic profile of a settlement or a region. Demographics of an area are also the consequence of economic resources available in a region. So, demography needs to be clearly understood and population must be precisely estimated as far as possible. Analysis of demography is based on both quantitative and qualitative understanding of population with respect to size, structure and socio-economic development of the sub-divisions of a region and all settlements.
- 2.1.2 Settlement patterns show the spatial distribution of population and activities, available facilities and spatial relationships between these activities, which importantly facilitate balanced regional development i.e. developing settlements and areas according to their potentialities.Urbanization is a complex socio-economic process that transforms the built environment, converting rural into urban settlements, while also shifting the spatial movement and distribution of population from rural to urban areas. Economic activities move in much more complex ways with little predictability. World class regional connectivity, housing, physical and social infrastructure to a large extent facilitate and enable entrepreneurs to take economic decisions for making investments in certain areas and not in others.
- 2.1.3 Movements of people and activities in multiple and complex ways result in changing the nature of a region over a long period. These changes get reflected in dominant occupations, lifestyles and cultures, economic activities leading to foundational changes in demographic and social structures both in rural and urban areas.
- 2.1.4 Globally, more people live in urban areas than in rural areas with 55 percent (4.2 billion) world population live in urban areas in 2018. While in 1950, 30 percent (750 million) of world's population was urban¹ and the share of the urban population is expected to reach 68 percent by 2050. According to the World Urbanization Prospects report 2018 produced by the United Nations, Tokyo is the world largest city with an agglomeration of 37 million population followed by Delhi agglomeration and neighboring cities together hosting 29 million people. As per the report, Delhi metropolitan area is slated to become the world's largest metropolis overtaking Tokyo by 2030. This also means that the NCR would become the most population region in the world.

2.2 Existing Status

2.2.1 **Population Distribution and Density**

2.2.1.1 According to the Census of India 2011, India has a population of 121.02 crores of which the share of urban population is 37.71 crores. The urban share increased from 25.72 percent in 1991 to 27.81 percent in 2001 and 31.14 percent in 2011 and is currently estimated to be around 34.47 percent as in 2019. The four megacities namely, Delhi, Mumbai, Kolkata, and Chennai together account for more than 15 percent of India's urban population and about 4.45 percent reside in the NCT of Delhi. Growth of population in the NCT of Delhi has been much higher than others mega cities in every

¹ World Urbanization prospects 2018 (UN)- <u>https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf</u>

decade since 1951 (Table 2.1).Demographic snapshot of NCR is given in Annexure-D-2.1

Table 2.1: Growth of the NCT of Delhi and Mega Cities in India, 1951-2011

Greater Mumbai UA			Kolkata UA		Chennai UA			NCT-Delhi				
Year	Area in square km	Population	Decadal Growth Rate in percent	Area in square km	Population	Decadal Growth Rate in percent	Area in square km	Population	Decadal Growth Rate in percent	Area in square km	Population	Decadal Growth Rate in percent
1951		3,216,904			4,685,869			1,542,333			1,744,072	
1961	539.83	4,515,495	40.37	610.50	6,008,656	28.23	226.07	1,944,502	26.08	1483	2,658,612	52.44
1971	559.99	6,596,370	46.08	679.36	7,447,429	23.95	490.58	3,155,944	62.30	1483	4,065,698	52.93
1981	588.50	9,421,962	42.84	870.35	9,232,103	23.96	531.82	4,273,329	35.41	1483	6,220,406	53.00
1991	1040.90	12,596,243	33.69	920.65	11,110,314	20.34	580.06	5,416,903	26.76	1483	9,420,644	51.45
2001	1135.11	16,434,386	30.47	1046.46	13,251,339	19.27	788.69	6,686,140	23.43	1483	13,850,507	47.02
2011	1063.49	18,394,912	11.93	1056.13	14,057,991	6.09	932.47	8,653,521	29.42	1483	16,787,941	21.21
Average		34.23			20.31			33.90			46.34	

Source: Census of India (1951, 1961, 1971, 1981, 1991, 2001 and 2011).

2.2.1.2 Total population of the NCR in the current area is 474.43 lakhs in 2001 and the subregions of Delhi, Haryana, Rajasthan and Uttar Pradesh accounted for 29.19, 28.22, 10.74 and 31.85 percent respectively. The NCR population increased to 581.57 lakhs in 2011 (4.8 percent of country population) and the share of sub-regions changed to 28.87, 28.25, 10.70 and 32.19 percent respectively (Table 2.2).

 Table 2.2: Sub-region wise Distribution and Growth of Population in NCR, 2001-2011

Region and	Popul	ation	Decadal Growth Rate Percent	Share of Popu	lation Percent
Sub-region	2001	2011	2001-2011	2001	2011
NCT-Delhi	13,850,507	16,787,941	21.21	29.19	28.87
Haryana	13,388,603	16,427,524	22.70	28.22	28.25
Rajasthan	5,093,734	6,222,641	22.16	10.74	10.70
Uttar Pradesh	15,110,452	18,719,180	23.88	31.85	32.19
NCR	47,443,296	58,157,286	22.58	100.00	100

Source: Census of India (2001, 2011); Report on population projections for the National Capital Region 2016-2041.

2.2.1.3 The NCR has 8.41 percent of urban and 3.81 percent of rural population share of the country. Over the period of 2001 to 2011, while the share of Delhi declined and that of Uttar Pradesh marginally increased² the urban population of the NCR constituent areas was 231.69 lakh (48.87 percent) in 2001, which has increased to 317.31 lakh (54.56 percent) in 2011. The rural population of the region was 242.43 lakh in 2001 and 264.26 lakh in 2011 (Table 1.3). The NCT of Delhi is about 99 percent urban as its negligible areas are rural. Currently, the NCR constitutes about 1.67 percent of the total geographical areas of the country and has 230 urban settlements of various size and 11,774 villages.

²Report on Population Projections for NCR (2016-2041)

Urban-Rural Component	Population (Person)		Percent share (Percent)	
	2001	2011	2001	2011
Total NCR	47,413,296	58,157,286	100	100
Urban NCR	23,169,390	31,731,165	48.87	54.56
Rural NCR	24,243,906	26,426,121	51.13	45.44
Urban NCR excluding NCT-Delhi	10,293,610	15,362,266	19.64	25.69

Table 2.3: Urban-Rural Population of NCR, 2001-2021

Source: Census of India (2001, 2011); Report on population projections for the National Capital Region 2016-2041.

2.2.1.4 The average population density of the NCR as per Census of India 2011 was about 1,056 persons per sq km, which is about three time higher than the all-India average of 382 persons per sq km. Sub-region wise analysis indicates that the NCT of Delhi has the highest population density of 11,320 persons per sqkm followed by Uttar Pradesh (1,263 persons per sq km), Haryana (649 persons per sq km) and Rajasthan (463 persons per sq km). The average density of the NCR excluding NCT Delhi is about 772 persons per sq km in 2011, which increased from 627 persons per sq. km in 2001. The Sub-region wise population density is given in Table 2.4.

Region and	Area(sq km)	Population		Density (Person per sq km)		
Sub-region		2001	2011	2001	2011	
NCT-Delhi	1,483	13,850,507	16,787,941	9,340	11,320	
Uttar	25 227			1.010	1 262	
Pradesh	23,327	15,110,452	18,719,180	1,019	1,205	
Haryana	14,826	13,388,603	16,427,524	529	649	
Rajasthan	13,447	5,093,734	6,222,641	379	463	
NCR	55,083	47,443,296	58,157,286	861	1,056	

 Table 2.4: Sub-Region wise Population Density in NCR (2001-2011)

2.2.2 Growth of Population in Sub-regions

The main components of population growth are natural growth and in-migration. Migration has played an important role in the growth of population of the NCT of Delhi. Data analysis of 1961-2011 for the NCT of Delhi indicates that the natural increase has declined from 26.37 lakhs in 2001 to 11.48 lakhs in 2011 while in-migration has almost doubled from 15.87 lakh in 1991 to 26.01 in 2011. The out migration has increased almost three times from 2.82 lakh in 1991 to 7.82 lakh in 2011 (Table 2.5). State wise migration to Delhi by the 'place of last residence' for year 1991-2001 and 2001-2011 indicates that during 2001-2011 about 42.31 percent of the total in-migrants of Delhi came from Uttar Pradesh followed by Bihar (22.79 percent) and Haryana (8.18 percent).

Year	1961	1971	1981	1991	2001	2011
Population (in lakhs)	26.59	40.66	62.2	94.2	138.21	167.88
Growth Rate (in percent)	52.44	52.91	53.00	51.45	46.72	21.47
Growth of Population (lakhs)	-	14.07	21.54	32.00	44.01	29.67
Component of Migrants (lakhs)						
(a) In-migrants	-	8.76	12.30	15.87	22.22	26.01
(b) Out-migrants	-	2.42	2.78	2.82	4.58	7.82
(c) Net-migrants	-	6.34	9.52	13.05	17.64	18.19
Percent share	-	45.06	44.20	40.78	40.08	61.30
Component of natural increase (lakhs)	-	7.73	12.02	18.95	26.37	11.48
Percent share	-	54.94	55.80	59.21	59.92	38.69

 Table 2.5: Growth of Population and Migrants into Delhi (1961-2011)

Source: Census of India (1961, 1971, 1981, 1991, 2001 and 2011).

2.2.2.1 National Capital Territory of Delhi

Decadal growth of population in the National Capital Territory of Delhi during the period 1951-1991 has been consistently above 50 percent. However, during the 2001-2011, the population growth declined drastically from 47.02 percent to 21.21percent. Table 2.6 depicts the growth of population from 1901 to 2011.

(a) Rural Population

As per the Census of India 2011, rural population of the NCT of Delhi was 419,042. The rural population showed sharp increase during the decade 1981-1991 (109.86 percent), after which it declined by minus 0.45 percent during 1991-2001 to minus 55.64 percent during 2001-2011. Table 2.6 depicts the growth of urban and rural population in the NCT of Delhi from 1901 to 2011.

	Total		Rura	ıl	Urban		
Year	Population	Decadal Growth	Population	Decadal Growth	Population	Decadal Growth	
	(Person)	(percent)	(Person)	(percent)	(Person)	(percent)	
1901	4,05,819		1,91,704		2,14,115		
1911	4,13,851	1.98	1,75,907	-8.24	2,37,944	11.13	
1921	4,88,452	18.03	1,84,032	4.62	3,04,420	27.94	
1931	6,36,246	30.26	1,88,804	2.59	4,47,442	46.98	
1941	9,17,939	44.27	2,22,253	17.72	6,95,686	55.48	
1951	17,44,072	90.00	3,06,938	38.10	14,37,134	106.58	
1961	26,58,612	52.44	2,99,204	-2.52	23,59,408	64.17	
1971	40,65,698	52.93	4,18,675	39.93	36,47,023	54.57	
1981	62,20,406	53.00	4,52,206	8.01	57,68,200	58.16	
1991	9420644	51.45	949019	109.86	84,71,625	46.87	
2001	13850507	47.02	944727	-0.45	129,05,780	52.34	
2011	16787941	21.21	419042	-55.64	163,68,899	26.83	

 Table 2.6: Growth of Population of NCT-Delhi, 1901-2011

Source: Census of India (1901 – 2011).

(b) Urban Population

Around 84.71 lakh persons lived in Delhi's urban area in 1991, which increased to 163 lakh, almost doubled in 2011 (Table 2.6). The NCT of Delhi is highly urbanized with 97.50 percent(Table 2.7) of its population living in urban areas as against the national average of

31.14percent in 2011. The percentage decadal growth of urban and rural population in the NCT of Delhi during 1951-2011is shown in Table 2.6.

	rabic 2.7. Trends of Orbanization in NCT-Denn (in takits)							
	Census Year	1951	1961	1971	1981	1991	2001	2011
	Percent Urban	82.40	88.75	89.68	92.73	89.93	93.16	97.50
S	Source: Census of India (1951, 1961, 1971, 1981, 1991, 2001 and 2011).							

Table 2.7: Trends of Urbanization in NCT-Delhi (in lakhs)

(c) Components of Growth in the NCT of Delhi

Migration plays an important role in the growth of population of the NCT of Delhi. Table 1.5presents the migration data for Delhi for the period of 1961-2011. The figures pertaining to natural increase depicts downfall in the total figure of component of natural increase from 26.27 lakhs in 2001 to 11.48 lakhs in 2011 while immigration component has doubled from 1991 (15.87 lakh) to 2011(26.01) with marginal increase during 2001-2011. The out migration has increased almost three times from 2.82 lakh in 1991 to 7.82 lakh in 2011. Table-2.8presents the state wise migration in the NCT of Delhi by the place of last residence for the year 1991-2001 and 2001-2011. During 2001-2011 about 42.31 percent of the total in-migrants of NCT-Delhi came from UP followed by Bihar (22.79 percent) and Haryana (8.18 percent).

 Table 2.8: Migrants Classified by Place of the Last Residence (Top Ten States), 1991-2001

 and 2001-2011

Sr. No.	Place of Last Residence	1991- 2001(percent)	2001-2011(percent)
1.	Uttar Pradesh	39.18	42.31
2.	Bihar	18.67	22.79
3.	Haryana	7.7	8.18
4.	Rajasthan	3.98	4.27
5.	Uttarakhand	5	4.26
6.	Madhya Pradesh	1.94	2.49
7.	Punjab	2.23	2.16
8.	West Bengal	3.8	1.86
9.	Maharashtra	1.18	1.23
10.	Himachal Pradesh	1.12	1.00
11.	Others include outside India and unclassifiable	4.34	3.44

Source: Census of India (1991, 2001 and 2011).

Note: For more details regarding Migrants Classified by Place of the Last Residence are given in Table 1.7 of **Annexure-D-2.1**.

2.2.2.2 Haryana Sub-region

Table 2.9 presents the decadal growth rate for the Haryana Sub-Region for the period 2001-2011.

Table 2.9:	Growth of	f Population	in Harvana	Sub-region,	2001-2011

		Total		Rural		Urban	
	Year	Population (Person)	Decadal Growth	Population (Person)	Decadal Growth	Population (Person)	Decadal Growth

		(percent)		(percent)		(percent)
2001	13,388,603		9,464,477		3,924,126	
2011	16,427,524	22.70	10,439,814	10.30	5,987,710	52.59

Source: Census of India (2001 and 2011).

2.2.2.3 Rajasthan Sub-Region

Table 2.10shows the population growth of the Rajasthan Sub-region during 2001 and 2011 along with the decadal growth rate for 2011.

Table 2.10: Growth of Population in Rajasthan Sub-region i.e. the Entire Alwar and Bharatpur Districts, 2001-2011

	Total		Ru	ıral	Urban		
Voor	Population	Decadal	Population	Decadal	Population	Decadal	
I Cal	(Person)	Growth	(Person)	Growth	(Person)	Growth	
		(percent)		(percent)		(percent)	
2001	5,093,734		4,249,835		843,899		
2011	6,222,641	22.16	5,073,091	19.37	1,149,550	36.22	

Source: Census of India (2001 and 2011).

2.2.2.4 Uttar Pradesh Sub-region

Table 2.11 shows the population growth in the Uttar Pradesh Sub-region during 2001 and 2011 along with the decadal growth rate for 2011.

Table 2.11: Growth of Population is				in Uttar Prad	lesh Sub-regior	n, 2001-2011
		To	otal	R	ural	Urban

	Iotal		K	ural	Urban		
Year	Population (Person)	Decadal Growth (percent)	Population (Person)	Decadal Growth (percent)	Population (Person)	Decadal Growth (percent)	
2001	15,110,452		9,584,867		5,525,585		
2011	18,719,180	23.88	10,494,174	9.49	8,225,006	48.85	

Source: Census of India (2001 and 2011).

2.3 Population Projections

As per the report on "Population Projections for NCR (2016-2041)" the population of the NCR is projected to be 718.2 lakh by 2021, 895.9 lakh by 2031 and 1130 lakh by 2041. At subregional level, the share of projected population for 2041 shall be 33.22 percent in case Uttar Pradesh (375.43 lakh), followed by Haryana - 29.55 percent (334 lakh), NCT Delhi- 27.25 (208.03 lakh) and Rajasthan-9.98 percent (112.08 lakh). Sub-region wise details are given in Table 2.12 and 2.13.

The total urban population of the NCR is projected to be 425.9 lakh by 2021 (59.3 percent of total population), 570.4 lakh by 2031 (63.6 percent of total population) and 766.5 lakh by 2041 (67.8 percent of total population). The NCT of Delhi is expected to be 100 percent urban by 2031. At sub-regional level, Uttar Pradesh sub-region shall have more than 50 percent population in urban areas from 2021 onwards followed by Haryana by 2031. Urbanization level in the Rajasthan sub-region, which is about 20 percent as per 2021, is expected to be close to 25 percent by 2041. Further, a number of large rural settlements are also expected to become

census towns. The schematic maps given in Transport & Mobility Chapter be referred for population (2011-2041) of different settlements.

Year	NCR	NCT-D	Delhi	Harya	na	Rajasthan		Uttar Pradesh	
	Total	Populatio	Percen	Populatio	Percen	Populatio	Percen	Populatio	Percen
		n	t to	n	t to	n	t to	n	t to
			total		total		total		total
2016	645.51	185.23	28.70	182.74	28.31	68.71	10.64	208.84	32.35
2021	718.20	204.64	28.49	204.12	28.42	75.87	10.56	233.58	32.52
2026	801.09	226.33	28.25	229.05	28.59	83.78	10.46	261.93	32.70
2031	895.92	250.59	27.97	258.31	28.83	92.51	10.33	294.52	32.87
2036	1,004. 80	277.71	27.64	292.87	29.15	102.15	10.17	332.07	33.05
2041	1,130. 26	308.03	27.25	334.00	29.55	112.80	9.98	375.43	33.22

 Table 2.12: Proposed Population of NCR and Sub-regions (in lakhs)

Source: Census of India (2001 and 2011); Report on population projections for the National Capital Region 2016-2041

Table2.13: Pro	jected Rural a	and Urban P	opulation of	the NCR
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NCR and Sub-				
Regions	2011	2021	2031	2041
Haryana Sub-Region				
Urban	5,987,710	8,901,944	13,140,403	19,408,451
Rural	10,439,814	11,510,160	12,690,244	13,991,316
Total	16,427,524	20,412,105	25,830,647	33,399,767
Uttar Pradesh Sub-Reg	gion			
Urban	8,225,006	11,872,707	16,882,545	23,786,926
Rural	10,494,174	11,485,056	12,569,499	13,756,338
Total	18,719,180	23,357,763	29,452,045	37,543,264
Rajasthan Sub-Region	· · · · ·			
Urban	1,149,550	1,540,531	2,044,211	2,690,555
Rural	5,073,091	6,046,448	7,206,560	8,589,259
Total	6,222,641	7,586,979	9,250,771	1,1279,814
Delhi				
Urban	16,368,899	20,284,030	24,981,804	30,770,279
Rural	419,042	179,486	76,878	32,929
Total	16,787,941	20,463,516	25,058,682	30,803,208
NCR				
	31,731,165	42,599,212	57,048,964	76,656,211
	(54.56	(59.31	(63.68	(67.82
Urban	percent)	percent)	percent)	percent)
	26,426,121	29,221,150	32,543,181	36,369,842
	(45.44	(40.69	(36.32	(32.18
Rural	percent)	percent)	percent)	percent)
Total	58,157,286	71,820,362	89,592,145	113,026,053

2.4 Key Issues and Challenges

- 2.4.1 The large size and continuing growth of the population in the NCR adds to burden on infrastructure and natural resources, especially in the CNCR and metro cities where growth is proceeding rapidly.
- 2.4.2 With the population of Delhi agglomeration and adjoining areas set to overtake Tokyo by 2028, the NCR is likely to be become one of the biggest urban regions in the world. Infrastructure planning and development of such a vast region, ensuring quality of life and livability for its inhabitants at global standards would remain a huge challenge.
- 2.4.3 Neighbourhood zone and sector level density is a critical factor while planning urban areas. Increased density, on one side, saves costs in providing utilities and services like water, sewer connections, power, etc., it also results in fewer space intensive amenities per persons such as schools, hospitals, etc. This dilemma needs to be resolved.
- 2.4.4 As per Census of India 2011, in NCR there are about 78 census towns (CT) of which 34 are in the UP Sub-region, 33 are in the Haryana Sub-region and 11 in the Rajasthan Sub-region (Table 2.14). Most of these towns are experiencing unplanned construction, adhoc provisioning of infrastructure development, etc. There is an urgent need for planned development of such urban areas of the NCR. There are small statutory towns (less than 50,000), which need streamlined planning systems with specific development plans. The schematic map of Existing Urban Settlements in NCR -2011is given in **Annexure-D-2.2**.

S.No.	Region and Sub-region	Number of Census Towns
1.	NCT Delhi	-
2.	Haryana Sub-region	33
3.	Uttar Pradesh Sub-region	34
4.	Rajasthan Sub-region	11
	National Capital Region	78

Table 2.14: Number of Census Towns, 2011

Source: Census of India (2011).

- 2.4.5 Several towns outside the CNCR could not achieve their desired population as proposed in the NCR Plan, 2021. Lack of fast and efficient connectivity, sparse economic activities and lack of state of the art infrastructure has caused lower population growth in metro centres and regional centres outside the CNCR.
- 2.4.6 The villages especially in Delhi, CNCR and around urbanisable areas of cities / towns are undergoing significant, physical and functional transformation. Villages are characterized by a mix of different landuse, compact built form, narrow circulation space, lowrise- high density developments and mainly accommodate residential, commercial and industrial uses and function as a mix. The issues of infrastructure and planned development have to be addressed.
- 2.4.7 The NCR has imbalanced sex ratio of 877, which is much below the national average of 940 as per Census of India 2011.
- 2.4.8 Migration to urban areas of the NCR continues to be one of the major contributors to population growth in the region. Rural-urban migration results in overcrowding of cities, haphazard growth including formation of slums and pressure on city infrastructure.

2.5 Policies and Proposals

2.5.1 **Population Policies**

- (a) The NCR states should endeavour to achieve development of a well-knit regional settlement system based on polycentric approach of planning whereby Delhi andtheCNCR, other towns and rural settlements in the region grow as per their carrying capacities so as to harness the development potential within the broad framework of the National Capital Regional Plan, 2041.
- (b) The NCR states should also adopt the mixed approach in the development of settlements by undertaking redevelopment as well as greenfield township projects to obtain sustainable development. Wherever possible, infrastructure capacities and smartness of old areas should be strengthened through redevelopment and new smart townships development as growth nodes along the key transport corridors, proposed expressways, orbital rail corridors and other suitable locations either on virgin land or as extension of the existing settlements.
- (c) Rural development should be encouraged by providing facilities and services in appropriate hierarchy to help stimulate production and increase income of rural population. This is expected to help facilitate diversification of the regional economy.

2.5.2 Settlement Development Policies

- (a) The NCR states should ensure that all census towns (CTs) in their respective subregions are recognized as statutory towns and master development plans are prepared in a phased and time bound manner for their planned development. The Ministry of Urban Development (now MoHUA) in 2016 requested all the states in India to initiate action for converting CTs as statutory towns to ensure their planned development³.
- (b) Comprehensive Scheme for redevelopment of villages within urbanisable area should be prepared by the concerned Departments/ local bodies for facilities and services within the abadi and integration of surrounding areas. Development along the peripheries of the villages should be carefully planned, wherever necessary, for provision of services and green/open areas, circulation, etc. This aspect should be kept in view while preparing lay out plans for development of new sectors for city extension in urbanisable areas.
- (c) Greenfield townships can be developed as growth nodes along the Transport corridors (RRTS, Expressways and NHs) or around Interchanges of Radial Transport corridors and orbital (ORC and Outer ORC) transport corridors in NCR, based on TOD approach. These Greenfield Township can be developed as selfcontained and self-sufficient smart townships for intensive development, based on AURIC City of DMIC with this smart elements like land allotment, e-land, smart water and electricity, central smart command system, 24X7 security, rain water harvesting, net zero water consumption areas (recycling of black and gray water), etc.
- (d) Further, the following major NICDP projects falling in NCR be integrated with the overall planning and development of urban settlement system of the respective sub-region in their Sub-Regional Plans:
 - i. Integrated Industrial Township at Greater Noida

³Maharashtra Govt. converted 19 CTs in the state to statutory ULBs.

- ii. Integrated Multi Modal Logistics Hub at Nangal Chaudhary (Haryana)
- iii. Multi Modal Logistics Hub (MMLH) & Multi Modal Transport Hub (MMTH) at Greater Noida
- (e) Metro and regional centres within the CNCR have grown much faster while the proposed metro and regional centres outside the CNCR could not grow as anticipated to achieve the target population of the NCR Plan, 2021. The emphasis, therefore, should be placed on the development of metro centres and regional centres outside the CNCR, which could be done by providing fast and efficient connectivity, boosting economic activities, and developing state of the art infrastructure.
- (f) In order to secure a significant impact of the large growth centres, which may act as catalysts for the development in the region, the CNCR towns and identified metro centres and regional centres should be intensively developed for attracting investment, generation of employment, creation of high quality infrastructure, robust transport and communication linkages, development of high quality residential areas, industrial and commercial complexes.
- (g) Development of small and medium towns in the region as sub-regional centres or service centres should be undertaken on priority as these towns would play an important role in supporting the socio-economic development in their rural hinterlands. This could be done by providing access to education and health facilities, agricultural extension services and agro-based industries, etc. depending on local resources.
- (h) The NCR states should take necessary actions to integrate the investment regions⁴ of the NICDC projects i.e. Manesar-Bawal Investment Region⁵ (MBIR) in Haryana sub-region, Khushkhera-Bhiwadi-Neemrana Investment Region⁶ (KBNIR) in Rajasthan sub-region and Dadri-Noida-Ghaziabad Region⁷ (DNGIR) in U.P. sub-region, in their respective Sub-Regional Plans in coordination with NICDC.
- (i) The Government of Uttar Pradesh planned the Yamuna Expressway Industrial Development Area (YEIDA) as a Greenfield city⁸ with a population of 2,000,000. The Master Plan has already been prepared for the entire area. Keeping in view the development potentials, the expressway (Delhi-Noida-YEIDA-Agra-Kanpur) and large projects like International Airport at Jewar, and upcoming World Class Film City, the YEIDA is proposed to be developed as a metro centre outside the CNCR. Add HRY- it is leaned that Haryana is planning two develop certain areas around KMP Expressway as Panchgramms, however, more details are not available in public domain.
- (j) Rural settlements should be developed on the lines of National Rurban Mission (NRuM) and more Rurban clusters should be identified in the sub-regions. Subregional plans, district development plans should be prepared for planned development in the districts.
- (k) Providing necessary housing and infrastructure to facilitate settlement of migrants in the NCR cities should be taken up on priority.

2.5.3 **Proposed Hierarchy of Settlements**

⁵<u>https://www.nicdc.in/projects.aspx?mpgid=15andpgidtrail=15andProjid=26</u> ⁶<u>https://www.nicdc.in/projects.aspx?mpgid=15andpgidtrail=15andProjid=36</u> ⁷<u>https://www.nicdc.in/projects.aspx?mpgid=15andpgidtrail=15andProjid=47</u>

⁸ Approximate urbanizable area of 20,000 Ha.

2.5.3.1 Regional Plan-2021 focused upon the following six tier hierarchy of settlements (Table 2.15). While undertaking the review in 2018-2019, the study group on "Rural Development" recommended further elaboration of the hierarchy of rural settlements namely, nodal point, bazar village, medium village, and small village.

	•	-	-	-	-
Table 2	2.15: Pro	posed Six-	Tier Hierarchy	of Settlements as	per RP-2021

S. No.	Hierarchical Level	Population Range
1.	Metro Centre	1,000,000 and above
2.	Regional Centre	300,000-1,000,000
3.	Sub-regional Centre	50,000- 300,000
4.	Service Centre	10,000 - 50,000
5.	Central Village	5,000 - 10,000
6.	Basic Village	Below 5,000

2.5.3.2 NCT Delhi

Delhi will have majority of population. Accordingly, provision for housing and other infrastructure for residential, commercial, institutional, industrial, recreation, etc. will have to be allowed along with massive redevelopment of all feasible areas.

2.5.3.3 Central National Capital Region (CNCR)

CNCR area will be defined as area from the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal expressway (KMP) up to 5 Km beyond outer edge of the ROW of this first ring of expressways.

2.5.3.4 Rest of NCR

- a) It will be the major supplier for agriculture and industrial products not only to NCT Delhi, CNCR but also to the areas within India and abroad, through logistics hubs, dry ports, cargo hubs, etc. located within NCT Delhi and CNCR.
- 2.5.3.5 Keeping in view the above, the following hierarchy of settlements is proposed in Table 2.16.

S. No.	Hierarchical	Components and Proposed Population Range by 2041
	Level	
1.	Metro Centre	All towns with 1,000,000 and above population
2.	Regional Centre	All district headquarters, and all towns with population ranging from 300,000 to 999,999
3.	Sub-Regional Centre	All tehsil headquarters and all towns with population ranging from 100,000 to 299,999.
4.	Service Centre or Nodal Point or ICAPs	All block headquarters, and all settlements or clusters with population ranging from 10,000 - 99,999.
5.	Central Village or Cluster of Bazar Villages	All settlements with population ranging from 5,000-9999
6.	Medium Village	All settlements with population ranging from 2,000 to 4,999
7.	Small Village	All settlements with population below 2,000.

 Table 2.16: Proposed Seven Tier Hierarchy of Settlements, 2041

2.5.3.6 The development of Metro center and Regional center outside CNCR must be encouraged by proving fast and efficient connectivity, boost economic activities and development of infrastructure. The role of settlements is given at para 2.8 below.

2.6 Improvement of Sex Ratio

- (a) The NCR state governments and district administrations should ensure that various programmes and missions like *Beti BachaoBetiPadhao*, National Mission to Address Malnutrition⁹, etc. launched for improving sex ratio and addressing malnutrition, by the Government of India, are effectively implemented.
- (b) Efforts should be also made so that the sex ratio in each of the NCR sub-region increases substantially to reach the normal range of 943-980 female per 1,000 males.

2.7 Migration Facilitation

- (a) Migrant Data Platform: Migrant registration should be mandatory to keep track of all persons moving from rural areas and entering urban areas or vice versa and necessary infrastructure should be created accordingly at district, block and gram panchayat level and data should be shared through public portals. The registration be linked with aadhar number and thus with the common data base which would also include data on qualifications, skill set/ updates /Skill mapping, education, local address and employment related details etc. For this registration centres could be developed as Migrant Service/Facilitation Centres (MFCs) also providing orientation about the city/town, shelter home allocation till rented accommodation arranged, list of local contractors registered, Fair Price shops, govt. dispensary details, accident insurance coverage etc. Regular medical check-ups and requisite counselling for migrants be organised every fortnight /weekly at these MFCs.
- (b) Every migrant worker should be enrolled under the Pradhan Mantri Jan ArogyaYojana (PM-JAY and Ayushman Bharat), the Government of India's flagship health insurance scheme, so that they can access cashless medical facilities at their workplaces. Besides, the NCR states should try to explore the possibilities of creating 'migrant workers welfare fund' to help them in their hours of need. It is suggested that this fund may be ficnanced by the Central or States Givt of NCR or proportionately financed by six agencies i.e. sending state, receiving state, contractors, principal employers and the registered migrant workers (with limited and minimal contribution). Every migrant worker should be automatically enrolled into the fund.

2.8 Role of Settlements

2.8.1 **Metro centre** (metropolis): These settlements will act as powerful growth nodes to attract capital functions and activities and help in population dispersal from the CNCR. Given their special functional status and size, a high level of physical, social and economic infrastructure at par with Delhi-CNCR, is required to be developed in these urban centres. This would include efficient intra-urban mass transportation system as well as strong transport and communication linkages with Delhi & CNCR, other metro centres and NCR towns. The respective participating states and their agencies would be required to create the necessary infrastructure themselves in these metro centres and also be required to facilitate the private sector investment therein. The centers be

⁹<u>https://www.firstpost.com/india/centre-launches-initiative-to-address-malnutrition-improve-sex-ratio-1717455.html</u>

developed in-line with smart cities initiative, by 2025 on priority. The list of the proposed metro centre (metropolis) is as under:

Table 2.17: Proposed population of Metro centres

Metro centres	Population (Census	Projected Population					
	2011)	2021	2026	2031	2036	2041	
Existing							
Meerut (M Corp.)	1305429	1846781	2196577	2612628	3107482	3696066	
Muzaffarnagar (NPP)	392768	555646	660890	786068	934957	1112045	
Greenfield							
YEIDA (proposed by Govt. of UP)	Design popu	lation as 20) lakh				

Source: Report on Population Projections for National Capital Region 2016-2041.

2.8.2 **Regional centre** (Regiopolis¹⁰) –these will be well-established urban centre in the region, marked by highly specialized secondary and tertiary sector activities and providing job opportunities, which normally cannot be performed by other lower order centres. These centres will be developed for advanced industrial and other economic activities and will have concentration of administrative and higher order service functions, which are expected to exert an increasingly dynamic influence on attraction of investment and creation of conducive living and working environment. The regional centres/complexes proposed in the notified RP-2021 will be retained in RP- 2041 as they are at various stages of planning and development by the NCR states. The proposed populations of regional centre (Regiopolis) are as under:

Regional Centers	Population (Census 2011)	Projected Population					
	2011	2021	2026	2031	2036	2041	
		40185	44301	48839	53842		
1. Panipat	295970	6	9	9	6	593578	
		50819	56025	61764	68090		
2. Rohtak	374292	9	5	3	9	750656	
		22755	25085	27655	30488		
3. Jind	167592	0	8	4	2	336112	
		41023	45225	49858	54965		
4. Karnal	302140	4	5	0	1	605953	
		26619	29346	32352	35666		
5. Bhiwani	196057	8	6	6	5	393199	
6. Rewari-Dharuhera-Bawa	al	234,1	258,1	284,6	313,7		
Complex	190,141	78	66	10	64	345,903	
		32541	38704	46036	54755		
7. Bulandshahr	230024	3	9	0	6	651268	
		17147	20394	24257	28852		
8. Khurja	121207	1	9	8	5	343174	

Table 2.18: Proposed population of Regional centres

¹⁰Regiopolis is a city outside the core of a metropolitan area that serves as an independent driving force for development within a larger region. The concept is used to develop midsized urban regions within regional, national and global contexts.

Regional Centers	Population(CensusProjected Population2011)					
	2011	2021	2026	2031	2036	2041
		18437	21929	26082	31022	
9. Modinagar	130325	0	1	7	9	368990
10. Baghpat -Baraut Complex	154,074	183,2 57	217,9 67	259,2 52	308,3 57	366,762
		37204	44250	52632	62601	
11. Hapur-Pilkhua Complex	262983	0	8	3	3	744585
		15847	19262	23413	28458	
12. Shamli	107266	5	4	1	2	345905
		40333	43268	46416	49794	
13. Alwar	322568	8	5	7	0	534170
		12229	13119	14073	15097	
14. Greater Bhiwadi	104,921	5	3	8	9	161964
15. Shajahanpu-Neemrana- Behror Complex	46 511	54,21	58,15 7	62,38 9	66,92 8	71 798
	10,511	31614	33915	36382	39030	,1,70
16. Bharatpur	252838	7	1	7	0	418698
Total		43392	48825	55039	62157	
	3258909	34	93	04	06	7032715

Source: Report on Population Projections for National Capital Region 2016-2041.

2.8.3 The NCR states have indicated the population of selected towns of NCR in their respective master plans. Population of all such towns have been projected for 2041, based on master plan population and is given at **Annexure D-2.3**.

2.8.4 The functions of other lower hierarchy of settlement namely, sub-regional centre, service centre/ nodal points (NB), central village cluster/ Bazar Villages (BV), Medium Village (MV) and small village (SV) shall have to be dealt in the sub-regional plans. The functional composition of the remaining hierarchical centres is being dealt with very briefly in this plan, since their identification and role would be spelt out in the sub-regional plans. An indicative broad role is given at **Annexure-P-2.1**.

Chapter 3

ECONOMIC GROWTH AND INCOME GENERATION

3.1. Introduction

3.1.1. The NCR being one of the most vibrant economic regions across the countries accommodating Delhi (ranking 6th in the world's top 10 best performing metro economies as per Brookings (2018) Global Metro Monitoring covering 300 cities across the globe). It is also considered as one of the top five economic hubs of India. It had attracted 20% of Foreign Direct Investment (FDI) in the country during 2010-15 amounting to Rs. 2,49,023 Cr (USD 49,410 million). Table 3.1 shows the GDP of NCR from 2011-12 to 2016-17 from which it can be observed that GDP of the region has increased from Rs. 21.5 million in 2011-12 to Rs. 31 million in 2016-17.

Sub Region	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	CAGR (2016-17)
NCT Delhi*	34,37,975	36,66,284	39,29,084	42,83,551	47,56,225	51,15,042	8.27%
Haryana [#]	1,23,65,308	1,34,71,867	1,44,11,884	1,54,29,452	1,69,08,189	1,84,24,533	8.30%
UP	11,98,387	12,39,339	13,65,353	16,15,960	18,15,862	20,05,876	10.85%
Rajasthan	45,85,297	44,56,458	45,08,557	46,69,820	50,95,289	54,54,605	3.53%
NCR	2,15,86,967	2,28,33,948	2,42,14,878	2,59,98,783	2,85,75,565	3,10,00,056	7.38%

Table 3.1 GDP of NCR from 2011-12 to 2016-17 at Constant 2011-12 & onwards Prices (In INR Millions)

Source: NCR Monitoring and Planning Cells, Govt of NCT Delhi, UP, Govt of Haryana and Govt of Rajasthan *Ministry of Statistics and Programme Implementation, Govt. of India. #Total excluding district Gurugram, Mewat, Palwal&Rewari

- 3.1.2. Average per capita income (PCI) of NCR in 2017-18 is about Rs. 1.37 lakh. Information on the average PCI of the sub-regions indicates that the highest PCI is that of NCT Delhi sub-region, followed by Haryana, U.P. and Rajasthan sub-regions respectively *(Annexure-D-3.1)*.
- 3.1.3. Delhi was on 5th position for GDP per capita growth with average rate of 6.6% during 2014-16. It has been included as U20 (Urban 20) group, which is a new space for cities to engage in the G20 and seeks to establish a forum in which cities develop, collect messages that enhance the G20 debates on global issues of urbanized world such as climate change, air pollution, social integration, inequality, access to housing and change in labour markets.
- 3.1.4. FDI inflows for Delhi region rose from Rs. 44,713.15 Cr. (\$5.9 billion) in 2016-17 to Rs. 58,346.75 Cr. (\$7.7 billion) in 2017-18 and Rs. 76,556.48 Cr. (\$10.1 billion) in 2018-19. Delhi region attracted about one-fourth (25%) of FDI received by the country during April-December 2018-19. Delhi region is considered as one of the top three economic hubs of India1. Delhi NCR with 370 Billion USD is the largest economy in India and contributes about 8% to National economy and pulls a huge number of workers from across the country. In NCT Delhi highest employment is generated in Textile sector (46.68%). A brief on economic scenario of NCR participating States is given at *Annexure-D-3.1*.
- 3.1.5. For the vision to make India USD 5 trillion economy by 2024 and grow beyond, it requires a national driven effort, and the mega region of NCR would have to play a

¹Source: https://www.siliconindia.com/news/general/Top-10-Economic-Hubs-of-India-in-2015-nid-183937-cid-1.html/2

prominent role. Besides, based on estimated Annual GDP Growth as per report of Visual Capitalist2, Delhi (with 6.5% GDP growth) is expected to be amongst world's top 10 cities (*refer Annexure-D-3.1*).

- 3.1.6. Over the years, various Ministries/ Department of Government of Indian have introduced several schemes that have not only helped citizens improve their financial situations but have also contributed to the overall economic development. Similarly, various steps have been also taken by the NCR participating State Governments. These joint efforts will lead to economic growth and development of the country including NCR. Some of the major Central Government initiatives are as mentioned below:
- 3.1.6.1. "Make in India (2014)" initiative was launched as part of a wider set of nationbuilding initiatives and have been devised to transform India into a global design and manufacturing hub.
- 3.1.6.2. Micro Units Development & Refinance Agency Ltd. (MUDRA) launched under "Pradhan Mantri Mudra Yojana (2015)" is an initiative designed for non-corporate, non-farm sector and micro & small enterprises.
- 3.1.6.3. "The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014" of MoHUA aims at protection of vendors' livelihood rights, social security and regulation of urban street vending. Further, MoHUA in July 2020 has launched Street Vendor's AtmaNirbhar Nidhi (PM SVANidhi) to facilitate working capital loans to the street vendors.
- 3.1.6.4. "Digital India (2015)" campaign was launched to ensure that the Government's services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or making the country digitally empowered in the field of technology.
- 3.1.6.5. "Skill India (2015)" initiative was launched to empower the youth of the country with skill sets which make them more employable and more productive in their work environment. The National Skill Development Corporation India (NSDC), one of its kind Public Private Partnership Company, has been setup as with the primary mandate of catalysing the skills landscape in the country.
- 3.1.6.6. "Smart Cities Mission (2015)" is an innovative initiative to drive economic growth and improve the quality of life of people by enabling local development and harnessing technology to create smart outcomes for citizens.
- 3.1.6.7. National Policy on Electronics (NPE) approved in 2019 envisaging creation of a US\$ 400 billion electronics manufacturing industry in the country by 2025. Further, "Modified Electronics Manufacturing Clusters (EMC2.0) Scheme (2020)" is launched for development of world class infrastructure along with common facilities and amenities through EMCs for manufacturing of electronics.
- 3.1.6.8. "Delhi Mumbai Industrial Corridor (DMIC)" is a mix of road, rail, port and airport projects launched to change the business landscape and industrial development from Delhi to Mumbai. Eight nodes/cities in the six DMIC states have been taken up for development which included Dadri Noida Ghaziabad Investment Region (DNGIR) and ManesarBawal Investment Region (MBIR) & Khushkhera- Bhiwadi-Neemrana Investment Region (KBNIR) in NCR. Further, the Government of India is developing "Amritsar-Kolkata Industrial Corridor (AKIC)" along the alignment of the Eastern Dedicated Freight Corridor (EDFC) traversing in six States including Haryana and Uttar Pradesh. A schematic map showing tentative alignment of DMIC and AKIC is given in **Figure 3.1** below.

²Source: <u>https://www.visualcapitalist.com/top-10-cities/</u>



Figure Error! No text of specified style in document. National Industrial Corridor Development Programme

Source: NICDC- https://www.dmicdc.com/about-DMICDC

3.1.6.9. National Infrastructure Pipeline (NIP) for 2019-2025 report of the task force of Department of Economic Affairs, Ministry of Finance, Government of India enable a forward outlook on infrastructure projects which will create jobs, improve ease of living, and provide equitable access to infrastructure for all, thereby making growth more inclusive. As per the Final Report on NIP presented on 29th April 2020, projects worth USD1.5 trillion (INR111 trillion) over FY 2020-2025 has been announced for the projects. Out of the total expected capital expenditure of Rs. 111 lakh crore, projects worth Rs 44 lakh crore (40% of NIP) are under implementation, projects worth Rs 33 lakh crore (30%) are at conceptual stage and projects worth Rs 22 lakh crore (20%) are under development Information regarding project stage are unavailable for projects worth Rs 11 lakh crore (10%). Sectors such as energy (24%), roads (18%), urban (17%) and railways (12%) amount to around 71% of the projected infrastructure investments in India. The Centre (39%) and States (40%) are expected to have almost equal share in implementing the NIP in India, followed by the private sector (21%). Further 10 infrastructure goals/ manufacturing sector have been identified under AtmaNirbhar Bharat Abhiyan which includes Clean Energy; efficient transportation & logistics, farming (developing farmer income); quality education; sustainable & smart cities, technology for public good; digital services for all, housing & water supply; good health & wellbeing; and Disaster resilience. Major projects of NIP identified for NCR includes Delhi-Mumbai Expressway, Dwarka Expressway and Trans Haryana North-South Expressway, New airports at Jewar along with modernization and expansion of airports across metro's in India. It is expected that USD 266 billion (INR20 trillion) business will be generated under this Abhiyan across the country. A brief overview of NIP is provided at *Annexure-D*-3.2.

- 3.1.6.10. The government has approved in Feb. 2018 a dedicated fund of INR 5,000 crore for enhancing "12 Champion Services Sectors" for promoting their development and realizing their potential. These include Information Technology & Information Technology enabled Services (IT &ITeS), Tourism and Hospitality Services, Medical Value Travel, Transport and Logistics Services, Accounting and Finance Services, Audio Visual Services, Legal Services, Communication Services, Financial Services and Education Services.
- 3.1.6.11. For achieving world competitive Ease of Doing Business (EODB) environment, Department for Promotion of Industry, and Internal Trade (DPIIT), GoI has formulated 'Implementation Guide for States /UTs, February 2019' for 'State Business Reform Action Plan' (BRAP). The BRAP keeps updating on year-to-year basis and DPIIT undertake 100% feedback-based assessment on all reform points under it.
- 3.1.6.12. A brief of above and some other major government initiatives is given at *Annexure*-*D*-3.4.

3.2. Existing Status

- 3.2.1. Delhi-NCR is moving towards developing a highly functional entrepreneurial ecosystem. This fact, coupled with expanded territory and excellent infrastructure, will attract foreign investors, and pave the way for more job creation which will make a direct contribution to India's GDP. There are many enterprises in the region that are playing a significant role in enhancing the overall investment climate.
- 3.2.2. The economic structure of NCR is undergoing rapid transformation due to economic forces such as changes in economic/fiscal policy, legislations, rapid urbanisation, etc. The various physical/spatial forces which have significantly shaped the economy of NCR include development of Model Industrial Estates/ Townships, SEZs, extension of Delhi Metro to surrounding NCR towns etc. The region has multiple special economic zones and industrial clusters, including Noida and Gurugram, known for their IT services sectors; Faridabad, an industrial centre; Meerut, an education hub; and Ghaziabad, Alwar, Sonepat, Panipat amongst others. The urban area in the region also attracts workforce from areas located outside the region.
- 3.2.3. Compared to national workforce participation rate (WPR) of 39.79% the WFR for UP, Haryana, Delhi and Rajasthan are 43.6%, 35.17%, 33.28% and 32.94% respectively, as per Census 2011.The percentage contribution of Primary Sector (Agriculture and Allied) to the Gross State Value added at basic prices has declined from 0.94 % in 2011-12 to 0.39 in 2017-2018. The contribution of Secondary Sector (Industry Sector) and Tertiary Sector (Service sector) was 15.91% and 83.70% respectively in 2017-2018.
- 3.2.4. Service Sector contribution is the highest to Delhi's Economy i.e., 84.12 % in 2018-19. Major contributions of different service sectors activities to Delhi Economy in 2018-19 as per Advance Estimates: Professional Services & Real Estate (28%), Transport,

storage &Communication (14.70%), Financial Services (13.79%), Trade, hotels & Restaurants (12.44%), etc.

3.2.5. NCR has more than 100 industrial estates with Delhi having 25 industrial estates. In rest of NCR most of the clusters are in Meerut, Ghaziabad, Gautambudh Nagar, Bulandshahr, Gurugram, Faridabad, Panipat and Alwar districts which are mainly related to auto component, textiles, general engineering, power looms, carpet, etc. Some of the significant industries in NCR include Automobile industry, metal industry (basic & fabricated), textiles, apparel & foot ware industry, animal production (dairy industry); computers, consumer electronics & electric equipment, Rubber & plastic industry etc. NCR is also rich in terms of variety of its local products and MSME sector is one of the major employment intensive segments in the economic development of the region. There are more than 42 lakh MSMEs in the region. **Error! Reference source not found.** shows the manufacturing clusters in NCR.



Figure Error! No text of specified style in document.1 Indicative Map showing Major Manufacturing clusters in NCR

3.2.6. The organized industrial sector consisting of the large and medium units and SSI in NCR has developed both in terms of number of units as well as in terms of growth of different industries. In terms of number of units, electrical machinery, textile products,
metal and metal products, food products, repair services and paper and printing units show highest percentage distribution in Delhi. In Haryana Sub-region, units manufacturing engineering goods, consisting of metal products and parts, machine tools and electric machinery show highest percentage distribution. Electric machinery, metal products and parts, chemicals and food products constitute the major sectors in the U.P. Sub-region. In Rajasthan Sub-region, metal products and parts, textile products and transport equipment's along with chemicals, non-metallic mineral products and basic metal products constitute the major sectors.

- 3.2.7. Trade and commerce form another important component of the economic base of the region. Distributive trade is one of the basic activities in Delhi and this factor has been instrumental in large scale employment generation in both formal and informal sectors. In addition, the functional specialization of Delhi, being the centre of political and administrative power, has also resulted in the concentration of banking activities, godowns, transport and communication facilities etc. In the rest of NCR, commercial activities are fairly developed in bigger towns like Meerut, Ghaziabad, Hapur, Khurja and Bulandshahr in U.P. Sub-region, Faridabad, Panipat, Rewari, Gurgaon, Sonepat and Rohtak in Haryana Sub-region and Alwar in Rajasthan Sub-region, respectively.
- 3.2.8. Detail of industrial development in NCR including industrial clusters, automotive industries, IT industries, warehousing & logistic clusters/hubs, Agro & Food Processing Industries, MSMEs, Tourism sector, etc. are given at *Annexure–D-3.3*.
- 3.2.9. As per FICCI analysis, approximately half-a-trillion dollars of economic value that can be unlocked through Circular Economy business models in India by 2030³. FICCI research highlights eight such priority resources for India. These are: (i) petrochemicals, (ii) plastics, (iii) food, (iv) gold, (v) iron & steel, (vi) copper, (vii) Fibers, and (viii) cement. There is \$1bn of value that can be realized from the extraction of gold from ewaste in India. Plastics recycling: Currently, ~40% of plastic waste in India ends up being uncollected for recycling. Proper management of this waste can create ~14 lakhs jobs and could potentially represent a ~\$2bn opportunity. Steel recovery from end-oflife vehicles: there is over 8mn tons of steel that can be potentially extracted from endof-life vehicles in India in 2025, representing a ~\$2.7bn opportunity. Further, a report on Circular Economy in India⁴: Rethinking growth for long-term prosperity shows that a circular economy path to development could bring India annual benefits of ₹40 lakh crore (US\$ 624 billion) in 2050 compared with the current development path – a benefit equivalent to 30% of India's current GDP. This conclusion rests on high-level economic analysis of three focus areas key to the Indian economy and society: cities and construction, food and agriculture, and mobility and vehicle manufacturing.

³http://ficci.in/spdocument/22977/FICCI-Circular-Economy.pdf

⁴*Circular Economy in India* - <u>https://smartnet.niua.org/sites/default/files/resources/circular-economy-in-india</u> 5-<u>dec 2016 0.pdf</u>



Figure Error! No text of specified style in document.2 Value realization potential from circular business models by 2030





Figure Error! No text of specified style in document.**3** *Benefits of Circular Economy Source:* United Nations Conference on Trade and Development⁵

⁵<u>https://unctad.org/topic/trade-and-environment/circular-economy</u>

3.3. Key Issues and Challenges

- 3.3.1. The available data shows regional imbalance exists between NCTD/ Central NCR and rest of the NCR. Economic growth is heavily skewed in favour of NCTD (constitutes more than half of GDP of NCR) and Central NCR (Noida, Gurgaon, Ghaziabad, Faridabad etc.). These towns include sectors like IT, ITES, and Auto components in Gurgaon, General Engineering (Faridabad, Manesar and Bawal); IT, ITES, Readymade Garments and General Engineering in Noida.
- 3.3.2. Deficiencies in basic infrastructure like power, water, transport linkages, telecommunication etc., which are the pre-requisite for faster economic growth, are evident in most of the towns in NCR. To make these towns self-sustainable and attractive enough for future economic development, concomitant infrastructure needs will have to be met.
- 3.3.3. Increasing population and high destines in NCR are overstressing the infrastructure which in turn is impacting the overall service quality. 250% increase in Delhi's peak power demand since 2002, affordable housing shortage, reduced traffic speed, lack of logistic facilities, etc. are some examples for the same.
- 3.3.4. Over the years environmental quality in NCR cities has degraded due to various reasons. Further, inadequate infrastructure for industrial development including common facility centres, quality power supply, lack of infrastructure for effective treatment & disposal of polluting industries waste, etc. is also a concern. Development of environment friendly industries & economic activities in the already degraded environmental situation in NCR is a challenge. As per 2018 NitiAayog report, Delhi region is amongst 21 Indian cities that is poised to run out of groundwater soon. Appropriate location and typologies of industries in NCR may hold the key to tackle this issue.
- 3.3.5. Despite of enormous importance and potential of MSMEs in NCR, many micro, household, and small enterprise/ clusters in the region are facing numerous problems related to availability of physical infrastructure (i.e., electricity, water supply, road, shelter, storage, etc.), procurement of raw material, purchase of machinery & equipment, design & technology, access to credit, marketing products and institutional support, etc. Strengthening of MSMEs in NCR is a challenge.
- 3.3.6. Limited non-farm sector employment and poor rural economy due to inadequate rural infrastructure like Mandies and marketing facilities, common storage, cold storage facilities and inadequate food, fruits and vegetables processing facilities/ industries is another important issue to be addressed for the rural NCR.
- 3.3.7. Rural NCR too deserve further support in terms of farmer's facilitation for higher productivity and marketing facilities.
- 3.3.8. Expansion of non-farm sector and associated growth in urbanisation is intricately linked with development of logistics policy and follow up actions. Accordingly, due attention is needed to logistics sector in the NCR by respective states.
- 3.3.9. Disparity in per capita income across NCR is also leading to affordability concerns for its inhabitants. Almost 15% of Delhi NCR population is still categorized as below poverty line.
- 3.3.10. Urbanisation potential in the rest of the NCR is not fully utilised in terms of suitable development of non-farming activities (manufacturing and services). A large chunk of marginal workers is concentrated amongst the states UP (38%), Haryana (30%), and Rajasthan (21%) which are potential segment of surplus manpower from agriculture.
- 3.3.11. Availability of adequate water supply due to limited irrigation facilities and ground water availability is also an issue for development of industries in Delhi region.

- 3.3.12. There is also lack of a comprehensive policy for strengthening of the craft-based informal sector that flourishes in urban centres of the region.
- 3.3.13. There are several management concerns such as multiplicity of authorities', nonconvergence of development schemes, lack of coordinated planning, and unorganized labour market along with in-migration.
- 3.3.14. Brief of more issues related to economic development of NCR is provided at *Annexure–D-3.5.*

3.4. Future Perspective and Proposals

- 3.4.1. Considering the shift of labour force from low productivity employment, as per NITI Aayogreport, 80-90 lakhs new jobs will be needed in India in the coming years. As per Economic Survey 2019-20 of Govt. of India, target is to create about 4 crore well-paid jobs by 2025 and 8 crore jobs by 2030, respectively.
- 3.4.2. For the vision to make India USD 5 trillion economy by 2024 and grow beyond, it requires a national driven effort, and the mega region of NCR would have to play a prominent role.
- 3.4.3. NCR has emerged as a modern hub of automotive & light engineering industry, producing 30% of cars and 50% of two-wheelers in the country. Further, proximity to government institutions, availability of a business-friendly infrastructure, and a burgeoning entrepreneurship culture make the NCR a viable IT hub. Delhi NCR offers a dynamic and highly functioning ecosystem that sees investors, government policymakers, skilled professionals, and entrepreneurs, and start-up incubators and accelerators. These positives coupled with its expanded territory and robust connectivity and infrastructure ensures its steady growth towards becoming India's top IT hub. Also, MeitY, Govt. of India under Electronics Manufacturing Cluster (EMC) Scheme 2012, has setup and planned various EMC across NCR, making it a hub for Electronics System Design and Manufacturing (ESDM) sector.
- 3.4.4. Development of aviation sector and allied activities plays an important role to boost the economic growth. The IGI Airport is India's largest and world's 16th most busy airport as per Airports Council International (ACI). It currently serves over 60 million passengers annually. The upcoming Airport at Jewar is proposed to serve a total annual passenger demand of around 5 million which may go up to 16 million by 2029-30, more than 71 million by 2049-50. Overall cargo demand at the proposed airport is expected to be around 0.4 million metric tons in 2022-23 and reach up to 2.9 million metric tons by 2049-50. This will generate numerous employment opportunities in NCR.
- 3.4.5. India Tourism Statistics, 2019, indicates about 290 lakhs domestic and about 27.4 lakh foreign tourist's inflow in NCT Delhi. Such tourist's inflow with its allied activities and multiplier effect offers immense opportunities to bolster NCR's economy through tourism sector.
- 3.4.6. National target is of increasing exports of goods and services combined by at least twice from USD 478 billion in 2017-18 to USD 800 billion by 2022-23. NCR participating States has to work in line with the above target.
- 3.4.7. Recently, Govt. of India has launched "Self-Reliant India Movement Atmanirbhar Bharat" wherein MSMEs in NCR shall have to play a crucial role. The colossal presence of MSMEs in the region presents ample opportunities to lead the nation for achieving the target of Self-Reliant India. Further, NCR is catering to the intrinsic warehousing demand and is also a key storage and warehousing hub for the neighbouring states and North India. Development of well planned, integrated, and

interconnected Logistics corridors and Multi-Modal Logistics Parks (MMLPs) across NCR will help in accelerating the economic growth of the region

- 3.4.8. India is world's second largest producer of fruits & vegetables after China but shall have to increase its processed produce significantly from current level 25%. NCR with its total production of around 6690 thousand MT (2015-16) of fruits, vegetables and spices shall have to play a major role. With estimated demand of five million litres per day which is growing at an annual growth rate of 6-8 per cent, NCR is biggest milk market in the country. Thus, Agro & Food Processing Industries, having vital linkages & synergies between two major pillars of the economy i.e., agriculture and industry, will have to play a major role in economic growth of NCR.
- 3.4.9. E-commerce can be the driver of overall economic growth over the next decade through its impact on generating demand, expanding manufacturing, employment generation and greater transparency.
- 3.4.10. Circular economy has vast potential in the region due to availability of substantial number of solid wastes.

3.5. Policies and Proposals

3.5.1. General

- 3.5.1.1. Economy of NCR should be seen in a regional context bridging the imbalance between central NCR and the remaining portion with a particular reference to the role of housing (FSI, Low income and institutional development including education), corridor development, agricultural productivity, and marketing facilities.
- 3.5.1.2. It is critical to expedite the economic activity in the region to fully utilise the economic potential of Delhi, Central NCR, and rest of the NCR in the overall context of equitable, sustainable, and productive development of the region.
- 3.5.1.3. Multi-pronged strategy needed to be continued for balanced economic growth of NCR covering, (i) NCT Delhi, (ii) Central National Capital Region (CNCR) (iii) Highway Corridor Zone (iv) Conservation Zone (natural and manmade) and (v) Rest of NCR.
- 3.5.1.4. NCT Delhi shall continue to be the economic hub. However, in the coming two decades it is proposed that economic growth in NCT Delhi shall be led by vertical development including vertical factories and massive redevelopment of urban, commercial, institutional, residential spaces. Heavy industries shall continue to be banned in NCT Delhi, however, other industrial activities as permitted by the Delhi Pollution Control Authorities shall be encouraged.
- 3.5.1.5. Central NCR as a "Ring of Opportunity" should be used to trigger pace of economic development in the entire NCR. The belt of CNCR around NCT Delhi shall form the "Ring of Opportunity" for both NCT Delhi and rest of the NCR on either sides. The activities like logistic parks, multi modal transport hubs, ICDs, dry ports, recreational/ theme parks, specialized townships (like Medi-cities, tech-cities, Educities, etc.), skilling hubs, MSME clusters and other activities which are not only land extensive but also require support infrastructure, should be encouraged and permitted in these areas. Special emphasis should be given to service sector, logistic hubs and high value manufacturing sector (electronics etc.).
- 3.5.1.6. The strategy should give due cognizance to the important initiatives (programmes and schemes) such as extension of Delhi Metro to other towns, Eastern/Western peripheral expressways connecting Delhi with rest of NCR and corridor development under DMIC (Delhi Mumbai Industrial Corridor) and DFC (Delhi Freight Corridor) along with intensive economic development under TOD Zones. A list of key projects

holding economic significance for next 20 years for expeditious investigation and implementation is given at **para 3.5.13** below.

- In the Rest of NCR, the basic policy of Regional Plan for accelerated development of 3.5.1.7. both urban and rural areas will be implemented. Large Rural Investment Zones, special economic zones, heavy industries should be planned this area which can supply to and benefit from the logistic parks, ICDs, air cargo terminals, dry ports, etc. in the CNCR area. It is also proposed to introduce the concept of shot& medium term lease of land for 5-10 year instead of current 70 to 90 years industrial uses like successful global industrial production hubs in China, Vietnam, Taiwan, etc. and to reduce the burden of high land cost and simplify changes of industrial land uses. Such a system will also enable NCR to dynamically change its industrial production to adapt to fast changing global and domestic opportunities and impulses. Fast, efficient and affordable rail (RRTS, ORC OORC, New rail links etc.) road (Expressways, NHs etc.) and air connectivity to be provided in this zone. Physical and social infrastructure has to be substantially upgraded at local and regional level (both by State and Central Governments) in order to induce the growth in these areas, specifically in the settlements i.e., Metro Centres, Regional Centres, Sub Regional Centers, etc.
- 3.5.1.8. Inter-state tourism should be promoted for improved coordination and exchange of expertise and experience on productivity promotion in the rest of NCR.
- 3.5.1.9. Agricultural productivity and income should be improved through farmer /producer/APMC/marketing linkages using ENAM platform in a regional and pan India context to network and create stakeholders.
- 3.5.1.10. The potential of local government both rural and urban should be fully utilised in the economic development of the region.
- 3.5.1.11. Horizontal imbalance among the local bodies in terms of finances and services should be minimised through consuming its revenue potential and development of suitable revenue sharing mechanism covering the overall framework of the city and its neighbouring regions
- 3.5.1.12. Due attention be given to development of logistics in line with frame-work Wholesale Market policy documents of Ministry of Commerce, Govt. of India and follow up policies of Haryana and UP. These policy initiatives are likely to pave way for start-ups, incentives on investment, fiscal (stamp duty/electricity duty) concession, interest subvention, development of e-Market place, Retail Centres, Cross-regional trade, e-Commerce platform and viability gap funding.
- 3.5.1.13. NCR should have its own Integrated Logistics Action Plan (ILAP) in line with initiatives taken by respective states. NCR should also have NCR Logistics forum to coordinate activities of concerned stakeholders. Department of Commerce, Govt. of India can prepare ILAP and NCRPB along with NCR participating States can leverage this.

3.5.2. Growth through Collaboration (SDG 01, 08 and 17)

- 3.5.2.1. NCR be treated as a Unified Economic Space (UES) giving suitable coordination and synergy among political and legal entities (States, Districts, Local Bodies, etc.) with respect to interstate toll, pollution tax, regional taxes sharing etc. In this regard the concept of 'Common Economic Zone (CEZ)' and 'Special Component Plan (SCP)' for individual or multi sectors e.g., industrial clusters, logistics, tourism, etc. may be examined and explored.
- 3.5.2.2. NCR States may take necessary initiatives to achieve and go beyond the 8% GDP target of the country by 2025, simultaneously ensuring that growth is inclusive,

sustained, clean and formalized. In U.P sub region potential of districts Meerut (Industries), Muzaffarnagar & Bulandshahr (Agriculture) may be exploited. Further, districts like Shmali, Hapur & Bagapat need special focus for improving their GDP status. In Haryana sub-region Gurugram (IT, electronics & consultancy), Faridabad (manufacturing industries), Sonipat (Education & Food Processing), Panipat (industries), Karnal (Agro-Processing) may be exploited as per potential and district like Mewat (Nuh), Bhiwani, Charkhi-Dadri&Jind need special focus. Districts in Rajasthan sub-region Alwar & Bharatpur (Industries & tourism) be developed for tourism and space intensive Industries.

- 3.5.2.3. States may integrate their economic initiatives with the Central schemes of "Assemble in India for the world" and "Make in India", to help the country in achieving its target of raising the export market share to about 3.5% by 2025 and 6% by 2030 and accordingly work with a motto of "Make in NCR/ Assemble in NCR".
- 3.5.2.4. Possibilities of shifting economic activities like wholesale market, inter-state bus depots/ yards, etc. to peripheral areas from city centres, be explored and taken up.
- 3.5.2.5. Promote and support co-building industrial parks, for incubation &duplication in NCR.
- 3.5.2.6. Economy of NCR should be seen in a regional context bridging imbalance within and outside Central NCR (CNCR).

3.5.3. Development of Industries (SDG 08, 09, 12 and 17)

- 3.5.3.1. Promote in a planned manner the adoption of the latest technology advancements, referred to as 'Industry 4.0' (*refer Annexure-P-3.1*) in NCR, in order to contribute towards doubling manufacturing sector growth rate by 2025 as per national target.
- 3.5.3.2. Clusters such as Film City, Aero City (Jewar), Tech-City, Medi-City, Knowledge city, etc. be promoted and the development of new clusters be supported such as Clean-Tech innovation clusters, Creative Enterprise Zones, film, fashion and design clusters, and green enterprise cluster. New Industrial Estates⁶ (IEs) or Industrial Parks (IPs) or Industrial Areas (IAs) at Strategic Industrial Locations (SILs) be established across NCR Infrastructure deficiencies in existing IEs, should be addressed and all IEs across NCR should be equipped with modern support infrastructure & facilities.
- 3.5.3.3. Smart industrial estates be developed on the line of smart cities in NCR duly equipped with basic and much-needed amenities like common effluent treatment plants, water supply, wastage management system and transportation, along with labour houses.
- 3.5.3.4. Existing industrial estates/industrial parks/ industrial plots should be reenergised and redeveloped with rational land use conversion policies to enable new industrial investment. If needed mechanism for an Escrow Account can also be used. This model can be replicated for the existing industrial areas of NCR through redevelopment (*refer Annexure-P-3.2*).
- 3.5.3.5. In order to address land related issues, policy for Industrial Brownfield Redevelopment should be formulated by NCR States to reduce pressure on Greenfield land in NCR. Potential areas for redevelopment of Industrial areas in sub-region wise are Okhla&Badli in Delhi; Faridabad &Bahadurgarh in Haryana and Ghaziabad, Modinagar& Meerut in in Uttar Pradesh. New industrial estates should be developed in undeveloped districts like Baghpat, Mewat, etc.

⁶ Updated data related to industrial estates, parks, etc. is expected from DPIIT and will be updated once available.

- 3.5.3.6. Industrial clusters as identified for spatial dispersal of industrial base should be developed across NCR. In this regard, potential of small and medium towns should be specially investigated. Industries requiring large space/land can be located in the identified lower hierarchy of settlements where land, water and labour are cheap.
- 3.5.3.7. Promote Economic Hubs (EHs) like Integrated Cyber Hubs (ICHs) where facilities like food, shopping, etc. co-exists.
- 3.5.3.8. Central NCR be used as a focal point to trigger pace of economic development in rest of the NCR. Special emphasis be given to service sector and selective high value manufacturing sector like Electronics (ESDM) sector, etc. which needs to be linked with a network of subsidiaries operating in rest of the NCR. All proposed ESDM clusters should be developed in a time bound & planned manner (*refer Annexure-P-3.3 (A&B)*).
- 3.5.3.9. Necessary support be provided to IT companies in NCR for expansion/opening of new branches. They may be encouraged to locate in Central NCR and on major transit nodes in rest of the NCR.
- 3.5.3.10. NCR States may align their policies for getting higher FDIs in collaboration of concerned Central Ministries/ Departments.
- 3.5.3.11. With the objective of being competitive and leveraging international trade agreements, NCR States may harmonize their quality standards for all sectors with global standards. States may collaborate with BIS and QCI and assess improvements in standards and productivity required.
- 3.5.3.12. Efforts be made by the NCR States to crate support infrastructure for encouraging e-Commerce/ e-Business.
- 3.5.3.13. MSMEs mega parks and manufacturing clusters in labour intensive sectors with common facilities be setup to reduce costs and improve quality. MSMEs should be facilitated through Pradhan Mantri Mudra Yojana.
- 3.5.3.14. State governments may set up plug and play parks (flatted factories) as per international productivity standards. Workers of industrial units in new mega parks be provided accommodation within reasonable proximity to the workplaces.
- 3.5.3.15. Circular economy concept be adopted for possible convergence to minimize environmental and health risks. Few highlights of Circular Economy in India are provided at *Annexure-P-3.4*.
- 3.5.3.16. Agro-Food Processing Parks including dairy and Export Zones be developed and promoted in NCR as per appropriate district potential with special focus in U.P & Rajasthan sub-regions, in line with the initiatives of Haryana. These be equipped with the state of art facilities and infrastructure. Ministry of Food Processing Industries, Govt. of India and NCR States have already identified certain areas for Food Processing Parks (*refer Annexure-P-3.5*). More such parks may be developed to harness the potential of vast agricultural area & agro-produces in NCR.
- 3.5.3.17. "Growth Corridors and Opportunity Areas" as identified/ mapped (*refer Annexure-P-3.6*) based on Industrial corridors & Economic hubs following the spatial network which is driven by development poles and supported by axes be developed on priority ensuring that identified growth potential is fully realized. Concentric circular rings i.e. (a) E&W peripheral Expressway (b) Panipat-Shamli-Meerut-Jewar-Nuh-Bhiwadi-Rewari-Jhajjar-Rohtak-Panipat and (c) Karnal- Muzaffarnagar Gharmukhestwar-Naraura-Aligarh-Mathura-Deeg-Alwar-Mahendragarh-CharkhiDadari-Bhiwani-Jind-Kaithal-Karnal, be developed as economic corridors of the region.
- 3.5.3.18. Table 3.2 shows sector–specific recommendations for generating employment opportunities in Delhi NCR.

S. No.	Sector	Recommendations
1.	Agro-based and Food Processing Industry	 Food testing laboratories in Haryana sub-region. Fruit and Vegetable Processing Park in Bulandshahr and Jhajjar for horticulture produce. Oil seed processing units in Bharatpur. Sugar Industry Muzzafarnagr and Shamli Dairy industry in Meerut and Bulandshahr Rice mills/ peddyproccsingHapur-Philkhuwa Paripat
2.	Electronics and Information & Communication Technology	 Considering the gap between number of approved and operational IT/ITES SEZs in NCR, it is recommended that appropriate policy interventions are made for operationalization of the approved SEZs to boost export. Software Development in NCT-Delhi, Gurgaon, Alwar and Noida (need intensification especially in case of NCT-Delhi).
3.	Automobiles & Automotive Components	 Induced cluster at IMT Manesar and Bawal for automobiles and auto components (need skilled manpower and infrastructure like workers' hostel etc.) Adequate level of support infrastructure, including forward and backward linkages, is to be established for the Auto-Park (e.g., upcoming Auto-Park at Alwar) and Research Institutes (e.g., upcoming National automotive testing, research, and development infrastructure project in Haryana). Infrastructure support for auto component for Faridabad, Gurgaon, NOIDA, Meerut and Alwar.
4.	Handloom, Hosiery, Textile and Garments Manufacturing	 Apparel park in Gurgaon SEZ and at Barhi (Sonepat) under the Apparel Park for Exports Scheme of Government of India. International Trade and Convention Center at Panipat. International Trade Center at Gurgaon for promotion of garments. Textiles Park in Alwar District. Dyeing Houses in Faridabad and Ghaziabad Districts. Textile Skill Development Centre at Okhla. Handloom in Bagapat, Hapur-Philkhuwa
5.	Footwear, leather garments and accessories	 Infrastructure for leather development at Bahadurgarh, Haryana. Alwar (Ramgarh/ Rajgarh)
6.	General Engineering	 Infrastructure development for general engineering (Faridabad, NOIDA, Gurgaon).
7.	Logistics	 Considering the DFC and the DMIC projects which includes part of Haryana and Uttar Pradesh sub-regions, it is recommended that logistics infrastructure such as Inland Container Depots (ICDs), Container Freight Stations (CFS), Integrated Freight Complexes be set up in these sub-regions at strategic locations. Multi-Modal Logistics Hub (IMLH) at Nangal Chaudhary, Mahendragarh Key districts: Jhajjar, Sonipat, Gurugram, CharkhiDadari, Ghaziabad, GB Nagar, Bulenshahr, Bagapat, Alwar
8.	Tourism and Hospitality	• Alwar, Bharatpur, Hapur (Garmukteswar), Gurugram, Hastinapur (Meerut), Karnal, Muzzafarnagar
9.	Medical and Health Support Services	Noida, Ghaziabad, Gurugram, Faridabad, Rewari, Meerut.
10.	Construction sector	Gr. Noida, YEIDA, Ghaziabad, Gurugram, Faridabad, Sonipat
11	Circular economy including material/waste recovery facilities, C&D, e-waste, steel recovery	• Bagapat, Bulendshar, Nuh (Mewat), Jhajjar, Alwar/ Bharatpur.

Table 3.2 Sector-specific recommendations for generating employment opportunities in Delhi NCR

S. No.	Sector	Recommendations
	from end-of-life Vehicles.	

Source: Functional Plan for Economic Development of NCR (2016) and market research

3.5.3.19. Table 3.3 shows cluster-specific recommendations for generating employment opportunities in Delhi NCR.

S. No.	Sector	Recommendations		
1.	Auto-Component (Meerut, Gurgaon, Faridabad, and Noida)	There is a strong requirement for technological up-gradation. In most units, simple cutting and drilling machines are being used. Since most units are either micro or small, full automation of the machines has not happened. There is a possibility of introducing advanced equipment, improve shop floor practices, induce quality systems, and promote standardization.		
2.	Handloom and Power loom (Panipat and Meerut)	The cluster needs inputs in design, worker's skill up-gradation and improved dyeing practices. Moreover, there are existing institutional systems to help this cluster and involvement of other development agents may be less efficient to induce use of new technology by leveraging on the Technology Up-gradation Fund (TUF) scheme, but the cluster may need support for a very long duration considering that it has practically no direct market linkages and is less productive compared to other similar clusters.		
3.	Sports Goods (Meerut)	The cluster has immense scope for technical upgradation within the existing set of manufactured items. Even greater scope lies in diversifying to newer sports segments. Thus, there is a huge scope for promotion of productivity in this cluster. However, several attempts for development have already been done/ are ongoing and there is already a technical institute dedicated for this purpose.		
4.	Textiles (Okhla, Gurgaon)	 The main focus would be quality improvements, technological up-gradation, skill enhancement and encouraging the entrepreneurs to be a member of global supply chain. The following soft activities are suggested: cutting Room Layout and workflow lean manufacturing quality of management Production improvement plan (technology adoption). 		
5.	General Engineering (Faridabad, NOIDA, Gurgaon)	General engineering sector is the backbone of NCR economy and industries are present in major concentration at above mentioned three locations. Most of the units are MSME nature and require support in the areas such as marketing initiatives, technology, and availability of raw materials.		
6	Pottery	Khurja, Mewat		
7	Handicraft	Alwar (Murti/Sculpture), Rewari (Brash ware), Mewat (Crochet)		
8	Toys	Meerut, Greater Noida, Sonipat.		

Source: Functional Plan for Economic Development of NCR (2016) and Market research

3.5.4. Enabling Infrastructure (SDG 01, 03, 04, 08, 09, 11, 12 & 14)

- 3.5.4.1. Provide 24x7 quality power to all by 2025. Mandatorily promote smart grid and smart meters across NCR. Support Govt. initiative for expediting establishment of National Gas Grid and promote city gas distribution to provide piped natural gas (PNG) in entire NCR.
- 3.5.4.2. Adequate investment/fund allocation be made on the infrastructure, necessary to support region's businesses, including highways, transit, dry ports, airports, high speed broadband and wireless internet, and pipelines.
- 3.5.4.3. Enhance capacity & efficiency of warehouses and their operations. Possibilities of converting existing warehouses into multi-storied ones to store multiple commodities

at the same time be explored to achieve increased warehousing space. Panipat-Shamli-Meerut-Jewar-Nuh-Bhiwadi-Rewari-Jhajjar-Rohtak-Panipat corridor may be given special emphasises for the development of warehousing & logistic infrastructure.

- 3.5.4.4. Warehousing be given industrial status and the process of approval should be simplified and made time bound.
- 3.5.4.5. Develop multimodal logistics parks (MMLP) and dry ports to ensure seamless movement of freight. Setting up multimodal logistics parks will help address issues related to underdeveloped logistic infrastructure, an unfavourable modal mix and connectivity. In this regard, following should be done:
- 3.5.4.6. Geo-tagging of all warehousing.
- 3.5.4.7. Viability Gap Funding (VGF) shall be provided for setting up of warehousing at the block / taluk levels on PPP mode. Food Corporation of India, Central Warehousing Corporation shall also offer their land for this purpose.
- 3.5.4.8. Refrigerated vans shall be attached to passenger trains to promote quick movement of perishables.
- 3.5.4.9. Krishi trains shall also be run on PPP mode.
- 3.5.4.10. Krishi Udan scheme shall be promoted / launched whereby horticulture and perishable commodities shall be transported through the air-route.
- 3.5.4.11. Cluster approach shall be adopted for promoting horticulture.
- 3.5.4.12. Financing of negotiable warehousing receipts would be encouraged and also its integration with e-NAM
- 3.5.4.13. The implementation of key projects identified under NIP for NCR participating States (refer **Annexure-D-3.2**) should be implemented on property which included the following:
- 3.5.4.14. Healthcare, Education and Skilling: Construction of AIIMS and medical institutes, IITs, Central Universities, NITs, IIMs, IISc, IISERs, MHRD institutions, better school infrastructure, regional institute of education, upgradation of government medical colleges, setting up of special education and research blocks at government hospitals.
- 3.5.4.15. Transportation and logistics: Delhi-Mumbai Expressway, Dwarka Expressway and Trans Haryana North-South Expressway, New airports at Jewar, modernization and expansion of airports.
- 3.5.4.16. Agriculture: Conversion of rural haats into GrAM, agri-market infrastructure, computerization of primary agricultural credit societies, testing facilities, creation of cold chain facilities and mega food parks,
- 3.5.4.17. Urban & Rural Infrastructure: Affordable housing, mass rapid transit system, Smart City Mission, AMRUT, Jal Jeevan Mission, all rural households to have toilets and all villages to be ODF.
- 3.5.4.18. Improve connectivity by accelerating completion of proposed, planned infrastructure projects including those under implementation such as DMIC, AKIC & DFC, Delhi-Mumbai Expressway, etc.
- 3.5.4.19. Tourism infrastructure projects, involving investment of Rs. 1 crore be recognized as 'infrastructure' and necessary amendment be made to enable promoters to avail loans on a priority basis.
- 3.5.4.20. All-inclusive up skilling and training centres with sector specific programme be planned at district level with the support of NSDC.

3.5.5. Skilling

- 3.5.5.1. Hospitality, tourism guide, health (elderly care, para medical staff), R&D, construction support staff (domestic and managerial staff).
- 3.5.5.2. Skill coordinator at every village (above 2000 population) and every ward who would liaise with all skill councils and also with Migration Facilitation centre of the district.

3.5.6. Technology and Innovation (SDG 08, 09 AND 17)

- 3.5.6.1. NCR to aspire to be a leading Global Innovation hub, to enable the country to be amongst the top 50 nations in the Global Innovation Index by 2022-23. At least existing 10 of NCR Scientific Research Institutions (SRIs) may be amongst the top 100 in the world (*refer Annexure-P-3.7*).
- 3.5.6.2. Establish R&D centers for manufacturing and Incubation Centers (ICs) in all Metro and Regional centres in NCR.

3.5.7. Travel, Tourism and Hospitality (SDG 08, 11 AND 12)

- 3.5.7.1. Make NCR the first choice for domestic and foreign tourist visitors by improving the overall experience through excellent tourist infrastructure, facilities, and hospitality services. Efforts may be made in the direction of upgrading existing infrastructure and leasing out the maintenance of such infrastructure to private players and developing new destinations using PPP model.
- 3.5.7.2. A mega project initiative to develop 100 "Smart Tourist Destination Sites" showcasing theme-based museums, heritage and natural sites in NCR may be taken jointly the Central & NCR Participating States. These may include at least 2-3 "World Class Museums" drawing from world class museums such as Bilbao or the Asian Civilization Museum in Singapore.
- 3.5.7.3. Plan and develop 4-5 globally competitive and world-class Tourism circuits from entry to exit. Policy guidelines regarding tourism sector be referred in specific Approach Paper on "Tourism and Heritage" in this regard.

3.5.8. Farmers Income (SDG 01, 02, 08, 10, 12 AND 13)

- 3.5.8.1. Support extensive use of ENAM platform in a regional and pan India context, through training and awareness campaign.
- 3.5.8.2. Modernize agricultural technology to increasing efficiency & productivity. Efforts be made towards expansion of area under fruits and vegetables and livestock products as they offer better income.
- 3.5.8.3. Promote recycling and utilization of agricultural waste.
- 3.5.8.4. Promote emergence of 'agripreneurs' so that small and marginal farmers can capture a higher share of value addition.
- 3.5.8.5. Encourage states to adopt the Model Contract Farming Act, 2018. Contract farming can be thought of as a form of price futures. The contract will specify the price and quality at which the farmers' produce will be purchased.
- 3.5.8.6. States may develop export-oriented clusters containing a functional, end-to-end cold chain system along with processing facilities with the assistance of APEDA.

3.5.9. Employment and Labour force (SDG 05, 08 AND 10)

3.5.9.1. State may take joint initiative to create a "Job-Portal of NCR' and Migration Facilitation Centres (MFCs) wherein perspective employers & employees can share their details and interact. There should be a Pan NCR Job/ Employment Portal. Delhi

has initiated a "Rojgar Bazaar Portal". Govt. of India has launched ASEEM Portal (Atamnirbhar Skilled Employees Employer Mapping), a subset of this portal be created for NCR.

- 3.5.9.2. Implement development strategies and policies set by the Central Government to generate sufficient jobs for new entrants into the labour force. A large part of jobs would hopefully be generated in labour-intensive manufacturing sectors, construction, and services. In addition, employability of labour needs to be enhanced by improving health, education and skilling outcomes and a massive expansion of apprenticeship scheme.
- 3.5.9.3. For improvement in NCR female LFPR be targeted to be at least 30 percent by 2022-23 in line with the 'NITI Aayog Strategy for New India @ 75' and this is to be further increased to 35 percent by 2025.
- 3.5.9.4. Encourage increased formalization of the labour force by reforming labour laws, easing of industrial relations and ensuring of fair wages, working conditions and social security through significant productivity improvements in the economy.
- 3.5.9.5. NCR states to take necessary actions that generate about 10-15% (7-10 lakh) of the total job requirements as estimated by the NITI Aayog Report (2019) for the country. In NCR major employment generating sectors are banking, construction, financial services, fast moving consumer goods (FMCG), human resources (HR), manufacturing, advertising, event management, real estate, retail and telecom. This shall be enabling NCR to become a major employment hub, capitalizing on its demographic dividend, well-paying & high productivity jobs.
- 3.5.9.6. To protect vendors' livelihood rights and social security, a 'Plan for Street Vending' be prepared by every local body as also mandated in the "Street Vendors Act, 2014". The plan should contain, inter-alia, earmarked vending zones, spatial norms for street vending, covering existing as well as accommodating future growth in the number of vendors. In this regard, necessary amendments be made in the existing Master Plans/Development Plans, Zonal Plans, etc. and steps be taken towards regulation of street vending in the Region, to provide respite to street vendors from undue harassment and help them carry out their business peacefully.

3.5.10. Ease of Doing Business (EoDB)

- 3.5.10.1. Concept of Ease of Doing Business (EoDB) be developed in NCR. These may include aspects such as Starting a business, construction permits, power connections, property registration, credit availability, etc. List of suggestive indicators as per World Bank are placed at **Annexure-P-3.8**.
- 3.5.10.2. Introduce a 'single window' (SW) system in all sectors for all government permissions which shall act as a single point of contact between investor and government based on stakeholder consultation and facilitate required licences and approvals accordingly.
- 3.5.10.3. For efficient approval/ inspection process, a system of accountability may be developed for major stakeholders like inspection bodies, testing labs, etc. on a digital platform.
- 3.5.10.4. States to ensure the seamless integration of the Shram Suvidha portal and State agencies' portals for all labour related matters.
- 3.5.10.5. Provide access to digital payment services and its necessary training to help increase its penetration across NCR. Simultaneously, implement the payments of wages through cheque or Aadhaar-enabled payments for all as mandatory by 2025.

3.5.11. Mapping and Data Management

- 3.5.11.1. Economic development blue prints of NCR be prepared / mapped based on existing potential.
- 3.5.11.2. NCR States may detail out and sustain Strategic Industrial Locations (SILs) to intensify and make more efficient use of land. Simultaneously, Industrial location policy for NCR should be prepared.
- 3.5.11.3. For better planning and ease of environmental clearances, all concerned in the subregions should adopt the system of using Geographic Information System (GIS) based maps at all levels to create pre-approved land banks for manufacturing facilities. In such designated land banks, standards can be clearly laid down in advance relating to (i) environmental requirements (ii) building byelaws, and (iii) safety and other norms.
- 3.5.11.4. More policies which are also to be elaborated/ detailed out in Sub-Regional Plan and local level plan like Master/ Development Plans, etc. are given in *Annexure-P-3.9*.

3.5.12. Major Projects & Implementation Strategies

- 3.5.12.1. NCR participating States to develop necessary policies/ amendments/ initiatives for enabling the region to become a 'Common Economic Zone (CEZ)', by 2026
- 3.5.12.2. All NCR States should come up with Circular Economy schemes/ initiatives especially about Cities & Construction, Food & Agriculture and Mobility & vehicle manufacturing, by 2023. Organizations can adopt five distinct models to introduce circular initiatives in their operations: (i) Circular Supply Chain, (ii) Recovery & Recycling, (iii) Product Life Extension, (iv) Sharing platform, & (v) product as a service.
- 3.5.12.3. State may initiate steps to enable Tourism projects, involving investment of Rs. 1 crore, or more, to be consider eligible for 'infrastructure landing' by banks and financial institutions, by 2022.
- 3.5.12.4. Inter-State Coordination Committee (ISCC) of Principal Secretaries and other stakeholders on the lines of CoTS for coordination of implementation of economic policies and proposals should be constituted at NCRPB level, to promote regional economic development through improved coordination and exchange of expertise and experience on productivity promotion across NCR.
- 3.5.12.5. Integrated Logistics Action Plan (ILAP) for NCR should be prepared by Logistics wing of the Department of Commerce, Govt. of India. NCRPB can leverage through the proposed ISCC which can also create a NCR Logistics Forum to coordinate activities of concerned stakeholders.
- 3.5.12.6. Special allocation in NIP should be worked out by the NCR States in consultation with the Department of Economic Affairs, Ministry of Finance, Govt. of India Government for the development of infrastructure in the region.
- 3.5.12.7. The respective line Ministries/Departments may finalize the Action Plans and the implementation timelines along with a monitoring mechanism to monitor implementation of projects in NCR under "12 Champion Services Sectors" under the overall guidance of the Committee of Secretaries (CoS) under Cabinet Secretary as mandated by the Department of Commerce, Govt. of India.
- 3.5.12.8. Potential of ULBs and PRIs (local government) should be fully utilised to achieve overall economic development of the region. In this regard, horizontal imbalance among the local bodies in terms of finances and services should be minimised through revenue sharing mechanism covering the overall framework of the city and its neighbouring regions.

- 3.5.12.9. For efficient approval/ inspection process, a system of accountability may be developed for major stakeholders like inspection bodies, testing labs, etc. on a digital platform. This should be taken up as one of the priorities for NCR in collaboration with MeitY and its knowledge partners.
- 3.5.12.10. NCR States should follow up to expedite implementation of respective stretch of Delhi Mumbai Industrial Corridor (DMIC) and Amritsar Kolkata Industrial Corridors (AKIC) and DFC, etc.
- 3.5.12.11. Govt. U.P should work on the line of Govt. of Haryana for establishing remaining Orbital Rail Corridor part in UP Sub-region.
- 3.5.12.12. NCR States may explore possibilities of developing Film City (a world class integrated Film Studio Complex) in NCR on the lines of 'RAMOJI FILM CITY'. This shall include necessary infrastructure state-of-the-art facilities for film shooting and post-production and to provide centralized services to regional filmmakers and attract other domestic and foreign filmmakers to shoot films in NCR.
- 3.5.12.13. The major weaknesses of public funded R&D and technology institutions like CSIR, DRDO, ICMR and ISRO are their poor marketing skills and information dissemination. Some measures for enhancing technology commercialization by public funded institutions are:
 - a) Value addition centres may be set up in each of these institutions for (i) up-scaling technologies, (ii) improving technologies from Technology Readiness Level (TRL) 4 to TRL 6/7, (iii) demonstrating industrial scale pilot production, (iv) coordinating with investors to incubate entrepreneurs, (v) bridging the gap between industry and technology development teams, (vi) enabling formal technology transfer, (vii) enabling commercialization and marketing and (viii) providing technology support during production.
 - b) National Technology Data Bank should be created in NCR in coordination with all publicly funded R&D institutions. This will provide a central database for technologies that are ready for deployment or under development.
 - c) Public funded research institutions should consider shifting their focus to the development and deployment of socially relevant technologies in areas such as clean drinking water, sanitation, energy, affordable healthcare, organic farming, etc. These technologies have large potential for commercialization.

3.5.13. Key projects

3.5.13.1. Specific projects envisaged to be taken up in NCR regarding Economic Growth and Employment Generation are given at Table 3.4 below, but not limited to:

S No	Bronogod Brojects/Bolicies	Phase –I	Phase –II	Phase –III	Phase –IV
5. NU.	r roposed r rojects/r oncies	(2021-26)	(2026-31)	(2031-36)	(2036-41)
	Projects for shifting economic	To be			
	activities like wholesale market,	undertaken in			
1.	inter-state bus depots/ yards, etc. to	All Metro and			
	peripheral/ peri-urban areas from	Regional	-	-	-
	city centers and provide necessary	Centers by			
	support infrastructure.	20026			
2.	Projects for developing Industrial clusters like Film City, aero city (Jewar), Hisarairport,Tech-City, Medi-City, Knowledge city, etc.	At least one ineach district Headquarter	Development of remaining areas	-	-

Table 3.4 Key projects envisaged to be taken up in NCR (2021-2041)

S. No.	Proposed Projects/Policies Phase –I Phase (2021-26) (202		Phase –II (2026-31)	Phase –III (2031-36)	Phase –IV (2036-41)
	(Industrial Clusters/ Cities like	(2022 20)		(2001 00)	(2000 11)
	Panchgram& YEIDA, etc.)				
3.	Projects be prepared for up- gradation of existing Industrial Estates/ Parks into Smart Industrial Estates/ Parks with a motto of "Make in NCR/ Assemble in NCR".	At least 50% of existing Industrial Estates/ Parks	Reaming existing Industrial Estates/ Parks	-	-
4.	Projects for the development of ESDM clusters and making them fully operational	To be done by 2023	-	-	-
5.	Projects for development of MSMEs mega parks and manufacturing clusters	At least one in each district	-	-	-
6.	Projects for setting up plug and play parks (flatted factories) as per international productivity standards.	At least one in each district	-	-	-
7.	Projects for development of Mega Agro-Food Processing Parks including dairy and Export Zones	At least one in each District	-	-	-
8.	Check viability of the projects for developing the Concentric circular Rings as Economic Corridors: (a) E&W peripheral Expressway (b) Panipat-Shamli-Meerut-Jewar- Nuh-Bhiwadi-Rewari-Jhajjar- Rohtak-Panipat, and (c) Karnal-muzaffarnagar- Gharmukhestwar-Naraura-Aligarh- Mathura-Deeg-Alwar- Mahendragarh-CharkhiDadari- Bhiwani-Jind-Kaithal-Karnal	To be done by 2031		-	-
9.	Projects for identification and development of Multimodal Logistics Parks (MMLP) and Dry Ports	To be done by 2026	-	-	-
10.	Projects be developed to upgrade at least 10 Scientific Research Institutions	At least one in each sub- region by 2023	Reaming 06 by 2031.	-	-
11.	Projects be developed for Establish R&D centers for manufacturing and Incubation Centres (ICs)	To be develope Regiona	ed in Metro and l centers	-	-
12.	Develop 100 "Smart Tourist Destination/Sites" showcasing theme-based museums/ virtual museums', heritage and natural sites	Develop at least 25 "Smart Tourist Destination/Sites" in each sub-region, in line with Smart Cities & HRIDAY initiatives of MoHUA, PRASAD scheme, etc. with continuous Up- gradation/ Augmentation of capacities for increased number of tourists.		Development o	of remaining
15.	Projects to create Street Vending	To be done in	-	-	-

S No	Proposed Projects/Policies	Phase –I	Phase –II	Phase –III	Phase –IV
5. 110.	1 Toposeu 1 Tojects/1 oncies	(2021-26)	(2026-31)	(2031-36)	(2036-41)
	Zones in each city/ town in line with the Street Vendors Act, and Plan.	all urban areas across NCR by 2024			
14.	Development of Migration Registration/ Facilitation centres (MFCs) and Skill Mapping	To be implemented in all Metro and Regional centers and districtsHqs.	To be implemented in remaining Cities and large rural settlements (above 2000 population)/ Rurban Cluster	-	-
15.	Expedite development of Jewar International Airport	To be developed by 2031		-	-
16.	NCRTC to expedite implementation of prioritized RRTS corridors.	By 2	2031	-	-
17.	Govt. of Haryana to coordinate and implement Orbital Rail Corridor	-	-	-	-
18.	India International Convention & Expo Centre (IICC, Dwarka)	Proposed to be developed by 2025	-	-	-

Chapter 4 TRANSPORT AND MOBILITY

4.1. Introduction

- 4.1.1. Transport and Mobility are crucial drivers of economic and social development, bringing opportunities for the poor and enabling economies to be more competitive. Transport infrastructure connects people to jobs, education, and health services; it enables the supply of goods & services and allows people to interact and generate the knowledge and solutions that foster long-term growth.
- 4.1.2. While transport is crucial for the economy, mobility is central to the whole of society. It allows people to connect with places and shapes the lives. With growing aspiration for mobility and the strong association between transport and economic growth, getting the pattern of mobility "right" has become a defining factor of the future. To be truly transformational, transport needs to be viewed as a system and future of transport needs to balance a wide range of considerations.
- 4.1.3. In a future where mobility is sustainable, cites and remote communities in rural areas will all be connected to jobs, markets, and social opportunities. Transport will become the lifeline for all vulnerable groups, including women, the youth and the elderly, persons with disabilities, and the poor, as transport services will reach them all. Sustainable transport and mobility are fundamental to progress in realizing the promise of the 2030 Agenda for Sustainable Development and in achieving the 17 Sustainable Development Goals.
- 4.1.4. Increased investment in infrastructure, last-mile connectivity, and emerging technologies are streamlining the logistics landscape in India. Strong growth supported by government reforms, transportation sector development plans, growing retail sales, and the e-Commerce sector are likely to be the key drivers of the logistics industry in India.
- 4.1.5. According to ASSOCHAM study, logistics cost is 14% of country's GDP which is much higher than peers like US, Europe, and Japan and as per Department of Commerce, GoI, there is a tremendous scope to improve current logistics baseline.
- 4.1.6. Transportation aspect in NCR demands a holistic view, covering environment, infrastructure, technology, investment, employment, and innovation aspects. The broad objective for transport sector development would be to provide an adequate, accessible, and affordable Integrated Multi Modal Transport System in NCR to cater for the needs of passengers, goods, and services in an equitable and sustainable manner to make NCR future ready.
- 4.1.7. Adequate mobility facilities are a key for harmonious development of a region and transportation system is a great enabler. Various schemes have been implemented by the Central Government to address the issue of core connectivity in rural and urban regions in the country. Some of the few important initiatives are outlined below:
- 4.1.8. The Pradhan Mantri Gram Sadak Yojana was launched in 2000, with the aim of providing good all-weather road connectivity to unconnected villages across the country. Of the 178,184 habitations with a population of above 500 in the plains and above 250 in the hilly areas, about 90% were already connected so far. The scheme has successfully integrated isolated hamlets into the larger economy.

- 4.1.9. The Pradhan Mantri Gram Parivahan Yojana was launched in 2016 to improve rural mobility by plying subsidized public transport (10-12-seater vehicles) on rural roads. The scheme is aligned with Pradhan Mantri Gram Sadak Yojana and is aimed at regulating rural transport service.
- 4.1.10. The government has launched the Aajeevika Grameen Express Yojana (AGEY) wherein self-help groups under the National Rural Livelihoods Mission (NRLM) will operate safe, affordable and community monitored road transport services to connect remote villages with key services and amenities (such as access to markets, education, and health)
- 4.1.11. As per the Smart Cities Mission (2015) of MoHUA, some of the core infrastructure elements in a Smart City include efficient urban mobility & public transport; sustainable environment; safety & security of citizens, particularly women, children, and the elderly; robust IT connectivity & digitalization; good governance, especially e-Governance & citizen participation; and assured electricity supply, etc. amongst others.
- 4.1.12. Atal Mission for Rejuvenation and Urban Transformation (AMRUT) launched by MoHUA in 2015, aims to provide basic services including urban transport and build amenities in cities which will improve the quality of life for all. The purpose of AMRUT is also to increase the amenity value of cities by developing greenery and wellmaintained open spaces (e.g., parks) and reduce pollution by switching to public transport or constructing facilities for non-motorized transport (e.g., walking and cycling).
- 4.1.13. Realizing the rapidly growing problems of Urban Transport, Government of India has formulated the National Urban Transport Policy (NUTP) in 2006 which was revised in 2018. Further, MoHUA has formulated Toolkit for Comprehensive Mobility Plan (CMP) (revised in 2014) and Term of Reference for preparation of Comprehensive Mobility Plan (CMP) in 2018.
- 4.1.14. MoHUA constituted an Expert Committee to make recommendations for a Transit Fare Collection system based on a Common Mobility Card, Vendor Agnostic-based on standard interfaces, be Indigenous. National Common Mobility Card (NCMC) is an inter-operable transport card conceived by the MoHUA launched in March 2019. The operator of this is National Payment Corporation of India (NPCI) and is being managed by MoHUA. NCMC is valid in all public transport systems, Toll Roads, ATMs, etc.
- 4.1.15. For implementation of RRTS, NCR Transport Corporation (NCRTC) has been established as a Govt. Sector Company which has undertaken the execution of first phase RRTS corridor i.e., Delhi-Gaziababd-Meerut, Delhi-Panipat, Delhi-Rewari-SNB-Alwar with spur from Shahjahanpur-Neemrana- Behror Complex to Sotanala.
- 4.1.16. The Cabinet Committee on Economic Affairs, GoI has approved the 121-km Haryana Orbital Rail Corridor (ORC) project connecting Palwal to Sonipat via Sohna-Manesar-Kharkhoda at an estimated cost of Rs.5,617 crore and to be completed by 2025. The rail corridor is expected to improve regional connectivity and decongest Delhi/NCR and will help in developing multi-modal logistics hubs in region. Besides, the Government is also going to come up with a 'National Rail Plan' to enable the country to integrate its rail network with other modes of transport and develop a multi-modal transportation network.
- 4.1.17. In order to achieve unrestricted movement of buses, taxis, & auto-rickshaws within the region, NCRPB has been instrumental for signing of a 'Reciprocal Common Transport Agreements (RCTA)' for 'Contract Carriage' and 'Stage Carriage' amongst all NCR participating States and the RCTAs are operational.
- 4.1.18. The Ministry of Civil Aviation launched Regional Connectivity Scheme called "UDAN" (Ude Desh ka Aam Naagrik) in 2017, to provide low-cost connectivity in

currently underserved/ unserved areas both for semi-urban and core rural regions. The scheme aims to operationalize new routes for increasing air connectivity. Hindon Airport Gaziababd has been developed under this scheme.

- 4.1.19. Govt. of India has given approval for develop of international airport at Jewar. The implementation of this project will enhance the air connectivity of NCR internationally.
- 4.1.20. Under the National Waterways Act, 2016, a total of 111 waterways have been declared as National Waterways (NWs). Under Pradhan Mantri Jal Marg Yojana (PMJMY) to increase the modal share of passenger and freight traffic, through cheaper transportation and improved regional connectivity, NW 110 is proposed to be developed on Yamuna River with total length of 1089 which will be covering NCR States of Haryana, U.P. and NCT Delhi.
- 4.1.21. MoHUA has notified the National Transit Oriented Development (TOD) Policy 2017, with the objective of encouraging compact mixed-use development which reduces the need for travel and improve the access to public transport.
- 4.1.22. Ministry of Commerce and Industry has launched the National Logistics Policy (Annexure-D-4.1) with a vision to drive economic growth and business competitiveness of the country through a truly integrated, seamless, efficient, reliable, cost effective and green & sustainable logistics network, leveraging best in class technology, processes, and skilled manpower.
- 4.1.23. In its efforts towards seamless digital transaction amongst various transport sectors and making train travel more rewarding, Ministry of Railways launched the National Common Mobility Card (NCMC) based contact less credit card, in July 2020 which provides benefits such as 10% value back on train bookings, waiver of 1% transaction fee and fuel surcharge etc. to start with. This IRCTC SBI RuPay Card is a major step towards Digital India endeavour.
- 4.1.24. A brief of some major Govt. initiatives related to transport and mobility sector is provided at Annexure.D-4.2.

4.2. Existing Status

4.2.1. Road Network

- 4.2.1.1. The existing transport network in National Capital Region is largely on 'radial' pattern. It comprises of Expressways, National Highways, State Highways, Major District and Other District roads (refer Annexure D-4.3 for Existing Road Network).
- 4.2.1.2. Five National Highways (erstwhile NH-1, 2, 8, 10 & 24) converge on Ring Road of Delhi and one Highway (erstwhile NH-58) meets NH-24 at Ghaziabad. In addition, erstwhile NH-71, 71-A, 71-B, NH-91 and NH-119 also pass through the region Delhi Meerut Expressway is under construction.
- 4.2.1.3. Apart from these National Highways, some state highways also serve in strengthening the regional road network. Other than these highways, MDRs and ODRs also act as important linkages among these highways. The region and sub-region wise road network lengths in the NCR are presented in Table 4-1 & Table 4-2.

Category of Roads	Haryana	Uttar Pradesh	Rajasthan
Expressway	47	273	-
National Highway (NH)	961	593	311
State Highway (SH)	3469	660	1247
Major District Road (MDR)	893	499	503

Table 4-1 Sub-Region Wise Road Network in NCR (Other than NCT Delhi)

Category of Roads	Haryana	Uttar Pradesh	Rajasthan
Other District Road (ODR)	10223	31849	918
Village Roads	1455	6085	7370
Total Roads	17048	39958	10350

Table 4-2 Category wise- road density (kms.) per 100 sq. kms of area and per 1000 people (Other than NCT Delhi)

Sub Region	Length (kms)	Area (sq. kms)	Road Density (kms) per 100 sq. kms	Population (2011)	Road Length per 1000 people
Haryana	17048	25327	67.31	21099559	0.80
Uttar Pradesh	39958	14826	269.51	29192777	1.37
Rajasthan	10350	13447	76.97	9506695	1.09
NCR	67356	53600	125.66	59799031	1.13

Source: NCR Monitoring and Planning Cell, Govt. of Haryana, Govt. of Uttar Pradesh, and Govt. of Rajasthan

4.2.2. Railway Network

- 4.2.2.1. The railway network in NCR consists of complex rail radials and hubs which have got developed over the last hundred years. It serves the National capital New Delhi and operates as a transit point for passengers and freight volumes moving between Punjab, Haryana, Himachal, J&K and Rajasthan on one side and rest of the country on the other. Eight Railway lines connecting Delhi and the NCR are collectively served by about 180 trains (85 mail/express, 34 passenger and 61 EMUs) between Delhi and the NCR Towns (refer Annexure D-4.4 for Existing Rail Network and EMUs).
- 4.2.2.2. Table 4-3 and Table 4-4 presents the details of existing rail network serving the NCR.

Sub Region	Type of Network	No. of Stations	Length (Kms)
Haryana	Broad Gauge	81	558.76
Uttar Pradesh	Broad/Meter Gauge	72	396.57
Rajasthan	Broad Gauge	42	485
NCR	Broad/Meter Gauge	195	1440.33

Table 4-3 Existing rail network in the region (Other than NCT Delhi)

Source: NCR Monitoring and Planning Cell, Govt. of Haryana, Govt. of Uttar Pradesh, and Govt. of Rajasthan

Table 4-4 Existing radials of NCR rail network

	Radials Rail network
	New Delhi – Faridabad – Palwal (to and from Central India)
Major	New Delhi – Sonipat – Panipat (to and from Northern States)
Padiala	New Delhi – Rohtak (to and from parts of Haryana & Punjab)
Raulais	New Delhi – Gurgaon – Rewari – Alwar (to and from Western India)
	New Delhi – Shahdara – Shamli (to and from Western UP)
	Delhi – Ghaziabad – Khurja – Aligarh (to and from Eastern India)
Radials	Delhi – Ghaziabad – Hapur – Garhmukteswhwar (to and from UP and Utrakhand
	Delhi – Ghaziabad – Meerut (to and from Western UP)

4.2.2.3. In addition to the above, the following sub sections constitute the rail network in NCR and around NCT:

- a) Delhi New Delhi Nizamuddin Patel Nagar Delhi Kishanganj New Delhi
- b) Delhi Shahdara/Sahibabad Anand Vihar- New Delhi
- c) Khurja Hapur Meerut (connecting Delhi Howrah route with Delhi Meerut- Saharanpur and Delhi-Moradabad links)
- d) Panipat Rohtak (Branch line)
- e) Sub sections of Rohtak Jind, Rewari Bhiwani, Rewari Mahendragarh and Rewari Narnaul sections.
- 4.2.2.4. Among the major radials converging in Delhi, the Delhi-Ghaziabad line has the highest number of trains operating per day (42) whereas Delhi-Hapur has the least number of trains operating in the route per day (2).
- 4.2.2.5. Table 4-5 gives the stations wise Total Passenger footfall.

Total Passenger footfall Total Passenger footfall Station Station 17-18 18-19 19-20 17-18 18-19 19-20 NDLS 7.8E+07 7.8E+07 2.1E+08 ANDI 617197 520794 432396 TKJ LPNR 1473244 1350101 1170086 41153 47307 36647 DLI 4.3E+07 4.3E+07 1.4E+08 DSJ 35995 34590 34305 DSA BRSQ 6883031 5879384 5387708 9116 4151 2495 NZM 3.2E+07 3.3E+07 6.9E+07 DEE 1.2E+07 1.2E+07 1.8E+07 ANVT 2.2E+07 2.6E+07 3.8E+07 PTNR 709266 661259 577402 DEC OKA 3177053 3015737 1112431 1014369 842191 2462161 TKD DBSI 3697702 3388812 3146530 866030 829816 731595 DKZ 1255504 SSB 1344823 1020701 1754812 1634765 1479213 SZM NNO 1437794 1332406 1335249 4452979 4219601 3939954

Table 4-5 Station-wise yearly passenger footfall (Year: 2017-20)

Source:

4.2.2.6. Table 4-6 gives the stations wise Total number of rakes handled.

Table 4-6 Station-wise yearly rakes handled (Year: 2017-20)

	Total No of Rakes Handled									
Station	17-18			18-19			19-20			
	I/W	O/W	Total	ı/w	O/W	Total	ı/w	O/W	Total	
NDLS	-	-	-	-	-	-	-	-	-	
ТКЈ	-	-	-	-	-	-	-	-	-	
DLI	-	-	-	-	-	-	-	-	-	
DSA	-	-	-	-	-	-	-	-	-	
NZM	-	-	-	-	-	-	-	-	-	
ANVT	-	-	-	-	-	-	-	-	-	
ОКА	-	-	-	-	-	-	-	-	-	
TKD	2798	2785	5583	3861	3333	7194	3293	3015	6308	
DKZ	22	223	245	38	225	263	53	221	274	
SZM	-	-	-	-	-	-	-	-	-	
ANDI	101	8	109	71	10	81	43	1	44	

	Total No of Rakes Handled								
Station	17-18			18-19			19-20		
	I/W	O/W	Total	ı/w	O/W	Total	ı/w	O/W	Total
LPNR	-	-	-	-	-	-	-	-	-
DSJ	-	-	-	-	-	-	-	-	-
BRSQ	-	-	-	-	-	-	-	-	-
DEE	-	-	-	-	-	-	-	-	-
PTNR	7	0	7	14	0	14	0	0	0
DEC	29	0	29	5	0	5	0	0	0
DBSI	-	-	-	-	-	-	-	-	-
SSB	270	0	270	225	0	225	211	0	211
NNO	5	0	5	2	0	2	6	0	6

4.2.2.7. With respect to total number of originating commuters, Ghaziabad has the highest number of originating commuters with 40,830 commuters, followed by New Delhi with 37,960 and Delhi Main with 36,960 commuters.

4.2.3. Metro Rail System

- 4.2.3.1. The Delhi Metro is a metro system serving Delhi and its CNCR cities of Faridabad, Gurugram, Noida, Greater Noida, and Ghaziabad in National Capital Region in India.
- 4.2.3.2. A total of 396.89km of metro rail network exists in NCR of which 291km is in Delhi, 34.2 km in Haryana and 71.6 km in Uttar Pradesh respectively (Table 4-7).
- 4.2.3.3. The Regional Plan-2021 for NCR proposed the extension of Delhi Metro Rail System to NCR towns and accordingly it has been extended to Noida, Gurgaon, Ghaziabad, Faridabad, and Greater Noida.

Sub Region	No. of Towns	No. of Stations	Length (kms)
NCT Delhi	10	211	291.026
Haryana	2	27	34.225
Uttar Pradesh	2	46	71.64
NCR	14	284	396.891

Table 4-7 Existing metro rail network

Source: NCR Monitoring and Planning Cell, Govt. of Delhi & Delhi Metro Rail Corporation Ltd. (DMRC), Govt of Haryana, Govt of Uttar Pradesh

4.2.4. Public Transport System

- 4.2.4.1. Intercity buses between Delhi and NCR/other states and within NCR are operated by the Delhi Transport Corporation (DTC), Uttar Pradesh RTC (UPSRTC), Haryana Roadways (HR), PEPSU Road Transport Corporation (PRTC), Punjab Roadways (PR), Himachal RTC (HRTC), J&K RTC (JKRTC), Rajasthan State RTC (RSRTC) besides some private bus operators.
- 4.2.4.2. Haryana Roadways provides bus services in the NCR and other areas mainly from 14 depots, UPSRTC from 12 depots, DTC from 28 depots (27 located in NCTD and 1 in NOIDA) and RSRTC from 3 depots located in the NCR besides those located elsewhere in these states.

4.2.5. Bus Terminals and Depots

4.2.5.1. There are in all 33 bus terminals and 133 bus depots in NCR (Table 4-8)

Sub Region	No of Terminals	No of Bus Depots	Vehicles capacity	Passenger capacity
NCT Delhi	9	58	5044	
Haryana	14	48	7800	324550
Uttar Pradesh	8	27	3946	193360
Rajasthan	2			
NCR	33	133	16790	517910

Table 4-8 Existing Bus Terminals and Depots

Source: Govt. of NCT Delhi, Govt. of Haryana, Govt. of Uttar Pradesh and Govt of Rajasthan

4.2.6. Regional Rapid Transit System - RRTS (under construction)

4.2.6.1. The Integrated Transportation Plan 2032 has identified eight Regional Rapid Transit corridors in the NCR and prioritised three corridors are namely Delhi-Meerut, Delhi-Panipat and Delhi-Alwar in Phase -1.

4.2.7. Air Transport

4.2.7.1. Indira Gandhi International Airport, Delhi: It is the busiest airport of the country since 2015 and is Gateway to the country. It has got three runways and the fourth runway is under construction. In 2018, it was the 12th busiest airport globally, and 6th busiest airport in Asia. In 2019-20, passenger traffic handled was 67.30 million of which international passengers were 17.83 million. The airport handled a cargo of 0.955 million tons (refer Figure 4.6).

4.2.8. Existing Traffic & Travel Pattern

- 4.2.8.1. As per the NCR Function Plan study surveys (2007) the average daily traffic (ADT) at outer cordons was observed to be about 2,21,575 (3,50,694 PCU) and Babarpur on NH-1 and Gohana Bhutana road were observed to have the highest (90,853 PCU) and lowest ADT (3,008 PCU) respectively.
- 4.2.8.2. At the urban scale it was observed that Gurugram has the highest volume of entry and exit with 3,13,609 vehicles per day while Sonipat has the least with 20,625 vehicles per day.
- 4.2.8.3. In terms of movement pattern of passenger traffic 69.4 percent trips were Internal-Internal, 15.5 per cent Internal – External, 14 percent External- Internal and 1.2 percent External- External, respectively. For goods traffic of the total trips 39.9 percent of the trips were internal-internal, 27.6 percent internal-external, 27.4 percent external-internal and 5.1 percent external-external, respectively. Table 4-10 shows details of movement pattern of traffic in NCR

Movement Pattern	Passenger Modes	Goods Modes
Intra-NCR	70 percent	40 percent
Between Haryana-NCR	5 percent	10 percent
Between UP- NCR	7 percent	14 percent
Between rest of Rajasthan and NCR	13 percent	11 percent
Between NCR and Other States	5 percent	20 percent
Through movements/non-destined traffic		5 percent

Table	4-9	Movement	Pattern	of Traffic
1 unie		movement	1 unern	0 114/10

Source: Functional Plan of NCR & related Study

- 4.2.8.4. The passenger interaction between Rajasthan and NCR is the highest with 13 per cent share followed by Haryana and NCR with 5 percent and UP and NCR with 7 percent interaction, respectively. With respect to goods traffic interaction, UP-NCR have been found to have highest share of 14 percent followed by Rajasthan and NCR, respectively.
- 4.2.8.5. The travel characteristics of passenger vehicles indicate that the standard buses have a trip length of 191 km, car have a trip length of 125 km while the two-wheeler and three-wheeler have trip lengths of 13.99 km and 13.35 km, respectively.
- 4.2.8.6. The travel characteristics of goods vehicles indicate that the Multi Axle Vehicle (MAV's) have a trip length of 685 km, 2/3 axle trucks 321 km, the LCV and tractor 154 km and 51 km, respectively.

4.2.9. Key Issues and Challenges

- 4.2.9.1. Due to continuous increase in population, employment opportunities and number of vehicles, there is a constant increase in travel demand over the years in the region and infrastructure has not grown in adequate proportions making the existing network system function beyond its capacity. This has led to serious traffic problems of congestion, delays, safety, pollution, and system management.
- 4.2.9.2. Lack of adequate Regional Public Transport and its low frequency, lack of integration of system, and multiple interchanges are major issues being faced by the commuters in the region. In addition, there are issues pertaining to congestions in the region due to high share of private transport (63%) leading to situations of vanishing off-peak hours, in major towns and cities. Further the integration of IT solutions with public transport system is still to pick up pace in city/ towns across region. Attempts have been made to link the bus system and the metro with "common mobility card1", but a lot can still be done in this direction. Much can be done with CCTV cameras installed on some of the streets and if their coverage is expanded, a robust control room can help in streamlining the transportation system of towns in NCR.
- 4.2.9.3. The bus related infrastructure facilities such as bus terminals, shelters etc. were found to be inadequate and partially /poorly developed in most of the cases. Very few terminals such as, ISBT Anand Vihar in Delhi, Meerut, and Ghaziabad in Uttar Pradesh, Faridabad, Sonepat and Panipat in Haryana have been up to certain standards with respect to passenger waiting spaces, passenger amenities, etc. Most of the other cities within the NCR lack basic passenger amenities and inter-modal transfer facilities are completely absent. The inter-modal accessibility such as between railway station and bus stand etc. is lacking except in some cases in Delhi. A comprehensive policy and a designated authority does not appear to exist for planning /development / operation / maintenance of bus terminals in the NCR particularly for the Private Operators' buses an essential requirement for promoting efficient bus operations and motivating commuters for using such services.
- 4.2.9.4. At present, the multiple modes of public transport often function in silos. A massive urban agglomeration such as NCR needs buses, metro rail and the forthcoming rapid rail system to be in sync. Often, the large public investment in these transport systems remains underutilized on account of problems with last mile connectivity.
- 4.2.9.5. Despite having NCR permits, most auto-rickshaws and taxis prefer to operate within their respective state borders and demand exorbitant fares for travelling beyond state

borders. Thus, the enforcement aspect seems lacking. In the past few years, appbased cabs have become a popular mode of transport, but toll tax has made them reluctant for crossing the borders.

- 4.2.9.6. Key challenges that need to be addressed regarding Logistics Sector in NCR include inadequate & ill designed terminal infrastructure, storage facilities, O&M protocols, regulations on logistics, land, bottleneck, tariff structure, and skilled manpower (*refer Annexure-D-4.5*). Besides, various types of approval and licenses (non-exhaustive) required for setting up of an Multi Modal Logistics Parks (MMLP), is also challenge for the logistics sector. These include 5 for Rail Operation, 13 for DTA Warehouse (State government approvals), 13 nos. for ICD Operations and another 13 nos. for HR/Admin/ Safety security/ fire fighting / pollution control, etc.
- 4.2.9.7. The small airports lack basic facilities like that of hangars. This causes aircraft and helicopters to be stationed out in the open which is not preferred by owners. Most small airports also do not have adequate night-landing capabilities. There are about 08 existing unserved/ underserved small airports/ airstrips in NCR (Karnal, Bhiwani, Narnaul, Meerut, Alwar & Bharatpur) and in CMAs (Bareilly, Kota & Patiala).
- 4.2.9.8. Influx of Intermediary Public Transport (IPT) like auto rickshaws, e-ricks, cycle rickshaws have added to the congestion on the roads as some of them are non-registered and flout a lot of traffic and parking norms. Further, poor infrastructure for pedestrians and cycling is a major challenge that needs to be addressed to aid walking and cycling in the cities and towns. Unsafe and inadequate cycling-friendly infrastructure has led to many short trips being made on private vehicles. To keep the modal share favourable to NMT, it would be crucial to invest in dedicated cycling lanes and pedestrian pathways across urban areas in NCR.
- 4.2.9.9. With significant share of traffic being private vehicles, its optimum utilization is also an emerging issue. It is observed that about 22% population moves in private cars which remain mostly idle and increase the demand for parking areas. Large areas of Delhi, especially roads, are occupied by parking spaces.
- 4.2.9.10. As per the Reports of MoRTH (2016 and 2018), road safety is another concern in NCR, with Delhi experiencing 1591 accident deaths in year 2016, which was highest among top 50 cities with million plus population. The severity of road accidents in Delhi as measured by the number of road accident deaths per 100 accidents is estimated as 25.9 as against a national average of 32.4% in 2018. Motorized two wheelers vehicles account for 28.8% of total accidents. Over speeding is responsible for 44.3% of the road accident deaths in Delhi.
- 4.2.9.11. Pollution in NCR is also a major concern. As per Ministry of Earth Sciences, Delhi has experienced about 40% increase in vehicular pollution during 2010-2018. Vehicles in the NCR region contribute to 40% to 50% of the pollution. Non-availability of CNG across NCR especially in areas beyond CNCR is another issue.

4.3. Policies and Proposals

4.3.1. Future macro perspectives

- 4.3.1.1. The world of transport is changing rapidly. It is apparent that mobility will increase as more people and goods move across towns and across the globe. By 2030, annual passenger traffic will exceed 80 trillion passenger-kilometres (a 50 percent increase compared to 2015), global freight volumes will grow by 70 percent compared to 2015; and an additional 1.2 billion cars will be on the road by 2050.
- 4.3.1.2. By 2030, electrification could lead to electric vehicles (EVs including battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles) holding a

substantial share (about 50 percent of new vehicle sales) of the global automobile sector. If the similar momentum, it will significantly impact manufacturers across the automotive value chain in the region.

- 4.3.1.3. The "Indian Logistics Industry Outlook, 2020" report indicates that advancements in digital technologies, e-Commerce, government reforms, and shift in service sourcing strategies are expected to lead the transformation of the Indian logistics ecosystem. Digitalization will improve the efficiency and performance in freight management and port operations.
- 4.3.1.4. Online freight platforms and aggregators are on the rise in the Indian logistics market, given the need for low entry barriers and less capital investment compared to setting up of an asset-based business model. Manufacturing in India holds the potential to contribute up to 25%-30% of the GDP by 2025 which will drive the growth of the warehousing segment in India. The logistics market in India is forecasted to grow at a CAGR of 10.5% between 2019 and 2025.

4.3.2. Travel Demand Forecast

4.3.2.1. Passenger traffic in terms trips of and goods traffic in terms of tonnage forecasts for 2041in NCR have been attempted based on past trends for three movement types, namely EI (external to internal- originating outside and terminating within the region), EE (external to external- originating outside NCR and passing through the region) and IE (Internal to external- originating inside the NCR and terminating outside the region) as shown in Table 4.10 below:

Traval Dattarn	Vahiala Turna/Vaar	Business as Usual (BAU)						
Travel Fattern	venicie Types/Tear	2007	2012	2017	2022	2032	2041	
	Tonnage							
	LCV	67122	97364	136902	183958	240517	306147	
	2/3 Axle	349048	507654	715561	963919	1263140	1611096	
	MAV	69206	101438	144020	195445	257850	330884	
EI	Persons Trips							
	Bus	552919	804097	1159689	1560199	2047267	2614385	
	Car	343934	547862	876406	1207873	1623467	2118475	
	Auto	15237	24211	37941	53098	71158	92609	
	2-Wheeler	54806	89424	147646	209086	28720	4811	
	Tonnage							
	LCV	76696	111727	157735	212848	279386	356883	
	2/3 Axle	330317	478883	673040	903999	1181555	1503527	
IF	MAV	63812	92874	131006	176622	231650	295693	
IL	Persons Trips							
	Bus	545914	795310	1149010	1549267	2037683	2607630	
	Car	350919	557514	889282	1222062	1638147	2132488	
	Auto	10026	16088	25789	36813	49658	65010	
	2-Wheeler	47971	78518	130453	185802	255892	341321	
	Tonnage							
EE	LCV	8259	11750	16287	21644	28104	35551	
	2/3 Axle	63482	90719	126263	168493	219580	278678	

Table Error! No text of specified style in document..100 Travel demand forecast for 2041

MAV	23529	33796	47218	63201	82527	104925
Persons Trips	L			L	L	
Bus	60635	86641	124426	167286	217841	276281
Car	18420	28306	44278	60274	79844	102836
Auto	308	462	707	977	1266	1599
2-Wheeler	579	944	1584	2298	3203	4319

4.3.2.2. It is also expected that by 2034 the IGIA airport in Delhi shall handle 100 million passengers per annum and 2 to 2.5 million tonnes of cargo per annum.

4.4. General Policies and Proposals

- 4.4.1. NCR should move towards creating a region where people and goods can move smoothly. Efforts should be directed towards easing out traffic congestions and create a more integrated, user-centred, accessible, and affordable transportation system. In this regard it may be imperative to connect Metro Centres and Regional Centres with the National Capital by an efficient and effective transport network for facilitating faster movement of traffic among such centres and NCT-Delhi. Further there is a need to provide linkages amongst Metro Centres and Regional Centres in the outlying areas of NCR.
- 4.4.2. There is a need to link the Sub-regional Centres with effective and efficient transport network for facilitating the faster movement of traffic among such centres and higher order settlements. Further it would be imperative to prioritise transport investments that enhance access to the economic corridors and between centres.
- 4.4.3. Attempts should be made to make travel times across NCR limits be under 30 minutes by Heli-taxies, 60 minutes by train and two to three hours by car. Accordingly, steps need to be taken to improve mass public transport appropriately, identifying the corridors, modes, speeds, infrastructure needs etc. to commute within the desirable time.
- 4.4.4. Need to develop a high-capacity, high-speed, high-frequency transit network that includes new modes of transit and improvements to existing services. Need to introduce flexible fleets of on-demand, shared, electric and eventually, self-driving vehicles (autonomous vehicles) that connect to transit within a mobility hub. Further new mobility hubs may be introduced, with a range of travel options, to address first- and last-mile connectivity challenges and to deliver a more seamless travel experience.
- 4.4.5. There is a need to minimize imbalances of accessibility and connectivity in areas like North West, South-West areas of NCR through expansion and up gradation road/ rail network in NCR Necessary steps be taken to strengthen connectivity amongst CMAs, Metro Cities and Regional Centres through NH/ Expressways and railways. All Counter Magnet Areas (CMAs) to the NCR should be well connected with Air, Rail, RRTS and NH/ Expressways. All CMAs should relate to RRTS by 2035, based on feasibility.
- 4.4.6. All missing links needs to be taken up on priority for competition both at intra city, inter- city as well as intra and inter region levels
- 4.4.7. Integration of transport planning with land use planning and providing for efficient, cleaner & safer movement of people & goods deserves prime importance. There is a need for Strategies, Plans of Action and Regulations/Standards that are futuristic and consistent with the responsibility of Integrated Mobility and Smart Transport System for a sustainable future of NCR.

- 4.4.8. Given the time and economics of travel involved within NCR, although expressway and RRTS are under planning/execution to potentially address the larger demand, the desire of most to have connectivity with NCR/Delhi is a huge potential to be exploited for Inter- NCR connectivity as more cities want to be connected to Delhi.
- 4.4.9. Delhi Mumbai Industrial Corridor (DMIC) is one of the prime 5 national level industrial corridors under National Industrial Corridor Development Programme and its effective implementation along with the developments along the corridor is essential.
- 4.4.10. Regional Rail shall play a major role in transforming economies and lives of people, enabling inter-connected clusters to develop as vibrant, dynamic NCR
- 4.4.11. Like other global Metropolitan regions in the world, it is necessary to develop more airports in NCR (for global examples of multi-airports refer *Annexure D-4.3*). Further, general Aviation facilities could be the biggest catalyst of regional connectivity. With the traffic situation worsening, in cities of developed world, commuters across the world are preferring air taxis as a smarter and faster way to reach their destinations. Helicopters and UAVs are expected to be part of logistics mechanisms to be adopted for development monitoring and security infrastructure and would need adequate norms and guidelines.
- 4.4.12. Need to integrate facilities / transport linkage for the pedestrian/cycle track, etc. with economic activities. Cycle riding policies should be formulated by each NCR State as a part of sustainable transport system. There should be strict guidelines for cycle riding and cycle tracks and its continuity at intersections in all urban areas across NCR. A brief of National Cycle Riding Policy Framework of Ireland is given at *Annexure-P-4.1*.
- 4.4.13. Need to explore possibilities of promoting commercial/property developments at all stations allowing high-rises and supporting the systems in their efforts for being self-reliant in terms of financing.
- 4.4.14. Vehicular pollution must be checked effectively.
- 4.4.15. Electrical vehicles charging infrastructure must be set up immediately to encourage EVs and reduce pollution in NCR.
- 4.4.16. Efforts be made to control car traffic and open central areas of towns to people, promoting pedestrian friendly city (as in Karol Bagh, Delhi). NCR States/ ULBs/ Development Authorities should explore possibilities and take initiatives for creation of outdoor cafes and walkways along streets and extensive bicycle-sharing system in the urban areas and large rural clusters to make NCR more appealing. Walkways and bicycle tracks in and around the Cities/ towns should be made mandatory across NCR.
- 4.4.17. The Inter State Bus Terminals may also be integrated with MPTs. Explore possibilities of promoting commercial/property developments at all terminals allowing high-rises and supporting the systems in their efforts for being self-reliant.

4.4.18. Road network Proposals

- 4.4.18.1. The road network hierarchy of the NCR should follow the reticular pattern with the ring and radial pattern for rail-road connectivity with strong connect from NCT Delhi to Metro cities and further connect from metro cities to sub- regional level cities through second order roads.
- 4.4.18.2. In addition to the existing Eastern & Western Peripheral Expressway (Peripheral Expressway No.1), two more Peripheral Expressways should be developed as Growth Corridors and Opportunity Area, for balanced development of NCR which are:
- 4.4.18.3. Peripheral Expressways No.2 connecting Panipat-Shamli-Meerut-Jewar-Nuh-Bhiwadi-Rewari-Jhajjar-Rohtak-Panipat

- 4.4.18.4. Peripheral Expressways No.3 connecting Karnal- Muzaffarnagar Gharmukhestwar-Naraura-Aligarh-Mathura-Deeg-Alwar-Mahendragarh-CharkhiDadari-Bhiwani-Jind-Kaithal-Karnal.
- 4.4.18.5. A Schematic map showing tentative alignments of Peripheral Expressways is given below as Figure No. 4.1)
- 4.4.18.6. State to take necessary initiatives to construct missing road links (both Inter and Intra-State) on priority to ensure radial and reticular road network in NCR, based on necessary investigation (refer Figure No. 4.5). The list of the missing links is given in Table 4.11 below.
- 4.4.18.7. It is proposed to have Elevated Ring Road (ERR) parallel to outer ring road in Delhi with suitable slip roads for entries and exits as required. The schematic map of tentative alignments (Figure No.4.2) is as under:
- 4.4.18.8. It is recommended to have extensive Bypass system around all urban and large rural settlements above 5000 minimum population in NCR.
- 4.4.18.9. All roads in NCR should provide equitable space for all the users with safe crossing and interchange facilities.
- 4.4.18.10. Widening and strengthening of all National Highways (NH) and State Highways (SH) up to NCR boundary should be undertaken in a phased manner, as applicable.
- 4.4.18.11. Service lanes be mandatory provided along all NH, SH and Expressways, etc. for Non-Motorised Transport (NMTs), all non-four wheelers, etc. by 2026. Vehicles accident Recovery lanes shall also be provided. It should be made in 2 years on all NHs/ Expressways and in 05 years on all SHs, across the region.
- 4.4.18.12. It is recommended to have Trauma Centre on each NH/ SH/ Expressway, set up at an interval of not more than 50 km or within travel time of 1 hour (Golden Hour) with all the facilities. Areas around fuel stations at an interval of 20-40 km stretch could also be utilized to develop the trauma centres.
- 4.4.18.13. All rural settlements across NCR should relate to all-weather roads and norms may be relaxed to enable this under PMGSY.
- 4.4.18.14. NHAI and state PWDs or related departments, may consider having dedicated freight lanes on respective NH /expressways/ SHs etc. to optimise freight productivity. All Expressways should have Helipad/ airstrip in every 200 km stretch for availing Heli/ Air ambulance service for emergency evacuation.



Figure Error! No text of specified style in document. Tentative alignments of Peripheral Expressway –II and III



Figure Error! No text of specified style in document.1 Tentative alignments of Elevated Ring Road (ERR)

- 4.4.18.15. To enhance connectivity, linking a loop of villages by a ring road about 30 km in circumference with frequent bus services, thus integrating population of all connected village into one market, may be thought of to support local market clusters. This can be helpful for polycentric development too.
- 4.4.18.16. Plan for arterial road grid, 30-meter-wide roads spaced one-kilometer apart that can carry public transport and truck infrastructure in expansion areas/ new areas and securing the land for that grid.

4.4.19. Rail network Proposals

- 4.4.19.1. Three priority Regional Rapid Rail Transit System (RRTS) corridors namely Delhi-Meerut; Delhi-Panipat; and Delhi-Rewari-Alwar should be executed in a time bound manner in the first phase. The work of Delhi-Meerut corridor be completed by 2023 and work on remaining two corridors should be expedited. Further, work of remaining 06 RRTS corridors i.e., Delhi-Shahdara-Baraut; Delhi Hapur; Delhi Khurja; Delhi-Ballabgarh–Palwal; and Delhi Rohtak should also be undertaken by NCRTC in a time bound manner.
- 4.4.19.2. All Metro Centers, Regional Centers, CMAs should be connected with RRTS by 2035, based on feasibility.
- 4.4.19.3. Indian railways may explore the possibilities to operate commuter rail service to connect with metro centers, regional centers and CMA's by 2041.
- 4.4.19.4. Orbital Rail Corridor (ORC) Networks:

- a) **ORC-I:** Govt. of Haryana has taken initiative for developing Orbital Rail Corridor (ORC) by 2025 connecting Palwal-Sonipat. Govt. of Uttar Pradesh should take necessary action to develop ORC connecting Palwal-Khurja-Meerut-Bagapat-Sonipat, to complete the Orbit/ Circle. The ORC in both the sub-regions be made fully operational by 2028.
- b) ORC-2: Explore possibilities for developing the Regional Orbital Rail Corridor (RORC) connecting Panipat- Shamli- Meerut- Jewar- Nuh- Bhiwadi- Rewari-Jhajjar- Rohtak- Panipat (along Peripheral Expressways No.2) to enable movement of passenger and goods at the regional level avoiding Delhi/ CNCR Area.
- c) **ORC-3:** The following four new rail links be developed to form another Outer Orbital Rail Corridor (OORC) along Peripheral Expressways No.3, by 2041. Ministry of Railways may initiate conducting feasibility Studies in this regard.
 - Karnal Jind Bhiwani Mahendergarh Narnaul Behror Alwar
 - Alwar Deeg Kurja (may be via Mathura)
 - Khurja Garhmukhteshwar Hastinapur Muzaffarnagar Karnal
 - Meerut Panipat
- 4.4.19.5. A Schematic showing tentative alignments of ORCs is given below as Figure No. 4.3)
- 4.4.19.6. Explore possibilities of construction of the proposed railway lines/ introduction of new rail networks/ conduct feasibility studies on new lines and line expansion, centring on those proposed by the Indian Railways.
- 4.4.19.7. Expedite electrification and broad guaging of Alwar to Bandikui line (serving Alwar District); Rewari to Loharu (serving Mahederharh District) and Alwar to Deeg line (be double guaged).
- 4.4.19.8. All railway lines in NCR should be double track, 100% electrified, broad guage and of high speed.
- 4.4.19.9. Possibilities of providing additional capacity at rail freight bottlenecks, rail yards, and rail lines shared with passenger rail operations, should be explored.
- 4.4.19.10. Ensure that the Dedicated Freight Corridors (DFC) are completed on scheduled time and fully commissioned by 2022; feeder routes to the DFC should be developed simultaneously NCR (refer schematic Figure No. 4.4 as given below).



Figure Error! No text of specified style in document.2 Tentative alignments of ORC-I, II and III



Figure Error! No text of specified style in document.3 Various Corridors in NCR under Bharatmala project

Souce: Ministry of Road Transport and Highways, 2020

- 4.4.19.11. All the level crossings including cattle crossings should be eliminated in the region through developing ROB/ under pass and fenced railway tracks in areas with high level of activity, to prevent accidents.
- 4.4.19.12. Overall initiatives should be in the direction of development of inter-city railway lines, particularly high-speed railway lines
- 4.4.19.13. Review of EMUs increase the frequency in peak hours.
- 4.4.19.14. Ring Rail Delhi should be reviewed and used as planned by resolving, exists/ bottlenecks, it can also be used for cargo.
- 4.4.19.15. Railways right of way (ROW) could be critical factor for future and should be planned in advance. Better and optimal usage of huge railway land in NCR along with possible sharing of right of ways of railways, be looked into, after making it encumbrance/ encroachment free.
- 4.4.19.16. NCRTC should explore possibilities to increase average speed of RRTS to about 250-300 kmph2 may be with dedicated tracks and inter- stoppage station distance of at least 50-60 kms for high-speed options. Explore possibilities of increasing the speed3 of Metro rail in NCR from existing average speed of 32 35 km/hr to about 50 Km/ hr by 2022 and further up to 70 Km/ hr by 2025.
- 4.4.19.17. Efforts be made to develop a separate suburban passenger transport from the rest of the network and put a light rail transit system, metro lite, rubber-tyred Metro rail, Monorail, Neo Metro etc. in place in all major urban areas under local governments

²Currently, Shanghai Maglev has the highest maximum operational speed of 430km/h and average speed of 251kmph

³Gatimaan Express is Indian Railways' fastest train, attaining speeds of 160 kmph between Delhi and Agra. Vande Bharat Express, a world-class engine-less train has the potential to hit 180 kmph, but the maximum operational speed on its routes is 130 kmph.Besides, the speed on Delhi Mumbai and Delhi Howrah routes is also planned to be raised to 160kmph by 2022-23. Passenger trains have also got approvals to raise 60% increasein average speed.

across NCR4. Possibilities may also be explored to have Hyper Loop facilities in NCR towns for quick movement between city and its airport /rail stations, etc.as being examined in Bangalore.

- 4.4.19.18. Railway junction/ station planning should be done considering aspects like cleanliness, public amenities, safety, convenience, self-sustaining, etc. The process of installation of platform doors should be taken up and accelerated for all rail-based networks.
- 4.4.19.19. Significant quantities of perishable items get wasted due to delays in deliveries. For Delhi, the existing Ring railway corridor could be rejuvenated to be used for transporting goods and especially perishable items. The required epoxy containers could be added in rail coaches to facilitate the same. The possibility of having Cool Chambers at loading and unloading points as transit arrangement for perishable goods could also be investigated. Agencies like APEDA, and others concerning perishable goods can utilize the Ring railway.
- 4.4.19.20. NCR should have a fast rail connectivity which should connect the outer limits of Delhi by less than 30 mints connections, so as to reduce the housing and permanent settlement pressure on Delhi. This can be done by establishing a new network or by making appropriate changes in DMRC/RRTS network.

4.4.20. Air connectivity Proposals

- 4.4.20.1. **Jewar Airport (Proposed)**: The gross area of the proposed international airport at Jewar near Greater Noida, UP is 7200 acres. It shall be a trans-shipment hub for the country once it starts its operation in 2022-23 according to the Development Plan. In the first phase it is likely to handle 5 million passengers per annum.
- 4.4.20.2. A large aviation hub is also proposed at Hisar (CMA) in Haryana.
- 4.4.20.3. The six-existing unserved/ small airports/ airstrips in NCR namely, Karnal, Bhiwani, Narnaul, Meerut, Alwar & Baratapur and three in CMAs namely Bareilly, Kota and Patiala should be developed by 2025 and made fully operational. Private players should be incentivized to develop these airports and airstrips.
- 4.4.20.4. It is proposed to connect all the existing and future airports with various mass transit systems such Regional Rapid Transit System (RRTS), High Speed Rail (HSR) and metro rail to enhance the accessibility of the airports.
- 4.4.20.5. Ensure good connectivity between district headquarters, towns, tourism destinations and airports/ airstrips/ helipads. Facilities in airports/ airstrips be provided as per the Ministry of Civil Aviation norms.
- 4.4.20.6. Support Infrastructure could be created through Government initiative, while connectivity services could be left to private players. As per National Civil Aviation Policy5 (NCAP) 2016, Helicopters are free to fly from point to point without prior ATC clearance in airspace below 5000 feet. Accordingly, on-demand helicopter services be considered and integrated in the City & State Transport Services (e.g., Voom, Uber Copter and Blade etc.) Heli taxi service be provided at each district headquarters and tourist destinations to promote tourism.
- 4.4.20.7. The funnel regulations with respect to having airports / airstrips and identified locations / already existing unserved /underserved / non- functional airstrips, may be take care of, in advance and land reserved/allocated accordingly, to avoid future development related issues, in future.

⁴Based on NITI Aayog Strategy for New India @ 75

⁵https://www.civilaviation.gov.in/sites/default/files/Final_NCAP_2016_15-06-2016-2_1.pdf
- 4.4.20.8. UAV/ Drone and UAV launch pads be established at all District headquarters. At least one Water Aerodromes in each of the sub-region be established. Design requirements of Water Aerodromes are given at **Annexure-P-4.2** for reference.
- 4.4.20.9. Promote air cargo growth by adopting "Fly-from-NCR" concept through creation of trans-shipment hubs in the region.
- 4.4.20.10. Efforts be made through policies & programmes to explore possibility of using technology of Unmanned Aerial Vehicles (UAV) freight/passenger movement for future needs.
- 4.4.20.11. More number of Airports in and around Delhi/ CNCR be developed to expand the capacity of Airport's Network (e.g., on the lines of Metropolitan regions of London, New York, Los Angeles, Tokyo, Melbourne, etc.). Explore possibilities to have one Airport in Karnal or Panipat and Meerut or Muzaffarnagar.
- 4.4.20.12. All Divisional and Districts Headquarters to have separate facilities for Chartered Planes. Towns of districts may be chosen not only from their importance from administrative point but also economic development potential. Besides all district and divisional headquarters should be having direct and efficient connectivity with airports.
- 4.4.20.13. Proper regulations for High rise and buildings should be prepared for development around the airports/ airstrips, as per the norms/ guidelines of the Ministry of Civil Aviation.
- 4.4.20.14. All Multispecialty Hospitals, Trauma Centres and Multi-level parking facilities across NCR be equipped with on-site helipads for emergency and disaster management point of view. The advantages offered by on-site helipad location include elimination of the inherent risks of patient transfers and enhancement of availability of EMS resources.
- 4.4.20.15. All-important high-rise buildings may explore possibilities of having helipads after due permissions.

4.4.21. Inland Waterways Proposals

- 4.4.21.1. Implementation of passenger and cargo ferry service on Inland National Waterway (NW)-110 (Yamuna River) should be expedited and it should be made fully operational by 2025. Further, possibilities be explored to develop passenger and cargo ferry service on major canal network in NCR like Agra Canal, Upper Ganga Canal, Western Yamuna Canal, etc. The Inland waterways can be explored for bulk cargo, especially of non-perishables.
- 4.4.21.2. Need to maintain minimum water levels in Yamuna in NCR to enable round the year boating and navigation and its potential further use
- 4.4.21.3. All districts should explore possibilities of having water aerodromes to facilitate and provide integrated air –water transport infrastructure.
- 4.4.21.4. NCR States should jointly develop networks of greens and waterways in NCR like of Singapore and Shanghai. States may identify water transport crossover points across Yamuna, through its stretch in NCR, and provide the identified points with road linkages to existing networks.

4.4.22. Intra urban public transport system

4.4.22.1. In order to cater to the growing demand of intra-urban traffic, there is a need to develop an integrated transport system at city level including, Bus Rapid Transit, Light Rail Transit, Trolley Bus, Metro Rail Transit & Buses based on contextual feasibilities. Cities with population more than 5.00 lakh may be provided with the

appropriate mix of integrated transport system. The proposed MRTS network at intra urban level should integrate with regional level network for seamless interchange

- 4.4.22.2. Shared mobility provided by Cab aggregators (Ola/Uber/City Cabs) & shared auto/cycles, Electric cycles along with feeder buses/minibuses for last mile connectivity and improving accessibility should be promoted. Integration among public transport systems should be in terms of both physical and financial. Phase I level of Mobility-as-a-Service (MaaS) can be introduced in NCR by integrating all the data of various modes operating and proposed to operate in the region for seamless travel.
- 4.4.22.3. NCR States should develop extensive fleet of buses along with electric vehicles and supporting infrastructure like depots, workshops, electric charging stations etc., at city transportation level as well as inter-city level to encourage low carbon mobility.
- 4.4.22.4. Possibilities of having high speed capacity bus systems, needs to be explored for all NCR regional centres
- 4.4.22.5. The following Metropolitan Passenger Terminals (MPT) as proposed in the Master of Delhi-2021 to decongest the central areasof Delhi, be developed on priority incorporating the requisite elements of a MPT:
 - a) AnandVihar, East Delhi
 - b) Bijwasan in Dwarka, South-West DelhiHolumbi Kalan in Narela, North Delhi
 - c) Tikri Kalan, West Delhi
 - d) Hazrat Nizammudin, South East Delhi
 - e) Kashmere Gate, North Delhi
- 4.4.22.6. The Inter -State Bus Terminals may also be integrated with MPTs.
- 4.4.22.7. Need to ensure that all city fleets (bus, minibus, waste collection and other cars and trucks) ply on and utilize green energy/fuel sources, across NCR.
- 4.4.22.8. Explore possibilities of utilizing Metro rails, RRTS and EMUs for use of cargo transport, in off-peak hours, for optimum utilisation of system capacity and minimise road congestion and deteriorating environmental quality.
- 4.4.22.9. Explore possibilities of reviving Ring Railway in Delhi as a mass urban rail commute mode through transit-oriented development policy adoption.
- 4.4.22.10. Promote the barrier-free concept and make NCR a barrier-free region by 2025. All roads that link railways stations to other public facilities should be made barrier free.
- 4.4.22.11. All interfaces between footpaths and roads in NCR should have adequate provisions for disabled (Divyangjan) friendly. All street /traffic signaling systems should be pedestrian friendly and concept of 'Right of First Way' to pedestrian should be followed.

4.4.23. Multi-Modal Integration

- 4.4.23.1. Multimodal Integrated Transit Interchanges should be developed covering Rail (Trains, RRTS, MRTS, etc.), Road (Bus/ IPT/ NMT), Air (Aeroplane/ Helicopters), Water (Speed boats/ Streamers, etc.), any other, as applicable. All existing points where overlapping of road/rail/metro/RRTS/ Air networkexists needs to be developed in an integrated manner, on priority. Potential station areas like Sarai Kale Khan and Anand Vihar with bus, rail and RRTS interchange should be developed as major transport hubs and similar hubs should be developed in all metro cities, regional cities and CMA's.
- 4.4.23.2. Interchange designs be such that they enable seamless movement of traffic and transfer of passengers and goods. Last mile connectivity modes like bicycles, e-

rickshaws, autos, taxies etc. are to be supported for proper multi modal integration and designated spaces be ensured at each stations/stand of bus, metro, RRTS, rail stations and similar points.

- 4.4.23.3. For development of Multi Modal Transport Hubs in NCR, State Govt. authorities may consult with Indian Railway Stations Development Corporation (IRSDC) which is single agency for railway station development.
- 4.4.23.4. Initiatives need be taken to integrate existing and new modes into an accessible multimodal network. Various new digital shared mobility services, such as bike-sharing, car-sharing, courier networking services, ridesharing, and transport service providers (including micro-transit, ride-sourcing, and ride-splitting), along with traditional taxi services can offer huge potential in providing new options in getting around the urban areas in the region.
- 4.4.23.5. At interchanges, facilities should have covered walkways amongst other bus/metro/train etc. alighting/boarding points and up to taxi/ last mile connectivity mode facility points, and should be adequately equipped with lifts, elevators\ travellators on all levels, golf carts/ e-rickshaws for needy, paid lockers, sleep pods, local sightseeing maps, help desks, refreshment counters, CCTVs, PA System, etc. Helipads spaces should be provided at all major/dispersed interchanges, etc.
- 4.4.23.6. Transportation hubs should be well connected with airports and the waterfront area to help urban development with diversity of functions.

4.4.24. Warehouse and Logistics facilities

- 4.4.24.1. Areas for logistics zones be identified with suggested land use and land cost categorization, in Sub-Regional Plans and local level Plans. Efforts be made towards gathering of disorderly scattered logistics activities in convenient locations, establishing rail, port and airport links to these locations, and developing auxiliary services
- 4.4.24.2. Provisions be made by each NCR participating State for special dispensation for transportation of & cold chain for perishable items.
- 4.4.24.3. Vehicle Tracking be made mandatory for all cargo/ commercial vehicles entering and moving in NCR. Idle time of each cargo vehicle be monitored by a Central Agency in MoRTH or E-Logistics Desk of Commerce Ministry or by a special body for NCR region i.e., the body which is being suggested for coordination of all transport modes in NCR. Such body can also create a NCR Logistics Cell which is extremely desirable.
- 4.4.24.4. In line with the objectives of National Logistics Policy, NCR States should work to (i) Reduce Cost of logistics to 10% from 13-14% of GDP, (ii) Help the country to Improve India's rank in LPI to <30, (iii) Contribute to Logistics employment and help in achieving the Country target of Creating additional 10-15 Million jobs, (iv) Facilitate Single point for all logistics data in the NCR coordinated with rest of country, and (v) Strengthen Warehousing industry and improve Cold Chain efficiency reduce agri-losses to <5%.</p>
- 4.4.24.5. District/ City Administration should understand transport patterns and needs and suitably plan for city freight logistics allowing more hours for movement of freight vehicles.
- 4.4.24.6. Explore possibility of providing Industry Status for warehousing which could give the option for Warehousing to setup in Industrial Estates, reduce costs of operations and provide for more optimal usage of unused plots (attrition/demand).
- 4.4.24.7. All Metro Centres, Regional Centres, Sub-regional centres, and urban areas with 1 lakh & above population should have Transport Nagar.

4.4.24.8. Logistic areas be earmarked around all the Expressways-I, II & III, ORC-I, II & III, around IGI, Jewer, Hisar, all the airports and appropriate places between Industrial areas and ICDs etc. The logistic parks in rural CNCR are proposed to be developed between Ist & IInd ORCs/ Expressways which will serve NCT Delhi and investments zones proposed to be developed in rest of the NCR. To have good transportation facilities radial network with reticular road networks shall have to plan in NCR (refer schematic Map / Figure No. 4.5).



Figure Error! No text of specified style in document.4 Proposed Reticular Network

4.4.25. Support Infrastructure for Transport System

- 4.4.25.1. Highway Facility Centres (HFC) need be planned and developed on a comprehensive basis. This would include parking, fuelling, PUC points, servicing and repairs, telephone and telecommunication, restaurants, and motels, medical, police, godown, weight bridge, entertainment, banking (ATMs), and a host of other needed services. These HFCs should be developed along the Expressways and Highways, spread over an area of 5 to 10 ha with a spacing of 50-60 km. To support carbon-free travel in future, the provision of hydrogen re-fuelling stations and rapid electric vehicle charging points.
- 4.4.25.2. For encouraging E-vehicles, provisions for adequate charging stations for e-vehicles (passenger/cars, interstate e-buses, etc.) may be planned & included in the services offered at HFCs. Further, in a grid of 3-by-3 km., at least one public charging station6 shall be set up in urban areas across NCR. For the highways, at least one fast charging station shall be planned and set up for every 100 km.
- 4.4.25.3. Explore possibility of sharing of development fee being charged by the development authorities with Transport infrastructure providing/maintaining agencies. Further there is a need to review the Taxes imposed on commercial vehicle by Municipal authorities/ULBs
- 4.4.25.4. Steps be initiated towards devising models of smart mobility based upon sustainable transport systems in urban areas which may include real time traffic data collection, analysis, and dissemination for general good. National Common Mobility Card Ecosystem be implemented and promoted on priority.
- 4.4.25.5. Efforts be made to expand ITS devices and traffic management capabilities to support weather responsive traffic management strategies. Further Advanced Traffic Management System (ATMS) should be adopted for managing traffic.
- 4.4.25.6. Mobility as a Service (MaaS) should integrate various forms of transport options and services into a single platform that commuters can access via an app on their mobile devices to plan for their journeys. This shall allow commuters to enjoy customized trips based on individual preferences, more seamless journeys, and quick and easy payment for multiple trips.
- 4.4.25.7. Government must support the development of local and regional transportation system management strategies based on ITS such as the provision of information to operators of goods and service vehicles for efficient travel decisions, management of traffic flow using transit priority measures, coordinated traffic signalization, and lane management.

4.4.26. ICT and smart mobility

4.4.26.1. Bus Terminals and Rail Terminals, enabling integration and smooth transfer in terms of fare, physical, operational amongst modes and agencies using ITS should be undertaken on priority by the NCR States.



Figure Error! No text of specified style in document.5 Logistic, Manufacturing hubs and Air Transport in NCR

4.4.27. Institutional arrangement

4.4.27.1. **Transport Policy and Planning Group (TPPG)** be established to function specifically at the Sub-regional level to plan and coordinate with agencies at the State level. The TPPGs such constituted for the Sub-regions may interact amongst the TPPGs of the other sub-regions for inter- state connectivity for integrated transport planning. This group should also take into consideration the policies for overall spatial planning for the region with the objectives:

- a) to spell out goals and formulate policy guidelines to facilitate preparation of a Strategic Transport Plan (STP) for the sub-region and a multi-modal plan for linkages with NCR
- b) to coordinate activities of various groups/agencies at the plan formulation stage,
- c) to regulate allocation of funds to different agencies for coordinated development
- d) to ensure provision of land with focus on identification, reservation, and protection for development of transport related projects.
- 4.4.27.2. A **Transport Safety Authority/Cell** be set up in each sub-region, with shared data systems but independent of functional departments and under the direct charge of the Principal Secretary of the concerned State Department. Cell should ensure to conduct Safety Audit of all transport plans, designs and operations by a multi-disciplinary team.
- 4.4.27.3. **State departments** should collaborate engagement with the safety and security regulators for promoting safe air traffic in NCR with initial focus on Metro Centres and its satellite/ nearby towns.
- 4.4.27.4. A **coordinating agency** for the entire region, having a long-term goal of planning and development of a coordinated network of transport services, needs to be constituted with representatives from various Transport Authorities, which would coordinate and take an overall and integrated view of the total transportation system in the region. NCRTC may take this role. This shall strengthen coordination and cooperation between transport institutions and authorities, developing shared approaches to transport problems; ensuring efficient management of transport demands by gathering transport under a single umbrella.

4.4.28. Skill Development and Awareness

- 4.4.28.1. Training needs to be imparted to officials of various ULBs and government organisations to create adequately trained human resources for future transport requirements in planning mega projects in NCR.
- 4.4.28.2. NCR States/ Cities may launch awareness program about the components of TOD, its benefits, incentives to be reaped by the land owners, developers, infrastructure agencies and other bodies, reduced per unit cost for creating and maintaining infrastructure etc. and providing improved quality of life.
- 4.4.28.3. Training and awareness raising activities be undertaken regularly to promote the use of public transport and develop public transport /shared mobility culture.

4.4.29. Other Aspects

- 4.4.29.1. Integration of transport planning with land use planning for providing efficient, cleaner & safer movement of people & goods should be given prime importance in planning decisions of the region and its components
- 4.4.29.2. Identify land use and related policies and actions that support optimizing the efficient movement of vehicles for passengers, special employment areas, goods, and services on the major road networks of the region
- 4.4.29.3. Integrate all modes of transport in a complementary way. Given the increasing diversity of mobility needs, the principle of 'co-modality' should be at the heart of the future transport & mobility related initiatives. Different modes of transport should be seen as complementary and interconnected.
- 4.4.29.4. Possibilities should be explored regarding formulating and implementing Transportation Demand Management (TDM) practices like home based working

facilities, flexible working hours, and flexible working opportunities that reduce transport demand, and ensuring more balanced distribution of traffic throughout the day.

- 4.4.29.5. Delivery bays be designated in all markets keeping in mind the with proximity requirement of vehicle with the outlet.
- 4.4.29.6. Kerb ramps or raised footpaths equipped with tactile tiles should be provided to help blind, poorly sighted, elderly, and disabled people and for those with prams or wheelchairs.
- 4.4.29.7. Movement of People & Goods should be given prime importance.
- 4.4.29.8. Re-development, Re-vitalization & Transit facilities in Inner city, dilapidated areas & slums should be undertaken in a phased manner and land under transport use should be kept encroachment/encumbrance free.
- 4.4.29.9. To reduce the need of long commutes and to bring people closer to their jobs a growth model based on the public transportation system, through "Structuring Axes of Urban Transformation", be attempted in new areas being developed.
- 4.4.29.10. Construction of the roads should start from outer edges towards inside, to safeguard the right of ways. Spaces be earmarked for underground common ducts/utility trenches along the roads, with space for future increase in utility needs. Storm water trenches and with permeable spaces along roads to capture surface runoff, be ensured.
- 4.4.29.11. Streets shall be appropriately designed and maintained to ameliorate negative effects of traffic on pedestrian areas and adjacent uses, to provide usable on-street open spaces, to enhance property values, and to increase the safety and attractiveness of neighbourhoods.
- 4.4.29.12. Streets should serve as attractive and safe public open space corridors with generous landscaping, lighting, and greenery. Streets serve as public view corridors and provide light and air.
- 4.4.29.13. Similarly, all entry and exit points/areas in cities/ towns in NCR be appropriately planned to include landscaping/ beautification and kept congestion free.
- 4.4.29.14. Take actions that aim at improving traffic fluidity, rather that restricting it.
- 4.4.29.15. Streets and neighbourhoods should be designed to encourage walking instead of driving. Homes, jobs, shops, schools, and other everyday destinations should be within easy walking distance of each other. The street network should be convenient for pedestrians, with high-quality footpaths, short blocks, few cul-de-sacs, and higher-density housing. Efforts be made for having access to a public open space within 400 metres (about a five-minute walk)7.
- 4.4.29.16. Initiatives be taken towards making travel safer and more convenient. These may include having Complete Streets, connective sidewalks, public restrooms, and places to sit or rest in all communities, linking modes by clustering infrastructure, coordinating arrival and departure times, implementing effective wayfinding, and providing free or affordable transfers, etc.

4.4.30. Transit Oriented Development (TOD)

4.4.30.1. Need to adopt TOD and Value Capture mechanisms along transit routes and around transit interchanges both at urban and regional level. Land value capture can be done through enhanced or additional land value tax or one time betterment levy, development charges or impact fee, transfer of development rights (TDRs),or other such mechanisms which have been adopted in various States across the

⁷https://theconversation.com/this-is-what-our-cities-need-to-do-to-be-truly-liveable-for-all-83967

country. It is proposed that TOD policy provisions be elaborated, and major TOD areas be identified in each Sub-Regional Plan.

- 4.4.30.2. To discourage the use of private vehicles and to manage parking in TOD, it is essential that the supply of parking is reduced and made expensive within the influence zone.
- 4.4.30.3. Promote development along the Growth Corridors namely, Peripheral Expressways (01, 02, & 03 referred at 5.2.9 above), RRTS corridors, ORCs, highways, etc.
- 4.4.30.4. Efforts be made to achieve transformation from inefficient land use and unsustainable land markets to synchronising public and private investment around transit stations, nodes and transformation areas
- 4.4.30.5. Major projects need to be identified with justification of benefits and land be reserved along the transit corridors for future development up to 2041.Identifying and preserving land for future port and airport, intermodal and rail infrastructure at macro level and even the land required for transit uses, like truck/ bus layovers
- 4.4.30.6. All new City/settlement spatial sizes/spread be decided based on having "15- minute city" (like Paris) concept wherein all essential services and daily needs items as required by the citizens is available within a 15-miniutes radius on foot/ bike or NMT.
- 4.4.30.7. To reduce the need of long commutes and to bring people closer to their jobs a growth model based on through development of residential and office spaces around public transportation systems be attempted in new areas being developed.
- 4.4.30.8. Speed limits should be enforced across NCR, as per IRC norms applicable to the hierarchy of respective roads to prevent accidents and improve road safety in the region. Speed Governors should mandatory and be strictly enforced on all Expressways, NHs and SHs. It should be ensured that Speed Governors are functional and the same be checked regularly.
- 4.4.30.9. Adopt an integrated approach to road safety through improvements in vehicle technology with complementary intelligent transport systems, better road design and maintenance, improved drivers training, and enforcement of traffic regulations.
- 4.4.30.10. States should move towards achieving Zero Road Deaths in NCR, by strengthening various aspects such as sufficient driver training schools, mandatory installation and monitoring of speed governors, efficient road/intersection designs, street furniture, street lighting, zero unmanned crossings, regular safety audits of railway lines, strict check on overloading, efficient traffic management plan implementation during project execution etc. All districts must have driver training facilities/ driving schools to facilitate qualified drivers on NCR roads
- 4.4.30.11. Departments should adopt use of climate projections to plan, maintain, and construct transportation system elements, such as pavements, bridges, drainage structures, catenary, and rails. Departments should determine the vulnerability of transportation infrastructure to climate change impacts and design transportation infrastructure to withstand and adapt to the climate of its intended lifespan.
- 4.4.30.12. All NCR Districts should conduct an analysis of road performance under severe weather conditions to develop planned responses and address flood vulnerability of critical transportation assets.
- 4.4.30.13. Re-development, Re-vitalization & Transit facilities in Inner city, dilapidated areas & slums should be undertaken in a phased manner and land under transport use should be kept encroachment/encumbrance free. A typical schematic diagram of a 75-metre road cross section is given at *Annexure P-4.1.3* for reference as best practice.
- 4.4.30.14. Construction of the roads should start from outer edges towards inside, to safeguard the right of ways. Spaces be earmarked for underground common ducts/utility

trenches along the roads, with space for future increase in utility needs. Storm water trenches and with permeable spaces along roads to capture surface runoff, be ensured.

4.4.31. Parking

- 4.4.31.1. To restrict unauthorized parking and to avoid congestion caused due to on-street parking, it is important to have an enforcement mechanism in place. All NCR cities should have a parking policy with heavy penalty for unregulated parking in the influence zone of transit points and ensure that the same is implemented. Parking should have price variations according to time of day and duration of parking.
- 4.4.31.2. Multi-level parking complexes should be a mandatory requirement in city centres that have high rise commercial complexes and be given priority.
- 4.4.31.3. Designated parking spaces be developed in periphery of Delhi near entry/exit points, for mandatory overnight parking of Commercial vehicles, Public Transport vehicles including Buses, Cabs etc. instead of their overnight parking inside Delhi, which itself should be banned.
- 4.4.31.4. Other districts may monitor the availability and promote the adequate supply of overnight truck parking, outside urban limits.
- 4.4.31.5. Encourage car share to reduce the number of cars in circulation. Permission to buy /have new cars be only when the owner ensures availability of parking space and gradually work towards capping the increase in number of cars.
- 4.4.31.6. Delhi has 9 major locations contributing to 75% of total entry traffic. These entry points should be kept congestion free 24x7.For improving the public mobility, buses need to provide quality and cleanliness. Public and Commercial vehicle movements have to be seamless across State borders.
- 4.4.31.7. Policies and proposals of this Regional Plan 2041 be elaborated in the Sub-regional Plans of the respective Sub-region, Master /Development Plans, and other lowerlevel Plans. Other broad Policies also to be detailed out in Sub Regional and lowerlevel Plans are given Annexure P-4.4.

4.4.32. Major Projects and Implementation Strategies

- a) The Metro rail projects extending to adjoining states of NCR should be taken up as per proposed schedule programme. Metro Rail Corporations should undertake following corridors for development by 2030 i) Sonipat-Panipat, ii) Ghaziabad-Meerut, iii) Faridabad-Palwal-Jewar (TIA), iv) Faridabad-Gurugram, v) Bahadurgarh-Rohtak, vi) Gurugram-Manesar-Rewari-
- b) New Rail lines linking Regional Centers and Metro Centers in the form of (ORC-I, ORC-2, and ORC-3) should be taken up on priority in a phased manner.
- c) RRTS corridors (all eight as proposed in RP 2021) and DMIC corridors including the link from Gurugaon–Manesar -Rewari, Dharuhera and Bawal, be implemented on priority. Extension of RRTS corridors to closest CMA town of NCR may also be taken up on priority.
- d) The implementation of following proposed high speed rail corridors be expedited:
 - i. Delhi-Agra-Lucknow-Varanasi (linking NCT of Delhi and CMA of Lucknow Kanpur)
 - ii. Delhi-Chandigarh-Amritsar
 - iii. Delhi-Jaipur-Ahmedabad

- e) Up-gradation of National Highways falling in NCR be carried out by the Ministry of Road Transport and Highways or as part of NHDP or other programmes, as per schedule and requests of respective State requirements be taken up on priority.
- f) The implementation of following proposed Expressways & Highways be expedited:
 - i. Delhi-Meerut Expressway be made fully operational by 2022.
 - ii. The Delhi–Mumbai Expressway (a green-field highway) project under Bharatmala Pariyojana connecting Delhi-Vadodara via Sohna, Alwar, Dausa, Sawaimadhopur, Bundi, Kota, Ratlam be made fully operational by 2025.
 - iii. The New Ganga Expressway connecting Meerut with Prayagraj be completed by 2025.
 - iv. The Delhi-Amritsar-Katra Expressway
 - v. Six-lane Trans-Haryana Highway (From Ambala to Kotputli (Raj.)
- g) Constrained infrastructure at Delhi airport be expanded. Further, the construction of Jewar International Airport be expedited.
- h) To ease congestion, Delhi government to invest in widening of roads stretches like roads in Mahipalpur area, road stretch connecting Dhaula Kuan to Gurgaon, Rao Tula Ram Marg (single lane roads), etc.
- Regional Road Network System is envisaged as a high capacity, high speed, and high-quality road network in NCR. Access control is required to be provided at important intersections between the roads of same class or different classes enabled with full or partial grade separated interchanges. Based on the following broad guidelines, detail interchanges be identified at Sub-regional and local level and implemented on priority by 2026, in phases as follows –

1	Between Expressway & Expressway	Full Interchange	By 2023
2	Between Expressway & Regional Arterial -	Full or Partial Interchange	By 2024
	(National Highways)		
3	Between Regional Arterial & Regional Arterial	Partial Interchange	By 2025
4	Regional Arterial & Regional Collector (State	Partial Interchange	BY 2025
	Highway)		
5	Between Regional Collector & Regional	At Grade (with proper signal	By 2026
	Collector	free design)	

- j) All interstate/ intra-region and all City level Bus Terminals should be developed and modernized with a state of art amenities and facilities, by 2025. An indicative list of amenities and facilities is given at **Annexure-P-4.5**.
- k) Specific projects envisaged to be taken up in NCR related to Transport & Mobility are listed at **Table 4-11** below, but not limited to:

 Table Error! No text of specified style in document.-11 Key projects envisaged to be taken up regarding Transport & Mobility sector in NCR (2021-2041)

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
Road					
1.	Projects for widening of Highways	50% of all NHs	All NHs and	-	-
	(NH/ SH)	and SHs	SHs		
2.	Projects for the development of	To be	Work	-	-

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	Peripheral Expressway No.2	Investigated by 2024	initiation and completed by 2031		
3.	Projects for the development of Peripheral Expressway No.3	To be Investigated by 2024	Work initiation and completed by 2031	-	-
4.	Elevated Outer Ring Road in Delhi	To be Investigated by 2023 and be constructed by 2026			
5.	Development of emergency service lane/ accident recovery lanes along NH/ Expressways/ SH/ MDRs, etc.	All NH/ Expressways by 2023	All SH/ MDRs by 2027	-	-
6.	Development of Trauma Center facilities/ hospitals on all National & State Highways and Expressways	All National Highways and Expressways	All State Highways	-	-
7.	Development of Highway Facility Centres (HFC)	All Highways, E State Highways	xpressways and	-	-
8.	Projects for Construction of missing road links (links to be identified and projects to be formulated)	Missing links of NHs and SHs	Missing other	g links of roads	-
9.	Construction of bye-passes around urban and major rural settlements	All major urban settlements with 10,000 and more population	All major Rural settlements above 5000 population	-	-
10.	Development and modernization of Bus Terminal/ Metropolitan Passenger Terminals	All Inter-State	All Intra- region and intra-city	-	-
11.	 Projects covering constriction of Inter/ Intra-State missing link projects necessary to have radial and reticular network in NCR: 1) Rajgarh (Alwar) –Kherli (Bharatpur) 2) Tijara (Alwar) – Nuh(Mewat) 3) Tijara (Alwar)- Nagina (Mewat) 4) Kaman (Bharatpur)- Punhana (Mewat) 5) Nangal Chaudhary- Behror 6) Bhakali (Rewari) – Farukhnagar (Jhajjar) 7) Karnal- Jalalabad (Shamli) 	To be investigated and implemented by 2025	-	-	-

SI. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	 8) Palwal – Jewar 9) Bagapat – Doghat 10) Bhokarhedi-Sikenderpur – Mawana-Garhmukteshwar –Siana-Anupshahr 				
Rail					
12.	 Projects for the development of missing rail links/ new rail lines. Broadly identified links are: a) Karnal – Jind - Bhiwani - Mahendergarh - Narnaul - Behror - Alwar b) Alwar - Deeg - Kurja (may be via Mathura) c) Khurja - Garhmukhteshwar - Muzaffarnagar - Karnal d) Meerut – Panipat 	All missing rail lines to be made 203	links/ new rail operational by 30	-	-
13.	Projects for construction of ORC	Haryana sub- region by 2025	U.P. sub- region by 2028	-	-
14.	Construction of Regional ORC	To be Investigated by 2024	Work initiation and completed by 2031		-
15.	Construction of Outer ORC	To be Investigated by 2024	Work initiation and completed by 2031		-
16.	Projects for the construction of RRTS connecting Metro centers and Regional centers	Delhi-Meerut by 2025	Delhi-Panipat and Delhi- Alwar	All other	· corridors
17.	Projects for the construction of RRTS connecting CMAs	_	Sotanala to Jaipur and Panipat to Ambala- Rajpura	All other CMAs (Hisar be given priority due to aviation hub)	_

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
18.	Fast Rail Connectivity Projects for 30 minutes rail connectivity from NCR limits to Delhi	North-South to be Investigated and completed by 2024-2026	East-West to be Investigated and completed by 2026-2031		
19.	Construction of intra-urban transit system likes Metro Rail/ LRT/ Monorail (MRTS)/ BRTS, etc.	All Metro Centers	All Regional Centers	Other towns/ cities as required	-
20.	Development & augmentation of Ring Railway in Delhi	To be developed& augmented by 2025	-	-	-
Air		ſ			
21.	Project for development of District Level Airports/ Airstrips	All unserved/ underserved Airports/ Airstrips	New Airports/ Airstrips in all remaining districts	-	-
22.	Develop New Helipads/ Heliports	All abandoned Helipads/ Heliports	New Helipads/ Heliports at least one in each remaining district	-	-
23.	Development of water Aerodromes	At least one in Delhi	At least one in each U.P., Haryana and Rajasthan (siliserh lake) Sub-region	-	-
Water					
24.	Develop inland over rivers and major Canals.	To be developed on feasible locations by 2030	-	-	-
25.	blue green network in all sub-regions	To be developed in a least one major city in each sub-region by 2026	-	-	-
Multi Mo	dal Logistic Parks/ Hubs/ Stations				
26.	Development of MMLPs	Chaudhary Nangal Narnaul and Dadri	Bharatpur and A;lwr in Rajsathan, Nuh in Haryana and Jewer airport	-	-

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Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
			in UP		
27.	Development of Multi Modal Stations	-	-	-	-

Chapter 5

Power and Energy

5.1 Introduction

- 5.1.1 Power and Energy are two essential infrastructures for socio- economic development, productivity and improving quality of life in a country. Electricity is essential for all facets of human life and has now become a basic human need. The growth in industrial, commercial activities, transport and change in life style have led and would also lead to higher electricity demand in all sectors of economy. The commitment to inclusive growth also requires access to affordable, reliable and quality power to all households. The electricity demand forecast of various sectors of consumption is an important input for planning and meeting future requirement of power & energy. This also enables utilities to plan and arrange power infrastructure necessary to meet the demand and ensure un-interrupted 'electricity to all'.
- 5.1.2 The Government of India has identified 'Power' as a key focus sector promoting sustained industrial growth. The Union Budget 2020-21 has allocated Rs 15,875 crore (US\$ 2.27 billion) to Ministry of Power and Rs 5,500 crore (US\$ 786.95 million) towards the Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY).
- 5.1.3 'Power for All' (PFA) Initiative is about providing 24x7 uninterrupted power supply to all households/ homes, industrial and commercial consumers and adequate supply of power to agricultural consumers.
- 5.1.4 Ministry of Power has launched Pradhan Mantri Sahaj Bijli Har Ghar Yojana-Saubhagya¹ in 2017 which aims to provide universal household electrification. Ministry of Power had prepared a draft proposal for Amendments in Electricity Act 2003 in the form of draft Electricity (Amendment) Bill 2020 which proposes consumer centricity, direct benefit transfer of subsidy, 24*7 Power supply²as an obligation, Ease of Doing Business, penalisation on violation of PPA, setting up Smart Meter and Prepaid Meters, promotion of green power, etc. along with regulations related to the same. Salient Features of the Bill are placed at Annexure-D-1.1.
- 5.1.5 As on October, 2019, total installed capacity of India's power system was 365 GW; with the capacity for Thermal being 229 GW (62.7%), that of Renewables being 83 GW (22.7%), capacity for Hydro is 46 GW (12.6%) and that of Nuclear is 7 GW (2%)). In Northern Region, the installed capacity is 96 GW (Thermal: 58 GW (60.4%), Renewable: 16 GW (16.6%), Hydro: 20GW (20.8%) and Nuclear: 2 GW (2.0%).

¹<u>https://www.recindia.nic.in/saubhagya</u>

²<u>https://www.recindia.nic.in/power-for-all</u>

- 5.1.6 India's Per Capita Electricity consumption is less than 50% of World's **average** consumption. India ranks 3rd globally in Primary Energy consumption with 5.6% share and 2nd in world for coal consumption, accounting for 85% of world's total consumption³ and its total oil import is 9.4%.
- 5.1.7 India has one of the highest levels of electricity T&D losses in the world i.e. almost20% of generation which is a major concern. Power utilities need to work towardsataining100% underground cabling for reduction of damage caused by severe weather conditions such as lightning, cyclones and power theft, thereby reducing aggregate technical and commercial (AT&C) losses.
- 5.1.8 Inter-state transmission system (ISTS) network is adequate to cater power transfer requirement through ISTS transaction by 2022. Northern region is very well connected with the Western Region and Eastern/North-Eastern Region through various high capacity AC and HVDC corridors. Surplus power available in NER/ER & WR can be transferred to NR through these corridors. Various S/Ss located in the NCR area are also having enough adequate capacity. Therefore, from transmission point of view, prima-facie there are no constraints envisaged in NCR in the near future.
- 5.1.9 India in its Nationally Determined Contributions (NDCs) under the United Nations Framework Convention on Climate Change (UNFCCC) has stated that it will propagate a sustainable way of living by adopting climate friendly technologies and a cleaner growth path. It has set the target to reduce the greenhouse gas emissions intensity of its GDP by 33 to 35 percent by 2030 from 2005 level. It also plans to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030⁴.
- 5.1.10 Internet of things (IoT) will change the way power distribution is done. Consumer behavior will change drastically. Smart meters and spot power markets will have huge impact of power supply scenarios in future. Cheap RE power and avenues for its handling with hydro & thermal power has potential to alter power scenario. Technology is changing fast, hence the plans and proposals for power need to have dynamic elements in it. Accordingly, country needs to be adequately equipped for the coming era of Electric Vehicles (EVs).
- 5.1.11 As per the National Electric Mobility Mission Plan 2020 of Department of Heavy industries, Government of India, the number of electric vehicles in India is likely to increase in a big fold (National target to bring 6 to 7 million EVs on roads by 2020 and to achieve 30% e-mobility by 2030). The growth rate of 7% in commercial category during the period 2016-17 to 2021-22, includes electricity demand of e-rickshaw, two wheelers, cars etc. , however, if all the electric vehicle as projected in the National Electric Mobility Mission Plan materialize, the additional electrical energy requirement would be of the order of 8-9 BUs on all-India basis.
- 5.1.12 Ministry of Petroleum & Natural Gas has formulated National Policy on

³ Source: Data shown is for 2016 - <u>https://www.worldometers.info/coal/india-coal/</u>

⁴ Shri Abhay Bakre, DG, Bureau of Energy Efficiency

Biofuels, 2018, to provide cleaner environment, employment generation, reduced import dependency, boost to infrastructural investment in rural areas, additional income to farmers and health benefits, etc. The policy aimed at taking forward the target of achieving 20% blending of biofuels with fossil-based fuels by 2030^5 .Salient Features of the policy are placed at **Annexure-D-1.2**.

- 5.1.13 Ujwal Bharat is a joint programme of the Ministries of Power, Coal and New & Renewable Energy which focuses on illuminating the life of every Indian⁶. Ministry of Power and the State Governments have introduced various programmes for vigorous DSM, improvement of energy efficiency and energy conservation measures like Standards & Labelling (S&L) programme, The Perform, Achieve, Trade (PAT) scheme in energy intensive industries, Energy Efficient Lighting solutions, Super-Efficient Equipment Programme etc.Brief about PAT provided at **Annexure-D-1.3**.
- 5.1.14 The Government of India has developed the Energy Conservation Buildi ng Code (ECBC), which provides minimum energy performance standa rds for energy efficient buildings, which can to be referred while designing private and public buildings. The ECBC is currently a voluntary program me, with a number of States adopting it as a mandatory requirement. *f*After the introduction of ECBC, MoEFCC suggested ECBC compliance while undertaking EIA for all building and construction projects falling under their purview. Apart from EIA, in 2008, the Ministry of New and Renewable Energy, the Government of India have launched Green Rating for Integrate d Habitat Assessment (GRIHA). GRIHA rating standards have been incorp orated the provisions of the NBC 2005, ECBC, and other Indian Standard co des.
- 5.1.15 The Generic Energy Efficiency Guidelines are applicable for various c ategories of the building irrespective of their climate location.
- 5.1.16 The renewable energy capacity target for India has been set at 450 GW by 2030. The National Electricity Plan⁷ (Volume 1- Generation), prepared by CEA in 2016 predicts that 57% of India's total electricity capacity will come from non-fossil fuel sources by 2027 whereas as per Paris climate accord target was 40% by 2030; Government of India has set a target of 175 GW of renewable capacity by 2022 consisting of 100 GW solar, 60 GW wind, 10 GW biomass and 5 GW of small hydro; it is preparing a 'rent a roof' policy for supporting its target of generating 40 gigawatts (GW) of power through solar rooftop projects by 2022.MNRE is aiming for about 500 GW of renewable capacity by 2030;

⁵<u>https://pib.gov.in/Pressreleaseshare.aspx?PRID=1532265</u> and ⁶<u>https://vikaspedia.in/energy/policy-support/ujwal-bharat</u>

⁷ Source: <u>http://www.cea.nic.in/reports/committee/nep/nep_dec.pdf</u> (page 12.16)

5.2 EXISTING STATUS

5.2.1 The total generation capacity of Power in NCR is 9,496 MW (<10 GW); of that thermal power generation is 5,560 MW (58.5%), Gas based generation is 3,480 MW(37%) and generation from Other sources is 456 MW(0.5%). Various Central/State/ Private Sector Power Projects for Power Allocation to Northern Region and NCR States is given at Annexure-D-1.4.Various S/Ss located in the NCR area are also having enough adequate capacity. Inter-state transmission system (ISTS) network is adequate to cater power transfer requirement through ISTS transaction by 2022.



Figure 5.1: Power Map of NCR, 2019

Source: CEA, Power sector Review Report on RP-2021

5.2.2 NCRPB has facilitated the NCR States and Counter Magnet areas (CMAs) to create necessary infrastructure for strengthening the power sector (refer Table 5.1 below). Thirteen projects in Haryana (including strengthening of Sub-transmission& distribution network including metering in Jhajjar, Rohtak, Panipat & Sonipat Circles), six in Rajasthan, one in Uttar Pradesh

sub-region and one in Gwalior CMA has been completed, so far with the financial assistance of NCRPB. While most of the projects pertain to creating, strengthening and up gradation of transmission and distribution system, two of the projects were related to power generation. More details regarding NCRPB's assisted Power Sector Projects is provided in **Annexure-D-1.5**

 Table 5.1: Summary of Power Sector Projects with loan assistance from NCRPB (as on 30th September 2020)

				(Rs. in Cr.)
Sub-region/CMA	No. of Projects	Estimated cost	Loan Sanctioned/ Final Loan as per CC	Actual Loan Amount released
Ongoing Projects				
Haryana Sub Region	1	19.74	5.93	4.15
Rajasthan Sub Region	2	75.28	56.46	13.11
Sub-total	3	95.02	62.39	17.26
Completed Projects				
Haryana Sub-region	11	546.03	403.45	397.56
Rajasthan Sub Region	5	291.58	205.03	200.29
UP Sub Region	1	299.89	224.89	140.40
CMA Gwalior	1	16.00	12.00	12.00
CMA Kota	1	880.00	160.00	160.00
CMA Hisar	2	4298.66	530.01	521.02
Sub-total	21	6332.16	1535.38	1431.27
Total	24	6427.18	1597.77	1448.53

- 5.2.3 Per-capita energy consumption in NCR is 1,694 kWh (2018-19), which is much higher than the Northern Region (i.e. 953 kWh). Its energy demand density is 1.9 MU/km²/year⁸. As per the Report on 19th Electric Power Survey (19th EPS) of India (Volume-II) (NCR) prepared by CEA, Ministry of Power, total electricity consumption of NCR in year 2018-19 was 83,849 MU (with14.68% T&D losses), against the requirement of 98,271 MU. During 2013-14 to 2017-18, NCR has observed annual growth rate of 4.87% in terms of electrical energy requirement. Peak Demand for the region was 15,430 MW in year 2018-19. Domestic sector was the biggest consumer of electricity (35%) followed by HT Industry sector and Commercial sector consuming about 22% & 15% respectively of the total electricity consumption of NCR⁹.
- 5.2.4 T&D losses in the NCR constituent states are quite high and all efforts are needed to reduce the same (refer table 2.6 of Annexure-D-1.6). More brief about above and some other issues and challenges provided at Annexure-D-1.7. It is a fact that the unit of electric energy generated by power stations does not match with the units distributed to the consumers. Some percentage of the units is lost in the distribution network. This difference in the generated & distributed units is known as transmission and distribution loss.

⁸ Shri K.V.S. Baba, CMD, Power Systems Corporation of India (POSOCO)

⁹ Report on 19th Electric Power Survey of India (Volume-II) (National Capital Region), CEA, MoP, GoI

There are two types of transmission and distribution losses i.e. Technical losses and Non-Technical (Commercial Losses) losses¹⁰. Distribution Sector is considered as the weakest link in the entire power sector. Many distribution pockets of low voltage (430V) in town are surrounded by higher voltage feeders. At this lower voltage, more conductor current flows for the same power delivered, resulting in higher losses; low efficiency transformers are responsible for significant part of network losses.

- 5.2.5 Domestic sector was the biggest consumer of electricity (35%) followed by HT Industry sector and Commercial sector consuming about 22% & 15% respectively of the total electricity consumption of NCR¹¹.
- 5.2.6 Theft of electric power Theft of electric power is a major problem faced by all electric utilities. Tampering of line and thefts are rampant in case of LT lines in many parts of the settlements in the region and are accounted as one of the causes for losses. The impact of theft is not limited to loss of revenue; it also affects power quality, resulting in low voltage and dips in voltage.
- 5.2.7 Performance of DISCOMS: As per earlier CEA analysis based on 2010-11 & 2015-16 data, AT&C losses had shown reducing trend in DISCOMS of NCT Delhi and Paschimanchal Vidyut Vitaran Limited (Uttar Pradesh), however in case of JVVNL (Rajasthan) the AT&C losses have increased from 22.66% to 33.08%. Similarly in Haryana the AT&C losses had increased from 26.29% to 30.23% for DHBVNL and from 29.85% to 35.03% for UHBVNL (refer table 2.5 of Annexure-D-1.6).
- 5.2.8 An assessment by Uttar Pradesh Power Corporation Limited (UPPCL) shows, that as per District-wise average MW Demand, Distribution & AT&C Losses in UP sub-region, Gautam Budhh Nagar scored lowest (4.20 % of Distribution loss and 10.02% of AT & C losses) while Shamli scored highest (23.30% of Distribution loss and 32.66% of AT & C losses) in the sub region. The total distribution loss is 12.51% and total AT&C loss is 19.21 percent in the sub-region. As per earlier CEA analysis based on 2010-11 & 2015-16 data, AT&C losses had shown reducing trend in DISCOMS of NCT Delhi and Paschimanchal Vidyut Vitaran Limited (Uttar Pradesh), however in case of JVVNL (Rajasthan) the AT&C losses have increased from 22.66% to 33.08%. Similarly in Haryana the AT&C losses had increased from 26.29% to 30.23% for DHBVNL and from 29.85% to 35.03% for UHBVNL (refer table 2.5 of Annexure-D-1.6 based on CEA data in CEA 19th EPS Volume-II for NCR, 2019-20).
- 5.2.9 NCR is hub of commercial activities and security of power supply is most important aspect of this. As power is a part of Critical National Information infrastructure, cyber security of this sector is most important as its availability affect many other important sectors like transport, health and

¹⁰<u>https://www.electricalindia.in/losses-in-distribution-transmission-lines/</u>

¹¹ Report on 19th Electric Power Survey of India (Volume-II) (National Capital Region), CEA, MoP, GoI

security of strategic locations in NCR. NCIIPC, CERT-In and CERT-MOP are coordinating Cyber Security aspects of power sector.⁷

- 5.2.10 NCT Delhi has increased its solar power generation capacity to 78MW from the 56MW recorded last year. Govt. of NCT Delhi, has put forth a proposal to develop the New Delhi Municipal Council (NDMC) area as a Solar City by installing SPV panels on the rooftops of government buildings, metro stations, bus stops, etc. Besides this, 74MW of solar capacity is being created across Delhi, at various government departments, as well as in the domestic and social sectors. Application of Solar energy (solar rooftop) -Gurugram, too, has reached a total installed capacity of 25MW of solar power, which is a 47 per cent increase over the corresponding period of 2017 - underlining the growing potential of renewable energy in the NCR. NCT Delhi has set the target for 2020 as 1000 MW in its Solar policy, however, actual achievement till March, 2019 was only 128 MW, i.e. only 12.8%; RPO Obligation: For non-solar it is 10.50% by 2021-22, and for solar also it is 10.50% by 2021-22.; Present compliance of Delhi is 3%. Delhi DISCOMs are entering into Long term and short term power contracts to fulfill this requirement and Rajasthan would be able to meet this as it has wind and solar capacity.
- 5.2.11 The implementation of automation and smart grid initiatives have been taken up by the DISCOMs of Delhi at a larger scale through installation of ring main units automatic sectionalizer and installation of unmanned grid sub stations. Metering infrastructure has also been created by installation of static meters. Delhi has already set up 10 MW battery storage, which are just like massive invertors interconnected on a network of 200 MW capacities, which can feed around 2500 preferred customers. Such steps can be a massive backup arrangement to deal with situations like grid failures.
- 5.2.12 Other DISCOMs of the NCR region have also taken initiatives under integrated power development scheme. The cities of Faridabad and Karnal of Harvana, Ghaziabad of Uttar Pradesh and New Delhi Municipal Council (Delhi) are covered under smart city proposals.Spreading of Distribution Automation and Development of Smart Grid in NCR beyond urban areas to enable optimization of energy generation, transmission, distribution and consumption is also a challenge being faced by the power sector. Such initiatives need to be initiated and extended for achieving 'Smart NCR'. ADSM has been fully implemented by TPDDL in Delhi and is under implementation in Rajasthan (LoA placed on 12.12.2018 with an execution period of 18 months for ADMS at the level of 33kV feeders at EHV Substation of RVPN under SCADA / EMS part of project). In U.P.remote operation of 132 kV feeders under ADMS is operational with some issues prevail for the down below network which needs to be taken up with the DISCOMs. Harvana has not implemented ADMS scheme so far. Limited implementation of automation and smart grid initiatives is thus a challenge for achieving a 'Smart NCR'.

5.3 KEY ISSUES AND CHALLENGES

- 5.3.1 The prime concern is development and management of various forms of energy for meeting the growing energy needs of society at a reasonable cost. Availability of land for power Plants and Transmission Lines is a major constraint.
- 5.3.2 Dependence on Coal based thermal power generation Nearly 60% of power generation in NCR area is coal-based thermal power generation that leads to increase in greenhouse gas emissions and pollution levels. Installation of Flue Gas Desulfurization (FGD) for reduction of SO2 is necessary to be complied with under new environment norms regarding emission of flue gases in and CEA has to closely monitor its implementation at thermal generation stations.
- 5.3.3 State-owned Power Distribution Companies (DISCOMS) are underperforming; the financial stress that DISCOMS are in has meant payment delays for developers, cancellation of auctions, and lack of enforcement of contracts -- this dampens investor confidence and developers' interest. The most recent attempt to reform them was launch of the Ujjwala Discom Assurance Yojana (UDAY). UDAY was initiated so as to encourage operational and financial turnaround of DISCOMS, with an aim to reduce Aggregate Technical & Commercial (AT&C) losses to 15 per cent. However, the attempt has not fully yielded desired results. Underperformance and Financial stress of DISCOMS still need to be addressed.
- 5.3.4 There are incidents wherein their public or billing portals are victims of Cyber-attack. While Central Power Utilities and private DISCOMS in Delhi are prepared to an extent to deal with Cyber Security, other distribution and transmission companies in NCRs are not geared up. Even after lot of efforts by Ministry of Power, these utilities have not prepared their Crisis management Plan (CMP) and not identified their Critical Infrastructure (CII). Limited Availability of Cyber Security is a matter of concern. Cyber Security in power projects/ sector is one other major challenge that needs adequate attention.
- 5.3.5 Solar rooftop has failed to make substantial headway in the current market which is skewed towards large-scale solar energy with the preference being on commercial and industrial installations; moreover, the targets have not been met and installations have also been limited. Residential consumers, who hold immense potential, they account for less than 20 per cent of the total installed capacity. Though solar policies are formulated, limited installation/ application of solar energy (solar rooftop) is a reality. MNRE has removed the upper ceiling tariffs for solar and wind projects to promote the renewable energy sector¹²
- 5.3.6 Spreading of Distribution Automation and Development of Smart Grid in

¹²https://mercomindia.com/mnre-tariff-caps-solar-wind-tenders/

NCR beyond urban areas to enable optimization of energy generation, transmission, distribution and consumption is also a challenge being faced by the power sector.

5.3.7 At ground level the primary challenges concern the Cable Laying and ROW issues as, (a) cables are laid through digging, (b) road cutting permission constraints, (c) trenchless cable laying for crossing main roads, and (d) unauthorized colonies exist under many lines. Further, there are difficulties in lay new cables due to congestion, time consuming fault identification & restoration, high cost of fault repair, cables resulting in safety issues are some of the major constraints across the region.

5.4 POLICES AND PROPOSALS

- 5.4.1 Peak Demand is expected to reach 29233 MW in year 2029-30 with a CAGR of 5.78%. The CEA Report on Nineteenth Electric Power Survey of India (Volume-II) (National Capital Region), providing power forecasts for NCR and its sub-region (FY 2019-20 to 2029-30, indicates the following:
- 5.4.1.1.Based on total electricity consumption and T&D Losses, the total energy requirement of NCR is estimated as 1,02,631 MU in year 2019-20 and it is expected to reach 1,27,149 MU in year 2024-25 with CAGR of 4.38%. The energy requirement is estimated as 1,54,916 MU by the year 2029-30 with CAGR of 4.03% for the period 2024-25 to 2029-30. The CAGR of energy requirement for the next ten years (2019-20 to 2029-30) is expected as 4.20%.



Figure 5.2 : Energy Requirement Forecast of NCR (FY 2018-19 to 2029-30)

5.4.1.2.Peak Demand for NCR is expected to see 6.14% CAGR upto 2024-25 and will reach 22070 MW in comparison to 16386 MW in year 2019-20. The CAGR of peak energy demand for the next ten years (2019-20 to 2029-30) is expected as 5.96 %. The Peak Demand for NCR is expected to reach 29,233 MW in year 2029-30 with a CAGR of 5.78% and 54,000 MW by 2041. The peak demand forecast for the following sub regions of NCR for the year 2030 is as follows: 9,379 MW (32%) for

Haryana sub-region, 1,978 MW (6.7%) for Rajasthan sub-region, 7,319 MW (25%) for UP sub-region and 11,884 MW (40%) for Delhi. The peak demand for Delhi for the year 2035 has been estimated as 12,700 MW. The five year interval forecasts up to 2041 are expected to be worked out by CEA/ NCR participating States.Snapshot of Power sector including sectoral details of NCR given at **Annexure-D-1.6.**

- 5.4.2 In view of wide variation in power demand between peak and off peak period in NCR, there is need of peaking power plants with high ramp rates. NCR States should accordingly, assess the related technological options, introduce Time of day (ToD) metering, and regulatory issues for peaking and reserve power plants and estimate & plan the quantum of such plants as may be necessary.
- 5.4.3 NCR State may explore possibilities of having pumped storage plants dedicated to NCR requirements, in the adjacent hilly States like Uttarakhand, Himachal Pradesh and even at U.P.
- 5.4.4 Initiatives be taken to promote solar inverters and other energy storage systems with grid forming capability. Further, HVDC Voltage Sourced Converters (VSC) be considered due to their black-start capabilities, as it can be also helpful with right of way.
- 5.4.5 Explore possibilities of converting old thermal units in NCR into Synchronous Condenser (help in Inertia & dynamic VAR).
- 5.4.6 Power departments may optimize and reduce their land requirement for power plants by adopting compact plant design, setting up of integrated projects for fly ash utilization, adopting multi-storey concept for township, etc. Lower level plants may consider demarking space allocation for substations in both existing and new areas based on load density and size of land, as suggested by power agencies. Standardization of substation sizes be done based on capacity and voltage ratio.
- 5.4.7 Efforts may also be made towards re-conductoring of existing transmission lines with higher capacity conductors.
- 5.4.8 All NCR States may prepare Business Plans for their respective areas up to 2041 giving phasing for every five year in line with 13th Business Plan of Delhi (2017-2018 to 2021-2022).
- 5.4.9 NCR States should closely coordinate with CEA and ensure the FGD installation in all thermal power plants.
- 5.4.10 Islanding not possible, not required. However to scale up, reasonable strategies are required to be framed by the NCR State Governments in their Sub-Regional Plans.
- 5.4.11 The requirement for electrical networks (new substations and infrastructure) for various districts of UP sub region is as follows with a total cost of Rs.68,720 crore(Refer Annexure- P-1.1 and P-1.1.1)Future Estimates of Electrical Networks (New Substation & Infrastructure) for the districts of

Uttar Pradesh Sub- Region show that the requirement is 926 no. of 33/11 KV Substation, 8480 km of 33 KV Line, 13.462 kms of 11 KV Feeder Line, 13000km of Underground Cable, 36,500 km of AB Cable, 87280 no of Distribution T/F and 7,035 no. of Auto-Re closure / RMU with SCADA Work. Other NCR sub-regions also need to prepare such detail Plans in their SRPs.

- 5.4.12 As per Government of India's focus on a sustainable future, NCR is envisaged to develop as clean environment friendly region with emphasis on generation of renewable energy. The strategies for NCR are within the framework of the identified focus sectors, proposals and targets, schemes and programmes of various Ministries in the Government of India. NCR needs to be developed as a clean, environment friendly region and promoted as a Renewable Energy hub, a Smart Hub through adoption of solar power generation, Waste to Energy, bio-energy, automated and smart grid initiatives etc.
- 5.4.13 With respect to 'Power for All' (PFA) Initiative, 24x7 uninterrupted power supply to all households/ homes, industrial and commercial consumers and adequate supply of power to agricultural consumers shall have to be ensured in NCR and has to be managed with a right mix of renewable &non-renewable energy sources.
- 5.4.14 Adequate cyber security measures need to be implemented for ensuring secure power supply across NCC. Crisis Management Plan (CMP) be mandatorily prepared by all Utilities and implemented in a phased manner. Further, Critical Infrastructure (CI) should be identified/ listed by the Utilities, as per the directions of the Ministry of Power, Govt. of India.
- 5.4.15 The Service sector share which is expected to be more than 80% in State GDP against current contribution of 55%, will demand more power in future. Expected Jewar Airport development will also lead to related development of service sector and real estate, offering more job opportunities in the region will demand more power. UPPCL had the energy tie-ups up to year 2027. Considering the current tie-ups the deficit in UP is expected to kick in from FY 2030 onwards. It is also expected that Solar Battery Storage will kick-in from FY 2025 onwards as will be the increase in E mobility services.
- 5.4.16 Underground cables will help in network expansion in densely populated areas across NCR. It will also add to the aesthetics of the areas, as it does not obstruct the view. Dedicated utility corridors should be constructed across NCR and 100% underground cabling shall be ensured by the NCR participating States in their respective Urban areas in a phased manner e.g. All Metro and Regional centres to be covered in 1st phase by 2030; all other towns in 2nd phase by 2035; and all remaining urban areas by 2041. This can be done through
 - a) Adoption and implementation of 'smart grid' and 'smart metering' in NCR. To manage the demand for power, it is necessary to introduce 100 per cent

metering, net metering, smart meters, and metering of electricity supplied to agriculture.

- b) Digital infrastructure, control systems and information technology need to be introduced and optimally utilized for efficient delivery and monitoring of power.
- c) Expedite establishing the National Gas Grid (NGG) and promote city gas distribution to provide piped natural gas (PNG) in a phased manner e.g. All Metro and Regional Centers to be covered in 1st phase by 2030; all other towns in 2nd phase by 2035; and all remaining urban areas by 2041.State may explore possibilities of promoting PNG supply in rural areas as well.
- d) Provide "priority sector" status for Second generation (2G) bio-ethanol projects. The 2G feedstock includes agricultural residues like rice, wheat straw, etc. The concept of 'solar parks & bio-fuel parks', be promoted and Govt. can lease land to private entities in this regard.
- 5.4.17 Balancing power (to tackle intermittency and Time of day availability) need to be secured. Battery Energy Storage (BES) is one of the options in this regard. Policy support can drive the scale for the battery industry including augmentation of technology through research and design program to improve upon existing technology in terms of cost and performance.
- 5.4.18 Implement 'smart grids' through smart meters and use communication infrastructure, control systems and information technology for efficient delivery.
- 5.4.19 Promotion of Renewable/ Green Energy: The use of renewable energy should be widely adopted by the NCR participating States and their agencies in order to reduce the pollution. Renewable Purchase Obligations (RPO) should be strictly enforced and inter-state sale of renewable energy should be facilitated amongst NCR States and efforts be meet RPO trajectory as notified by the M/o Power (refer Para 04 of **Annexure-D-1.8**); Implementation of various renewable energy options for example Solar energy, Hybrid renewable energy systems such as solar PV+ biomass, Commercial biogas, wind, hydrogen, etc. need to be explored and promoted..
- 5.4.20 Promotion of Solar Energy: NCR being major energy consumption hub, special attention is required towards establishing large-scale solar energy plants. NCR States may come up with detailed solar energy policy to promote 'Mega Solar Parks' in the region. Mega solar parks can be set-up in different districts of NCR e.g. Bharatpur, Nuh, Bulandshahr, etc. for meeting power needs of Delhi and other areas in NCR. NCR has extensive network of irrigation canals like Agra canal, Eastern Yamuna canal, Upper Ganga canal, Western Yamuna canal etc. Possibilities may be explored to use these canal spaces as Solar Park for production of solar energy in NCR. The solar panel would meet the twin objectives of reducing the evaporation and production of clean energy. Setting up of Solar Parks can be done based

on studies of Solar power potential, by the concerned agencies of the Central Government or NCR States. If necessary, the solar potential of NCR subregions can be re-evaluated by engaging agencies like National Institute of Solar Energy, etc. The load pattern of NCR cities like Noida, Gurugram and Delhi can be matched with solar profile to address the peak demand of the cities (around afternoon) mainly due to Air conditioning load. As per land availability the solar installations need to be promoted to reap the benefits of renewable energy. The NCR States may introduce/ update/ amend their building codes to promote and provide clarity for Solar Energy harvesting and its roof rights, as applicable. Actions need to be taken by all cities and towns of NCR in terms of promotion of solar rooftop installation through Single Window clearance. All ULBs/ Authorities may accordingly mandate solar roof top installation for public buildings in their building bylaws and private building owners be encouraged for adopting solar installation by giving appropriate incentives like TDR, additional FAR, etc. If sufficient roof capacity is not available, the land available in societies, farm houses, etc. can be used for surface mounted solar panels. Ground mounted and solar roof top especially on all Government buildings and vacant roof tops need to be promoted. The solar policies should be implemented across NCR.

- 5.4.21 Energy access constitutes a core component of the sustainable development agenda for energy. Goal 7 of the SDGs specifies that everyone should have access to affordable, reliable, sustainable and modern energy services. One of the policies for NCR is to provide all NCR citizens assured 24X7access to efficient electricity and clean cooking by 2025. With respect to 'Power for All' (PFA) Initiative, 24x7 uninterrupted power supply to all households/ homes, industrial and commercial consumers and adequate supply of power to agricultural consumers shall have to be ensured in NCR and the has to be managed with a right mix of renewable &non-renewable energy sources. Make Open Access market viable for procurement of power so as make the sector competitive. For power procurement, DISCOMS need not consider the demand of open access consumers; however, the same would have to be considered for augmentation of network by the DISCOMS/States.
- 5.4.22 Enabling Infrastructure: Improvement of financial health of DISCOMS: State Governments have to ensure accountability of the DISCOMS and explore possibilities of discounting the consumers for load shedding. Adequate measures be taken to improve the financial health of DISCOMS and to bear the financial burden arising from the AT&C losses beyond the base mark of 15%.For power procurement, Discoms need not consider the demand of open access consumers; however, the same would have to be considered for augmentation of network by the DISCOMS/ States/ UTs.
- 5.4.23 Actions need to be taken up by the concerned States/SERCs for improving the financial health of DISCOMs like Rationalization of tariff to reduce gap between average revenue realized (ARR) and actual cost of supply (ACS), Adequate investment to strengthen distribution network, Formulation of Enforcement Strategy to prevent theft, Real time energy accounting and

auditing Adoption of enhanced revenue management techniques, Timely payment of subsidy and gradual reduction of the same, Managerial intervention and bringing accountability, Cooperation from employee and Sound financial restructuring plan.

- 5.4.24 Investment in Distribution & Improving the Financial Health of the DISCOMs Power Utilities in NCR should prepare a bankable distribution plan clearly defining the road map to augment their distribution system to match the expected load demand of the area and to identify land for substations and their timely acquisition also, as to avoid time lag in commissioning of the projects. They may approach NCRPB or Indian financial institutions such as Banks, REC and PFC etc. or international financial institutions such as World Bank, ADB etc. for funding of their distribution infrastructure.
- 5.4.25 Demand Side Management (DSM), Energy Conservation & Efficiency Improvement programmes initiatives need to be popularized so that the consumer can participate in DSM measures undertaken by DISCOMs.
- 5.4.26 Demand Side Management (DSM): Power agencies may explore designing and offering incentives to encourage participants & contributors to its Demand Side Management (DSM) programmes, as implementation of these programmes may result in reduction in electrical energy requirement and peak electricity demand. Suggestive DSM solutions are provided at **Annexure-P-1.2**. Automatic Demand Management System (ADSM) which includes SCADA, EMS, etc. as already implemented in NCT Delhi could also be taken up by concerned DISCOMs of other NCR participating States to enable 100% ADSM implementation in NCR by 2025.Mandatory use of ISI marked motor pump sets, power capacitors, and foot-reflex valves in the agricultural sector,Prepare Detailed Project Reports (DPRs) for municipal DSM programmes.
- 5.4.27 Energy Efficiency & Conservation: NCR being a special region, energy conservation should be mandatory for all activities. Energy auditors be appointed in each DISCOM subdivision and at each district under the respective DC/DM. 35% improvement in energy efficiency should be achieved by 2025 and this should be further improved up to 40% by 2031 and 50% by 2041. Energy Efficiency alone can deliver substantial economic, environmental and social benefits. The measures are cost effective, based on energy savings and the technologies that are readily available. EE could result in lower emissions by 2041 compared with today, despite a doubling in the size of region's economy. On Global CO2 reduction potential it was established that by 2040, the scenario may be 44% efficiency, 36% renewable, 2% fuel –switching, 6% nuclear, 9% CCS, and 3% Other
- 5.4.28 Key Performance Indicators (KPI): Key Utility Trends with indicated Key KPIs should be followed in NCR:Broad categories of KPIs for which specific targets in phases to be identified by the NCR States are Operational

Performance, Operational Cost & Management, Financial Performance, Customer Service Quality, Energy Efficiency & Demand Side Management (DSM), Workforce (Including Health & Safety) and Sustainability.) Digitization: Digital enablement of utilities would lead in better operational efficiency and better consumer service. KPI – 25% digitization by 2025 and 100% by 2030; Smart Grids: Information enabled grids would lead to higher control with consumer and loss reduction and other data enabled services. KPI –100% by 2030; Distributed Generation – Multiple small grid connected generators would lead to Prosumer's supply to grid through netmetering, lower bills and better control; Demand Electrification: Increasingly diverse energy demands shifting to electricity majorly leading to higher penetration of EVs and more Vehicle to Grid (V2G)&Vehicle to House (V2H) services; NCR to be 100% ready with EV infrastructure by 2030.

- 5.4.29 Energy efficiency can be achieved by the following:
 - a) Targets need to be set for energy efficiency with special focus on energy efficient building for Industrial, Institutional, Commercial and Domestic sectors, with the focus on increasing green power percentage.
 - b) Promote the mandatory use of LED and replacement of old appliances in government buildings with five-star appliances. Possibilities may be explored to increase the number of appliances being covered under the Standards and Labelling (S&L) programme. Efforts be made to achieve 100% lighting of city facilities and streets through LED lighting by 2030 across NCR. States may benefit from the UJALA (Unnat Jyoti by Affordable LEDs for All) programme on lower-income households and small commercial establishments.
 - c) Energy Efficiency in water pumping should be adopted and promoted in NCR and states may undertake projects for energy efficiency (EE) improvement of water pumps in Agriculture and Municipal sector. Use of solar pumps be also wide promoted for irrigation in agriculture sector.
 - d) The Bureau of Energy Efficiency (BEE) may formulate strategy for NCR 2041 on energy efficiency in various sectors and specify energy consumption norms.BEE may also develop MSME cluster-specific programmes for energy intensive industries in NCR to introduce energy efficient technologies.
 - e) State Designated Agencies (SDAs) need to be more empowered and provided with adequate resources to implement EE related programmes. There is a need to ensure greater participation of Energy Service Companies (ESCOs) using appropriate financing models with a risk sharing mechanism, particularly by public sector banks¹³.
- f) NCR States should adopt the latest version of the Energy Conservation Building Code (ECBC) in their building by-laws and ensure faster implementation in their

¹³ Source: Strategy for New India @ 75 - <u>https://niti.gov.in/writereaddata/files/Strategy for New India.pdf</u>

respective sub-regions.

- g) Widen and deepen the Perform, Achieve and Trade (PAT) scheme and make Energy Saving Certificate (ESCert) trading under the PAT scheme effective in NCR by ensuring strict penalties against defaulters.
- h) To reduce dependency on convention vehicle fuel, NCR States should promote electric powered public transport system and have time bound targets to convert its complete public transport fleet to EVs with the provision of necessary charging stations and support infrastructure. States may expand the Corporate Average Fuel Efficiency Standards¹⁴ (CAFE) beyond passenger cars to other vehicle segments.
- NCR States may come up with specific norms of 'Energy Intensive Industries' and new/ old industries should follow these norms by adopting appropriate measures/ technologies. Energy Intensive Industries be permitted after ensuring that energy consumption norms are provisioned for.
- j) Efforts should be made to bring down the Distribution Losses to around/ apprx. 5% by 2041 (currently 12.51% in UP). CEA has estimated to bring the T&D losses in NCR to about 11.51% by 2024-25 and 10.30% by 2029-30 (refer Annexure D 1.6). Accordingly, Aggregate Technical & Commercial (AT&C) loss and T&D (Transmission & Distribution) loss, reduction road map be prepared and implemented by each of the NCR States as part of their Sub-Regional Plans. Indicative suggestions to reduce the T&D losses are given at Annexure-P-1.3. NCR States should make necessary initiatives to improve the health of DISCOMs.
- 5.4.30 Reduction of Transmission and distribution Losses: The methods & steps to reduce the technical and non-technical losses are suggested as follows:
 - a) Reduction of Technical losses: Conversion of Low Voltage (LV) Line to High Voltage (HV) Line- Increase of efficiency of transmission and reduction of losses can be achieved by converting Low Voltage (LV) Line to High Voltage (HV) Line. However, conversion of old LV (430V) feeders to higher voltage entails higher the investment costs and are often not economically justifiable but if parts of the LV (430V) primary feeders are in relatively good condition, installation of multiple step-down power transformers at the periphery of the 430 volt area will reduce copper losses by injecting load current at more points (i.e., reducing overall conductor current and the distance travelled by the current to serve the load).
 - b) Direct connection to Bulk Consumers Design the distribution network system in such a way so that large commercial / industrial Consumers gets direct power line from feeder.
 - c) Adoption of High Voltage Distribution Service (HVDS) for Agricultural Consumers - In High Voltage Direct Service (HVDS), 11KV line direct given to cluster of 2 to 3 Agricultural Customer for Agricultural Pump set. Setting up of small distribution Transformer (15KVA) for 2 to 3 customers and laying of direct insulated service line (smallest/ negligible LT distribution lines) to each agriculture consumer from the distribution transformers would also reduce losses.

¹⁴<u>https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy</u>

- d) In HVDS, there are less distribution losses due to minimum length of distribution line, high quality of power supply with no voltage drop, less burn out of motor due to less voltage fluctuation and Good quality of Power, to avoid overloading of transformer.
- e) Adopting Arial Bundle Conductor (ABC) Where LT Lines are not totally avoidable use of Arial Bundle Conductor would minimize faults in lines resulting from direct theft from line (tampering of line). Installation of medium voltage distribution (MVD) networks in theft-prone areas, with direct connection of each consumer to the low voltage terminal of the supply transformer would also reduce thefts.
- f) Reduction in the number of Transformers and installation of High efficiency distribution transformers so as to reduce the distribution losses.
- g) Feeder Renovation / Improvement Program / Utilize Feeder on its Average Capacity- By overloading of distribution feeder, distribution losses will be increased. The higher the load on a power line, the higher its variable losses. It has been suggested that the optimal average utilizations rate of distribution network cables should be as low as 30% if the cost of losses is taken into account. Due to Feeder Renovation Program, T&D loss may be reduced from 60-70% to 15-20%.
- h) Replacements of Old Conductor or Cables By using the higher the cross-section area of conductor / cables, the losses will be lower but the same time cost will be high. So, by forecasting the future load, an optimum balance between investment cost and network losses should be maintained.
- Re conductoring of Transmission and Distribution Line according to Load; Identification of the weakest areas in the distribution system and strengthening or improving them; Reducing the length of LT lines by relocation of distribution sub stations or installations of additional new distribution transformers.
- j) Installation of single-phase transformers to feed domestic and nondomestic load in rural areas - Installation of lower capacity distribution transformers at each consumer premises instead of cluster formation and substitution of distribution transformers with those having lower no load losses such as amorphous core transformers; Installation of shunt capacitors for improvement of power factor and providing small 25kVA distribution transformers with a distribution box attached to its body, having provision for installation of meters, MCCB and capacitor.
- k) Industrial / Urban Focus Program: Separations of rural feeders from industrial feeders; Instantly release of New Industrial or HT connections; Identify and replacement of slow and sluggish meters by electronics type meters; .In industrial and agricultural consumer adopt one consumer, one transformer scheme with meter should be Introduced; Change of old service line by armoured cable; .Strictly Follow Preventive Maintenance Program; Required to adopt Preventive Maintenance Program of Line to reduce Losses due to Faulty /Leakage Line Parts and Required to tights of Joints, Wire to reduce leakage current.
- 1) Reducing Non-Technical Losses: Making mapping / Data of Distribution Line; Mapping of complete primary and secondary distribution system with all parameters such as conductor size, line lengths etc.; Compilation of data regarding existing loads, operating conditions, forecast of expected loads etc. and Preparation

of long-term plans for phased strengthening and improvement of the distribution systems along with transmission system; Implementation of Energy Audits Schemes - It should be obligatory for all big industries and utilities to carry out energy audits of their system. Further, time bound action for initiating studies for realistic assessment of the total T&D losses into technical and non-technical losses has also to be drawn by utilities for identifying high loss areas to initiate remedial measures to reduce the same.

- m) The realistic assessment of T&D loss of a utility greatly depends on the chosen sample size which in turn has a bearing on the level of confidence desired and the tolerance limit of variation in results. In view of this, it is very essential to fix a limit of the sample size for realistic quick estimates of losses.
- n) All existing unmetered services should be immediately stopped. Replacement of Faulty/Sluggish/old erroneous electromechanical energy Meter by distribution agency to reduce unmetered electrical energy; Periodic testing of accuracy of meter and replacement of with accurate electro static meter (Micro presser base) for accurate measurement of energy consumption; use of meter boxes and seals them properly to ensure that the meters are properly sealed and cannot be tampered.
- o) Bill Collection Facility: Increase bill's payment cells, increasing drop box facility in all area for payment collection; .E-payment facility gives more relief to customer for bill payment and supply agency will get payment regularly and speedily from customer; Effectively disconnect the connection of defaulter customer who does not pay the bill rather than give them chance to pay the bill.
- p) Reduce Debit areas of Sub-Division
 - Recovery of old debts in selected cases through legal, communication and judicial actions through consumer discipline; ensuring police action when required to disconnect connection of defaulter consumer; Users must aware that the distribution Agency can monitor consumption at its convenience. This allows the company fast detection of any abnormal consumption due to tampering or by-passing of a meter and enables the company to take corrective action.
- q) Loss Reduction Programming as increased hours of supply to agriculture and rural domestic consumers have resulted in higher loss levels.
- 5.4.31 Energy Conservation Activities:
 - a) Efficient development control regulations and building byelaws from the point o f view of energy efficient design should be considered. Thelegal framework for promoting energy conservation activities should be adopted and implemented across NCR which includes: Standards and Labelling for appliances & equipment, Energy Consumption norms for energy intensive industries, Demand Side Management (DSM) programme, Energy Conservation Building Code (ECBC) for commercial buildings, & Certification of Energy Auditors and Managers.
 - b) Adoption and effective implementation of mandatory Energy Conservation Building Code (ECBC) in all government buildings and new building projects, with the help of architects and BEE empanelled consultants. Changes in the building bye-

laws to incorporate ECBC; Energy efficiency of existing government buildings through retrofitting to be carried out so as to achieve at least a rating of one-star from BEE under their building labelling programme; Promotion of energy efficient building design; Efficient lighting programmes - Mandatory use of T-5, 28 Watt tube-lights, CFLs/LEDs electronic chokes in government buildings / government aided institution / boards and corporations, s CFLs/LEDs in street lightings, hoardings, and advertisements; solar water heaters in different categories of buildings like industries, hotels, hospitals, canteens, corporate and residential building having an area of 500 sq.m. or above, government buildings, etc. Effective utilisation of SECF for energy conservation in small and medium enterprises (SMEs), energy audits, capacity building, etc.; Subsidy for promoting battery operated vehicles; Implement scheme on an interest free loan for energy conservation measures; Energy audits of government buildings, industries and commercial establishments; Time of Day tariffs 15; Power Factor Surcharge/Incentive: Awareness programmes: Pre-paid Meters and Load Research are the other measures that can be implemented.

- c) As per Report of the Sub-committee for development of National Sustainable Habitat parameters efficiency for energy in Residential and CommercialBuildings, 15% of the total external lighting load should be met throug h renewableenergy and for commercial / institutional / industrial / mixed use build ings, 5% of the total lighting load should be met through renewable energy source s (solar, wind, biomass, fuelcells and so on). Also, there should be development of city level Energy Efficiency (EE) and Renewal Energy (RE) policy actions Similar tothe Leadership in Energy & Environmental Design (LEED) ratin . (practiced globally), the LEED-India promotes a wholesystem g building approach to sustainability by addressing performance in the following five areas: (1) sustainable site development, (2) water savings, (3) energy ef ficiency, (4) materials selection and (5) indoor environmental quality. It also m eets the specifications of ECBC 2007, NBC 2005, MoEF Guidelines, and CPCB n orms.
- 5.4.32 Reduction of Carbon Emissions:

Increased ratio of renewable energy sources in primary energy sources needs to be integrated. Efforts should be made to reduce total carbon emission in a phased manner; Targets for all NCR states set by the Ministry of New and Renewable Energy (MNRE), Govt. of India should be followed (refer **Anexure-D-1.4**);Local governments should allow and promote renewable energy systems in zoning, building, design guidelines, and energy codes and explore bulk purchasing options; Promote eco-houses, energy-saving measures at buildings and factories, and the conversion of metropolitan facilities to zero-energy buildings across all subregions.NCR States may adopt, promote and set annual targets for getting

¹⁵ Source: https://www.prayaspune.org/peg/publications/item/281-demand-side-management-in-indiaan-overview-of-state-level-initiatives.html

'Green Rating' for all buildings and accordingly work towards Zero–Energy Building (ZEB) i.e. buildings with zero net energy consumption through energy efficiency and use of renewable energy and should also aspire and explore options for utilization of 'Hydrogen Energy' wherever possible.

- a) Installation of Flue Gas Desulfurization (FGD) for reduction of SO₂ is necessary to be complied with under new environment norms regarding emission of flue gases in and CEA has to closely monitoring its implementation at thermal generationstations. AProvision for TOD¹⁶ in cities should be considered, as it encourages high density and mixeduse development, overall reducing the travel demand and in turn reducing the car bon footprints. Adoption of green transport models models through a Combination of Promotional, Regulatory and Fiscal Measures
- 5.4.33 Major initiatives towards having adequate fuel availability for electricity generation especially with regard to coal and gas to the Power Plants, are as follows: Coal India Limited (CIL) sign in Fuel Supply Agreements (FSAs) with power plants that have entered into long term Power Purchase Agreement (PPAs) with DISCOMs; Coal companies are being requested to increase the coal production so as to meet the demand of power plants; Even the imported coal based power plants are advised to reduce imports and use domestic coal; Captive coal blocks have been allocated by Ministry of Coal to augment coal availability for power projects and Suitable policy measures being taken to make natural gas available for power sector. To handle the frequent Right of Way (RoW) issues in construction of transmission lines, Ministry of Power (MoP) guidelines should be followed. At per MoP order dated 15.10.2015, 85% of circle rate can be given to land owner for tower area and also 15% of circle rate for RoW for transmission lines. Online RoW permissions facilities be started by each NCR State.
- 5.4.34 Planned Inter State transmission system (ISTS) network in NCR Area The power evacuation systems for Inter State Generating Stations (ISGS) is finalised by Central Transmission Utility (CTU), Power Grid Corporation of India Limited (POWERGRID), Ministry of Power. Further, for State Sector generation projects power evacuation system is to be planned and implemented by respective State Transmission Utilities (STUs). This can be done as follows:
 - a) Improvement of T&D system through proper augmentation to ensure energy access (24x7 power supply) as a key priority for the growth of the sector.
 - b) Promotion of Cross-border electricity trade so as to utilize existing/ upcoming generation assets.
 - c) While current ISTS cater to power transfer requirement till 2025, further phasing of ISTS should be worked out on five year interval till 2041 in the respective Sub-

¹⁶ Refer details on TOD elaborated in Physical Infrastructure section and Report of the Sub-Committee on Urban Transport (NMSH) can be referred for strengthening Public Transport

Regional Plans by the NCR States in consultation with CEA/ MoP.

- 5.4.35 'Balancing power 'should be secured to tackle intermittency and time of day availability. Pumped-hydroelectric Energy Storage (PHES) and Battery Energy Storage (BES) are among the options in this regard.
- 5.4.36 Assuming 50% of the electric vehicles will charge simultaneously, the additional electricity demand would be of the order of 10,000 MW. The electric vehicles are likely to charge their batteries during day time i.e. during periods of high solar power, and thermal power stations during such time could be operated at lower capacity. For faster promotion of EVs and for infusing range confidence in the minds of the EV owners, a network of charging stations is required in NCR. This network should be set up as per CEA suggestion in Report of the Committee on "Technical Aspects on Charging Infrastructure for EVs¹⁷" and the guidelines and standards issued by the Government from time to time. Haryana, U.P. and Rajasthan shall take initiatives similar to 'EV policy' formulated by NCT Delhi and NCR should aim to aims to achieve 25% EV target by 2024. Brief facts about Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, Government of India FAME-I & FAME-II and Ministry of Power Charging Infrastructure Guidelines are provided **Annexure-P-5.1**
 - 5.4.37 Sub-Region wise power infrastructure projects U.P. Sub-Region UPPCL/ PVVNL has prepared a detailed proposal for strengthening of power distribution system in eight districts of the sub-region. It includes load required for primary sub-stations, secondary sub-stations, charging stations for EVs along with National Highways & State Highways, load growth for proposed works of metro rail, electrical vehicle charging stations, industrial, domestic and commercial load, and load growth due to Jewar International Airport. The total cost proposed for all works is Rs. 68720 Crore. District-wise project details given in Annexure-P-5.1.1
 - 5.4.38 Other NCR States should also prepare proposals/ projects for development of power infrastructure in their Sub-regions on the similar lines.
 - 5.4.39 Major projects envisaged to be taken up in NCR regarding Power & Energy sector are given at Table 5.2 below, but not limited to:

Table 5.2: Major projects/Schemes envisaged for development of Power & Energy infrastructure in NCR (2021-2041)

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
1.	Sub-region wise projects for power generation,	To be done by 2026	-	-	-
	upgradation of				

¹⁷ Source: <u>http://www.cea.nic.in/reports/others/planning/rpm/ev_cea_report.pdf</u>
Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
	transmissionanddistributionsystemstoensure24X7efficientelectricitysupply acrossNCR				
2.	Sub-regionwiseschemes for ensuring24X7 access to cleancookingfacilities(including bio-gas).	To be done by 2025	-	-	-
3.	Implementation of National Gas Grid (NGG) to ensue PNG in Urban areas across NCR.	To be implem Metro and Reg	nented in all ional Centers.	To be implemente d in all remaining towns	To be implement ed across NCR
4.	Schemes to promote bio-gas production and uses as clean fuel (including Goober/ Manure collection centers, bio-gas plants and distribution network).	At least two districts in each sub- region.	75% of districts in each sub- region.	100% of districts in each sub- region.	-
5.	Sub-region wise schemes for Dedicated utility corridors incorporating 100% underground cabling in Urban areas across NCR.	To be implemented in all Metro and Regional Centers	To be implemente d in rests of the towns	-	-
6.	Projects for Metering of all 11 KV feeders and transformers in NCR Sub-regions	To be done by 2026	-	-	-
7.	Projects for to ensuring 100% 'smart metering' and implementation of 'smart grid' across NCR.	To be done	e by 2031	-	-

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
8.	Projects for setting up of EV Charging Station and related infrastructure across NCR.	To be done	e by 2031	-	-
9.	Projects for replacement of old appliances and 100% lighting of city facilities & streets through LED lighting.	100% of all Institutional areas, govt. complex/ building, etc. and all Metro and Regional Centers.	Remaining buildings Rest of the NCR	-	-
10.	Framing of Schemes to enable 100% Automatic Demand Management System (ADSM) (SCADA, EMS, etc.)	To be achieved by 2026	-	-	-
11.	Projects/measures for reduction of AT &T losses in Sub-regions				
12.	Sub-region Schemes for achieving higher Green Energy percentage based on CEA/ MoP target of 57 %.	At least two districts in each sub- region.	10% of districts in each sub- region.	-	-
13.	Project for Schemes to have 'Mega Solar Parks' in NCR Districts.	At least one in each sub- region.		Another in districts feedback of requir	remaining based on 1 st phase and ement
14.	Scheme for Rooftop PV System	 i)100% govt. complex/ building, all Institutional buildings / areas, etc. ii) All Metro and Regional Centers 	Remaining buildings & Rest of the NCR	-	

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
15.	Plan for pumped storage plants	Formulate a scheme by		-	-
	dedicated to NCR	2024 and			
	requirements,	implement by			
		2026			
16.	Schemes for		Refer Annexu	ıre P5.1.1	
	strengthening of				
	power distribution				
	system in UP sub-				
	region as proposed by				
	the Govt. of U.P.				

Chapter 6

WATER AND DRAINAGE

6.1 INTRODUCTION

Availability of water and its desirable quality and required quantity is considered to be an important factor for economic, social and spatial development of a settlement and the region. However, water is not uniformly available throughout the world and even within a region. The World Economic Forum's Global Risk Report 2015 indicates that around one third of the global population is water stressed, with about one billion people not being able to get safe drinking water. Water crisis is perceived as a top order global threat. According to the Aqueduct Water Risk Atlas released by the World Resources Institute, India is placed 13 among the world's 17 'extremely water-stressed' countries. In India, 22 out of its 32 big cities face water crises. Due to an increase of population and increase of per capita income due to economic development, water demand is increasing, and many settlements are facing serious water crisis. Other factors responsible for aggravating water situation in human settlements and regions are increasing water pollution, depletion and deterioration of ground water quantity and quality and variations in rainfall patterns due to climate change.

In this backdrop, it becomes necessary to prepare holistic water policy at all geographical scales including a region promoting efficient and sustainable use of water in order to ensure water security and sustainable development. In this line of thinking, we should make a balanced use of water for domestic, agriculture and industrial purposes in a region and should not extract and consume water to the extent that replenishment becomes impossible through natural processes. Seasonal variability and climate changes are responsible for dramatic increases in surface flows over a short period of time causing flooding and draught in the same region.

6.2 THE EXISTING WATER AND DRAINAGE SITUATIONS

In case of NCT Delhi, the current water requirement is 1150 MGD for 2.3 Cr population, however the current water availability is 895 MGD (4068 MLD). 92% area of Delhi has piped water supply. In remaining areas of Delhi, water tankers are being used on the basis of short term and long term contracts with the concerned vendors¹.

Presently DJB is supplying 50 Gallons (189.27 LPCD) per capita per day. However, efforts are being made to reduce the same to 40 Gallons (151.41 LPCD) per day. A detailed note regarding water supply of NCT Delhi is attached at annexure D 6.1.

Water demand in the NCR is consistently on the rise. Total water demand for the NCR in 2031 has been estimated to be about 10389.58 million litres per day (MLD), which is likely to rise to 13399.42 MLD in 2041. In order to meet this rising water demand, the NCR requires sustainable water resources. However, to the extent of two third of its water needs, the NCR depends on water resources located outside of the region. For another 31 percent, the NCR depends on ground water

¹ Note: The data from NCR States has been received but it is incomplete. The same will be updated once received form the NCR States.

for water supply in urban areas of NCR (Fig. 12.1). A critical aspect of water management in the NCR is that ground water resources are increasingly getting depleted, potentially causing further dependence on water resources from outside the region.



Fig. 6.1. Source of Existing Water Supply in NCR-2019

In the Uttar Pradesh (UP) Sub-region, dependency on ground water for urban water supply is very high (88 percent) followed by urban areas of the Rajasthan Sub-region where it is 54 percent (Table 12.1). However, the Rajasthan Sub-region has experienced greater change in ground water table than the Haryana Sub-region (Table 12.2 and Fig. 12.2).

Table 6.1: Sources of Urban Water Supply, 201	1: Sources of Urban Water	Supply,	2019
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S	Sub Pagion	Source of Water Supply in Urban Areas					
No	Sub Region	Ground v	vater source	Surface water source			
		In MLD	Percent share	In MLD	Percent share		
1.	Delhi	363	9	3,705.00	91		
2.	Haryana	513.82	40	763.85	60		
3.	Uttar Pradesh*	1,163.42	88	165.00	12		
4.	Rajasthan	64.36	54	55.60	46		
	NCR	2,104.60	31	4,689.45	69		

Source: Delhi Jal Board, 2019-20; NCR planning and monitoring cell, Haryana and UP., 2019-20; PHED, Government of Rajasthan, 2019

Note: Excluding GB Nagar district in Uttar Pradesh

Table 6.2: Average Change in	Water Table in the NCR	, 2012-2018 (in meters be	low ground
level)			

S. No.	Sub Region	Average depth to water table in 2012	Average depth to water table in 2018	Change in Water Table (2012- 2018) (Meters below ground level)
1	Delhi	13.32	15.23	-1.91
2	Haryana	17.25	22.32	-5.08
3	Uttar Pradesh	14.17	17.36	-3.19
4	Rajasthan	19.95	25.64	-5.69
	Total NCR	16.17	20.14	-3.97

Source: CGWB, 2019-20; NCR Planning and monitoring cell, Haryana and UP; Ground Water Department, Rajasthan Note: Excluding Faridabad, Gurugram, Panipat, Rewari in Haryana and GB Nagar district in Uttar Pradesh



Fig. 6.2: Average Change in Water Table, 2012 -2018 in meters below ground level

Source: CGWB, 2019-20; NCR Planning and monitoring cell, Haryana and UP; Ground Water Department, Rajasthan

Note: Excluding Faridabad, Gurugram, Panipat, Rewari and GB Nagar districts

There is a difference in coverage of water supply in urban areas of the NCR among the subregions. In Delhi urban area coverage of water supply is highest (92 percent through piped water supply and rest through tankers) whereas in Rajasthan Sub-region has the lowest urban water supply coverage (73.9 percent). There is a need to ensure 100 percent water supply coverage at the rate of 135 lpcd water to all urban residents in all sub-regions (Table 12.3). Our analysis shows that urban areas of the Rajasthan Sub-region deserve a special attention. Coverage and service level of water supply in rural areas of the NCR is also below accepted standard of 70 litres per capita per day with 100 percent coverage. The UP Sub-region has the lowest water supply coverage of 42 percent and Rajasthan Sub-region has the lowest service level of 34 lpcd against a standard of 70 lpcd (Table 12.4).

S. No.	Sub Region	Percent Water Supply Coverage in Urban Areas of the NCR	Service Level of Water Supply in Urban Areas (as per CPHEEO is 135 LPCD) in LPCD
1.	Delhi	100	189.27
2.	Haryana	86.86	133.63
3.	Uttar Pradesh	80.47	128.97
4.	Rajasthan	73.94	68.39
	Total NCR	85.32	130.07

Table 6.3: Coverage of Water Supply and Service Level in Urban Areas of NCR, 2019

Source: Delhi Jal Board, 2019-20; NCR planning and monitoring cell, Haryana and UP., 2019-20; PHED, Government of Rajasthan, 2019-20

Table 6.4: Coverage of Water Supply and Service Level in Rural Areas of NCR, 2019

S. No.	Sub Region	Percent Water supply coverage of population in Rural Areas	Service Level of Water Supply in Rural Areas of NCR (as per CPHEEO is 70 lpcd) in lpcd
1.	Delhi	-	-
2.	Haryana	85.54	65.30
3.	Uttar Pradesh*	42.05	61.46
4.	Rajasthan	81.235	34.15
	Total NCR	52.20	40.23

*Note: Excluding Meerut and Muzaffarnagar districts

Source: NCR planning and monitoring cell, Haryana and UP, 2019-20, PHED, Government of Rajasthan 2019-20

The unaccounted-for water (UfW) is also high in urban areas of the NCR (Table 12.5) with the highest in Delhi. The UfW of Delhi is above 46 percent, which is much higher than the norm of 15 percent prescribed by the Ministry of Housing and Urban Affairs. Similarly, UfW is also high in the Haryana Sub-region (17 percent) but much below Delhi. For sustainable water management, a standard of less than 15 percent of UfW is regarded desirable. Other parameters of service level benchmarks are not achieved in all sub-regions of the NCR (Table 12.6). Initiatives to be taken to achieve these benchmarks for water supply in all sub-regions of the NCR.

Table 6.5: Sub-region Wise Unaccounted for Water (UfW) in Urban Areas of NCR, 2019²

S. No	Sub Region	Actual Water Supply (MLD)			Actual Water Generated (MLD)			Estimated Water Loss (UfW) in MLD
		Urban Industrial Total			Urban	Industrial	Total	(percent loss)
1.	Delhi	4,068		4,068	4,068	4,068 4,068		1,875 (46)
2.	Haryana	905.04 184.55		1089.59	1040.4 1	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		189.38 (15)

²Note: The data from NCR States has been received but it is incomplete. The same will be updated once received form the NCR States.

3.	Uttar Pradesh*	1191.0 3	2.20	1193.23	1326.2 2	2.5	1328.72	135.86 (10%)
4.	Rajastha n	104.81	3.45	108.26	116.44	3.5	119.94	10.06 (10%)
NCR		-	-	6,459.08	-	-	6,794.57	2,210.31

Note: Excluding GB Nagar District*

Source: Delhi Jal Board, 2019-20; NCR planning and monitoring cell, Haryana and UP, 2019-20; PHED, Government of Rajasthan, 2019-20

Table 6.6: Sub Region Wise Status of Service Level Benchmarks in Urban Areas, 2019

S. No.	Sub Region	Percent Water supply coverage of population	Actual service level of water supply (lpcd)	Extent of NRW (in %)	Extent of Metering (in %)	Continuity of Water supply services (in Hrs.)	Efficiency in redressal of customer complaints (in %)	Quality of Water Supplied (in %)	Cost Recovery (in %)	Efficiency in Collection of Water Charges (in %)
				15%	100%	24	95%	100%	100%	90%
						.				
1	Delhi	100	189.27	46.11	92	Intermittent water supply	98	99	39.57	80
2	Haryana*	86.86	133.26	16.77	63.89	15.28	84.12	98.71	63.05	72.78
3	Uttar Pradesh**	80.47	128.97	13.02	1.50	10.02	87.57	97.62	54.46	66.46
4	Rajasthan	73.94	68.40	14.68	54.47	24.00	76.69	93.33	41.59	75.19
	Total NCR***	85.32	130.07	22.64	52.97	16.43	86.59	97.17	49.67	73.61

*Note 1: It excludes Faridabad, Karnal and Mahendragarh Districts due to non-availability of data.

** Note 2: Information regarding "Extent of metering" are available for few towns of UP Sub Region.

*** Note 3: Excluding Delhi sub region for data related to Continuity of water supply services which is not available

The NCR has insufficient number of water treatment plants. A total number of towns without water treatment plants (WTPs) are 94 and only 31 towns have water treatment plants (WTP) (Table 12.7). Number of towns without WTPs is the highest in the UP Sub-region (75) followed by the Rajasthan Sub-region (11). To ensure better water quality, investment in building new water treatment plants becomes one of the major challenges.

S. No.	Region and Sub-Region	Number of Towns with WTPs	Number of Towns without WTPs
1.	Delhi	1	0
2.	Haryana*	20	8
3.	Uttar Pradesh	8	75
4.	Rajasthan	3	11
	Total NCR	31	94

Table 6.7: Status of WTPs in Urban Areas of the NCR, 2019

* Excluding Faridabad, Jind, Karnal, Palwal, Panipat Districts

Note: In Hapur, Muzaffarnagar, Shamli and Alwar Districts there are no water treatment plants.

Source: NCR planning and monitoring cell, Haryana and UP, 2019-20; Government of Rajasthan

Encroachments around water bodies and pollution of river, streams and other water bodies, excessive focus on ground water extraction technologies leading to reduction of available sources

of water and overexploitation of groundwater aquifers in many areas of the NCR. This clearly shows that conservation of water bodies and measures to attain sustainability are critical.

It is also observed that more than 85 percent of the water is used for flood-irrigation purposes and less water is available for other uses like domestic and industrial. To meet the growing demand of water for domestic and industrial use, water used for ground water extraction for irrigation need to be brought down and use of more efficient irrigation practice to be encouraged.

Dumping of solid wastes in storm water drains, natural drains and water bodies reduces their capacity to absorb or convey the storm water effectively. This problem needs to be addressed across the NCR. Instances of urban flooding are increasingly becoming common as paved areas are increasing considerably. This has led to increase in the runoff volume generated for the same amount of rainfall. Yamuna drainage and rainfall data along with a drainage map of the NCR provide a synoptic view.

Climate change may, in particular, increase short period rain intensity and frequency, which affects urban drainage. Mapping of the NCR's water and drainage system for ensuring effective planning and management is a massive task and challenge. The existing national standards may not be suitable for the NCR for 2041. BIS standards formulation and revision at the National Standards is not an exhaustive process. So evolving new protocols suited for various relevant works could be explored.

As per available information certain districts in the NCR like Shamli, Muzaffarnagar, etc. do not have Sewage Treatment Plants (STPs). Further, reuse of treated sewage water is not being practiced in all the districts of the NCR, creating more pressure on use of freshwater sources and also polluting freshwater sources.

As many as 18 drains fall into river Yamuna in Delhi. There are instances of high level of ammonia pollution in the river water during winter season. Wastewater from Panipat in Yamuna is the main source of pollution carrying entire sewage of Panipat town. Drain DD-6 also carries industrial wastes. De-silting of the storm water drains is a very important activity to keep effectiveness of the drains intact. Although, cities spend money every year for de-silting, effectiveness of drains remain a challenge. Fig. 12.3 shows the drainage network of the NCR.

To meet the current water demand, NCR is dependent on outside water sources. For example, Delhi gets its water supply from Bhakara Yamuna system. Renuka Dam is the project from where dedicated supply of water is planned for Delhi. Allocation to Delhi is based on the Upper Yamuna agreement between six states. A major part of Alwar comes under Sabi Ruparail and Banganga river basin in Rajasthan sub-region. In Bharatpur region there is Banganga, Gambir and Ruparail basins. All the rivers in these two districts flow only in the monsoons and these are seasonal rivers and in rest of the seasons there is no water. There is a need to relook at these agreements based on present water demand and availability. One of the strategies identified for implementation under the comprehensive mission document of the National Water Mission is to make a reassessment of basin wise water situation under the present water demand by using the latest techniques.



Fig. 6.3: Drainage Networks in NCR, 2019

There is no commonality while planning for water resources by different ministries, departments and users. Even the unit of measurement and planning of water is not common, which creates obstacles in efficiently fixing and achieving targets, provision of funds, execution and monitoring, and even duplicity of programs. Possibilities for having at least a common unit of measurement like watershed for all programs shall have to be explored. A mechanism of monitoring and evaluating actions and implementation by various participating states needed to be put in place to ensure water sharing and sustainable water supply in the NCR.

Due to constantly falling water table on account of over-extraction of ground water for irrigation, industrial and domestic water supplies, there are major implications on environmental health of the NCR, and it is gradually heading towards water insecurity. It would be important to analyze water demand versus availability in the NCR and explore ways and means to bring the overall demand below water availability using primarily options for water demand management. This is a major challenge for the NCR.

6.3 THE KEY ISSUES AND CHALLENGES OF WATER AND DRAINAGE

- 6.3.1 The NCR is facing the ever rising water demand due to ever increasing population and consumption. Domestic use of water is also increasing with greater speed than other uses.
- 6.3.2 Water coverage is uneven among sub-regions and level of service also remains below prescribed standards both in urban and rural areas.
- 6.3.3 Local sources of water supply such as ground water are dwindling and at the same time due to pollution, water quality is getting low.
- 6.3.4 Reliance on external water sources to meet major part of water demand in the NCR remains a major challenge as supplies could be stopped by other states at any time.
- 6.3.5 Sourcing water from external sources requires signing of treaties and agreements. In spite of the written agreements and treaties, conflicts do arise among states, causing uncertainty of water supplies.
- 6.3.6 The NCR does not have adequate number of water treatment plants and a large majority of towns do not even have a water treatment plant.
- 6.3.7 Little reuse of wastewater and insufficient infrastructure for the treatment of wastewater hinders augmentation of water supplies and causes pollution of freshwater sources.
- 6.3.8 Implementation of three proposed dams namely, Renuka dam, Lakhwar dam and Kishau dam along with the proposed Sharda-Yamuna linkage project is very important for rejuvenation of water in Yamuna.
- 6.3.9 The wasteful practice of flood-irrigation is the normal in the NCR, which leads to high consumption of water for irrigating agricultural fields.
- 6.3.10 Details of water consumption for irrigation in NCR provided in Table 6.8 below includes the districts of Haryana sub-region together consuming 1963.715 MCM and Rajasthan sub-region consuming 151.49 MCM,:

Table 6.8.: Quantum of Water used for Irrigation/Agriculture purpose

S.No.	District	CCA (In	Demand of w	ater supply	Area	Actual supply of water	
		lakh			irrigated (In		
		hectare)			lakh		
					hectare)		
			(In MAF)	(In MCM)		(In MAF)*	(In MCM)
1.	Faridabad	0.35	0.151	186.257	0.04	0.007	8.634
2.	Gurugram	0.22	0.095	117.181	0.03	0.005	6.167
3.	Mewat	0.62	0.268	330.575	0.16	0.028	34.538
4.	Rohtak	1.5	0.649	800.534	1.45	0.254	313.306
5.	Sonepat	1.57	0.68	838.773	1.13	0.2	246.698
6.	Rewari	1.0	0.433	534.101	0.07	0.012	14.802
7.	Jhajjar	1.47	0.636	784.499	0.50	0.087	107.314
8.	Panipat	0.68	0.294	362.646	0.43	0.075	92.512
9.	Palwal	0.35	0.151	186.257	0.09	0.016	19.736
10.	Bhiwani	3.03	1.31	1615.871	1.35	0.236	291.103
11.	Charkhi Dadri	0.91	0.394	485.995	0.26	0.046	56.740
12.	Mahendergarh	1.37	0.593	731.459	0.10	0.017	20.969
13.	Jind	2.4	1.04	1282.829	2.78	0.487	600.709
14.	Karnal	1.44	0.623	768.464	0.70	0.123	151.719
Hary	ana Sub Region Total	16.91	7.317	9025.439	9025.439	1.593	1964.948

(a) Haryana Sub Region

*1 Million Acre Foot = 1233.489 Million Cubic Meter

(b) Rajasthan Sub Region

S.No.	District	CCA (In	Demand of	Area irrigated	Actual supply
		hectare)	water supply	(In hectare)	of water (In
			(In MCM)		MCM)
1.	Bharatpur	126486	379.458	30288	146.02
2.	Alwar	21546	138.023	502	5.47
Rajasthan Sub Region Total		148032	517.481	30790	151.49

6.4 POLICIES AND PROPOSALS

6.4.1 Sustainable Water Supply in the NCR

i. In order to meet the water requirements of Delhi, DJB proposes that 150 MGD to 240 MGD water can be spared from Ganga Canal near Muradnagar, UP, as there is no shortage and surplus water can be given to Delhi. DJB can provide treated water of good quality to UP for agricultural purposes in lieu of the water exchange from Ganga Canal. DJB is developing water treatment plant at Okhla with modern technology. However, Delhi should ensure that they adhere to the norms in terms of quality of water and in case of violation, penalties/compensation are to be paid. Joint inspection committee may be constituted for Quality Monitoring.

- ii. Land Pooling areas to have their own Water Treatment Facilities.
- iii. An integrated approach should be adopted for the revival and rejuvenation of rivers and major drains in the NCR. For example, the rivers Yamuna, Hindon, Kali, and Sahibi, and the Najafgarh drain, etc. should be taken up for revival and rejuvenation in the next five years after the approval of the NCR Plan, 2041. Revival and rejuvenation of river Yamuna should be taken up as a priority project jointly by Delhi Jal Board, Delhi Development Authority, the NCR along with concerned state governments, and the central government. A viable financial strategy may be worked collaboratively for the implementation of this policy.
- iv. Drainage is very closely related to overall water management. The relation between rainfall in the NCR and local floods due to overflowing of water from the rivers Yamuna, Ganga, Hindon, Sahibi should be considered while planning and upgrading drainage infrastructure in all four states.
- v. Water sensitive planning for creating blue-green infrastructure in the NCR should be mainstreamed in all four states. This means blue infrastructure like rivers, canals, ponds, wetlands, floodplains, water treatment facilities, etc. need to be integrated with the green infrastructure like trees, lawns, hedgerows, parks, fields, forests, etc. Spatial planning of blue and green infrastructure should be carried out in an integrative manner across the NCR for water security and sustainable development in the region. The NCRPB proposes to play the role of a catalyst by preparing Functional Plans for each sub-region, which could be detailed out by planning agencies considering their local contexts in the form of Project Plans for implementation by concerned organizations.
- vi. Reuse of wastewater should be adopted as one of the main water policies for augmentation of increasing water demand in all urban settlements by preparing a time bound plan for implementation of this policy. The aim of this policy is to reduce heavy reliance on freshwater sources from outside of the NCR and groundwater within the NCR. The policy promotes the dictum of 'Not a Drop to Waste'. So, recycle and reuse of water shall be made mandatory for all the NCR districts. Reuse of water after applicable treatment for agriculture and horticulture purposes, recreational purposes, industrial purposes, and large scale irrigation should be made mandatory. We may refer to **Annexure P-6.1** for typical applications under different water reuse categories. A network of decentralized wastewater treatment plants should be set up to generate useable water at local level particularly in urban areas.
- vii. To provide sustainable water supplies, construction of porous and permeable pavements and open public spaces in new developments and replacement of the existing non-porous pavements and open public spaces is made mandatory across the NCR. Replacement of the existing pavements and open public spaces should be carried out in phases by 2026.
- viii. In-situ treatment and use of wastewater in housing complexes and dual-pipe system supplies through potable or non-potable systems should be promoted. Alongside, piped water supply networks should be timely refurbished to reduce distribution losses. Complete replacement to earthquake-resistant joints for water supply pipes in supply routes to the cities, and in emergency medical centers, etc. should be achieved in a phased manner by 2030.

- ix. Decentralized STPs should be available in all high rise buildings.
- x. There should be zero water discharge. Only black water should go to FSTP.
- xi. DJB approved setting up of a new sewage treatment plant (STP) at Okhla The plant will be able to treat 124 million gallons of wastewater per day. The treated wastewater may be re-used for agriculture purpose etc.
- xii. New sources of water for the NCR population should be also explored. This should be done by promoting inter-basin transfers as one of the sources of water. We also propose that planners should explore the possibilities of inter-linking rivers such as Sharda-Yamuna through Sharda-Yamuna River Link Project from where the NCR could draw certain amount of water. The project needs to be expedited to provide water to the NCR. Eastern Rajasthan Canal (ERC) project (Annexure P 6.2 A) if implemented can supply irrigation and drinking water to both Alwar and Bharatpur districts along with many more districts of Rajasthan
- xiii. In order to enhance the environmental water flow in the river Yamuna, the three proposed dams namely, Renuka Dam, Lakhwar Dam and Kishau Dam along with the proposed Sharda-Yamuna Linkage Project should be completed on a top priority in a time bound manner. The proposed project components of Renuka Dam Project include 23 Cumec of Drinking Water Supply, out of which 498 MCM to be supplied to NCT of Delhi. Lakhwar Multipurpose National Project Uttarakhand for which appraisal is already complete, is proposed over River Yamuna in Dehradun District. In this regard an agreement amongst the Basin States for implementation of Lakhwar MPP has been signed by Hon'ble Chief Ministers of Uttarakhand, Himachal Pradesh, Haryana, Uttar Pradesh, Rajasthan and NCT of Delhi and Hon'ble Minister (WR, RD & GR). The work for preparation of DPR for Kishau Multipurpose National Project is underway. A brief about the proposed dam projects is provided at **Annexure P-6.2**.
- xiv. Flood waters of the rivers Yamuna, Hindon and Ganga may be stored in barrages and regulated floodplain reservoirs like flood tunnels in Tokyo. These structures could be used to store excess monsoon over flows at suitable locations, which could then be used for managing aquifer recharge like it is done in Singapore. Initiatives regarding inducing recharge along the rivers should be also undertaken.
- xv. The NCR and participating four states should undertake promotion of artificial groundwater recharge including recharge in areas such as ridges, roof-top rain water harvesting, rainwater harvesting of runoff from roads and flyovers, deepening and rejuvenation of village ponds and lakes, etc. Areas surrounding the Aravalli Ridge may be treated to allow higher subsurface recharge by constructing trenches, gully plugs, gabion structures, etc. Geo-tagging of initiatives should be done with pictures and regularly updated on the NCR Geo-Portal.
- xvi. Regarding the revival and rejuvenation of river Yamuna, authorities should make all efforts and focus on the stretch upstream of Wazirabad Barrage and stretch between Wazirabad and Okhla Barrages (Delhi segment), on priority. Indicative strategies and actions to be adopted

for the rejuvenation of river Yamuna are placed at Annexure P-6.3.

- xvii. Special taskforces should be set up in all four states for comprehending use of water for irrigation in the agriculture sector. Agriculture disproportionately being the largest consumer of water (over 75 percent), its demand and supply management should be assessed separately by the proposed taskforces within one year after the approval of the NCR Plan, 2041. These taskforces should make definitive proposals for efficient water management including sustainable irrigation practices. Irrigation departments in the states should be also entrusted with the task of monitoring water demand efficiency for agriculture and also that of irrigation. Concerned departments should also promote agricultural practices like hydroponics, which is dirt-free, space-saving, and water-effective method of growing soilless. Further, micro-irrigation techniques should be adopted for enhancing water use efficiency in agriculture sector in the NCR. Current water consumptions for irrigation is indicated in para...The states shall make an efforts to reduce this consumption to 75 80% of the current consumption level as part of their strategy in respective SRPs.
- xviii. There is a large scope of reviving water bodies, ponds, and lakes by way of catchment treatment, de-siltation work and deepening of ground water recharge with the provision of recharge shafts. For conservation and restoration of water bodies, ponds, etc., all the NCR districts should focus on the policy of 'Identify, Repair, Renovate and Restore'. Water agencies and city and regional planning agencies in the NCR should undertake joint studies to create detailed data of all forms of water bodies and place this information in the public domain so that all stakeholders could benefit and use the data for conservation and restoration of water bodies, ponds, lakes, etc. In this context, it is proposed that all natural and manmade water bodies in the NCR need to be identified and revived in a phased manner by 2031 to rejuvenate water table and prepare five yearly water budgets for each sub-region as well as for the NCR. The chief aim is to make the NCR a water rich region. However, revived local and regional water bodies can be also utilized for various activities like tourism (water amenity spaces). cattle use, fairs, boating, recreation, etc. based on their potentialities. Needless to stress that all potential recharge spaces like forests, water bodies, rivers and tributaries, lakes, large open spaces like gardens, parks, etc. should be identified and protected from encroachments, siltation, depletion, and pollution. All three sub-regional plans and master development plans of all urban areas should detail out specific policies, proposals and projects for realization of this policy.
 - xix. Clear identification of natural drainage systems and watersheds should be made on the principles of water sensitive planning. Future construction of higher order roads in the region should follow natural slopes as far as possible and also view roads as carriers of storm water. Each urban settlement should be divided into several manageable parts and all these divisions should be demarcated based on natural parameters. Master development plans should attempt, as far as possible, to localize surface runoff in these divisions by creating recharge spaces at local level. Planning agencies should proactively prepare *functional water sensitive plans* at sub-region and settlement level. Efforts should be also made for groundwater recharge from storm water run-off on roads and footpaths through installation of pre-fabricated structures between road carriageways and footpaths.
 - xx. Strategies for the localization of stormwater runoff should be made an integral part of urban and rural development plans for recharging aquifers. Here Integrated Cluster Action Plans

(ICAPs) prepared under the Rurban mission should be integrated with District Development Plans (DDPs) and in turn DDPs should get embedded in the sub-regional plans to ensure that polluted stormwater does not reach the aquifers. Phase wise five year targets for reducing 'percent runoff' beyond local areas should be prepared and monitoring of progress should be assessed throughout the plan period of twenty years.

- xxi. All settlements in the four states should start a drive in mission mode to separate stormwater drains from sewage drains so that stormwater is used for groundwater recharge in all subregions of the NCR. All cities and towns in the NCR shall have 100 percent coverage of stormwater drains and this facility need to be extended to rural clusters where the work should be completed by 2031 in a phased manner.
- xxii. Groundwater recharge policies and guidelines for rural and urban areas should be prepared by each participating state in the NCR considering local elements and contexts. Possibilities of having river policing by a dedicated unit may be explored and enforced for securing rivers and other water bodies in NCR, by the respective states.
- xxiii. The NCR views that water availability could be increased by tapping surface run off and this could augment availability of usable water. So, artificial recharge and rainwater harvesting should be given priority. All the four states should implement guidelines and schemes of the central government for control of ground water depletion and promotion of rainwater harvesting and water conservation as shown at **Annexure D-6.1.2**.
- xxiv. Rainwater harvesting plan should be implemented through appropriate mix of incentives and rules and should include all possible ways including roof tops and public open spaces. Rural settlements should be also engaged in water harvesting by tapping into water from rainfall. This could be done by building 'village panchayat ponds' to collect water to be used for promoting animal husbandry, dairy farming, and even for irrigation in fields meant for subsistence agriculture. Rainwater harvesting shall be one of the mandatory provisions while granting building permissions for any development project and industry. Rainwater harvesting and ground water recharging techniques shall play a major role in the NCR to reduce the ground water depletion, ensure ecological requirements of water and to meet the growing water demand.
- xxv. All districts in the NCR are required to take appropriate steps to provide land for ground water recharge. As proposed in the NCR Plan 2021, at least 2 to 5 percent urban area should be earmarked for water bodies, which would include natural as well as human made water bodies, ponds, etc.
- xxvi. All four states should work on a definite timeline and prepare status reports on groundwater in their respective sub-regions. The NCR should prepare a "Unified Ground Water Plan for the NCR" in two years' time after the approval of the NCR Plan 2041. Based on the findings of these development plans and strict restrictions should be imposed for illegal extraction of ground water in over exploited and critical areas in the NCR. It is also proposed that groundwater modelling should be undertaken at sub-regional or district level and 'Aquifer Management Plan' should be prepared.
- xxvii. According to the CGWB Report, 2017, Alwar, Bharatpur, Palwal, Gurugram and Panipat

districts are water stressed. These districts should device mechanisms to monitor and control percent of water to be withdrawn and maximum limit of withdrawal should be fixed for such areas. Such districts should identify suitable sites and select them to act as water percolation points.

- xxviii. Considering the overall macro deficit of water in the NCR, initiatives towards rain water harvesting and sprinklers and drip irrigation should be made mandatory across NCR.
- xxix. Work on registration and geo-tagging of all bore wells and other wells across the NCR should be made mandatory for effective monitoring and management of groundwater resources through an online portal. Permissions shall be required for digging new wells, which would require building of a groundwater recharge structure.
- xxx. The NCR need to have a single digital platform for all issues related to water and drainage including interstate issues. Digital stormwater management should be promoted to help practitioners to scale up rainwater harvesting and improved storm water management for sustainable water management including urban flooding in the NCR.
- xxxi. All settlements and sub-regions should map all the existing water networks. Besides, all settlements and sub-regions should also make estimates by quantifying available water and also map various water sources. The supervisory control and data acquisition (SCADA) systems should be installed for monitoring and management of water supply systems. Maps of water quality status for all districts falling within the NCR should be prepared and made available to water planners and other policy makers. Further, for comprehensive monitoring and evaluation, a separate cell should be set up in each state for water resource tapping and utilization with the aim of achieving water security in each sub region of the NCR. Introduction and adequate use of appropriate tools of integrated development of NCR in water management as well as other sectors, has to be fulfilled. Strategy for water and drainage covering mapping of water demand, quality, projects, etc. are as indicated at **Annexure P-6.4.** 'Watersheds' as a category should be maintained in the land use classification under 'Conservation' or 'Recreation' uses in the Regional as well as Sub-regional plans.

6.4.2 Water Demand in the NCR

- i. The Rajasthan Sub-region, the UP Sub-region, and the Haryana Sub-region should prepare sub-regional plans to provide potable water to all their residents by building 100 percent domestic water connections, networks and other infrastructure. This policy should cover all urban and rural settlements.
- ii. Several water providing agencies are not able to reasonably estimate how much water they have received from various sources and how much water has been received by consumers in each household. In order to estimate the quantity of water received at various WTPs, each WTP should install water meters. For measuring the exact amounts of water received in different areas, district water meters should be installed. This will give agencies better idea about per capita water supplied on a daily basis.
- iii. Water statutes should be amended to guarantee prescribed water quality for humans at the

level of water works as well as at the level of water consumers. Water providers and distributors should be held accountable in the event of deviations from the prescribed standards of the Bureau of Indian Standards (BIS). All settlements and sub-regions should prepare development plans for replacing and improving the existing underground water distribution networks and make them leakage free to avoid large scale loss of water and water contamination. These plans should be implemented in a phased manner within a specified time but before 2041.

- iv. As most water laws are written to serve the planned areas (Delhi Jal Board Act 1998), major proportions of city population who live in unauthorized areas and slums get excluded from accessing water. It is proposed that water laws in all the four states should be amended to include all residents living in the NCR irrespective of the nature of their place of residence. This would also mean that total water demand includes water needs of slum dwellers, daily migrants, residents living in unauthorised colonies as well as residents living in planned areas.
- v. All sub-regional plans and master plans should detail out water demand for various activities such as water for drinking, industry and commerce, agriculture, etc. A large percent of treated wastewater should be used for agriculture, which is the major consumer of water. However, great care should be taken by water engineers to ensure high quality of water fit for use for irrigation purposes and stop deadly pollutants from entering the food chain via water used in agriculture. Similarly, after treatment, some percent of wastewater should be used for gardening and cleaning of roads in urban settlements. High quality treated wastewater should be also used for drinking purposes of animals. A separate water network to distribute treated wastewater of high quality should be built throughout the NCR. Municipalities and concerned state departments should build this second network through their own investments, the NCR shall invest in taking this network to agricultural fields and other parts of the region with 25 percent investment contribution being made by the concerned states. Under no circumstances potable water supplies should mix with treated wastewater supplies.
- vi. Steps towards adopting site-specific indoor and outdoor solutions for efficient residential water use and distribution of water-saving devices, rebates for use of water saving fixtures, programmes promoting replacement and retrofitting of water efficient toilets will enhance water management in residential Areas. Specific awareness programs to be conducted in this regard (Annexure-P-6.5).
- vii. Programmes should be devised to increase water-use efficiency in commercial an institutional sectors. Water auditing should be carried out to find out whether water demand was met efficiently. All the major water use sectors such as domestic, agriculture and industry, and other large developments should carry out *water auditing* for efficient water utilisation as provided at **Annexure P-6.6**.
- viii. All sub-regional plans should identify *water polluting activities and zones* and strictly monitor for gradual improvements. Possibilities of allotting quotas for such activities may be explored after which the concerned consumers shall have to device methods to survive on allotted quotas through reuse.

- ix. District Metering Areas could be developed by the NCR states in in each division of an urban area including the NCT of Delhi in order to reduce non-revenue water and unaccounted for water as per guidelines issued by the MoHUA.
- x. Metering of water consumption and billing by volume should be mandatory throughout the NCR. Mechanical meters should be replaced with digital meters with remote reading systems. Mechanisms for alerts against any tampering should be developed and implemented. This should be implemented in all sub-regions in a phased manner by 2026. State may take initiatives towards adopting conservation pricing to ensure recovery of costs of water service maintenance, delivery, and infrastructure replacement.
- xi. In all the four states, concerned water agencies and departments should create "Water Smart Portal" for the use of residents and staff to see hourly water use in their homes and facilities. Such water smart platforms should also send leak alerts when it detects continuous hourly use, allowing users to quickly resolve leaks and prevent water waste.
- xii. A High Powered Standing Committee comprising of drinking water specialists, urban and regional planning and development experts, water engineers, and engineers working in the irrigation departments of the four states should be constituted for achieving integrated water resource management and water security for the NCR by the NCR and taskforces should be set up in four states, prioritizing drinking water needs among various uses of water, ensure e-flow in the rivers, quality monitoring of river waters, etc. and feeding innovative knowledges into the NCR Plan and sub-regional plans.
- xiii. Required portal can be made with the help of the National e-Governance Division (NeGD), Department of Electronics and Information Technology, Government of India and these can be further linked with the 'NCR Geo-Portal'.
- xiv. All four states in the NCR should encourage community involvement, strengthen groundwater governance institutions and provide performance-based incentives across the sub-regions. The Atal Bhujal Yojana should be implemented on a priority basis and enforced in all sub-regions.
- xv. Separate storm water drainage and sewage systems, shall be followed as a mandatory norm, throughout the NCR. No new storm water drains should be designed in isolation and without studying the overall impact of new proposal on the existing storm drainage system. Drainage issues need to be looked at from regional and sub region level as developments in the natural drainage areas of the three water basins of NCR ultimately results in flooding. As the NCT of Delhi cannot be developed in isolation, the areas around Delhi need to be developed in an integral manner considering their drainage aspects in a regional context. States should take initiatives in this direction.
- xvi. Ensure flood prevention through protection of flood flow zones like *khals* and ponds, rivers and flood water retention areas, etc.
- xvii. The NCR Plan proposes to promote use of Green Storm Water Infrastructure (GSWI) in the development and redevelopment of streets and land parcels so that spaces get created for infiltration of storm-water, reduce water flows, and improve water quality. Use of

GSWI to capture and cleanse rainfall runoff and incorporate green infrastructure into urban storm water management systems to reduce flooding should be promoted.

- xviii. Dumping of solid wastes and carrying of sewage in storm water drains or into water bodies is prohibited in the NCR. Adequate monitoring mechanisms including digital surveillance methods like use of CCTVs, drones, etc. with provisions of penalties on defaulters should be also developed. The cost analysis of CCTV and drone based monitoring versus costs of combating floods or losses from floods can be undertaken at local level.
 - xix. De-silting of drains should be made technology based involving GIS mapping, drones for monitoring, robots for clearing and unclogging with clearly laid down schedules for efficient drainage management. The schedule of de-silting by the contractors segment-wise and jurisdiction-wise along with crucial details such as time schedules of de-silting and the amount of silts and debris removed should also be captured and displayed on departmental portals and websites (Annexure P-6.7) No construction and encroachments should be allowed inside or on any storm drain and natural drain.
 - xx. Appropriate remedial measures should be undertaken to tackle issues leading to obstruction of run off and non-maintenance of drains. All encroachments should be removed and slums should be resettled locally. No peripheral resettlement, as is the practice today, is permitted as it destroys existing infrastructure of water and sanitation.
 - xxi. Concerned authorities should ensure that the quality of water flowing through drains and falling into rivers and water bodies is allowed only if it is treated according to CPCB standards and norms. Pollution levels of wastewater entering into the river Yamuna through diversion drain 8, diversion drain 6 and diversion drain 2 in Haryana need special attention. Similarly, wastewater and polluted water from Panipat drain falling into diversion drain 2 entering in the river Yamuna at Khojkipur should be analysed. Water in all the three diversion drains should be treated and allowed into the river Yamuna only if it meets the norms set by the CPCB. This work should be completed in one year from the approval of the NCR Plan 2041.
- xxii. Measures such as detention and retention storages, low impact developments, rejuvenation of water bodies and similar such interventions should be adopted to manage the additional storm water runoff rather than relying on manmade roadside drains alone. All road side drains should have proper disposal systems with connection to drainage network in an area.
- xxiii. Generalized tree canopy targets for built-up areas with 50 percent tree canopy in suburban built-up areas; with 25 percent tree canopy in urban area; and with 15 percent tree canopy in central business districts can be followed in the NCR in order to protect and restore vegetated riparian buffers, maintain naturally functioning floodplains, and preserve wetland buffers to manage stormwater and improve water quality. In this regard, specific guidelines can be issued by the Ministry of Environment and Forests and Climate Change in consultation with concerned central ministries and state governments of Delhi, Haryana, Rajasthan, and Uttar Pradesh.
- xxiv. Government of the NCT of Delhi has formulated the Drainage Master Plan for the NCT Delhi, using the simulation modelling approach and the GIS, analysing all the drains of

NCT for their adequacy in the present form for rainstorms of 2 years and 5 years return periods. Similar plans should be prepared for all urban areas in the NCR. With climate change effects rising, the NCR is facing higher intensity of rainfall, which potentially could lead to higher intensity of floods. So, all four states need to be ready for such eventualities with requisite drainage plans. Normally, rural drainage is designed to drain for 3 days rainfall of 5 year frequency and hence, submergence for 2 days is involved but with high value crops, this should be unacceptable. Similarly, urban storm water drains are designed for a 5 year return but this also needs review as while land flooding for upto 3 hours may be acceptable once in 5 years in residential areas, however, it cannot be accepted in commercial or industrial areas. So, as pointed out by the Ex-Chairman of the Central Water Commission, better safety is required. It is proposed that the NCR should frame some norms to address the issue of safety. Watersheds, sub-watersheds and micro-watersheds are identified and mapped by the CGWB. These should be utilised by concerned authorities to facilitate cities, town and villages to formulate drainage master plans, which should be also integrated with ICAPs prepared under the Rurban programme. Detailed analysis of contributing areas to each drain along with drain's adequacy and carrying capacity for current and future scenarios should be evaluated by ULBs and PRIs. This task should be initiated in phases starting with Class-I Towns to be finished in 2025 followed by the rest of the towns and finished by 2031. The exercise should also be undertaken for rural clusters (ICAPs) in a phased manner and finished by 2031. All sub-regional plans should include phasing details of building of capacities of all drains.

- Planning of drainage networks and land uses should be done simultaneously. No city, town XXV. and village should be developed without having requisite planned drainage networks. This means all local level plans like master development plans, zonal plans, etc. in the NCR should be prepared collaboratively by organizations like city planning agency such as the Delhi Development Authority, water provisioning agency like the Delhi Jal Board, and irrigation departments in all four states. Collaboratively prepared drainage plans are critical to draining out water from inhabited areas and recharging of groundwater with localized runoff where all efforts are made to minimise the water runoff. Drainage networks should be placed on a GIS framework following the AMRUT guidelines. It should identify the stretches of natural drainage system that are encroached and a definite plan for tackling these encroachments should be put in place. Such information should be made public for awareness and public participation to check future encroachments. All natural drain big or small should be maintained in their natural form and any engineering interventions in such drains are discouraged. Except in large agricultural tracts, the primary, secondary and tertiary storm drains should be covered free flow pipes and barrels. Only trunk drains shall be kept open. All-natural drains should have a 'right of way', which may be depicted in all maps, plans and documents of the area. All lakes and ponds of 2 acre and above shall have catchment area delineated, which shall be depicted in all plan documents. Except plantation, water bodies, water harvesting components, compost making and paved walk ways not exceeding 10 percent of gross area only should be permitted within right of way of drains and catchment areas of lakes. It may form part of green corridors. Irrigation water efficiency should be evaluated in the rural areas.
- xxvi. Concerned water management and planning departments in the NCR should organise regular training programs, and awareness campaigns regarding water status, efficient water

utilisation, benefits and ways of rainwater harvesting, groundwater recharge and more income per drop of water for agriculture to promote water conservation and efficient water use and bring about required behavioural changes in users. Trained and experienced professionals from academic and research institutions located in the NCR should be given responsibilities for organising such training programmes on water management. Public awareness campaigns should be also organized through societies or trusts for the revival and rejuvenation of water bodies.

All states should amend the existing laws to regulate development along rivers and natural drains in order to maintain their natural state as well as render rivers, lakes and canals attractive. Along with the above policies, other micro level policies given at Annexure P-6.8 should be detailed out in the sub-regional plans and other lower order plans.

6.4.3 Major Proposed Projects and Implementation Strategies

- (a) The target of 100 percent guarantee of 'water quality at water works' and 'water quality at consumer end' should be achieved in a phased manner in next 5 years i.e. by 2026 in all cities and towns and in all rural areas across NCR by 2031.
- (b) States should adopt the Model Groundwater Bill, 2017 and enact suitable groundwater legislation and regulate and control development and management of groundwater across NCR by the end of 2021.
- (c) MoHUA has formulated Model Building Byelaws, 2016 which recommend rainwater harvesting for all types of building of plot size of 100 sq m or more. Further, all building having a minimum discharge of 10,000 litres and above per day shall incorporate wastewater recycling systems. These byelaws should be made mandatory across the NCR. The recycled water in urban settlements should be used for horticultural purposes. Implementation of these byelaws should be ensured across the NCR by 2025.
- (d) The key development projects envisaged by the NCRPB regarding water and drainage are listed in Table 6.9 below, but not limited to:

Table 6.9: The Key Projects of Water and Drainage in the NCR, 2021-2041

S. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
1.	Schemes for augmentation of water supply include water treatment plants (WTPs) and 100 percent piped water supply coverage across the NCR. For peri-urban areas pond-based and surface water based methods to be adopted.	50 percent of all urban and rural settlements in each district	100 percent of all urban and rural settlements.	-	-
2.	Schemes pertaining to reviving i.e. conservation and restoration, geo tagging and geo-fencing of	To be undertaken by	-	-	-

S. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
	water bodies, ponds, lakes, etc. by way of catchment treatment, de-siltation work and deepening for ground water recharge with a provision of recharge shafts with a policy focus on Identify, Repair, Renovation, Restoration of traditional water bodies.	all the NCR districts.			
3.	Schemes should be prepared for areas surrounding hills, ridges, etc. in the NCR enabling higher subsurface recharge by constructing trenches, gully plugs, gabion structures, etc.	To be undertaken in all the NCR districts	-	-	-
4.	Geo-tagging and registration of all bore-wells and other wells across the NCR.	To be done by 2021-22.	-	-	-
5.	Scheme for 100 percent coverage of the NCR with storm water drainage network (separate from sewerage) but integrated with ground water recharge facilities.	50 percent of all urban and rural settlements in each district.	100 percent of all urban and rural settlements.	-	-
6.	Schemes to store flood water of the rivers Yamuna, Hindon and Ganga by way of construction of barrages, regulated floodplain reservoirs, and green storm water infrastructure (GSWI), etc.	To be accomplis	shed by 2031.	-	-
7.	Scheme for revival and rejuvenation of the river Yamuna is a top priority.	Stretch Upstream of Wazirabad Barrage and Stretch between Wazirabad and Okhla Barrages (Delhi Segment)	Remaining stretches in the NCR	-	-
8.	Project for increasing embankment heights of all drains across the NCR including Diversion Drains 6, and Diversion Drain 8 near Piau Manihari and Diversion Drain 8 near Garhi Birdroli Sonipat)	To be accomplished by 2023.	-	-	-

S. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
9.	Projects for the treatment of drains water before entering into the river Yamuna.	To be completed by 2026	-	-	-
10.	Schemes for 100 percent water metering and water auditing for the key water guzzling sectors.	50 percent of all urban and rural settlements in each district	100 percent of all urban and rural settlements.	-	-
11.	Schemes for the replacement of the existing non-porous and permeable pavements across the NCR.	Replacement of the existing pavements be done in phases by 2026.	-	-	-
12.	Schemes for the replacement of earthquake-resistant joints for water supply pipes in supply routes to cities, and in emergency medical centers, etc.	50 percent of all urban and rural settlements in each district	100 percent of all urban and rural settlements.	-	-
13.	Expedite and complete Sharda- Yamuna River Link Project.	To be made operational by 2026.	-	-	-
14.	Expedite and complete work related to Renuka Dam.	-	To be made operational by 2031.	-	-
15.	Expedite and complete work related to Lakhwar Dam.	To be made operational by 2026.	-	-	-
16.	Sanction and Implementation of Eastern Rajasthan Canal (ERC) project	To be done by 2026			
17.	Expedite and complete works related to Kishau Dam	To be made operational by 2026.	-	-	-
17.	Scheme for building rain water harvesting structures in all settlements across the NCR.	100 percent of institutional areas, government complex building, etc.	50 percent of all urban and rural settlements.	100 percent of all urban and rural settlements	-

Chapter 7

SANITATION AND WASTE MANAGEMENT

7.1 INTRODUCTION

- 7.1.1 Image of a region, among other things, also depends on how well authorities are able to manage their sanitation services and wastes. Sanitation is seen as the provision of facilities and services for the safe disposal of human urine and feces. However, sanitation also refers to the maintenance of hygienic conditions through services such as garbage collection and wastewater disposal. Efficient sanitation system ensures better environmental conditions of any settlement and requires comprehensive planning and management.Sustainable Development Goal 6, particularly the target 6.2 calls for adequate and equitable sanitation for all. The target is tracked with the indicator of 'safely managed sanitation services' with the use of an improved type of sanitation facility that is not shared with other households and from which the excreta produced are either safely treated in situ, or transported and treated off-site. Providing exclusive sanitation services to all households presents a huge challenge. But the Government of India has initiated the Swachh Bharat mission in urban and rural areas to meet this challenge.
- 7.1.2 Sanitation is not only essential for health and hygiene but also required for socioeconomic development. Development of appropriate sewage or wastewater carriage system with efficient treatment is the key element, which acts as a prerequisite for facilitating balanced and harmonized development of any settlement. As per estimates, about 75-80 percent of surface water pollution is caused due to untreated domestic sewage discharged into local water bodies. Therefore, augmentation of the existing inadequate systems and treatment facilities with the adoption of new wastewater treatment technologies for all urban settlements, peri-urban areas as well as rural areas is a big challenge.
- 7.1.3 Like provisioning of exclusive sanitation services to all households, the management of wastes of all kinds is also one of the most crucial aspects for people living in any settlement. The management of municipal solid wastes in India has continued to be in a bad condition and poses a huge challenge to city administrations, not only because of environmental and aesthetic concerns but also because of the enormous quantities generated every day due to growing urban population, improvement in economic conditions, changes in lifestyles and consumption patterns. Flagship report on Economic Impacts of Inadequate Sanitation in India, 2011 highlighted that the total annual economic impact of inadequate sanitation in India amounted to a loss of \$53.8 billion in 2006. This implies a per capita annual loss of \$48. Amongst management of all forms of wastes, solid waste management (SWM) is the most essential service to be made available to all residents. The aspects of sanitation and waste management, however, should not be looked at in isolation.

7.2 THE EXITING STATUS OF SANITATION AND WASTE MANAGEMENT

7.2.1 As per the Centre for Science and Environment (CSE) reports of 2018, urban areas of Haryana generated around 1,413 million litres per day (MLD) sewage and had the treatment capacity of 852.7 MLD, 60 percent of the total sewage generated. National Capital Territory of Delhi generated 4,155 MLD of sewage and had the treatment capacity of 2,693.7 MLD, which comes to about 65 percent of the total sewage generated. In Uttar Pradesh, the sewage generated in urban areas was 7,124 MLD and

the treatment capacity available was 2,646.84 MLD, which is about37 percent of the total sewage generated. In the case of Rajasthan, the sewage generated in urban areas was 2,736 MLD and the treatment capacity available is 865.92 MLD, which is 32 percent of the total sewage generated¹. The NCR sub-regions and districts wise sewage treatment plants (STPs) and installed capacities, availability of toilet facilities are given in **Table 7.1**. It is evident that a significant gap persists between the treatment capacities and generated sewage volumes in all the four states. The total sewage treatment capacity in the NCR is about 5,238 MLD with Delhi 2,807 MLD, Haryana Sub-region 1,005 MLD, Uttar Pradesh Sub-region 1,394 MLD and Rajasthan Sub-region 32 MLD.

S. No.	Sub Region	Sewage Generation in MLD	Treatment Capacity in MLD	Percent treatment capacity
1.	Delhi	3,276	2,807	86
2.	Haryana	770	1,005	131
3.	Uttar Pradesh	1,081	1,394	129
4.	Rajasthan	42	32	76
	NCR	5,170	5,238	101

 Table 7.1: NCR State Wise Sewage Generation and Installed Treatment Capacity, 2019

Source: NCR Planning and Monitoring Cells, 2019 and CPCB Note: For sewage generation data of Faridabad, Hapur and Baghpat districts is excluded.

7.2.2 As per the Government of National Capital Territory of Delhi, around 79percent area of Delhi is covered with sewerage network. With respect to the sub-regions of Rajasthan and Haryana, the urban sewerage network coverage is 97.89 percent and 81.36 percent respectively. The sewerage network coverage of 16.54 percent in Uttar Pradesh sub-region is the lowest in the NCR (**Table. 7.2**). In term of STP infrastructure, in 2020, the NCR has 133 STPs out of which 60 STPs are located in the Haryana Sub-region, 35 in Delhi, 35 in Uttar Pradesh Sub-region, and 3 in Rajasthan Sub-region.

Table 7.2: Sub Region Wise Sewerage Network Services in Urban Areas of the NCR

S. No.	Region and Sub- Region	District Level Coverage of Sewage Network Services in Urban Areas (in percent of total area)
1.	Delhi	79.00
2.	Haryana	81.36
3.	Uttar Pradesh	16.54
4.	Rajasthan	97.89
	NCR	68.70

Source: NCR Planning and Monitoring Cells, 2019.

Note: District level coverage of sewage network services in urban areas excludes data of Faridabad, Jind and Baghpat districts.

7.2.3 Wastewater generated in Delhi finds its way through the drains into the river Yamuna. Estimates indicate that around 1,136-1,363 MLD (250-300 MGD) of untreated wastewater flows into the river Yamuna in Delhi stretch from Wazirabad to Okhla. The wastewater flows in Delhi stretch also includes about 341-364 MLD (75-80 MGD) untreated wastewater coming from Haryana through the Najafgarh drain. The crisis in sewerage and sanitation sector has clear links to the imbalanced urban development and poor provision of wastewater infrastructure. Situation is aggravated by un-ending densification of the Central National Capital Region (CNCR), impact of climate changes and increasing groundwater pollution because of sewage infiltration.

¹Note: The data from NCR States has been received but it is incomplete. The same will be updated once received form the NCR States.

- 7.2.4 In the NCR total solid waste generated is 20,099 metric tons per day (MT/D) of which the NCT of Delhi Sub-region has the highest share of 66 percent, followed by Uttar Pradesh Sub-region with 19 percent and Rajasthan Sub-region with the least 2.51percent. With regard to household level coverage of solid waste management system in major urban areas of NCR, the NCT of Delhi has achieved the target of 100 percent service level benchmark (SLB) followed by Uttar Pradesh Sub-region with 97.38 percent, Haryana Sub-region with 87.81 percent and Rajasthan Sub-region has the lowest with 87 percent (Table 7.3)².
- 7.2.5 Construction and operation of sanitary landfill sites is a financially expensive option for solid waste management. Due to non-availability of land for garbage dump, attempts are being made to locate such facilities in the flood plains of a river, along roads outside urban limits or inside forests, which are responsible for deteriorating surface and groundwater quality.

rable /.	able 7.5: Sub Region wise Sond waste Generation in Major Urban Area								
S. No.	Sub Region	Solid Waste	Household level	Efficiency of	Percent of total				
		Generation	coverage of solid	collection of	waste				
		(MT/D) in urban	waste management	municipal solid	generation in				
		areas	services (100%)	waste (100%)	urban areas				
1.	Delhi	13250	100	100	65.92				
2.	Haryana	2514.88	87.81	92.91	12.51				
3.	Uttar Pradesh	3830.4	97.38	99.17	19.06				
4. Rajasthan		504	86.97	85.91	2.51				
1	Fotal NCR	20099.28	93.04	94.50	100				

Table 7.3: Sub Region Wise Solid Waste Generation in Major Urban Area

Source: NCR Planning and Monitoring Cells, 2019

Note: In Haryana data of Faridabad and Panipat districts is not included.

7.2.6 For the entire sub-region the household coverage of solid waste collection and efficiency of collection, the NCT Delhi has achieved the target of 100 percent but other sub-regions are lagging behind. The coverage and efficiency of collection of other sub-regions are not as per service level benchmarks (SLBs). Details are given in **Table 7.4**.

1	Table 7.4	4:	District	Wis	se Solid	Waste	Gen	eration	in M	ajor	Urban A	Areas

S. No.	Sub Region	Districts	Solid Waste Generation (MT/D) in Urban Areas**	Household level coverage of solid waste management services (100%)	Efficiency of collection of municipal solid waste (100%)
1.	Delhi	Delhi	13250	100.00	100.00
2.		Bhiwani	100.30	100.00	100.00
3.		CharkhiDadri	22.00	95.00	95.00
4.		#Faridabad			
5.		Gurugram	1279.83	100.00	100.00
6.		Jhajjar	115.00	100.00	100.00
7.	Haryana	Jind	137.13	76.25	76.25
8.		Karnal	203.50	100.00	92.86
9.		Mahendragarh	44.95	90.00	90.00
10.		Mewat	41.59	100.00	95.00
11.		Palwal	44.08		80.00
12.		Panipat			

² Note: Data provided by the NCR States

S. No.	Sub Region	Districts	Solid Waste Generation (MT/D) in Urban Areas**	Household level coverage of solid waste management services (100%)	Efficiency of collection of municipal solid waste (100%)
13.		Rewari	82.00	100.00	93.33
14.		Rohtak	176.5	100.00	100.00
15.		Sonipat	268	92.50	92.50
	Sub Reg	gion Haryana	2514.88	87.81	92.91
16.		Baghpat	99.11	87.50	96.25
17.		Bulandshahr	90.50	100.00	100.00
18.		GautamBudh Nagar	1010.45	98.57	98.57
19.	Litter Dredech	Ghaziabad	1262.42	100.00	100.00
20.	Uttal Fladesh	Hapur	119.75	100.00	100.00
21.		Meerut	911.03	97.54	98.93
22.		Muzaffarnagar	225.30	95.42	99.64
23.		Shamli	111.84	100.00	100.00
	Sub Regio	n Uttar Pradesh	3830.40	97.38	99.17
24.	Dejecther	Alwar	277.70	76.67	84.21
25.	Kajastilali	Bharatpur	226.30	97.28	87.60
	Sub Reg	ion Rajasthan	504.00	86.97	85.91

Source: NCR Planning and Monitoring Cells, 2019

Note: ** District Level Solid Waste Generation in urban Areas may vary once information from the towns which are yet to share are added to the existing ones.

7.3 KEY ISSUES AND CHALLENGES OF SANITATION AND WASTE MANAGEMENT

- 7.3.1 Low coverage of urban settlements with sewerage network coupled with a large and increasing gap in treated sewage and sewage generation capacity is leading to degradation of the environment. The rivers, mainly Yamuna, Hindon and Kali Nadi and various seasonal streams and drains in the NCR are under severe water quality threat due to untreated sewage polluting downstream areas. The surface water bodies and rivers receiving untreated wastewater are becoming unfit for bathing and unsuitable for drinking water.
- 7.3.2 Since sewerage networks have not increased with the speed with which population has increased, those people who have houses have to rely on septic tanks and often dump wastes in the open environment. Unsafe disposal practices is another issue as even one truck of faecal sludge and septage carelessly dumped equals 3,000 people defecating in the open.
- 7.3.3 The existing national standards on sewage are not adequate for shaping solutions for year 2041. Absence of statutory guidelines for reuse of treated wastewater is an issue demanding immediate attention. BIS standards formulation and revision of national standards is an exhaustive and time consuming process.
- 7.3.4 Some of the major issues related to the crisis of the sewerage system in the NCR are inadequate sewerage network, inadequate capacity of STPs, cultural inhibitions to the reuse and recycling wastewater, lack of investment for the rehabilitation and phasing out of the existing sewerage network and STPs, general lack of operations and maintenance, non-existent sewerage facilities in peri-urban and rural areas, lack of

treatment of industrial and hotel wastes, non-availability of land for STPs, non-availability of accurate and relevant data.

- 7.3.5 Waste segregation is critical to solid waste management. Wastes could be divided into various categories like plastic waste, e-wastes, bio-medical waste, C and D waste, and other hazardous wastes. Treatment, storage, and disposal facilities need to be provided for hazardous and e-waste.
- 7.3.6 Other major issues related to waste management include availability of land for landfill sites for the disposal and management of wastes scientifically, poor or no segregation of wastes at source, poor public awareness and capacity building, inadequate financial resources, piecemeal approach towards handling of solid wastes, appropriate training and knowledge of municipal staff, exclusion of informal sector, adoption of circular economy concept. So, varied problems ranging from lack of resources and limited institutional capacity to inadequate infrastructure and public participation need to be addressed.

7.4 FUTURE PERSPECTIVES AND PROPOSALS

- 7.4.1 To address the issue of uneven and inadequate coverage of sewerage network in towns and large rural settlements, policy makers should focus on meeting the target of 100 percent coverage of population and area with sewerage networks by adopting appropriate technologies, making land available for treating wastewater for potential reuse. Areas where construction of sewerage networks is not feasible, the low-cost sanitation measures should be adopted.
- 7.4.2 Decentralized and localized sewerage system should be developed for treatment and reuse of wastewater at local level. In the NCR, the issues are primarily related to decentralized facilities in terms of waste and grey water. Similarly, as it has been observed that the land required sanitation and waste management initiatives are often delayed. There is need to hasten the process of land use change for critical services like sanitation services.
- 7.4.3 To address problem of lack of sewerage system, a number of actions would be immediately needed, such as (i) Substantial investments in the construction of sewerage networks, conveying systems and STPs (ii) Reuse of effluents (iii) Energy generation in STPs (iv) Institutional and financial management reforms to ensure that growth is environmentally sustainable and inclusive.
- 7.4.4 The NCR sub-regions have to adopt ODF++ policy. The ODF++ is about treating the faecal material before discharging it in water bodies, and this also includes treatment of grey water. This is a herculean task for such a vast region. Implementation of innovative low-cost sanitation systems and sustainability of sanitation services is one of the major challenges.
- 7.4.5 The concept of 'nothing is waste' should be considered to utilize environmental resources and need to be preserved, and protected through technological interventions. The concept of 'circular economy' to use wastes as raw materials or resources should be implemented on priority. Specialized plants can be set up across the region with state-of-the-art technologies to utilize various types of wastes as raw material, generated within NCR and even outside NCR.

- 7.4.6 Emphasis should be placed on developing a decentralized sanitation system (DSS) by providing suitable incentives or subsidies, followed by semi decentralized systems and thereafter the large systems. The plan proposes to promote multiple smaller STPs, which enable spreading of discharges to natural drains or water bodies and also minimize travel length of sewage conveyance and its pumping requirements. Delhi should initiate a scheme for replacing soak pits with decentralized STPs to prevent groundwater contamination and also to help in recycling water. Govt. of NCT Delhi building decentralised toilet blocks in its ISBTs. In case of AnandVihar ISBT (as per quotes received by GNCTD) for a 10 KLD plant initial investment including plant, tanks, civil works, transportation, etc. would be about Rs. 19 lakh and O&M cost would be 4 lakh for 2 years. Similarly, for a 25 KLD Plant, initial investment would be about Rs. 33.6 lakh and O&M cost to 4 lakh for 2 years. It recycles water and one can reuse almost 85 percent of the water. Such initiatives shall be replicated in other parts of the NCR.
- 7.4.7 Constructed wetland treatment should be promoted and its benefits of low cost, green footprints and easy maintenance should be realized. It also generates employment through pisciculture, biomass production for the livestock (chicken and cattle feed), and composting and irrigation to increase yield of fruits and vegetable production. Such projects could be financed by the NABARD, ADB, etc. and TERI, NEERI, CWC, CPCB, etc. could help in identifying such potential location and do necessary handholding or monitoring for wastes or sewerage treatment facilities.
- 7.4.8 Treated wastewater from STPs in urban or rural areas should be channelized and reused through suitable natural systems like Phytorid Technology, a highly efficient and structured way for treating sewage developed by NEERI. Bioprocessing and biotechnology based waste and wastewater treatment should be also promoted as it uses low energy and provides more scope for energy production
- 7.4.9 Subsidies available for double pit toilets in SWM should be availed and unsafe disposal practices of sewage or faecal sludge and careless dumping of septage should be discouraged or at least double pits should be used so that contents of one pit could be emptied, and used to make compost and manure, thus making it environmentally safe and beneficial overall.
- 7.4.10 To handle the sludge from septic tanks, septage management should be considered for adoption. The National Policy on Faecal Sludge and Septage Management should be followed. We should also explore possibility of enacting legislation for the NCR districts that acts as deterrent for high BOD, COD and phosphorous levels in treated wastewaters meant for reuse.
- 7.4.11 The provisions of existing acts and rules which prohibits direct and indirect engagement of manual cleaning of man holes should be implemented strictly. It is recommended that a complete ban on manual cleaning of manholes and sewers with immediate effect. Cleaning of manholes and sewers should be undertaken by use of machines and modern technologies. The NCR also proposes a complete ban on manual scavenging. Robot, named Bandicoot, takes 15 minutes to clean small sewers and around 45 minutes to unclog bigger ones. Surat City is using Bandicoot Robot V2.0 machineries like Sewer jetting machines, Gulper machines, Grab bucket, Super Sucker machines and CCTV camera equipped machines etc. in large numbers for cleaning of drainage line.
- 7.4.12 Concerned authorities should ensure substantial improvement in the quality of treated effluents for discharge from sewage treatment and industrial effluent treatment

facilities, so that discharged water could be safely reused or discharged into natural water bodies. This may require retrofitting of further treatment to an existing facility and even 0.5 km stretch of open drain with decentralized wastewater treatment systems (DEWAT) can achieve it.

- 7.4.13 Discharge norms for STPs, ETPs and CETPs should be made more stringent in order to protect water sources and new protocols should be worked out. CPCB and MoEF and CC prescribed norms of maximum permissible limits and reduced limits will not counter the set stipulations.
- 7.4.14 Concerned agencies should strictly ensure that only treated wastewater with requisite BOD reaches the rivers like Yamuna, Hindon and Kali Nadi, etc. and water bodies in the NCR.
- 7.4.15 All concerned authorities should promote proper disposal and treatment of sludge from on-site installations (septic tanks, pit latrines, etc.). Initiatives should be taken to ensure 100 percent safe disposal of human excreta and liquid wastes from all sanitation facilities including toilets and after collecting safely, it should be confined and disposed of after treatment, so as not to cause any hazard to public health and environment. Prohibit dumping of untreated wastes from septic tanks. Ensure that the faecal matter does not discharge in open spaces, drains, rivers and other water bodies.
- 7.4.16 All master development plans should clearly earmark lands for STPs/DSTPs, envisaged sewage treatment facilities in the master plans as per the manual on 'Sewerage and Sewage Treatment Systems' of 2013 prepared by the MoHUA and as amended from time to time. For towns and large rural settlements, which do not have relevant plans like master or development plans, district magistrates or district commissioners of the respective districts to ensure that suitable land is earmarked for STPs/DSTPs.
- 7.4.17 Provision for land use change for setting up STPs/ DSTPs and waste treatment and processing facilities could be delegated to local authorities as they have the pulse of the popular sentiments and can address issues like the NIMBY ("not in my back yard") syndrome
- 7.4.18 Statutory guidelines for reuse of treated wastewater specific to desired application or use should be prepared. Needs of carriers of treated water to utilization sites i.e. tankers should be addressed at local level. Mechanisms should be put in place for continuous monitoring of treated water quality, soil quality and produce quality when reused for irrigation purposes. The ground water quality also should be monitored regularly. Adoption of higher standards for treated water should be emphasized through protocols. The NCR participating states should associate national level institutions like NEERI, TERI etc., in drafting guidelines for use of treated wastewater and also for vehicles conveying and transporting wastes.
- 7.4.19 Irrigation Management Plan indicating norms of treated water suitable for irrigation should be prepared by the agricultural scientists of agricultural departments located in each district of the region.
- 7.4.20 Necessary certification for decentralized sewage plant by CPCB, SPCBs or NEERI, etc. and manure produced from organic wastes should be taken up to ensure the quality of manures produced. This certification is important for building consumer confidence in the quality and safety of such manures. There is a need to create a business model such as agro-forestry whereby sanitation and municipal waste-based manure and organic fertilizer, etc., could be effectively consumed, like in Surat, Indoor, etc.

- 7.4.21 District wise specific plans should be prepared for resource requirements vis-à-vis waste management in terms of wastewater, and solid wastes. A detailed matrix should be made for each sub-region and phase wise targets should be detailed out in all sub-regional plans. All STPs/DSTPs and Common Effluent Treatment Plants (CETP) projects should clearly bring out the extent of reuse and the area and population proposed to be served by it. This should be followed up by sanctioning of every STP/DSTPs and CETP across the NCR.
- 7.4.22 The Decentralized small STPs/DSS should be made mandatory in all group housing and new multi-story building. All new buildings should be mandated to compulsorily ensure decentralized small STPs and also at least 90 percent local utilization of the generated grey water. This should be part of the conditions for granting building permissions across the NCR. Building byelaws should be amended or formulated such that all new buildings have separate networks for grey water and should have mandatory duel piping both at inlet and outlet levels. Above amendments in required laws/ byelaws be ensured by 2022. Retrofitting of all other existing group housing and multi-story buildings to meet above standards shall be ensured and included in the SRPs of the NCR participating States in such a way that Metro Centers, ensure 100% retrofitting by 2023, Regional Centers by 2024 and sub-regional centers by 2026.
- 7.4.23 Sewerage charge should be imposed on every household in all urban areas and large villages having population of 5,000 or more in the entire NCR in line with the NGT order³ of 6 July 2020 for the NCT of Delhi. Sanitation programs of the government should be implemented in states on a mission mode.
- 7.4.24 A digital platform with GIS mapping of the existing sewerage systems with installed and operational capacities as well as proposed networks with other sewage handling facilities should be prepared and updated from time to time. Concerned authorities should also evaluate systems' performances against stipulated norms. It is very important to make all this information public on web portals for effective participation. Web portal with Monitoring and Feedback facilities.
- 7.4.25 Necessary training programme should be arranged and conducted on regular intervals for all ULBs, departments and workers. Regular training should be imparted to the health and sanitation workers.
- 7.4.26 Public awareness campaigns should be organized at various levels for encouraging sewage connections, reuse of treated water, need for hygiene, use of low-cost sanitation methods and available latest technologies. Agriculture department officials may organize campaigns to persuade farmers and home garden owners to use treated wastewater.
- 7.4.27 Dedicated teams for working on *Swachhta* related matters should be formed at each district, city, ward and village level for coordination, campaigns, trainings, etc. and regular training of event coordinators should be imparted. Regular campaigns should be organized for sharing of best practices at district, tehsil, city and lower levels towards solving various *Swachhta* related problems and issues.
- 7.4.28 All cities and town should practice 100 percent door to door collection and segregation of solid wastes at source into minimum three categories that is dry, wet, domestic and hazardous other than sanitary wastes. Local authorities should allow only the non-usable, non-recyclable, non-bio-degradable, non-combustible and non-reactive inert

³https://images.assettype.com/barandbench/2020-07/999755b9-1aa2-4a90-a8f3-623f18aae99f/Manoj Mishra vs UOI NGT order on Yamuna rejuvenation .pdf

waste and pre-processing rejects and residues from waste processing facilities to go to sanitary landfills. The sanitary landfill sites shall have to meet all specifications. Every effort should be made to recycle and reuse the rejects to achieve the desired objective of 'zero waste'. Slum development using 'zero waste concept' should be adopted in the NCR.

- 7.4.29 NCR States should prepare plans, as part of their SRPs, for solid waste management and zero legacy waste, targeting achievement of 90% recycling and local management by 2022-23 in all Metro centers, 2023-24 in Regional Centers and 2024-25 in all Sub-Regional centers.
- 7.4.30 Local and district authorities should plan for creating separate collection of construction and demolition waste and biodegradable waste from source. Once bio-degradable waste is separated from mixed wastes and bioprocessing starts, pollution and health hazards are immediately brought under control and no additional land is required for such processing.
- 7.4.31 Efforts should be made to ensure that both organic waste and C and D waste does not go to the landfill site, which shall lead to considerable decrease in requirement of land for landfill sites. All cities with 100,000 and above population must have a C and D waste recovery facility, which can be set up by respective municipalities and RWAs. Such C and D waste recovery facilities should also cater to nearby small towns and villages. Concerned authorities should also encourage large groups with experience to start C and D recovery and recycle facilities and biodegradable wastes separation and processing facilities across all districts of the NCR.
- 7.4.32 Local authorities should provide incentives to design and encourage hybrid annuity mode for such facilities but on performance basis, to make this a viable business model. Similar steps should be taken for all other waste categories like bio-medical waste, e-waste, hazardous waste, plastic waste, etc.
- 7.4.33 Transportation of unsorted garbage and its dumping at unapproved locations should be strictly banned and large financial penalties should be imposed. ULBs need to shift its approach from only collecting and dumping wastes to mandatorily getting segregation of wastes at source and explore possibilities of maximum reuse and minimum dumping at scientifically designed landfill sites.
- 7.4.34 Generators should segregate the waste at source. In order to push and encourage onsource segregation, local authorities may consider creating systems of incentives, which may not be necessarily any financial means or products. Incentives may be like awarding and recognizing households by giving certificates and awards, by publishing their names on respective websites or reduction in property tax, etc.
- 7.4.35 The organic waste in the form of vegetable waste or scrap may be used for compost; and the food waste may be used as fodder for animals. Dry waste like paper, metal or plastic may be sold for recycling purposes. Only the rejects should be handled by municipalities.
- 7.4.36 The domestic hazardous waste like discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, etc. should be stored separately and given separately to waste collectors every day.
- 7.4.37 Efforts should be made to create pockets of excellence in waste management in industrial areas, gated complexes, food grain mandis, dairy colonies, institutional areas,

medi cities, residential colonies, etc. so that other areas may learn and implement accordingly.

- 7.4.38 Livestock excreta or dung disposal units like vermicompost, biogas plants, etc. should be encouraged in all settlements. In this regard, *Gobar Kharid Kendra* should be setup across the NCR and commercial selling of vermicompostingshould be adopted.
- 7.4.39 On-site composting should be mandatory for all mega events, fairs, festivals, etc. Further initiatives should be taken across the NCR for providing home composting kits to bulk waste generators producing 50-100 kg of waste per day, which may include hotels, hostels, educational institutions, gated communities and function halls.
- 7.4.40 Segregation and recycling of waste at source be made mandatory for all religious places in the NCR.
- 7.4.41 Material recovery facilities should be set-up in each ward. At least one material recovery facilities should be made mandatory for each village.
- 7.4.42 All concerned authorities in the NCR should adopt source reduction or waste prevention and implement the SWM Rules, 2016. Timeframe provided under Rule 22 of SWM Rules, 2016 should be followed. The Manual on SWM describing all procedures and other related aspects for its proper handling should be followed as applicable and district administration should be made responsible for its strict adherence. Training and awareness programs should be organized for SWM.
- 7.4.43 NIMBY syndrome should be addressed through public campaigns. Creation of waste clusters may be thought of and attempts should be made so that a waste collection center could become a picnic spot. The issue should be dealt with at the local administration level through stakeholder consultations. Additional buffer spaces around waste clusters are needed with beatification.
- 7.4.4 'Pay-as-you-throw policy' whereby consumers have to pay for volume of garbage that they generate and nothing or a minimal fee for recycling should be adopted. The goal is to provide a financial incentive for recycling while reducing waste. Develop a fee structure to give citizens incentive to recycle.
- 7.4.45 The waste prevention techniques of four Rs i.e.Reduce, Recycle, Reuse and Recover should be adopted for making the NCR a 'zero waste region' by 2035.
- 7.4.46 Necessary awareness campaigns and training programmes should be developed for adopting the approach of8Rs-rethink your choices, reduce consumption, refuse single use, reuse everything, refurbish old stuff, repair before you replace, repurpose should be creative and last option is recycling. The concept of 8R should be widely encouraged by all stakeholders.
- 7.4.47 Bioprocessing of wastes can only be dealt and monitored by manpower appropriately trained in the fields of biotechnology and biosciences and such processing generates substantial labor employment.
- 7.4.48 Ragpickers or erstwhile waste workers should be trained and integrated into sustainable solid waste management systems with proper personal protective equipment and proper working conditions. All waste collection workers should be mandatorily equipped with the basic safety gears, which may include gloves, helmet, etc. and be provided with necessary medical insurance.
- 7.4.49 Local authorities should consolidate the existing plans and long-term needs into a comprehensive waste management plan that addresses the solid waste function for the

next 20 years in an economic and efficient manner.

- 7.4.50 All cities in the NCR should target 'zero landfills' and if there is a small percent only for non-degradable items, which should be placed in secured or sanitary landfills and not garbage dumps, governments should explore possibilities to incorporate the service level processing parameters that have been formulated for *Swachhta Survekshan* and garbage star rating as monitoring parameters and make them mandatory.
- 7.4.51 About 10-15 percent park area should be dedicated to garden waste and appropriate bylaws should be formulated to ensure that garden waste and fallen leaves are processed to generate fuel for fire or for compost manure.
- 7.4.52 GIS map and database creation should be done for the entire process of solid waste generation, collection and disposal (sources as well as final disposal points, including landfill site and segregation plant). District administration through its ULBs and municipal corporations should get reliable data base prepared for types of waste generated in rural areas and urban areas on priority to enable efficient waste management. The same shall need regular updating and sharing amongst the concerned departments so that joint treatment facilities can be planned and implemented.
- 7.4.53 The approach to create information about implementation of procedures or infrastructure is highly desirable so that loopholes can be identified and plugged. Hence, all entities relevant with respect to the SWM in the NCR should be mapped for both the present and proposed infrastructure. For such mapping, each town should be covered and the end use of solid waste along with details of SWM and recover facilities with location and capacity be indicated. For big cities it shall be more appropriate to show links of the locality with the disposal or landfill sites.
- 7.4.54 Authorities and ULBs should plan for 'waste to energy' plants using technologies that involve high temperature, efficient combustion, and effective scrubbing and controls, which can significantly reduce air pollution.
- 7.4.55 Compactors which make wet waste airless and dry waste un-sortable should be avoided. Authorities and ULBs may explore possibilities for deploying and maintaining smart infrastructure like capacity sensors in waste bins and wireless networks for data transferring. All cities and towns in the NCR may undertake IT initiatives on the lines of smart cities. Citizens may be encouraged to participate through online media for waste-related activities which need urgent attention from the authorities. New technologies should be used to manage solid, liquid and agriculture residue waste. The National Mission for Clean Ganga (NMCG) may be approached as it undertakes environment technology verification (ETV).
- 7.4.56 Issues related to legacy waste should be addressed on priority. The Standard Operating Processure of CPCB for implementation of bio-mining and bioremediation of legacy solid waste on the direction of NGT⁴should be mandatorily adopted in all towns and large rural settlements (with 2000+population as per latest Census) by 2025.Regarding Legacy Waste a brief is given at **Annexure D-7.1**.
- 7.4.57 Due to organic nature of wastes, composting is the most suitable, sustainable and environment friendly method of recycling and reuse of solid wastes in rural areas. Options of composting of wastes may include NADEP method, Bangalore method, Indore method, Vermi Composting, Biogas Technology, Rotary drum composting.

⁴<u>https://greentribunal.gov.in/sites/default/files/all_documents/Orders_in_Compliance_of_Municipal_Solid_Waste_Manag</u> <u>ement_Rules-2016.pdf</u>

- 7.4.58 Local authorities may utilize services of specialists from biosciences who can deliver better operation and monitoring of STPs and biodegradation of solid wastes. Trained bio-scientists are better equipped in generating and sharing data on operations and performance monitoring of these components and the problem of data generation or sharing shall get addressed. Authorities and ULBs may utilise plastic wastes to create 'eco-friendly tiles' and other construction materials.
- 7.4.59 Most funds available under the SWM proposals are spent on heavy transport vehicles, garbage compaction equipment, construction activities related garbage dumps, and they help little in technology use to promote composting and reuse. Adequate funds should be made available for any mode of biodegradation of all organic wastes (any form of composting or bio-methanation) or processing and reuse of inert materials or construction materials. Local bodies may continue to take steps that will extend the existing landfill sites through comprehensive recycling and other means for as long as possible. 90% of the waste should be re-used and only 10% should go out.
- 7.4.60 Local authorities may prepare a timely plan for remediation and bio-mining of the existing dumpsites. Toxic waste treatment facilities should be developed for Delhi as well as the NCR jointly. The NCR states may identify land to develop such facilities collaboratively.
- 7.4.61 Land requirements for SWM should be worked out for decentralized SWM based on biodegradation of organic waste instead of traditional practice of transportation of mixed wastes to garbage dumps as it helps in reducing the land requirements as well as operational cost, besides elimination of pollution risks.
- 7.4.62 The NCR states should install more waste treatment plants, waste to energy plants, etc., based on wastes being generated at the NCR level. There is a need to have separate strategies for industrial areas, gated complexes, regular colonies, unauthorized colonies, food grain mandis, dairy colonies, etc.
- 7.4.63 Concerned authorities should promote multiple smaller SWM processing sites based on biodegradation of organic waste leading to waste reduction and such proposals should get speedy approvals as transportation costs would also reduce substantially. The NCR states and its related agencies may take up incubation models for 50 and 100 TPD SWM modules based on biodegradation of organic waste.
- 7.4.64 No land should be allotted for illegal use of garbage dumps and no funding of construction related to sanitary landfill which turns into garbage dump should be granted. Privatization of landfill sites may be promoted with appropriate safeguards for the waste collection staff.
- 7.4.65 Local authorities should strengthen systems for collection, transportation and processing of segregated wastes. All local authorities should prepare a roadmap for taking steps to strengthen segregation, collection, transportation and processing. The roadmap can include: (a) Enforcement of segregation of wastes (b) Ward by ward mapping and coverage to ensure segregation at source (c) Building awareness in households (d) Distribution of bins (e) Monitoring of progress to achieve the desired objectives (f) Ensuring compliances from bulk generators (g) Ensuring compliances from street vendors (h) Creating infrastructure to collect segregated waste (i) Protection and training of waste collectors (j) Ensuring compliance over processing of segregated streams.
- 7.4.66 Extended Producer Responsibility (EPR) where producers are given a significant responsibility for the treatment and disposal of post-consumer products
should be applied in the NCR at least for e-waste, plastic waste, and partly for biomedical waste. Explore possibilities to make producers of waste generating goods to mandatorily declare about their waste recovery and handling agents and locations and contact details, etc. upfront at the time of sale. These details should be put in public domain through websites and on all packages. Make EPR nodal coordinators in each ward in town & Cities and in each village for all companies. Steps like EPR cess going into escrow account of ULBs to cater to budgetary requirements for waste management and sanitation may be adopted by states as per feasibility.

- 7.4.67 The option regarding need to generate licensing requirement on the waste generation side, as has been done in the power sector, could be explored.
- 7.4.68 Explore options and possibilities of imposing user-fees and penalties or taxes on dumping wastes in unauthorized places (refer **Annexure D-7.2** for Global examples of Waste Taxing).
- 7.4.69 'Create market linkages for compost' in order to incentivize households that are treating wet waste at source through composting. Civic bodies may create a mechanism to procure compost and give coupons that can be used in all Mother Dairy and Safal counters, PDS or similar outlets. On a trial basis, this model can be run in a few RWAs in each local authority.
- 7.4.70 'Close the Loop-buy Recycled', buying products made from recycled or recyclable materials to ensure the continuum of recycling process by creating sustainable markets for goods. Some of global corporate recycling examples to follow are: (i) HP recycles print cartridges into Scanjet printers, (ii) Nike converts old athletic shoes into basketball and tennis courts, football and soccer fields and running tracks (iii) Tangent Technologies manufactures park benches out of scrap plastic packaging, which are then donated to Chicago's national parks by Unilever.
- 7.4.71 To encourage private agencies and contractors to use C and D waste in construction and reuse, the high GST rates on C and D waste management plant products may be reviewed and reduced.
- 7.4.72 A 'common cleanliness complaint forum' for all water, sanitation and waste related services in each sub-region should be created where calls are recorded, documented and followed up and tracked till satisfactory resolution of problems are obtained.
- 7.4.73 Efforts towards monetizing and up cycling of the solid waste and liquid waste by converting it into materials that consumer shall be willing to pay for should be promoted. Commercialization of waste management should be done across the NCR.
- 7.4.74 A mechanism should be devised for handling and managing surplus wastes at district, sub-regional and regional level. State government and other agencies may enter into partnerships and come forward to take care of surplus compost, C and D waste etc., and this will encourage others and public in general to follow.
- 7.4.75 CSR participation should be promoted and supported as it shall be a game changer. The CSR can help in the process of switching from garbage dumping to bioprocessing. A CSR Portal for NCR can be considered.
- 7.4.76 All urban areas in the NCR should prepare city sanitation plans integrate them with sub-regional level sanitation strategies.
- 7.4.77 Swachh Bharat Mission (Urban), 2014 launched to eliminate open defecation, eradicate manual scavenging as well as implement modern and scientific solid waste

management techniques should generate awareness about sanitation and its linkages to public health, and capacity augmentation for ULBs.All urban area should adopt the mission to ensure the phase wise implementation.

- 7.4.78 As per the Swachh Bharat Mission (Grameen) all villages, gram panchayats, and districts of sub-region should prepare necessary action plans to declare themselves 'open-defecation free' (ODF) and progress towards ODF ++. NCR should become ODF+ by 2022 and ODF++ by 2025.
- 7.4.79 National Policy on Faecal Sludge and Septage management sets the context, priorities, and direction to facilitate the implementation of faecal sludge and septage management service in all ULBs. This policy should be followed in all the sub-regions of the NCR for efficiently managing sanitation systems where sewerage system does not exist.
- 7.4.80 All solid waste rules available like Solid Waste Management Rules, 2016, Plastic Waste Management Rules, 2016, Construction and Demolition Waste Management Rules, 2016, Hazardous and Other Wastes (Management & Trans-boundary Movement) Rules, 2016, E-Waste Management Rules, 2016, Bio-Medical Waste Management Rules, 2016, etc., should be followed by local bodies in the NCR. Necessary awareness programmes and implementation strategies should be developed to popularize these rules and their amendments by local bodies in collaboration with educational and research institutes.
- 7.4.81 Along with the above policies, the other policies given at **Annexure P-7.1** and **Annexure P-7.2** should also be followed and elaborated/ detailed out in sub-regional plans and local level plans like Master/ Development Plans, etc. Development plans should include land availability, space allocation for STPs and decentralized sanitation systems, provision for land use change for setting up sewage treatment, solid waste processing facilities, etc.

7.4.82 Major Projects and Implementation Strategies

- (a) Interstate deliberations amongst concerned agencies should be initiated for taking necessary actions to ensure that water which is eventually flowing into the Yamuna, is within requisite BOD norms so that pollution can be reduced.
- (b) The GNCT of Delhi should ensure speedy completion of the works related to the three wastes to energy plants under construction, under expansion and take necessary steps to ensure all waste is treated, as per applicable norms. All these should be made operational by 2022.
- (c) Annual star rating of cities, towns and rural areas in the NCR should be done mandatorily for Swachhta on the lines of Swachh Survekshan by MoHUA. SwachhSurvekshan should be done every 6 month in the NCR. On the line of states like Chhattisgarh, the NCR states should come up with schemes for *Gobar Kharid Kendra*.
- (d) Government of Uttar Pradesh should come up with projects related to ethanol production factories to manage sugarcane waste.
- (e) Suggested incubation projects with performance monitoring in peri-urban or rural area, where required in-puts are available and the community is interested in participation include:
 - Decentralized bioprocessing (constructed wetland treatment) of sewage for safe irrigation for production of organic fruit, vegetable as well as livestock and pisciculture.

- Decentralized bioprocessing (composting) of domestic solid waste to significantly reduce quantity of waste for disposal in landfill sites.
- Identify interventions to improve medical waste management in cities.
- (f) The specific projects envisaged to be taken up in the NCR on sanitation and waste management are given out in Table7.5, but not limited to:

Table 7.5: Key projects on Sanitation and Waste Management in the NCR, 2021-2041

S. No	Proposed Projects	Phase –I (2021- 2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	Coverage of urban areas	50 percent of all	100 percent		
	with sewerage and	urban and rural	of all urban		
	sanitation facilities	settlements in each	and rural		
1.	including decentralized	district.	settlements.	-	-
	and centralized sewage				
	management. etc.				
-	100percent segregation of	50 percent of all	100 percent		
2	wastes at source and door	urban and rural	of all urban		
2.	to door collection.	settlements in each	and rural	-	-
		district.	settlements.		
	Projects for having C&D	Waste recovery	For all settleme	ents once reach ()I lakh
	facilitiesshouldcater to	1 for 100 000 to	population		
3.	nearby small towns and	500,000 population			
	villages.	with project timeline			
		not more than 1 year.		1	1
	Projects for	To be done in all			
4.	GobarKharidKendra and	districts by 2025.	-	-	-
	vermicomposting				
	Projects for material	This should be done			
	recovery facilities at ward	in Metro and Regioanl	Domoining		
5.	and village level.	centers by 2023 and	areas of NCR	-	-
		other cities, towns and	areas of freek		
	Droinstach ould be	villages by 2026.			
	prepared for replacing	by 2026			
6.	soak pits with	<i>by</i> 2020.	-	-	-
	decentralized STPs in the				
	NCR.				
	District wise specific	To be assess by 2025.	To be	-	-
	plans for resource		implemented		
	requirements vis-à-		by 2030		
7.	vis waste				
	management in terms				
	of wastewater, and				
	solid wastes.				
8.	Projects for	To be assess by 2025.	To be	-	-
	STPs/DSTPs and		implemented		
	Common Effluent		by 2050		
	Treatment Plants				
	(CETP) bring out				
	extent of reuse and				
	area and population				

S. No	Proposed Projects	Phase –I (2021- 2026)	Phase –II (2026-2031)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	proposed to be served.				
9	Plan for EPR nodal coordinators in each ward in town & Cities and in each village for all companies	To be implemented by 2025	-	-	-

Chapter 8

AGRICULTURE AND ALLIED ACTIVITIES

8.1 INTRODUCTION

- 8.1.1 Agriculture and its allied sectors make 18 percent contribution to the national GDP and provide employment to 60 percent of the population. Livestock sector is the largest contributor (30 percent) to agriculture GDP. Cultivable landmass has not changed much from the 1980 level of 140 million hectare. On average Indian's household expenditure on food is 35 percent of domestic income while it is 7 percent in America. In Delhi, it is around 20-22 percent. So food, area under its production, along with per hectare produce, holds importance both for consumers, producers and the government.
- 8.1.2 The NCR is located in the fertile alluvial belts around major rivers including the Doab between Yamuna and Ganga rivers. Out of a total 55,083 sq km area of the NCR, about 44,930 sq km area or 82 percent is under agriculture. Average of gross production yield during 2017-18 was around 3,668 kg per hectare (**Table 8.1**).Haryana, Western Uttar Pradesh and Alwar have large areas under food grains like wheat, paddy, cash crops, sugarcane and others like mustard, pulses, vegetables, etc. Crops grown in Delhi include paddy, wheat, vegetables, some mustard, etc. The NCR is also marked by vibrant dairy activities.

S.	Description	India	National Capital Region
No.			
1.	Total Arable Land in million hectare	159.0	4.5
2.	Net Irrigated Area in million hectare	66.1	3.6
3.	Net Irrigated Area in percent of total land	*47	79
4.	Rain fed area in percent	*53	21
5.	Projected Population by 2041 in crore	153.0	11.3
6	Projected food grain demand by 2041 in million tons	450	34

Table 8.1: Agriculture Scenarios in India and the National Capital Region

Source: *IARI; India's Demography at 2040: Planning Public Good Provision for the 21st Century (Page 137).

8.2 THE EXISTING STATUS

8.2.1 Total area under various crops in the NCR is 58,00,000hectares and area under food grains cover 72.5 percent, oilseeds 14.9 percent, commercial crops 10.9 percent and pulses 1.7percent (**Table 8.2**). Area under wheat is the highest followed by rice, bajra, jowar, maize and barley in the NCR (**Table 8.3**). In the NCR the average yield is about 3,668 kg per hectare. The NCR is a metropolitan region with four metropolitan cities with population above 10,00,000 and 25 large cities and more than 200 towns with extensive peri-urban areas. Peri-urban agriculture and horticulture plays a very prominent role in food security of the NCR. Peri-urban areas supply fresh fruits, vegetables, milk, fish, eggs and meat to Delhi and all other urban areas in the NCR. Every day, the NCT of Delhi having about 30 percent of the NCR population consumes

1,300 tons of potato, 860 tons of onion, 682 tons of tomato and about 170 tons of meat. These quantities may at least double for the region as a whole and that would lead to overall, bulk consumption of 5,800 tons every day. There is a huge demand of agricultural produce in the NCR. Earlier primary focus in agriculture on increasing food production and improving livelihood of farmers, now agriculture sector is gradually becoming a technology driven dynamic sector.

8.2.2 In the NCR, sugarcane is being produced in Meerut, Bulandshahr, Baghpat, Hapur, Shamli and Muzaffarnagar districts of Uttar Pradesh and in Rohtak, Sonipat, Panipat and Palwal in Haryana. The sugar industry provides huge employment and increases farm incomes. Ethanol from molasses is used in industries as well as for blending with petrol. However, sugarcane crop is water intensive and efforts have been made in the past to replace it with wheat and vegetables, etc. The NCR currently has around 25-30 sugar mills, which are mostly located in the UP Sub-region (about 15 Mills), followed by the Haryana sub-region (about 10 Mills). During 2018-19 total cane crushing in the UP Sub-region was about 1,399.64 lakh quintals, which has resulted in total sugar production of about 157.76 lakh quintals. In the NCR, about 5.9 lakh hectare area is under sugarcane cultivation with an average yield of 34,134 kg per hectare.

S. No.	Crop Categories	Area in '000 hectares	Average Yield (Kg per hectare)	Percentage share of area under different crops
1.	Food Grains	4,215.79	2,441.42	72.5
2.	Pulses	100.88	481.50	1.7
3.	Oilseeds	864.33	595.53	14.9
4.	Commercial Crops	632.05	11,155.22	10.9
	Total Area	5,813.05	3,668.42	100.0

Table 8.2: Area and Average Yield of Major Crops in the NCR, 2017

Source: Delhi Statistical Handbook, 2017; Statistical Abstract of Haryana 2017-18; Statistical Diary and District Statistical booklets, of UP, 2017 and Statistical Abstract of Rajasthan 2015

		Rice	Wheat	Barley	Bajra	Maize	Jowar
S1 No	1 No Sub Region			Area		Area	
51. 110.	Sub Region	Area in	Area in	in	Area in	in	Area in
		hectare	hectare	hectare	hectare	hectare	hectare
1	Delhi	5,973	19,622	68	1,487	34	3,193
2	Uttar Pradesh	219,436	577,630	6,606	14,460	40,265	4,705
3	Haryana	670,800	1,372,100	12,600	412,100	2,896	51,099
4	Rajasthan	2,139	363336	12,807	345,679	5,204	71,555
	NCR	898,348	2,332,688	32,081	773,726	48,399	130,552

Table 8.3: Area under Major Food Grains in the NCR, 2017

Source: Delhi Statistical Handbook, 2017; Statistical Abstract of Haryana 2017-18; Statistical Diary and District Statistical booklets, of UP, 2017 and Statistical Abstract of Rajasthan 2015.

8.2.3 The NCR is the source of multiple farm activities. It is also an industrialized region. The region cannot exist without linkage with agriculture. The major fruits like banana, mango, citrus, apple and guava, etc. available in the NCR, come from other parts of the country. For example, banana comes to Delhi from a distance of 700-1,000 kms. Vegetables like onion, potato, cabbage, cauliflower and brinjal makes 85 percent of the total vegetables consumed in NCR. While 20 percent potato comes from the Punjab, and the rest of the potatoes are imported from West Bengal, Karnataka, and Uttar Pradesh. Similarly, onions come from Rajasthan, Bhavnagar and Nasik. The NCR has

a strong domestic demand due to changing lifestyles and rising disposable incomes. Its supply side advantages include, high level of agricultural production (with 5.8 million hectares of gross cropped area), large livestock base, and a wide variety of crops grown in the region.

- 8.2.4 The region's peri-urban areas have the potential of growing fruits and vegetables through organic farming with the use of bio-wastes or wastewater after recycling for the production of fresh organic foods at reduced costs, which is beneficial for farming community as well as consumers in urban settlements. Animal farms and poultry could benefit from consumption of farm residues and recycled wastes from animal farms. Out of the total area of the NCR, about 10-12 percent is used for horticulture or organic farming.
- 8.2.5 Considering the prospects of dairy production in the NCR, the regional market is poised to grow from about 100 lakh litres per day to 650 lakh litres per day by 2041(Table 8.4). Further, it is estimated that in order to meet growing milk requirements of the NCR, Uttar Pradesh and Haryana shall have to meet 65 percent of the total requirements in 2041. The requirement of the number of milk booths is also very high (Table 8.5).

Table 8.4: Market Size of Milk and Milk Products in the NCR, 2018-2041

Parameters	Units	18-19	20-21	25-26	30-31	35-36	40-41
Market Size*	LLPD	100	120	183	280	429	656
Per capita Consumption**	Grams per day	350	369	464	560	655	750

Source: AMUL

* It is estimated that the NCR market size will grow at a CAGR of 9 percent by 2041.

*It is estimated that per capita consumption will grow at a CAGR of 3.7 percent.

	Tuble 0.01 Mink Dooths Requirements in the resty 2011						
Year	18-19	20-21	25-26	30-31	35-36	40-41	
Milk Sales per booth	Liters per day	1,000	1,048	1,286	1,524	1,762	2,000
Milk Booths required							
in future	Numbers	-	5,825	7,938	11,120	15,868	22,943
a () (T) (T)							

Table 8.5: Milk Booths Requirements in the NCR, 2041

Source: AMUL

Note: Currently one booth's capacity is around 1,000 liters per day and is selling about 10 percent of total pouch milk sales.

8.3 THE KEY ISSUES AND CHALLENGES

- 8.3.1 In the past emphasis was placed upon increasing production, which has changed to nutrition and diversified food requirements along with preference for organic food products. Along with increasing use of technology for agriculture, enhancing farm incomes is one of the top priorities. Diversified agriculture and off-farm activities are also becoming important.
- 8.3.2 Farmers have been demanding higher prices and efforts need to be made in this direction as higher farm incomes would lead to greater prosperity and higher disposable incomes in rural India as well as in the NCR, spurring the regional economy.
- 8.3.3 Distribution of vegetables and fruits pose a huge logistics challenge. Further, trucks movement is restricted in Delhi. Hence, cold chain logistics assumes greater importance.
- 8.3.4 Major prevailing issues in the dairy sector in the NCR include increasing per capita consumption, large market size and availability of milk without compromising quality. The demand for milk is increasing and is expected to generate some price imbalances also because there is difference in milk production during winter and summer seasons

leading to wastage of milk in winters and adulteration in summers on a wide scale. Further, milk collection in villages and transfer to milk chilling and processing facilities is not always hygienic and timely, leading to loss of quality and curdling or souring of milk in significant amounts, especially in the summers.

8.3.5 As the districts need to develop with synergy, the regional plan can provide them with appropriate guidance and direction for agriculture, horticulture, poultry and dairy related projections, plans and policies to move in a manner, which ensures that districts development complements each other.

8.4 POLICIES AND PROPOSALS

8.4.1 Agri-Business

- (a). Production of fruits and vegetables through organic farming in peri-urban areas should use bio-wastes, recycled wastewater for the production of fresh organic foods, which is beneficial for farming communities in rural areas as well as consumers in urban settlements. Animal farms and poultry could benefit from the consumption of farm residues and wastes could be used in animal farms. Action plans at sub-regional level should be prepared to enhance area under horticulture and organic farming in the NCR from 10-12 percent to 20 percent by 2041.
- (b). Concept of 'one nation, one food law' should be adopted and consistency in its enforcement should be ensured to remove discrepancies in food safety regulations across states. The state level authorities should follow a standard practice for implementation, compliance and surveillance of food safety regulations.
- (c). Various central government schemes like the Pradhan Mantri Krishi Sinchae Yojana, National Horticulture Mission, Param Paragat Krishi Vikas Yojana, Pradhan Mantri Fasal Bima Yojana, Rashtriya Krishi Vikas Yojna- Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR), etc. and similar schemes launched from time to time should be integrated in sub-regional plans and Comprehensive District Agriculture Plans in the NCR constituent states.
- (d). The NCR states should use country's export opportunities to the fullest extent and set-up businesses with food importing nations. Other ancillary opportunities to strengthen use of new technologies and equipment, and research and development in agricultural activities, skill development, and related infrastructure development, and packaging material machinery, etc. should be also explored.

8.4.2 Irrigation and Water Use Efficiency

- (a). Water consumption levels in agriculture sector should be managed through the right choice of crops, in accordance with water availability and priorities. All efforts should be made to use the treated recycled or wastewater or sewage water for agriculture purposes. In order to monitor water supply and conservation of water, water metering of agricultural supplies should be made mandatory in the NCR.
- (b). Water and electricity for agriculture should not be provided free of charge in the NCR; at least a token fee should be charged, enabling monitoring of quantum of water and electricity supply. State governments should evolve farm water supply charges in the form of slabs for imposing water charges, and higher rates should be charged for high consumption of water especially in water shortage areas like dark and grey blocks. Farms using recycled water should be given rebates in water charges. Hours of water supply for irrigation should be fixed as per local requirements.

- (c). Groundwater extraction should be strictly monitored and the constituent states. All bore wells should be registered and the number of bore wells of all types and sizes should be identified and geo-tagged as directed by the National Green Tribunal (NGT) in its order of 25 February 2020 in M.A. No. 26/2019.Construction of new bore wells should be banned in all blocks, which have reached grey and dark levels in the NCR.
- (d). Wastewater and recycled wastewater supplied for irrigation purposes should conform to the CPCB quality norms. These norms must be strictly enforced by imposing large financial penalties and even jail terms. This will not only encourage use of wastewater by farmers but will also prevent unwanted side-effects on farmers and farm labor getting infected with water-borne diseases.
- (e). The PMKSY's 'per drop more crop' motto should be followed and accordingly, efficiency of water use should be promoted through micro irrigation systems. Crop wise status and demand may be assessed and water budgeting should be carried out accordingly. Department of Agriculture could be approached for micro irrigation funds. Districts where currently flood irrigation is in practice, state governments should encourage farmers to explore possibilities of adopting micro irrigation systems. For increased water productivity, drip (orchards, oilseeds) and sprinkler-based irrigation systems (cereals, pulses, spices and field crops) should be preferred over flood irrigation methods.
- (f). The NCR constituent states should prepare State Irrigation Plans (SIPs) and District Irrigation Plans (DIPs) as per the "Operational Guidelines of per drop more crop component of PMKSY2017 formulated by the Ministry of Agriculture and Farmers Welfare.
- (g). According to the Indian Agriculture Research Institute (IARI), economic analysis of Kharif onion-wheat-mung-bean cropping system under drip-irrigation technology has shown benefits and should be adopted in the NCR.
- (h). For balancing reservoirs and farm ponds, use of solar pumps has been found suitable in irrigation methods, and should be adopted by all states. Rainwater harvesting structures should be constructed in agricultural fields for providing irrigation during dry seasons. Every village or field should ensure appropriate percent (as decided by the state) of total water requirements through rainwater harvesting initiatives. States should make all efforts to capture and retain surface run-off and flood water in constructed surface or underground reservoirs or ponds.
- (i). Possibilities of covering canals through solar panels under solar power projects for obtaining the twin objectives of reducing water evaporation and producing clean energy shall have to be explored.
- (j). To address the problem of food loss and waste globally, all NCR state should follow the Sustainable Development Goal (SDG) 12.3, which aims to halving per capita global food wastes at the retail and consumer levels and reduce food losses along production and supply chains including post-harvest losses.

8.4.3 Empowering Farmers

(a). The NCR constituent states should all take necessary steps to ensure that farmers are empowered through various initiatives. Policies which could act as pillars for empowering farmers may include (a) fair remuneration of farmer produce, (b) providing accessible competitive markets, (c) export clusters, value chain, traceability, storage and transportation, (d) market information and intelligence, (e) fallback mechanisms such as procurement system and price deficiency payment system.

- (b). Non-conventional crops like mushroom, broccoli, baby corn, bamboo shoot, etc. and crops like flowers, strawberry, jamun, etc. should be promoted in the NCR. Farmers are to be encouraged to develop biological insecticides or botanical insecticides. Efforts should be made to maximize agricultural area under organic farming in all districts.
- (c). Necessary infrastructure in terms of technical know-how, finance, management and marketing support facilities should be made accessible to farmers or artisans to promote non-conventional high value commercial farming and production with the help of academic, technical, and management institutions. Programs like Unnat Bharat Abhiyan of the Ministry of Education could provide the necessary networking with higher educational institutions.

8.4.4 Cropping Patterns and Systems

- (a). High value crops should be identified and promoted as they are linked with increasing incomes of farmers. It should be understood that food grains are necessary for food security. Export production should be done alongside cultivation of high value crops like spices, and medicinal plants.
- (b). Services of agriculture universities like the ones located in Hisar and Meerut, central institutions of excellence like IARI should be utilized for increasing agricultural activities. Such institutions should also issue seasonal advisories for the NCR districts through Interactive Voice Response System, and call centers with video facilities.
- (c). In peri urban areas, horticulture activities along with crops with high carbon sequestration should be promoted. To increase the productivity protected cultivation should be practiced in the NCR.
- (d).Plug-tray nursery rising and high-quality vegetable production technologies should be adopted. Vegetables like cucumber, tomato and capsicum, etc., which give high tonnage per acre, with good benefit cost ratios should be also promoted in the NCR.
- (e). 'Low tunnels technology' should be adopted for off season crop production as this provides better benefit cost (BC) ratio for muskmelon, summer squash, bitter gourd, bottle gourd, etc.

8.4.5 Planning Norms

- (a). Agricultural land should be protected, conserved and utilized and exploited sustainably. Conversion of land from agriculture use to urban and other non-agriculture uses should be allowed only under exceptional circumstances for clearly stated.
- (b). Agro-climatic zones should form the foundation of planning for agriculture and allied activities alongside sub-agro-climatic zones, which should be defined and mapped in each of the sub-regional plans in the NCR. Accordingly, sub agro-climatic zone-based planning should be carried out for major crops. The NCR states may take help from the ICAR to demarcate these zones.
- (c). Dairy farming and related activities should be shifted from city cores to peripheries. Areas designated for placing and shifting dairies should be considered under agriculture land use and suitable mechanisms should be developed.
- (d). Special cropping areas like Ratul Mango area in Baghpat district should be identified and conserved for saving historical and regional identity across the NCR. Such areas should be promoted as part of *agro-tourism* as well as *strategic rural investment zones*.

8.4.6 Food Processing and Logistics

- (a). Sub-regional plans should encourage development of agro-processing clusters and enhance processing and preservation capacities. These plans should promote export of processed food by way of developing markets at appropriate locations.
- (b). Necessary initiative should be taken to ensure faster movement of perishable products to consumers. Cold chains may be preferred if harvesting and selling cycle is beyond 48 hours.

8.4.7 Livestock, Dairy and Fodder

- (a). Joint efforts should be made by the NCR participating states to harness the regional potential of dairy sector and make the NCR a hub of dairy products of export quality. Initiatives of Haryana like 'Dudh ki Chakki' should be replicated in other NCR constituent states. Aspect of 'dry dairy' and 'dry dairy farming' should be introduced and followed up in order to support economic viability in the dairy sector when the bovine stop giving milk.
- (b). All steps should be undertaken to control disease through vaccinations program, tagging of animals, traceability of products, andbreed improvement. State governments should promote nutritious but low cost of fodder and create awareness in ration balancing. Mobile veterinary units should be promoted across the NCRto keep animals healthy at all times.
- (c). Waste land in the NCR districts should be taken up for fodder cultivation under technical supervision of Indian Grassland and Fodder Research Institute (IGFRI), Jhansi.

8.4.8 Agri Marketing

(a). Hygienic market places should be made available so that farmers themselves could sell their agricultural produce as well as livestock products. Hygiene frozen meat markets should be promoted and encouraged. Grameen Agriculture Markets should be linked to e-NAM.

8.4.9 Food Safety and Produce Certifications

- (a) Regulations of the FSSAI should be followed and enforced strictly. Possibilities of having globally benchmarked food standards and practices should be explored and food testing with standardized testing methods and protocols should be carried out.
- (b) The NCR districts should ensure increase in agri-produce certification facilities. Certification of manure produced from compost and waste should be adopted for safer use. Concerns of farmers regarding use of certified seeds for better yield should be addressed.

8.4.10 Research and Development, Technology and Skills Up gradation

- (a). New technologies should be made available to rural masses at subsidized rates for different sectors such as agriculture, animal husbandry, food processing, handicrafts, handlooms, and rural and cottage industries, etc.
- (b). Sub-regional plans should promote 'incubation centers' by providing infrastructural, management and networking support and encourage 'agri-entrepreneurship' in the NCR.
- (c). Skill development courses for dairy farmers, fish farmers, horticulture, poultry, apiculture, floriculture, agri-entrepreneur, veterinary health assistants, animal health workers, etc. should be organized on a regular basis in each district with the help of respective skill development councils, academic professional institutions, NGOs, etc.
- (d). Central Inland Fisheries Research Institute model of feeding dead animals to fish should be adopted.

8.4.11 Pisciculture and Other Water Based Farming

- (a) About 30 percent of the NCR area has saline water. Areas in which saline water is found should be identified in the sub-regional plans and possibilities of practicing pisciculture involving saline fishes like milk fish, soul fish, etc. should be explored. Further, fishes like singi, pabda, etc. should be grown in areas with very low dissolved oxygen and cultivation of such fish can be promoted in village ponds. Village ponds should be built as a part of the ICAPs.
- (b) Pisciculture may be combined with peri-urban agriculture as it provides benefits of helping soil to retain moisture, boosts production of fruits in vegetables and fruit plants through irrigation using water with fish and raise substantial incomes of fish cultivators.

8.4.12 Vegetable Supplies for Urban Habitation

- (a). Production zones should be created and promoted in urban area in the NCR as cities and towns have a huge daily demand for fruits and vegetables. Further, region has advantage of better logistics in terms of transportation and storage facilities, air connectivity, etc. and this should be exploited to the extent possible.
- (b). Urban spaces like roof tops, terraces, buildings, and colonies should be used for producing vegetables (terrace or kitchen gardening) and vertical farming should be promoted to support urban agriculture.

8.4.13 Other Aspect:

- 1) APEDA may be associated pre and post-harvest interventions, infrastructure and logistics, etc. (refer **Annexure D-8.1**) for improvement of Agri Export in NCR. States may develop export oriented clusters containing a functional, end-to-end cold chain system along with processing facilities with the assistance of APEDA.
- 2) Promote recycling and utilization of agricultural waste.
- 3) Possibility be explored to change in production of crops, i.e. from cereals to horticulture crops (fruits, vegetables, floriculture, medicine, aromatic plants, etc.), and additional activities like beekeeping (in parks/ farms) and its nursery development, which would increase the income of the farmers.
- 4) All districts of NCR to mandatorily have 2-3 Collection Centres based on productions and Terminal Markets. All Collection Centres be linked directly to farmers and feed to main/terminal market (Hub).
- 5) Direct Marketing licences be mandatorily issued to Agro-Industries and Bulk Retailers to integrate farmers with retail chain of Delhi and other major cities.
- 6) Warehouses be mandatorily developed especially along the Expressways and Highways and declared as market to facilitate city dwellers to buy the produce directly without middlemen.
- 7) FPOs through development of value chain and linking to consumers to play critical role in empowering farmers.
- 8) Soil Health Card Scheme, of Govt. of India emphasizes on efficient utilization of fertilizers to realise higher yields at lower cost and soil health cards are issued to farmers. NCR constituent states should adopt the scheme and ensure that soil health cards are issued to all farmers.
- 9) In Sugarcane sectors Cane Based interventions like Ratoon Management, Seed Program, Trench Planting, Drip Irrigation plus fertigation, Balanced Nutrition, Land

Levelling may be made.

- 10) Activities like Horticulture Tourism & Horticulture Therapy be promoted in NCR.
- 11) Explore possibilities of having Solar Farming on wastelands.
- 12) Productivity led growth should be promoted and area led growth be discouraged. Intensive cultivation leading to maximisation of production from the same landmass be promoted.
- 13) Agri data system be improved and this may include data related to Sowing, Central database, output estimates, marketing facilities, storage and warehouse facilities, etc.
- 14) Proper norms and assessment procedure be formulated as part Sub-Regional Plans, regarding allowing of conversion of land use from agri to non-agri uses. Strict implementation of such norms be monitored to ensure time bound utilisation of such converted land. The concerned departments to ensure that no agricultural land remain un-utilised or underutilised. Mechanism be developed to support needy agriculture landowners/ farmers for carrying out agricultural activities and utilisation of the ageriland. Provision of penalty/ fines for misutilization of agricultural land may be explored by the States. Approval of departments, responsible to ensure achievement of required targets for agricultural produce, be mandated and these departments should be accountable for land mass under agriculture use.
- 15) Concerned departments in States to assess its available land resources (agriculture land; waste lands; lands with poor quality of soil; saline, barren agricultural & rocky lands, water availability. etc.) and make efforts to optimally utilize such areas through micro planning.
- 16) States may device a strategy to protect and support agricultural production and mineral resources by preventing inappropriately dispersed urban activities in rural areas. Planning for the areas outside controlled/regulated/development shall be part of the SRPs/ District Development Plans by the respective NCR constituent states/ districts.
- 17) Cold chain for perishable products from peri-urban areas and with selling cycle of 48 hours (unless it's a frozen good), be established. Cold Chain facilities under modern scientific agro logistics be planned such that the facility acts as Hub and produce supply points and consuming markets act as spokes around the hubs. About 4-5 hubs may be created in and around Delhi in NCR.
- 18) Multi-chambered, differential temperature controlled cold storages for nonpotato/onion based Fruits, vegetables and flowers will still be required at central sale points/ Terminal Markets, to prevent wastage, be planned.
- 19) Special facilities both for transfer, storage as well as after use treatment be planned for flowers grown for economic purpose.
- 20) To prevent post-harvest loss, adequate initiatives be taken to provide infrastructure for short-term storage (particularly at the farm level) and for intermediate processing in the production catchments.
- 21) Explore possibilities of having up 'Food Processing Park' in each Tehsil Hq. and running on its own at cost of work basis. Possibilities of opting for PPP mode may also be explored. State Govts. may have pilot projects in each sub-region at district Hq.
- 22) Each village of NCR should produce fodder and the same should be mandated in District Development Plans. GPs/ Districts should be self sufficient in Fodder and plans

should spell out to increase farm revenue.

- 23) Every village of 5000 population or every 1000 households in big village in rural areas should have one milk booth. In urban area every group housing, RWA, should have one milk booth and every ward should have 02 booths at least. A scheme/ provision for space be made in respective local area plans of rural and urban area.
- 24) Possibility of having 'consumer testing kits' for preliminary checking of adulteration in food, milk, etc., be explored by the concerned departments.
- 25) Significant Operational Changes shall be required at working level to encourage use of processed waste water for irrigation, which shall involve Hand Holding Support by academicians & experts, for which interactive Incubation Models need to be formed at appropriate operational level (refer **Annexure–P-8.1**).
- 26) Explore possibilities of freshwater pearl farming.
- 27) Combination of pisciculture in fresh water along with water based crops like waterchestnut, fox-nuts, etc. be adopted.
- 28) Possibilities of imposing penalties/ fines for wasting food be explored at local level.
- 29) Efforts be made to channelize all edible food waste to feed empty stomach.
- 30) Each group housing can have 'edible food waste station' to receive and divert/ distribute at least three times a day i.e. 10 AM 3 PM 9 PM. Possibilities of having ward wise stations could also be considered with NGOs manning these stations.
- 31) Large grocery stores should donate all unused but still edible food to charitable organisations. All the large market chains, malls and stores may plan in advance by concluding formal agreements with various charities regarding the deemed donation and use of unused, but safe-to-eat food.
- 32) Every village should have space for horticulture/ vegetables for the consumption of local people. This space can be based on per person daily vegetable requirement. Eating 231 grams of vegetables or up to 500 grams of fruits and vegetables per day may help reduce the risk of heart disease and increase lifespan1. Vegetables& Fruits are perishable and suitable for immediate local consumption and this will further reduce the transportation cost.
- 33) Similarly, certain area should be earmarked based on per person daily milk requirement (250 ml milk per person/day2) at local level, space for dairy activities be earmarked in each such Plan.
- 34) Mapping and identification the land/ areas for horticulture/ vegetables production and dairy activities be done in the SRPs/ DDPs/ Master Plans/ Development Plans/ GPDPs, etc. as applicable.
- 35) In Urban areas also there should be area in urban limit for vegetable production and dairy activities.
- 36) Every village should have primary processing facilities of vegetables and milk facilitation center which should preferably be a Bulk Milk Cooler (BMC), depending upon the requirement for marketable surplus. These Agro-primary processing facilities and BMCs should preferably be in Panchayat Ghar.

¹https://www.healthline.com/nutrition/servings-of-vegetables-per-

day#:~:text=Summary%20Eating%20around%208%20ounces,disease%20and%20increase%20your%20lifespan.
²https://www.thebetterindia.com/155455/milk-benefits-nutritionist-news/

- 37) Use of compost created from solid waste management and other waste management sources in the village/ block/ tehsil/ district, etc. should be ensured at local level.
- 38) Manage Parali/ Stubble Burning: Several organizations have made recommendations for the management of *parali* or stubble burning. Indian Agricultural Research Institute

(IARI)^{3,} PUSA has developed affordable technique (which involve use of bio-organism to dissolve Stubble) for tackling the problem of Stubble Burning which further reduce pollution & make soil fertile by maintaining the moisture of filed for longer duration. NCR states may collaborate with IARI for mandatory adoption of such techniques and to reap benefitted from.

- 39) States may adopt better harvesting techniques like in-situ management which involves ploughing back the stubble in the ground; happy seeder machine; or simply cut, bail and transport the straw to cardboard factories or bio-mass based power plants. Options being offered be tied with an appropriate financial or institutional mechanisms. Each Gram Sabha should buy one or two happy seeder machines and leasing to farmers via roaster should be increased as an income generation activity.
- 40) Tariff rates regarding water and electricity for agriculture be reviewed and revised. Farm water supply tariff rates to have slabs introducing stiff rates for high consumption in areas declared dark and grey blocks and also provide rebates if water is being reused and recycled. Necessary action be taken by all NCR States with one year of metering.
- 41) The number of bore wells of all types and sizes be identified, Geo-tagged and registered by 2023 across NCR. This process be continued thereafter on regularly mandatorily for all new wells in NCR.
- 42) All NCR districts to prepare schemes for promoting adoption of Rain water harvesting in agricultural sector.
- 8.4.14 Other policies and proposals given at **Annexure P-8.2** should also be followed and elaborated/ detailed out in sub-regional plans and local level plans like Master/ Development Plans, etc.

8.4.15 Key projects

Specific projects envisaged to be taken up in NCR regarding development of agriculture sector are given at **Table 8.6** below, but not limited to:

S. No.	Proposed Projects and Plans	Phase –I (2021-2026)	Phase –II (2026- 31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1.	Scheme on 100 percent metering of water supplied for agriculture.	To be done by 2026.	-	-	-
2.	Schemes for rainwater harvesting structures should be prepared for agricultural sector based on natural drainage systemsand ponds, lakes, etc.	At least two districts in each sub-region.	75 percent of districts in each sub-region.	100 percent of districts in each sub- region.	-
3.	Schemes for covering canals through solar power projects should be initiated.	50 percent of canals should be covered by 2026.	100 percent of canals should be covered by 2031 based on	-	-

Table 8.6: Key Projects of Agriculture Sector to be taken in the NCR, 2021-2041

³<u>https://krishijagran.com/agriculture-world/this-5-rs-capsule-will-solve-stubble-burning-problem-reduce-pollution-make-soil-fertile/</u>

S. No.	Proposed Projects and Plans	Phase –I (2021-2026)	Phase –II (2020 31)	6- Phase –III (2031-2036)	Phase –IV (2036-2041)
			feedback of first phase.		
4.	Schemes for mega agro- processing parks and export zones should be prepared in association with APEDA.	At least one in each district headquarters.	Another in each tehsil headquarters based on feedback from first phase and balance requirements.		
5.	Terminal agri-market scheme along-with collection centers in surrounding districts.	Gannaur (Sonipat) should be expedited and completed by 2026.	Based on feedba requirements, si Rajasthan sub-re period should no	ack from the first ph milar schemes in U egions should be un ot exceed five years	ase and ttar Pradesh and dertaken. Project
6.	Scheme for developing warehouses and cold chain along the expressways and highways in the NCR.	To be completed by 2026.	Based on feedba requirements, si Rajasthan sub-re period not to be	ick and success fror milar schemes in U egions should be un more than five year	nthe first phase and ttar Pradesh and dertaken. Project rs.
7.	Scheme for building solar farms on wastelands in each district.	At least two districts in each sub-region.	75 percent of districts in each sub- region.	100 percent of districts in each sub-region.	-
8.	Schemes for shifting dairies and related activities from city cores to peripheries, peri-urban areas and rural clusters. (Identify location in SRP/DDP/ MP/DP/GPDP, etc).	To be implemented in all Metro & Regional Centers.	To be implemented in other towns.	-	-
9.	Linking of the Gramin Agriculture Markets (GrAMs,) with e-NAM.	To be implemented by 2022.	-	-	-
10.	Schemes to build agri- produce certification centers in all districts of the NCR.	To be implemented by 2026.	-	-	-
11.	Scheme to build compost or waste-based manure certification centers in all the districts of NCR	To be implemented by 2026.	-	-	-
12.	Scheme for developing agricultural and village tourist centres based on area specialty.	Agriculture based village tourist centre at Rataul, Baghpat with specialty in mangos.	Other districts o schemes based o	r areas may replicat on feedback from th	e the similar e first phase.

CHAPTER 9

RURAL DEVELOPMENT

9.1 INTRODUCTION

- 9.1.1 India has 649,481 villages as per the Census of India 2011. According to the World Bank estimates, the rural population share in India has reduced from 69 percent as per 2011 census to 66 percent in 2019. Rural development in the regional plan implies both the economic betterment of people as well as greater social transformation. In order to provide rural population with better prospects of economic development, increased participation of people in rural development programmes, decentralization of planning processes, better enforcement of land reforms and greater access to credit become significant factors. Initiatives taken by the government for bridging the urban-rural divide by upgrading the standard of living of people in rural areas is expected to play an important role in the overall development of the country. For a comprehensive development of rural areas, programmes, schemes for drinking water, sanitation, road construction, electrification of villages and food supply, etc. including employment authorities need to be considered together.
- 9.1.2 The 73rd Constitutional Amendment Act (CAA) 1992 called for reorganized Panchayati Raj in India and made constitutional provisions to ensure peoples' participation at the grassroots level of governance. It specifies 29 functions, which are to be carried out at village level by the panchayats. In addition, Article 243 ZD of the Constitution of India mandates the setting up of District Planning Committees (DPCs) in each district of a state. The DPCs are intended to consolidate the plans prepared by the panchayats and municipalities in the district and to prepare a Draft District Development Plan for the entire district to be approved by the state government. These are not however spatial plans. The task of preparing spatial rural development plans has been carried out successfully under the first phase of the Rurban Mission in 300 Integrated Cluster Development Plans. Another 1,000 ICAPs will be prepared and implemented in the second phase of the Rurban Mission. Participating states are fully engaged in preparing and implementing ICAPs.
- As per the Census of India 2011, the NCR has 2.64 crore rural population, which 9.1.3 constitutes 45.44 percent of region's total population living in 11,774 villages. A large area and population will be left out of planned development unless the rural areas of the NCR are included in the regional plan. There were no planning and development control regulations in locating various economic activities in the rural areas, falling outside the controlled and regulated areas of the towns, which has resulted in the growth of unplanned urban and industrial activities in rural areas. Secondly, rural settlements, located in the fast-growing growth centers are undergoing major physical and socioeconomic changes, particularly in the rural settlements of the NCT of Delhi and adjacent to the DMA towns, priority towns and along all the major transport corridors. However, under the first phase of Rurban, the Ministry of Rural Development has adopted Model Spatial Planning Guidelines in March 2019. The March 2019 guidelines include provisions on model land uses, development controls, and service level benchmarks with appropriate enforcement mechanisms for rurban clusters and villages. These model guidelines are expected to be amended under phase two of the Rurban Mission.

9.2 THE EXISTING SITUATION

9.2.1 As per the remote sensing Data of 1991, about 91 percent of the area of the NCR was rural., accommodating about 43.61 percent of population in 1991, with an increase of 45.44 percent in 2011 (Table 9.2). In NCT Delhi, there has been a gradual increase in urban population from 89.93 percent in 1991 to 97.50 percent in 2011 and gradual decline in rural population has been observed. Rural population in Delhi was 10.07 percent in 1991 and declined to only 2.50 percent in 2011. Hence, urbanization of the NCT of Delhi has taken place at a rapid pace. The Rajasthan Sub-region is predominantly rural with 81.53 percent of rural population followed by the Haryana Sub-region with 63.55 percent, the Uttar Pradesh Sub-region with 56.06 percent and the NCT of Delhi with only 2.5 percent population living in rural areas as per Census of India, 2011 (Table 9.1).

Region	19	81	19	91	20	01	20	11
and Sub- Region s	Urban Populat ion	Rural Populat ion	Urban Populat ion	Rural Populat ion	Urban Populat ion	Rural Populat ion	Urban Populat ion	Rural Populat ion
NCT of Delhi	92.73	7.27	89.93	10.07	93.18	6.82	97.50	2.50
Haryan a	24.43	75.57	27.62	72.38	34.13	65.87	36.45	63.55
UP	27.97	72.03	34.63	65.37	39.88	60.12	43.94	56.06
Rajasth an	11.08	88.92	13.95	86.05	14.53	85.47	18.47	81.53
NCR	45.83	54.17	50.23	49.77	56.39	43.61	54.56	45.44

 Table 9.1: Rural and Urban Population in the NCR, 1981 – 2011 (percent)

Source: Regional Plan, 2021 and Population Census of India, 2011.

9.2.2 The NCR has 2.64 crore rural population, which constitute 45.44 percent of region's total population living in 11,774 villages. There are 7,530 gram panchayats in the NCR excluding the NCT of Delhi. The highest number of gram panchayats are located in the Haryana Sub-region (3,626), followed by sub-regions of Uttar Pradesh with 2,925 gram panchayats and Rajasthan with 979 gram panchayats. The Haryana Sub-region has the highest number of villages (3,987) followed by the UP Sub-region (3,790). Sub-region wise number of villages in the NCR is shown in **Table 9.2**.

Table 9.2.:	Number	of Villages in	n the NCR	and Sub-	regions,	2019

S. No.	Region and Sub-region	Number of Villages	Percent share of villages
1	Delhi	357	3.03
2	Haryana	3,987	33.86
3	Uttar Pradesh	3,790	32.19
4	Rajasthan	3,640	30.92
	Total NCR	11,774	100.00

Source: Census, 2011; Haryana Statistical Abstract, 2018-19. NCR Planning and Monitoring Cell, UP and Haryana 2019, and http://raipanchayat.rajasthan.gov.in/Portals/ default/tree-example/pr dir eng 2020.html

- 9.2.3 The NCR Plan, 2001 provided for lower order facilities in the basic villages and higher order facilities in service centres. The Plan emphasized upgradation of skills of rural workers, training for rural artisan, creation of employment opportunities, provision of low cost rural housing, and provision of water supply and sanitation facilities in rural areas. It also provided for the preparation of integrated plans for cluster of villages at the block level as a pilot project.
- 9.2.4 Decadal increase of rural population in the NCR is less but there will be huge increase in absolute rural population in the NCR (**Table 9.3 and 9.4**).

Year	Delhi	Haryana Sub- Region	Uttar Pradesh Sub- Region	Rajasthan Sub- Region
2011	1.59	39.51	39.71	19.20
2016	0.99	39.5	39.56	19.96
2021	0.61	39.39	39.30	20.69
2026	0.38	39.21	38.99	21.42
2031	0.24	39	38.62	22.14
2036	0.15	38.74	38.23	22.88
2041	0.09	38.47	37.82	23.62

Table 9.3: Sub Region Wise Projected Rural Population, 2041 (%)

Note: Exponential growth of population has been considered for projection purpose

Year	Delhi	Haryana Sub- Region	Uttar Pradesh Sub- Region	Rajasthan Sub Region
2011	419,042	10,439,814	10,494,174	5,073,091
2016	274,248	10,961,931	10,978,441	5,538,428
2021	179,486	11,510,160	11,485,056	6,046,448
2026	117,467	12,085,807	12,015,049	6,601,067
2031	76,878	12,690,244	12,569,499	7,206,560
2036	50,314	13,324,910	13,149,536	7,867,592
2041	32,929	13,991,316	13,756,338	8,589,259

Table 9.4: Sub Region Wise Projected Rural Population, 2041

Note: Exponential growth of population has been considered for projection purposes.

- 9.2.5 A Review of the NCR Plan, 2001 recommended that in the settlement hierarchy, a category of central village should be added between the basic village and service centre. It also suggested that Integrated District Development Plans may be prepared by the states within the framework of Sub-regional Plans as mandated in the 74th Constitutional Amendment Act, 1992. It further suggested notifying the entire rural area in the NCR as one area under the common legislation in order to control unauthorized conversion of rural land uses to urban uses.
- 9.2.6 The NCT Delhi is lagging behind in rural development programs. With only a total of 357 villages in the NCT of Delhi, it becomes difficult to carry out regulated development in these rural areas. No Integrated Cluster Action Plans are prepared under Rurban Mission for rural areas of the NCT Delhi while the Haryana Sub-region has

covered the highest number of clusters (seven) and population under this mission (Table 9.5).

rusie sier i opulation covered ander the Rarbun Mission, 2015							
Region and the Sub-regions	Clusters covered under the Rurban	Population					
Delhi	-	-					
Haryana Sub Region	7	322,163					
UP Sub Region	3	106,699					
Rajasthan Sub Region	2	25,572					
National Capital Region	12	454,434					

Table 9.5: Population covered under the Rurban Mission, 2019

9.2.7 Presently, there are 12 Rurban clusters in the NCR out of which 7 are located in Haryana, 3 in Uttar Pradesh, and 2 in Rajasthan. These clusters are being developed across the NCR by the respective states under Rurban Mission with a total approved investment of Rs. 1,526 crore. Based on local needs, the sectors getting maximum investment in these clusters are water supply, village streets, agriculture services, waste management, skill development, etc. A brief analysis about the Rurban clusters in the NCR is given in **Table 9.6**.

S. No <u>.</u>	Sub- Regions	Districts	Clusters	Activities
1.		Karnal	Balla	Economic theme is agri-services and processing. Rurban investments are being made in Agriculture Equipment Banks and for providing training to unemployed youth.
2.		Jind	Uchana Khurd	Economic theme is skill development. Rurban investments are being made in Providing training to unemployed youth and Agriculture Equipment Banks.
3.		Rewari	Kosli	Economic theme is skill development. Rurban investments are being made in skill development and dairy farming.
4.	Haryana	Jhajjar	Badli	Economic theme is skill development. Rurban investments are being made in providing training to unemployed youth.
5.	Haryana	Panipat	Sewah	Economic theme is agri-services and processing. Rurban investments are being made in setting up agri-service centres and cold storage places.
6.		Faridabad	Tigaon	Economic theme is skill development. Rurban investments are being made in residential training to unemployed youth and in street vending projects.
7.	Mewat	Singar	Economic theme is skill development. Rurban investments are being made in the establishment of multi-skill development training centres and Agriculture Equipment Banks.	

Table 9.6: Rurban Cluster in the NCR, 2019

S. No.	Sub- Regions	Districts	Clusters	Activities
8.	Uttar Pradesh	Baghpat	Silana	Economic theme is agri-services and processing. Rurban investments are being made in seed godowns and dairy development.
9.		GB Nagar	Chitehera	Economic theme is agri-services and processing. Rurban investments are being made in organic farming and farmers training programmes.
10.		Ghaziabad	Dasna Dehat	Economic theme is agri-services and processing. Rurban investments are being made in capacity building and skill training for self-employment, and also in farmers' training programmes.
11.	Rajasthan	Alwar	Nauhawan	Economic theme is agri- services and processing. Rurban investments are being made in the construction of animal sheds, and in the irrigation projects.
12.		Bharatpur	Jurahara	Economic theme is skill development. Rurban investments are being made in SHG formation and capacity building, and veterinary building upgradation.

Source: Rurban Mission Portal and Stakeholders' Workshop by Ministry of Rural Development (2019).

9.3 THE KEY ISSUES AND CHALLENGES

- 9.3.1 The existing Town and Country Planning Acts of the constituent states have provisions for preparation of master plans, and development plans for the notified, controlled, and regulated areas around cities and towns and do not have any control over development activities in rural areas outside the controlled or regulated areas. In fact, none of these acts are aimed at regional planning and development purposes and are limited in scope. These acts do not make any provisions for the preparation and implementation of ICAPs. Legislations on city planning, and urban and rural local government run parallel to each other and do not compliment.
- 9.3.2 No district development plan as per 74th Constitutional Amendment Act has been prepared in the NCR. With respect to districts, which are part of the NCR, the NCRPB Act of 1985, mandates preparation of a Regional Plan for the National Capital Region. While Regional Plan 2001 and 2021 were in place and Regional Plan, 2021 advocated for the preparation of district development plans for districts falling within the NCR. However, concerned states could not prepare district development plans.
- 9.3.3 Rural settlements close to the NCT of Delhi are undergoing rapid physical and socioeconomic changes, causing haphazard development with lack of basic services like water supply, power, sanitation, drainage, etc. Although, there is a need to decongest the urban core by redirecting migration, doing so without creating enough economic potential in rural areas will remain unrealizable.

- 9.3.4 Government of India and the participating states have various development schemes for rural development, which are not embedded in the policies and proposals of the sub-regional plans and district development plans for implementation in rural areas.
- 9.3.5 Prevailing acts and policies of the participating states do not have any control over the location of urban activities in rural areas outside notified areas, resulting in large scale haphazard development of urban activities, and construction outside notified areas by way of conversion of rural agricultural lands to urban activities has become quite common.

9.4 POLICIES AND PROPOSALS

- 9.4.1 Low-income levels, lack of universal access to quality education, lack of good basic healthcare, unsafe drinking water, and lack of sanitation services characterizes rural NCR. It is likely that improvement of income levels and availability of basic services may significantly improve the quality of rural life in the NCR. Micro and household enterprises have huge potential in rural settlements. Some of micro and household enterprises functioning in rural settlements in the NCR include pottery, food processing, sports goods, textiles, carpets, *murtikari*, scissors and blades, leather works, artificial ornaments, *zari* works, etc. Unemployment appears to be the most significant issue in the rural NCR.
- 9.4.2 As the maximum migration is taking place from rural areas to nearby *Mofussil* towns, these towns are now becoming hubs of development. Reasons of this trend include improvement in commuting facilities due to increased penetration of roads in villages over the last few decades under various government schemes like PMGSY. So, people now find it easy to commute between their places of residence and work. In view the current situation and the identification of the key issues, the following policy recommendations are made.
- 9.4.3 The states of Uttar Pradesh, Haryana and Rajasthan should identify in the sub-regional plans comparably less developed NCR districts on carefully selected development parameters such as income, employment, resources, land, literacy, life expectancy, infant mortality, productivity and per capita income, etc. The sub-regional plans should recommend strategies for balanced development of these districts. State governments should insist on the preparation of constitutionally mandated district development plans in the NCR. The sub-regional plans should broadly set out socio-economic goals for each district and district development plans should detail out and implement these goals through various state and central government schemes.
- 9.4.4 The states of Uttar Pradesh, Haryana and Rajasthan should wholeheartedly adopt the policies of the Rurban Mission across the rural NCR. The idea of convergence propagated under the Rurban Mission should be adopted by all the states. ICAPs should be prepared in all districts of the three NCR states with a priority given to less developed districts within no more than one year.
- 9.4.5 Service centres and central villages should be identified in sub-regional plans or on the basis of identification of service centres and central villages clusters should be identified in the district development plans leading to the preparation and implementation of ICAPs. Constituent state governments should take the lead and encourage district authorities to prepare ICAPs in all districts of the NCR.
- 9.4.6 While the ICAPs draw on policies contained in the sub-regional plans and district development plans, ICAPs should collect concerned village development plans and put together ICAPs at block level, block being a unit of development.

- 9.4.7 Training programmes in micro-entrepreneurship, processing of local produce, vocational skills upgradation etc., allied agro-economic activities such as poultry, dairy, pottery, handlooms, handicrafts and rural tourism should be encouraged. Financial incentives and loan schemes for starting micro-enterprises should be worked out and delivered through district plans.
- 9.4.8 Low cost houses, universal access to sanitation at household level, networked water supply at household level, building robust communication systems, other social infrastructure should be provided to improve the quality of life in rural areas. Better road connectivity among various settlements in rural areas should be provided connecting all villages within the next five years.
- 9.4.9 Increasing demand for exotic agriculture products in large cities in the NCR is increasing and should be met through cultivation of non-conventional crops such as mushrooms, broccoli, baby corn, bamboo shoots, poultry, and fish. In addition, farmers should be given low interest loans for floriculture. The state governments should provide necessary infrastructure in terms of technical know-how, finance and marketing support facilities to the farmers to promote the non-conventional high value commercial crops in the NCR. This will increase per unit earning and also reduce the risk of land conversion to other uses.
- 9.4.10 The sub-regional plans should indicate *special rural investment areas* and promote development of these areas through strategic partnerships between relevant government agencies, private sector, NGOs and CBOs. These areas should be further detailed out in district development plans for implementation through ICAPs and village development plans.
- 9.4.11 Dissemination of relevant information on a regular basis to apprise rural population about new opportunities, on-going programmes, sources of micro-credit, market potentials, etc. should be provided by district level political leaders represented on zilla parishads, block samities and village panchayats.
- 9.4.12 In order to protect rural areas from unauthorized activities, state governments should make necessary provisions in the existing local government statutes by extending the provisions of the *Model Spatial Planning Guidelines* adopted in March 2019 by the Ministry of Rural Development, Government of India. The states of Uttar Pradesh, Rajasthan and Haryana should incorporate these model guidelines in the sub-regional plans and district development plans. The March 2019 guidelines include provisions on model land uses, development controls, and service level benchmarks with appropriate enforcement mechanisms for rurban clusters and villages.
- 9.4.13 Regarding Polycentric Growth & Sustainable Development approach of UN Habitat, States should work towards developing multiple growth centers that meet people's aspirations. Growth centres can be developed with spirit of Hon'ble PM's vision "*Atma gaon ki ho aur suvidhayein shehar ki ho*". This further equates rural urbanism. Creating more Growth Centres across NCR can lead to evenly spread population and more balanced development. Hence, aspects for identifying and building more Growth Centres that retain & attract people should get immediate attention.
- 9.4.14 **Migration Facilitation & Registration:** Migrant registration to be mandatory, to keep track of all moving from village areas and entering into urban areas or vice versa. The registration be linked with *aadhar* number and thus with the common data base which would also include data on qualifications, skill set, updates, skill mapping, education, local address and employment related details etc. For this registration centres could be

developed as Migrant Service and Facilitation Centres (MFCs) also providing orientation about the city or town, shelter home allocation till rented accommodation arranged, list of local contractors registered, fair price shops, government dispensary details, accident insurance coverage etc. Regular medical check-ups and requisite counselling for migrants be organised every fortnight or weekly at these MFCs. Registration and Facilitation centres shall be mandatory in each town, city, metro, gram panchayats, etc. in NCR and State departments should take action on the same in a phased manner. The registration and facilitation centres should be digitally linked on a suitable platform for exchange, sharing and updation of data with the help of MeitY, etc. The leanings from COVID-19 pandemic situation which brought out the importance of district administration functioning to manage the migrants could be used by devising the intricacies for the functioning of MFCs.

- 9.4.15 MFCs and CSC should be used to impart training in all villages. CSC coordinator can be the ex-officio skilling mitra/ skilling coordinator in village. Where CSCs are not available, the Gram Panchayat/ Gram Sachivalayas should have such training facilities. OFC network connectivity should be ensured to all such facilities. [For more skilling related aspects Chapter on Education and Skill Development be referred].
- 9.4.16 The huge scope in rural tourism in NCR because of the infrastructure & connectivity which Delhi be benefitted from. Efforts should be in the direction of having a rural urban continuum, as applicable.
- 9.4.17 For resource usage efficiency in NCR and equal focus of rural and urban population, efforts including Ecopolis¹ for increasing resource use efficiency, linkage between urban system and ecosystem, de-materialization through circular economy. NCR States should have vendors/ facilitators for circular economy in each village and wards for respective sub-region and all such vendors/ facilitators should be registered on an Aadhar based platform. This can help in waste management too. [For circular economy also refer Chapter on Economic Growth and Income Generation].
- 9.4.18 Exploit natural resources, and set up of agro-processing units, reinvigorate handloom industry with CSR interventions. Attract & incentivize private sector investments as well as CSR Trusts/Foundations in identified cluster developments and Rurban clusters through MSMEs/MNCs already having bases in NCR.
- 9.4.19 Facilities of both offline and online soft skilling opportunities, through Mobile Skill Centres or Village Cyber/IT Hubs through mass video films, etc. need to be arranged in rural areas. MFCs can be used in this regard. MFC should arrange for hands on training on cashless transaction and digital applications use, for all in rural areas. Seminars/ workshops be organized periodically in identified Nodal Villages by concerned departments and District Administration
- 9.4.20 A 4-tier system of rural settlements i.e. Nodal, Big (Bazaar), Medium & Small Village (NBMS) could be looked into to make settlement structure more concrete, scientific and natural, as illustrated below. Sub-Regional or District Plans to identify and locate all such categories of villages with indicated influence zone, based on their growth potential, size and capability of performing central functions. State administration shall accordingly plan & implement the required infrastructure (refer **Table 9.7**).

Table 9.7: Proposed Hierarchy of Rural Settlements

¹ **Ecopolis** is the technology of closed loops, no waste in the settlement as a whole, i.e. materials and substances derived from one type of activity used as raw material in other activities.

Tier	Category	Broad Description
Ι	Service Centres	Act as Nodal Point for economy in the region covering an
	- a Nodal Point	area of about 15-20 km radius
II	Central	Generally, such villages have a weekly phenomenon
	Villages/ Big	called "Haat/ Rural Vending Zone". There are weekly
	level villages or	markets (Haats) where people from around 7-8 kms gather
	Bazaar Villages	either for sale of their local products or as buyers for the
		non-local products on a weekly basis as
		suppliers/shopkeepers converge from outside areas to sell
		products not available/produced in the local area.
III	Medium	Villages having some common facilities (eg. post office,
	villages	senior school, agricultural processing units). Serves
	_	villages in around 2-3 km area.
IV	Small Villages	Served by Medium Villages for common facilities

- 9.4.21 The preparation of Village Development Plan (VDP) and the Integrated District Development Plans (IDDP) be carried out by States, as per the 73rd Constitutional Amendment Act. These will necessarily cover the spatial, sectoral and economic aspects. Various schemes related to rural development need to be dovetailed in the above NBMS structure for the rural areas. Town & Country Planning Organisation or Departments and expert knowledge institution may be associated and some model District Development Plans (DDP) and VDP should be prepared, to start with. Gram Pradhan (elected representative) to have an active role to play in preparation as well as implementation of the VDP. RADPFI, Guidelines, 2017 and GPDP Guidelines, 2018 of Ministry of Panchayati Raj, should be referred for preparation of DDPs and VDPs.
- 9.4.22 Rural-Urban 'Transitional Areas' in NCR be identified in SRP & DDP and Growth dynamics of these areas be looked into at micro level. Districts may identify how and why the changes are occurring, the outcome of this transition. Approach for rural area could be different from these transitional areas.
- 9.4.23 **Rural Investment Areas (RIA)** to be developed in rural area. Location of large land consuming activities like Mandis, Warehouses and Godowns (supporting E-commerce as well), Cold storage areas, Educational Institutions (institutions or colleges planning to expand hostel facilities), Solar Parks etc. be located to fringe areas of urban and in peripheral villages of urban settlements. Districts may identify land and areas to facilitate shifting of mandis from the urban core areas to rural areas. This should be part of SRP and DDP.
- 9.4.24 While preparing Development Plans for the Towns, infrastructure (physical and social) plans for the large villages within urbanisable area and outside may be prepared and integrated with the proposed urbanisable areas of the respective town.
- 9.4.25 In order to manage conversion of rural land use and to control the large scale urban activities in the rural areas, it is essential to notify the entire sub-region of each NCR constituent States as control area and enforce landuse control in order to avoid haphazard development. This call for review of existing Legislations of the NCR participating States and the same may be looked into by the States as also indicated in RADPFI, Guidelines, 2017.
- 9.4.26 Town & Country Planning Acts be prepared or amended by NCR participating States to enable effective land use control in rural areas. Vast part of NCR is outside notified controlled /development areas and is essential to bring them under control through

modification in the existing legislations to designate the entire Sub-region as controlled /development areas in each NCR participating States and set up appropriate sub-regional level planning and development mechanism to exercise landuse and development control.

- 9.4.27 While undertaking spatial planning in DDPs and VDPs/ GPDPs, space for grazing, last rites, fairs, festivals, celebrations, iconic places be earmarked.
- 9.4.28 To enhance connectivity, linking a loop of villages by a ring road about 30 km in circumference with frequent bus services, thus integrating population of all connected village into one market, may be thought of. These villages could become a virtual city with potential to expand and accommodate 3-5 lakhs people. This can be helpful for polycentric development too.
- 9.4.29 Providing urban amenities/ facilities in rural areas such as affordable safe housing and house sites for the landless, public health & sanitation, education & skilling, water supply, communication system, better connectivity, 24x7 electricity, social infrastructure, irrigation facilities, etc. be mandatory, in a time bound manner. Amenities & facilities such as online mandis, health care and agriculture support, etc. could be aspirational, to improve the quality of life in rural/rurban/ semi urban (Mofussil areas).
- 9.4.30 Efforts for development of visitor amenities for promoting rural tourism must be initiated, in co-ordination of Department of tourism of respective states. Village guest houses can be thought of, as these can earn extra income for the rural area.
- 9.4.31 All NCR districts to have the District Planning Committees (DPCs) in place as also mandated under Article 243 ZD of the Constitution of India. The DPCs may facilitate preparation and consolidation of plans prepared by the panchayats and municipalities in the district and accordingly, the draft development plan for the entire district. Have a common platform where all the rural related schemes, running under different Ministries may be brought, analysed and monitored.
- 9.4.32 Various schemes of centre and NCR States related to rural development be dovetailed with the policies and proposals of the Regional Plan/ Sub Regional Plans for their implementation. District Administration will have to incorporate various proposals while preparing plan of action for development of respective districts in various sub-regions. Quarterly District level meeting may be held in this regard at DM level.
- 9.4.33 District Administration headquarters shall have the baseline data of district and data related to any project/scheme being implemented in the district, to track the progress of change through continuous monitoring. Mid-term and end term evaluation of each of government programme be ensured/ carried out and intimated to State/ NCR Planning & Monitoring Cells and NCRPB. Block office shall be custodian of such data and it shall be kept in a form where it can be viewed by general public.
- 9.4.34 To institutionalize the Gram Panchayats, as well as, to bring transparency in their functioning, the Development and Panchayat department Govt. of Haryana had planned to set-up Gram Sachivalayas for every Gram Panchayat. This should be mandatorily followed in all Gram Sabha across NCR. These Gram Sachivalayas should also house IT centres with CSC and health centres.
- 9.4.35 Projects for Rural road development should be undertaken in all the settlements with more than 100 population in NCR (settlements with 50 people as per Census 2011 or 100 people as per Census 2021, whichever is higher). Such projects be considered by

relaxing the PMGSY guidelines/ regulations in NCR, considering it as a special region for the economic growth and development.

- 9.4.36 Projects for rural electrification be undertaken providing separate feeder for Agriculture, rural domestic use, rural industries and Rural Investment areas (RIAs). Quality of power supply should be good and should be in day time.
- 9.4.37 100 % tapped water supply should be ensured for every rural house.
- 9.4.38 Weather based crop insurance for food crops, oil seeds & perishable fruits and vegetables be mandatorily adopted across NCR. This should preferably be Automatic Weather Station (AWS) based. AWS should be set up in all blocks across NCR by 2025 through utilizing CSR funds and other sources. More number of AWS be setup specifically in NCR and crop insurance for weather sensitive crops be promoted and adopted in the region.
- 9.4.39 **Creation of Iconic Spaces:** Every village, town, settlement with more than 2000 population should have a local iconic space/ place which should be a symbol of local culture, heritage, aspirations, etc., centrally located and where every people should feel good, cutting across diverse sections. It can be a park, sculpture, pond or water body, etc. Such iconic places should act as a "Pride of the Settlement". This should be incorporated in the programs and Plans of Village Development and such iconic placed be created in first 03 years after the publication of the Regional Plan-2041. CSR funds, MP funds, Gram Nidhi, funding from Voluntary sources, etc. should be utilised for the development of such iconic spaces.
- 9.4.40 Every Panchayat/Gram Sachivalayas should have IT Center, CSCs, health service center, daily milk collection centers and Bulk Milk Coolers, primary agriculture / horticulture processing center, packing center for perishable marketable surplus, skilling coordinator center, etc.
- 9.4.41 Every group of five-seven Revenue Villages should have a modern packaging unit/ centre for small qualities for stamping, safe & hygiene packing with high tech traceability, etc. This should be preferably coterminous with the coverage area of each CSC and CSCs should be used for E-marketing. Such modern packaging unit/ centres be developed within 3 years.
- 9.4.42 Every SRP and DDP should present a blue print for digital integration of the villages.
- 9.4.43 TOD should be allowed and promoted around/ along the railway stations, railway sidings, ICDs, railway yards, etc. in the rural areas. \
- 9.4.44 Non-Master Plan areas in NCR which are within or outside control areas shall provide all basic amenities to the houses, if constructed therein, including water supply, sewerage, electricity, waste management, road connectivity, gas connectivity (if applicable), etc. The developer shall have underground utility ducts for all such types of infrastructure, along with the roads. This will be applicable to all the land uses such as Commercial, Institutional, Industrial, etc. Only individual houses which replace or reconstruct new houses or houses for poor/PMAY houses or similar Govt. funded poor section individual housing schemes/ programs are excluded from this.
- 9.4.45 An indicative list of deficiencies and identification of needs for a Cluster is given below in **Table 9.8**:
- Table 9.8: Deficiency Analysis and Identification of Needs for a Cluster

Α		В	С	D= C-B		
Des	sirable Component	Existing Situation	Desired Levels	Gaps/Need		
1	Skill Development training Linked to Economic Activities	Existing skills in the villages. (Handicraft/Handloom/Industrial etc) No of skilled members at the HH level.	At-least 70 percent household with one beneficiary in each household.	Identification of training needs in terms of sector and no of people to be trained with age profiling.		
2	Agri-services and Processing	Detail the existing Agri services and processing industries present in the cluster. (Including storage infrastructure).		Identification of support to any agri based service/industry/ storage infrastructure.		
3	Digital Literacy	Detail the existing levels in terms of core IT infrastructure as well as general digital literacy levels at the HH and Village level.	At least one e- literate person in every household.	Identification of no of people to be digitally literate in the cluster.		
4	24x7 Piped Water Supply	Existing levels of water supply at the household level.	70 liters per capita per day (lpcd) of safe drinking water for every households throughout the year.	Identification of Augmentation needs at the household level and type of augmentation- source/ transmission/distribution.		
5	Sanitation	Coverage of Individual Toilets in the villages at the household level.	100% HH with Individual Household Latrines.	Identification of no of households to be covered with individual latrines.		
6	Solid and Liquid Waste Management	Existing arrangement for solid and liquid waste management at the Household/ Village and Cluster level.	Collection at HH level Treatment at Cluster Level.	Identification of SWM facilities at collection/transportation/ treatment.		
7	Access to Village Streets with Drains	Existing coverage of village streets and drains.	All village streets to be covered with drains.	Identification of length of streets yet to be covered with drains.		
8	Village Street Lights	Coverage of village streets with lights.	All village streets to be covered with street lights as per norms.	Identification of no of street lights to be provided.		
9	Health	Access to clinics and health centres at the household and village level.	Access to Health infrastructure as per norms.	Identification of need for Mobile Health Units.		
10	Up gradation of primary, secondary and higher secondary schools	Existing nos of primary, secondary and higher secondary schools in the cluster and existing conditions.	Ensuring primary and secondary school within a reasonable distance from all households along with facilities of Drinking water provisions, Toilet blocks (separate for boys and girls) and adequate class rooms.	Identification of upgradation needs/new facilities in the primary and secondary schools.		
11	Inter village roads	Connectivity between villages within the cluster with roads	Ensure connectivity	Identification of need for new connectivity		

	Α	В	С	D = C - B	
De	sirable Component	Existing Situation	Desired Levels	Gaps/Need	
	connectivity	and public transport	between all villages.	between villages.	
12	Citizen Service Centres	Existing no. of citizen service centres at the village level.	One ICT enabled front end Common Service Centre (CSC) per 2 to 3 villages.	Identification of no of CSCs required for the cluster.	
13	Public transport	Existing levels of availability w.r.t. Public Transport facilities both intra and inter village.	Public transport to block from each village.	Need for additional facilities to improve public transport access to each village.	
14	LPG Gas Connections	Access to LPG connections at the household level.	One LPG retail outlet per village or per 1800 households.	Need for additional retail outlets in the cluster.	

Source: Shyama Prasad Mukherji Rurban Mission: INTEGRATED CLUSTER ACTION PLAN (ICAP)

9.4.46 Indicative list of Central Sector and Centrally Sponsored Schemes for possible Convergence for the Desirable components within a Rurban Cluster is given below in **Table 9.9**:

Table	9.9:	List	of	Central	Sector	and	Centrally	Sponsored	Schemes	for	possible
Conve	rgeno	ce									

S.	Desirable Desirable			Potential Scheme for convergence
No.	components	Outcome	Name	Brief
1	Skill	At-	Deen	Deendayal Upadhaya Gramin Kaushalya Yojana
	Development	least	Dayal	is scheme implemented by Ministry of Rural
	training Linked	70	Upadhyaya	Development.
	to Economic	percent	Grameen	The key features of the scheme are: 1) Outcome led
	Activities	household	Kaushalya	design 2) Guaranteed Placement for at least 75%
		with one	Yojana	trained candidates 3) Shift in emphasis from
		beneficiaries	(DDU-	training to career progression 4) Post placement
		in each	GKY)	support, migration support and alumni network to
		households.		enable farm to factory transition. 5) Industrial
				Internships 6) Skill training programs that are
				based on national and international market demand
				7)Special Regional focus - Sub-schemes for J&K
				(Himayat) and for 27 most affected Left Wing
				Extremist (LWE) districts (Roshini) across nine
				States.

S.	Desirable	Desirable		Potential Scheme for convergence
No.	components	Outcome	Name	Brief
2	(i) Agri services andProcessing	Support to the Agriculture and Allied Activity components as per RKVY.	Name Rashtriya Krishi Vikas Yojna (RKVY)	Brief Rashtriya Krishi Vikas Yojna (RKVY) by the Department of Agriculture, Cooperation and Farmer Welfare under the Ministry of Agriculture and Farmer Welfare intends to incentivize the States so as to increase public investment in Agriculture and allied sectors. The scheme gives autonomy to the States to draw up plans for executing Agriculture and allied sector schemes taking into consideration the agro-climatic conditions, availability of technology, natural resources and cropping patterns in the respective districts. The components for which the scheme provides support includes Crop Husbandry (including Horticulture), Animal Husbandry and Fisheries, Dairy Development, Agricultural Research and Education, Forestry and Wildlife, Plantation and Agriculture Marketing, Food Storage and Warehousing, Soil and Water Conservation, Agricultural Financial Institutions, other Agricultural Programs and Cooperation and expenditures directly related to the development of agriculture viz., expenditure on shallow tube well, deep tube well, drip irrigation, sprinkler irrigation, dug wells or other similar
	(ii) Agri services and farm productivity	Support to components under end to end irrigation supply chain as per PMKSY.	Pradhan Mantri Krishi Sinchai Yojna (PMKSY)	Agriculture Department of the State. Pradhan Mantri Krishi Sinchai Yojna (PMKSY) by the Department of Agriculture and Cooperation and Farmer Welfare under the Ministry of Agriculture and Farmer Welfare intends to ensure access to protective irrigation to all agricultural farms in the country to produce 'per drop more crop', thus bringing much desired rural prosperity. PMKSY will be focusing on end-to end solution in irrigation supply chain, viz. water sources, distribution network, efficient farm level applications, extension services on new technologies & information etc.
	(iii) Agri Services	Support to organic farming cluster identified under PKVY.	Paramparagat Krishi Vikas Yojana (PKVY)	Paramparagat Krishi Vikas Yojana (PKVY) support and promote organic farming thereby improving soil health. Under PKVY Organic farming is promoted through adoption of organic village by cluster approach and Participatory Guarantee System (PGS) certification. In three years 10,000 cluster covering 5.0 lakh acre organic farming areas is to be developed under PKVY by providing Rs. 20,000/- per acre per farmer for

S.	Desirable Desirable			Potential Scheme for convergence
No.	components	Outcome	Name	Brief
				seeds and transport facilities.
3	Digital Literacy (access to digital resources for all citizens)	At-least one e- literate person in every household.	Digital India	Ensuring Universal digital literacy is one of the component under Digital India mission, which intend to provide the citizens the ability to fully exploit the digital technologies to empower themselves. It helps them seek better livelihood opportunities and become economically secure. The programme focuses on digital literacy by ensuring at least one e-literate

Source: Shyama Prasad Mukherji Rurban Mission : INTEGRATED CLUSTER ACTION PLAN (ICAP)

9.4.47 Along with the above policies and proposals, other policies given at **Annexure P-9.1** should also be elaborated/ detailed out in sub-regional plans and local level plans like Master/ Development Plans, etc.

9.4.48 Key Projects:

Specific projects envisaged to be taken up in the NCR for rural development are listed in **Table 9.10**, but not limited to:

 Table 9.10: Major Projects and Schemes Envisaged for Development of Rural Areas in NCR (2021-2041).

S. No.	Proposed Projects	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
1.	Projects for the development of rurban clusters with growth centers through ICAPs.	At least 25 percent districts to be covered with ICAPs	At least 50 percent districts to be covered with ICAPs	At least 75 percent districts to be covered with ICAPs	100 percent districts to be covered with ICAPs
2.	Projects for the setting up of the Common Service Centres (CSC) in all rural areas.	All large rural settlements or rurban clusters	100 percent NCR villages to be covered.	-	-
3.	Projects to develop infrastructure that support and improve micro and household enterprises in rural settlements in the NCR.	Two districts in each sub- region of UP, Haryana and Rajasthan.	50 percent of the NCR districts should be covered.	75 percent of the NCR districts should be covered.	100 percent of the NCR districts should be covered.
4.	Projects for ensuring optical fiber connectivity	50 percent optical fiber	100 percent optical fiber	-	-

S. No.	Proposed Projects	Phase –I (2021-2026)	Phase –II (2026-2031)	Phase –III (2031- 2036)	Phase –IV (2036- 2041)
	in all rural areas of the NCR.	connectivity to all rural areas of the NCR.	connectivity to all rural areas of the NCR.		
5.	Projects for the establishment of facilitation centres for skills development and mapping.	To be implemented in Class-I cities and 50 percent districts of the NCR.	To be implemented in remaining cities and large rural settlements, all districts of the NCR.	-	-
6.	Projects for Rural Road Development	To be undertaken in all districts by 2025	-	-	-
7.	Projects for Rural Electrification	To be undertaken in all districts by 2026	_	-	-
8.	Projects for Rural Water Supply	To be undertaken in all districts by 2024	-	-	-
9.	Projects for Rural Housing other than PMAY.	To be undertaken in all districts by 2025	-	_	

Chapter 10

HEALTH

10.1 Introduction

- 10.1.1 The 'Right to Health' is a fundamental right and hospitals are included under the purview of the Consumer Protection Act, ensuring timely and emergency care for patients in all hospitals (the patients can approach the Consumer Forums to redress grievances); and actions are taken against cases of negligence.
- 10.1.2 Healthcare has become one of India's largest sector, both in terms of revenue and employment. Healthcare comprises hospitals, medical devices, clinical trials, outsourcing, telemedicine, medical tourism, health insurance and medical equipment, etc. The Indian healthcare sector is growing at a brisk pace due to its strengthening coverage, services and increasing expenditure by public as well private players. The healthcare market can increase three-fold to Rs 8.6 trillion by 2022.¹
- 10.1.3 'Health' is the one of the key aspect for Sustainable Development. Principle-I of the Rio Declaration on Environment and Development states that "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature". Thus, the 2030 Agenda for Sustainable Development Goal (SDG-3) of the of the United Nation's, adopted by all UN Member States in 2015 to ensure healthy lives and promote wellbeing for all at all ages by achieving Universal Health Coverage, including financial risk protection, access to quality essential health care services, medicines and vaccine for all; Interaction with economics, other social and environmental SDGs and SDG-17 on means of implementation. Maternal Mortality Ratio, Neonatal Mortality rate, Infant Mortality Rate, Under 5 Mortality Rate and Total Fertility Rate are the Key Health Indicators in India. The SDG targets to halve the number of global deaths and injuries from road traffic accidents by 2020 and to reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being by 2030.
- 10.1.4 The Universal Health Coverage (UHC) vision in India proposes that every citizen be entitled to essential healthcare services. Besides being inclusive, all the services are slated to be delivered at affordable costs, so that people do not suffer financial hardships in the pursuit of good health. The Government is mandated to act as not only the provider of health and related services, but also the guarantor and enabler. Elements of UHC are given at **Anenxure-D-10.1**.

10.2 Existing Status

- 10.2.1 In NCR there are about 150 Govt. hospitals, more than 200 CHCs, and above 580 PHCs. In Haryana sub region, districts like Palwal, Mewat and Sonipat have only one district level hospital whereas others districts like Gurugram, Faridabad and Jind has more than 3 district hospitals. Similarly in UP & Rajasthan sub regions Baghpat, Alwar&Bharatpur districts have only one district hospital each, in comparison to other district like Bulandshahr, and Ghaziabad. There are over 2000 private and charitable health facilities including multi-specialty hospitals, general hospitals, nursing home etc. in the National Capital Region. An overview of sub-region wise Health infrastructure in NCR given at Annexure –D-10.1.
- 10.2.2 NCR has about 177 blood banks both government owned (50) and private sector operated (127) in the region. Besides there is also an eRaktKosh portal a Centralized

¹ Source: <u>https://www.ibef.org/industry/healthcare-india.aspx</u>

Blood Bank Management System² to connect, digitize and streamline the workflow of blood banks across the nation. e-RaktKosh enforces Drug & Cosmetic Act, National blood policy standards and guidelines ensuring proper collection & donation, effective management and monitoring the quality and quantity of the donated blood. There are about 19 trauma centers in NCR (NCT Delhi-08, Haryana subregion-03, U.P. sub region-05 & Rajasthan sub region-03) with bed capacity of 426, nursing staff of 128 and 62 doctors catering to the need of trauma patients. Assessment of Blood bank and trauma centers in NCR given at **Annexure D-10.1**.

- 10.2.3 Traditionally in India, doctors and healthcare providers act as the custodians of patient information and data. With the advent of Internet of Things (IoT), wearable technology, and smart devices, this too is changing. Digital transformation has revolutionized every industry including Healthcare. It is helping to live longer and lead safer, healthier, more productive lives. A connected ecosystem of sensors and devices on and around the individual serve the function of Capture and Measure, Identify, stratify risk, Inform, Make Decision and Take Action. Healthcare technologies, such as, Telemedicine, Artificial Intelligence, Electronic Medical Virtual Reality Records could save lives for decades to come. This aspect could be taken forward.
- 10.2.4 Along with the public sector healthcare services, private, co-operative and other nonprofit organizations are also medical services to the public. The Government agencies have to ensure the enforcement of quality healthcare standards for such a diverse sector.
- 10.2.5 Most developed countries have a widespread insurance network in the healthcare sector. In India, the insurance industry is now picking up. The percentage of the Indian population having health insurance policies is very low, and there are very few companies offering insurance in the healthcare sector. Nonetheless, it is expected that insurance will play a major role in the Indian healthcare system in the near future.
- 10.2.6 India, the land of Ayurveda, has a wide variety of special treatments to offer. In addition, there are hospitals practicing modern medicine that provide quality service at an affordable cost. When compared to the expense of medical treatment in Western countries, India's facilities for treatment, natural beauty and tourist destinations across the country will make it a popular 'Health Tourism' destination for healthcare seekers.
- 10.2.7 Snapshot of best practices of PPP in Healthcare sector in India and abroad are given in **Annexure –D-10.2.**
- 10.2.8 In the year 2006, the Quality Council of India, through the National Accreditation Board for Hospitals (NABH) had come out with hospital standards that are applicable to Indian hospitals. The likelihood of an insurance boom in the healthcare sector and the potential for health tourism are important reasons for accrediting the hospitals. Therefore, accreditation and quality health service will be the main agenda of hospitals in the years to come.

10.3 Key Issues and Challenges

10.3.1 In 2017, NITI Aayog initiated an in-depth assessment of the Indian healthcare system and key opportunities for systematic transformation which was validated and refined with more experts and stakeholders in 2018. Its key findings was the India's health system is lagging behind comparable countries on various aspects such as Current Health Expenditures as percentage of GDP; Fiscal Health Expenditures as percentage of GDP; Out-of-pocket expenditure percentage of current health

²https://www.eraktkosh.in/BLDAHIMS/bloodbank/about.cnt

expenditure; Neo-Natal Mortality; Global Healthcare Rank; Burden of Disease (DALYs per 100,000 population).

- 10.3.2 NCR like the country is also to catch-up on Healthy Life Expectancy (HALE) index. Indian health sector is fragmented (Payers, Providers and Digital) leading to lower performance than other countries at similar per capita income. India also has higher medical inflation than global/Asia average. India ranks low (3.6%), with regards to out of pocket spending as share of total health expenditures percentage and public expenditure on health as share of total GDP percentage. Lower performance of Indian healthcare is due to a vicious cycle of severe fragmentation such as Risk-Pooling/ Insurance, Strategic Purchasing and High levels of fragmentation of Organization of care/delivery, Digital Health landscape, etc.
- 10.3.3 There is a huge opportunity in healthcare sector as World Bank predicts a shortage of 80.2 million workers by 2030 globally and India will need 2 million doctors and 6 million nurses by that time. A recent survey by Boston Consulting and CII States that Indian healthcare sector will generate 40 million new jobs by 2020. Shortage of qualified doctors and nurses, and healthcare infrastructure is a major challenge considering the large and fast-growing population. As per Directorate of State Health Services & National Health Profile, 2018, against the WHO standard of 1 doctor /1000 persons, the NCR states of Uttar Pradesh (1/ 19,962), Haryana (1/10189), Rajasthan (1/10,976) and even NCT of Delhi (1/2203) lag far behind. A note on Shortage of Doctors is also provided at **Annexure—D-10.3**.
- 10.3.4 Hospitals, dispensaries, public health centers and other medical facilities are not sufficient to cater to the growing needs of NCR population. Furthermore, the infrastructure required in the hospitals, like medicine, equipment and furniture are not adequate to serve the population. Compounding the problem is the government spending on healthcare services which was 3.6 % of its GDP in 2018, which is not up to the WHO norms of 5% of gross domestic product in healthcare.
- 10.3.5 Govt. of India has planned a system reform to drive both health outcomes and economic benefits targeting saving more than a million additional infant deaths, reduction of adult deaths by up to 16% by 2030, increasing economic growth up to ~30% over current trajectory by 2030, reduction in Out of Pocket (OOP) expenses to 45% by 2030 and saving at least 1.5 million additional households from poverty, amongst others.
- 10.3.6 Challenges in health sector are observed due to poor referral mechanism, less number of hospitals adopting it, lack of trained manpower, poor network of Ambulance, lack of accidental trauma centres with trained critical care specialist, etc. (refer note on Poor Referral system provided at **Annexure-D-10.4**.
- 10.3.7 Another important aspect of planning is how to deal with burgeoning population of NCR. It is quite apparent that the health system in Delhi and surrounding cities like Gurugram, Faridabad, Noida, etc. is faced with multiple challenges. These include steady streams of 'floating' populations from the neighbouring regions/states who come to these cities to seek treatment for emergencies and for general healthcare needs; vulnerable groups such as the homeless, or those engaged in high risk livelihoods; and a growing share of the aged populace requiring assistance amidst fragmenting social support systems. Another issue arising due to large patients from outside NCR is the unorganized manner they reside in areas around the big hospitals, due to lack of designated facilities for this purpose.

- 10.3.8 Patient safety has been increasingly recognized as an issue of global importance and NCR has to follow the same.
- 10.3.9 Safety of doctors and hospitals is increasingly becoming a matter of concern. NCR has to show the way.
- 10.3.10Air ambulances network by reputed hospitals and even by Govt. hospitals can be foreseen in next 5-10 years and processes need to be built.

10.4 Policies and Proposals

- 10.4.1 Ministry of Health and Family Welfare (MoHFW) has also launched a flagship scheme 'Ayushman Bharat', as recommended by the National Health Policy 2017, to achieve the vision of UHC. This initiative has been designed to meet SDGs and its underlining commitment, which is to "leave no one behind." This scheme aims to undertake path breaking interventions to holistically address the healthcare system (covering prevention, promotion and ambulatory care) at the primary, secondary and tertiary level health facilities. Brief facts about 'Ayushman Bharat' are provided at **Annexure-D-10.5**.
- 10.4.2 Govt. of India has established Jhajjar Extension campus of AIIMS New Delhi (AIIMS-II) which is developed as the largest Medical Education center for medical super-specialties in the World³. Government has also established National Cancer Institute (NCI) within the campus of AIIMS Jhajjar. Further, in February 2019, the Government of India proposed a new All India Institute of Medical Sciences (AIIMS) at Manethi, District Rewari, Haryana at a cost of Rs 1,299 crore.
- 10.4.3 The National Ambulance Code by Govt of India in 2014, (refer **Annexure-D-10.6**) launched by the MoRTH, in collaboration with the MoHFW provides the minimum standards and guidelines for the construction and functionality of road ambulances. The four variants of road ambulances approved under this include, Medical First Responder (Type A); Patient Transport Vehicles (Type B); Basic Life Support Ambulance (Type C) and Advanced Life Support Ambulance (Type D).
- 10.4.4 The Indian Public Health Standards (IPHS) for Sub-centres, Primary Health Centres (PHCs), Community Health Centres (CHCs), Sub-District and District Hospitals were published, 2007 and have been revised in 2012. IPHS are a set of uniform standards envisaged to improve the quality of health care delivery in the country. Further, detail guidelines are prepared for various categories of health facilities⁴. The existing facilities have to be checked w.r.t these norms and then deficiency has to be worked out. Norms are provided as per no of beds per unit population and need to be related to the current norms to check adequacy.
- 10.4.5 The Indian medical education system has been able to double the numbers of MBBS graduate (modern medicine training) positions during recent decades. With more than 535 medical colleges, India has reached the capacity of an annual intake of more than79,000 MBBS students at medical colleges regulated by the MCI (now NMC). Additionally, India produces medical graduates in the "traditional Indian system of medicine," regulated through CCIM. Considering the number of registered medical practitioners of both modern medicine (MBBS) and traditional medicine (AYUSH), India has already achieved the WHO recommended doctor to population ratio of 1:1,000 the "Golden Finishing Line" in the year 2018 by most conservative estimates. During 2017, 1.33 billion of Indian population was being served by 1.8 million registered medical graduates. So, the ratio was 1.34 doctors

³<u>http://www.indiascienceandtechnology.gov.in/organisations/centres-of-higher-learning/aiims/all-india-institute-medical-sciences-aiims-jhajjar</u>

⁴Source: <u>https://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=971&lid=154</u>
for 1,000 Indian citizens as of 2017⁵. However, modern medical graduates are less then WHO norms. Further, most of them prefer to live and work in urban areas leading to huge shortage in backward districts and rural areas.

- 10.4.6 The MoHFW is administering a centrally sponsored scheme to establish new Medical Colleges attached with existing District/ Referral hospital in underserved areas of the country. In this regard MoHFW has come up with guideline for establishment of New Medical Colleges attached with existing District/Referral hospitals. Brief of the guidelines given at **Annexure-D-10.7**. Projects are already sanctioned for construction of 04 new Medical colleges attached to existing District Hospitals in Bhiwani (Haryana), Bulandshahar (UP), Alwar and Bharatpur (Rajasthan) districts of NCR⁶.
- 10.4.7 Similarly, for nursing staff it is important for all hospitals of 100 beds and above to should have a nursing college mandatory.
- 10.4.8 Comprehensive facts about above and some other heath sector related initiatives of the Govt. of India and NCR participating states are placed at **Annexure-D-10.8**.
- 10.4.9 Two key prerequisites for any initiative towards Health care planning would include, analysis of the deficits in the health infrastructure (both healthcare facilities-primary, secondary, tertiary, as well as the required skilled adequate manpower e.g. Doctors, Nurses, para medical staff etc. to run the same), and then the financial resources to arrange for the required infrastructure.⁷ Through assessment of same, States should aim for Good Health Outcomes, Financial Protection, Patient satisfaction and regional competitiveness in Health Systems. Objective should be to make Health Care in NCR region, affordable and accessible to all.
- 10.4.10 NCR States may adopt PPP policy for improvement of health care facilities and standardize healthcare, while maintaining a high quality of services, in turn, raising the life expectancy and mortality rates. States also to ensure required number of Health Care Centres needed including AYUSH and assist in provision of comprehensive healthcare delivery system, under the national flagship program of Pradhan Mantri Arogya Mitra.
- 10.4.11 NCR States should adopt IPHS guidelines for strengthening the Public Health Care Institutions and put in their best efforts to achieve high quality of health care across the country.

10.4.12 Health Infrastructure

- 10.4.12.1 Every hospital be equipped with the capability to provide disease specific acute care like stroke centres, neurosurgical centres, and Trauma Care Centre with all diagnostic and treatment facilities for accident cases etc. along with adequate number of ambulances.
- 10.4.12.2 All Hospitals need to follow the National Ambulance Code, 2014 with the required four variants of road ambulances. In addition, possibilities of Air Ambulances should also be introduced.
- 10.4.12.3 Healthcare facilities of the neighbouring States (especially in NCR districts) to be strengthen to reduce the burden on the tertiary care facilities in Delhi. States need

⁵http://www.jfmpc.com/article.asp?issn=2249-

^{4863% 3}Byear% 3D2018% 3Bvolume% 3D7% 3Bissue% 3D5% 3Bspage% 3D841% 3Bepage% 3D844% 3Baulast% 3DKumar#:~ :text=World% 20Health% 20Organization% 20% 28WHO% 29% 20has,population% 20ratio% 20as% 201% 3A1% 2C000. ⁶Source: https://pib.gov.in/PressReleseDetailm.aspx?PRID=1595204

⁷ Source: Ms. Preeti Pant, Joint Secretary, Ministry of Health and Family Welfare, National Urban Heath Mission

to strengthen the private hospitals, as about 70-80% healthcare services are provided by private sector.

- 10.4.12.4 Medical functional agglomeration areas be built in potential areas/districts. However, a Community Clinic in each ward, Medical first-aid centre accessibility within a radius of 3km in the main city and new townships, and within a radius of 10 km in suburbs be ensured.
- 10.4.12.5 At least one Hospice be created in each district for rural areas and separately in each town/ city in the districts. All public and private hospitals to have Geriatric Clinics and Palliative Care Clinic for addressing the need of ailments arising because of ageing and non-communicable diseases.
- 10.4.12.6 Each district should also have a Medical College and Nursing training centre. Such college & Nursing training centre be equipped with quality hostels/ accommodation facilities. Further, efforts be made by the NCR States to ensure adequate Nursing hostels and accommodation for para medical staff. NCR participating States should get benefits of the scheme to establish new Medical Colleges attached with existing District/ Referral hospital.
- 10.4.12.7 It be ensured that each Hospitals should have capacity to deal with disaster management or emergency services.
- 10.4.12.8 Dilapidated Health infrastructure in NCR as identified by States could be taken up for improvement and up-gradation to Healthcare Wellness Centres, by dovetailing the resources of NCRPB with that of MoHFW under its National Urban Health Mission (NUHM). For Monitoring of such projects there could be a convergence mechanism between NCRPB and MoHFW over the infrastructure requirement and completion. Monitoring committee thus constituted can monitor finance utilization and time overruns.
- 10.4.12.9 It may be ensured that Hospitals and health centers, etc. both existing and planned must be equipped with latest medical equipments& machinery, life support systems, personal hygiene & safety kits, etc. Such facilities should be regularly monitored for functionality.

10.4.13 Support Mechanisms

- 10.4.13.1 Health departments may develop brief, standardized data entry protocols suitable for different platforms (mobiles, smart phones, tablets, PCs, etc.) and data flow that can be coordinated through the District Program Management Units (DPMUs). A committed data user community could be identified, involving interested sections of the health administration, academia and civil society for aiding Evidence-Based Decision-Making.
- 10.4.13.2 State health departments may coordinate with Indian Council of Medical Research (ICMR) and develop and help realize the potential of (1) Artificial Intelligence in Healthcare (2) Next-generation digital healthcare systems (3) Engineering healthier environments at workplace (4) Future affordable and inclusive healthcare solutions and (5) Technologies to improve healthcare treatment⁸.
- 10.4.13.3 States should develop 'Testing Mechanisms' and efficient & quality testing systems for common citizen. Ensure awareness for laboratory system for of food/drug adulterants identification/ testing for timely results of collected food samples be encouraged to ensure quality food consumption. Efforts be made to

⁸Dr. ChanderShekhar,Head, Innovation &Translation Research, Indian Council of Medical Research, New Delhi

ensure Mobile Testing Labs availability in urban areas as well as remote locations.

- 10.4.13.4 Ambulances movement be allowed across state borders as emergency vehicles at all times.
- 10.4.13.5 Trauma Care network Considering the very high accidents and mortality rate it is recommended to have Trauma Care facilities in every 50 km. on Public Private Partnership (PPP) or any model with facilities like 24x7 blood banks, residential/ rest facilities for emergency doctors, diagnostic facilities, x-ray, city scanning, pathology, other basic facilities, etc. Vehicle recovery facilities with cranes also be provided 24x7. Further, Telemedicine link up with super specialist, a tertiary care centre if required in few cases, should also be considered.
- 10.4.13.6 Indian Red Cross Society may under its efforts benefiting people in NCR may maintain a dynamic NCR Blood Donors Portal, getting real-time updating of available number of units of different blood groups, screened for diseases, etc., along with lists of active blood donors with their updated phone and contact details. Portal could also have the ambulances network (all types) to pick up and drop the donors; network of government dispensaries in NCR, linked with it. Alongside, a map indicating 'Trauma Care Facilities' along road/ expressways network with information on distances from these roads be also added in the portal. This can be linked with NCR Geo-Portal.

10.4.14 Service Delivery Mechanism

- 10.4.14.1 Highly fragmented Service delivery (> 80% care delivery from private sector) warrants exploring possibility of combining delivery models with provider consolidation under strategic purchasing. Critical actions to reduce fragmentation in services delivery in NCR may include enabling aggregation of providers to offer people centered care financed through a capitation model; Innovative platform organization models to cluster/aggregate/ support/manage small providers; and Transformative delivery models.
- 10.4.14.2 Universal Telemedicine platform be created/ expanded through awareness, followed by Tertiary Care. Possibility of making Tele-consultation mandatory for all in the first instance, irrespective of income, status, etc. before coming to tertiary or referral hospitals, be looked into. Aspect of patient privacy be covered with exempted categories as may be required (e.g. protected persons, ladies with pregnancy etc.).
- 10.4.14.3 Setting up of E-Health Record System and Health mapping System on Cloud.
- 10.4.14.4 Every Village Citizen Service Centres (CSCs) in NCR should have tele-medicine facility. This can play a big role in helping in tele-medicine and reducing medical and transportation costs for villagers.
- 10.4.14.5 Explore and encourage a system of online payments upfront, before consultations are initiated online and online issuance of signed prescriptions could be in encrypted form.
- 10.4.14.6 To reduce waiting times, a pool of volunteer doctors/ paid partially or fully by govt., could be created. IMA may explore this possibility, through recruitment/enlisting of young graduates for NCR. Online registration system can tackle proper referral mechanism and OPD time. Prior patient data collection via online system/web portals, initiation of screening OPD by interns/ medical officers/ Junior residents; initiation of evening OPDs; block appointment system instead of fixed time to accommodate short time delays; appropriate signage in each OPD, could also be adopted.

- 10.4.14.7 Explore options/ rule amendments to enable the Pharmacy rules to allow prescription of drugs beyond over-the counter drugs except restricted drugs.
- 10.4.14.8 Establish an International Level Central Public Health University in NCR for monitoring of existing courses as well as affiliation for distance education. Standardize the courses and further improve the requirement of primary health care by providing qualified health workers in the area of health prevention and health promotion.
- 10.4.14.9 Large hospitals be planned in city periphery, the Cluster Approach with Ancillary facilities/services (diagnostic, therapeutic, and custodial etc.), along with hospitals be adopted for all existing/proposed Health Care Facilities. Brief of ancillary services given in **Annexure P-10.1**.
- 10.4.14.10 Delhi and Gurgaon are emerging as a destination for medical tourism in India. Government as well as private players are keenly assessing the potential and means to tap the same. Legal framework to promote medical tourism may be prepared. Hence, it is important to look at health from promotional point of view. NCR States may take necessary actions to promote 'Health Tourism' in the region.

10.4.15 **Other Aspects:**

- 10.4.15.1 In-Service training be made essential for medical and paramedical staff. The routine curriculum should include Patients Safety, Hospital Services information, Emergency Medical Response and Disaster management.
- 10.4.15.2 For hospital designing, a branch/ module on Hospital architecture may be established for hospital designing skill and all Architecture Schools to promote and introduce Hospital design assignments as mandatory. Specific Certificate course on hospital designing could be introduced.
- 10.4.15.3 Most diseases can be prevented through making lifestyle conducive to health. Stress and mental health problems due to lifestyle issues need attention as these affect both physical and mental health. Hence, alongside efforts for control and prevention of infectious diseases, programs focusing on essential lifestyle and behaviour changes are also required.
- 10.4.15.4 Malnutrition is an issue which is overlooked. In this context, efforts be made in line with the National Nutrition Strategy released by NitiAayog (refer Annexure P-1.1) Explore possibility of having an NCR Health Registry with details of type of patients and location or residence, etc., amongst others. Efforts be made to upgrade Electronic Health Record System in coordination with IT sector. Facilities under the National Health Mission include the Health Management Information System which can be implemented in NCR.
- 10.4.15.5 Every sub centre and PHC in NCR be made into health and wellness centre by 2023, as per Niti Aayog guidelines.
- 10.4.15.6 All public and private health centers should confirm to IPHS standards by 2024 in phased manner.
- 10.4.15.7 The number of quality Tertiary health care facilities outside CNCR should be increased to reduce the load on Delhi.
- 10.4.15.8 One more AIIMS in UP sub-region and one in Rajasthan sub-region. For every cluster of 4 districts there should be one AIIMS like facility either on govt. or private sector. In these priority be given to the local people. NCR people should be given preference in such AIIMS in the NCR area outside Delhi, but only after they do initial tele-medicion.

- 10.4.15.9 Every hospital with 100 beds should start diploma courses through national board of examination, especially in Govt. hospitals. So that NCR can get good and trained medical practitioners. There should be mandatorily nursing and paramedical college to train workforce.
- 10.4.15.10 Every hospital should have hospital management system along with electronic medical records on cloud which should be paid on "software as a service (SAAS)" model.
- 10.4.15.11 First consultation with the online. Physical consultation should....
- 10.4.15.12 Every patient living in NCR should have their medical records in their phone so that they need not to carry think files during out-patient visit.
- 10.4.15.13 Every patient how get discharge from hospital should be ensured an online consultation with the responsible doctor of that hospital within a week of discharge.
- 10.4.15.14 Patient medical records in the phone should be part of electronic medical records of the hospital.
- 10.4.15.15 Critical care in non-peak hours of hospitals:- After 6 pm till next 8 am should be managed by Intensivists from home, each intensivist working for just four hours in on-line shifts, an each Intensivists can cover several hospitals. Intensivists should have access to patient medical electronic records (EMR) from anywhere from their mobile phones.
- 10.4.15.16 5% of the GDP of the 8% NCR's health allocation of overall GDP of the central and State govt should spend. Of the overall 5%, delhi 5%, Central 8% of 5% of GDP and NCR states 5% of the state GDP should be allocated to the as per their share of total area of the state.

10.4.16 Major Projects and Implementation Strategies

- 10.4.16.1 Universal Telemedicine platform be created/ expanded through awareness, followed by Tertiary Care by 2023.
- 10.4.16.2 Medical Certification of causes of death be made mandatory across NCR. Necessary guidelines/ notifications be issued by the NCR States by 2022.
- 10.4.16.3 National Patient Safety Implementation Framework (NPSIF) be implemented by 2022 in NCR.
- 10.4.16.4 'NCR Health Registry/ Health Directory with details of type of patients & doctors and location or residence, etc., amongst others are prepared.

10.4.16.5 Key projects

Specific projects envisaged to be taken up in NCR regarding Health sector are given at **Table 10.1** below, but not limited to:

Table 10.1: Key	y projects envisaged t	o be taken up regardi	ing Health sector in	NCR (2021-2041)
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SI. No	Proposed Projects/Policies	Phase –I (2021- 2026)	Phase – II (2026- 31)	Phase – III (2031- 2036)	Phase –IV (2036- 2041)
1.	Project/ Scheme for upgrading existing hospitals and medical facilities (to provide disease specific acute care like stroke centers, neurosurgical centers, Geriatric Clinics and Palliative	To be done by 2026	_	_	-

Sl. No	Proposed Projects/Policies	Phase –I (2021- 2026)	Phase – II (2026- 31)	Phase – III (2031- 2036)	Phase –IV (2036- 2041)
	Care Clinics, etc.)		- /		
2.	Project/ Scheme for up-gradation of existing Trauma Care Center (with all diagnostic and treatment facilities for accident cases etc. along with adequate number of ambulances) and development of fully equipped new Trauma Care Center accessible within golden hours, with blood bank etc.	To be done by 2026	-	-	-
3.	Medical functional agglomeration areas with Ancillary facilities/ services (diagnostic, therapeutic, and custodial etc.)	up in each district	-	-	-
4.	Project/ Scheme for upgrading/ improving or having Community Clinic and/or Healthcare Wellness Centres in each ward	In all Class-I & II cities and large rural clusters.	All urban areas and rural clusters	-	-
5.	Project/ Scheme for development of Hospice / Geriatric Clinics and Palliative Care Clinics	At least one in each district	-	-	-
6.	Project/ Scheme for having Medical College and Nursing training centre	At least one in each district	-	-	-
7.	Project/ Scheme for having Nursing hostels and accommodation for para- medical staff.	50% of the Hospitals in each districts to be covered	Remain ing Hospita Is in NCR to be covered	_	_
8.	Project/ Scheme for Establish an International Level Central Public Health University in NCR	To be ope 203	rational 1	-	-
9.	Scheme for creating Medical registry of patients and Medical registry of health service providers on "software as a service (SAAS)"	To be ope 202	rational 6		

Chapter 11

Education and Skill Development

11.1 INTRODUCTION

- 11.1.1 Education continues to be an area of importance for the successful and balanced development of a region. While planning for the education sector, both, quantity and quality of infrastructure are equally important, along with the spatial spread and quality of service delivery. While information technology could be an enabler, the kind of pedagogy teachers adopt and the kind of learning process that takes place in an institution is important for the desired final outcome of education process. Adapting with changes over the last two decades, the education sector has evolved substantially. Alongside education, skill development, which has also emerged as a new category to be addressed, has also been considered in this section. (refer **Annexure D-11.1**).
- 11.1.2 Agenda for 2030 for Sustainable Development, amongst its 17 Goals, includes the education goal (SDG 4), which is to ensure inclusive and equitable quality education and promote 'lifelong learning opportunities for all'. Therefore, there is a need for the NCR to move forward in this direction as well.
- 11.1.3 Technology is fast changing and would require a different kind of skill sets and job structure to keep pace with the changing times. There is a need to plan in terms of manpower which can cater to both evergreen conventional technology as well as new and emerging technology. For example, in the construction sector, instead mixing material individually, a gradual shift towards technology where use of pre-fabricated materials and light materials, is being made. The kind of manpower who are working here are from rural background with rural aspirations as well as urban aspirations. Skill is dynamic and keeps on changing; hence Government policies on skilling should be in sync with requirements of specific industries and sectors and the population of the region needs to be skilled accordingly.
- 11.1.4 Along with education, skilling has become a major factor in improving the employment probability, for those who see education not only as a path to enhance learning but also, to help in earning a living. Hence, skills and skilling strategy is important for having a future ready NCR. The developing technologies require manpower equipped with both hard and soft skills which should, therefore, be incorporated in long term and short term training programmes.

11.2 EXISTING STATUS

11.2.1 Literacy Scenario of the Region

- 11.2.1.1 As per 2011 Census, among 23 districts and NCT of Delhi constituting the NCR, Mewat district in Haryana with 56.1 percent and Shamli district in uttar Pradesh sub region with 58.7 percent are the two districts with the lowest literacy rates, while New Delhi district of NCT of Delhi has the highest literacy (89.4 percent).
- 11.2.1.2 There are 3 districts in the region where literacy rates are in the range of 60-70 percent and these districts are Karnal in Haryana, Muzaffarnagar in Uttar Pradesh and Bharatpur district in Rajasthan.
- 11.2.1.3 There are 7 districts in the region where literacy rates are in the range of 70-75 percent

and these districts are Palwal and Mahendergarh in Haryana, Baghpat, Bulandshahr, Hapur and Meerut in Uttar Pradesh and Alwar district in Rajasthan.

- 11.2.1.4 Panipat in Haryana is the only district in NCR that has literacy rates between 75 and 80 percent.
- 11.2.1.5 All the rest of the districts (including whole of NCT Delhi), have literacy rates above 80 percent.

11.2.2 Schools in the Region

- 11.2.2.1 In the National Capital Region as per 2016-17 UDISE data there are 45,261 elementary schools and 12,200 secondary/ Higher Secondary schools.
- 11.2.2.2 These include 5,727 elementary schools and 2,087 secondary/Higher Secondary schools from 9 districts of Delhi, 14,150 elementary schools and 5,203 secondary/higher secondary Schools from districts of Haryana sub region, 17,039 elementary schools and 1,985 secondary/higher secondary schools from districts of Uttar Pradesh sub region and as many as 8,345 elementary schools and 2,925 secondary/higher secondary schools in Rajasthan sub region of NCR.
- 11.2.2.3 It can be seen that average number of elementary schools in Delhi are about 636 per district while average number of secondary/higher secondary schools in Delhi are about 232 per district. In Haryana the average number of elementary and secondary/higher secondary schools per district are about 1,088 and 400 respectively. In Uttar Pradesh average number of elementary and secondary/higher secondary schools per district are about 2519 and 248 respectively. Rajasthan subregion having two but large district in NCR has 4,172 elementary and 1,462 secondary/higher secondary schools, per district.

11.2.3 Access to Elementary and Secondary Education

- 11.2.3.1 In the National Capital Region, it has been found that number of elementary schools per lakh population was 74.44 in 2016-17, while the same for secondary/higher secondary schools was 20.06. It is surprising to note that number of govt schools per lakh population in Delhi is the lowest at elementary (34.11), while in Uttar Pradesh it is lowest at secondary/higher secondary level (9.27). However, in Alwar district of Rajasthan number of elementary and secondary/higher secondary school are highest in the NCR which are 134.59 and 47.18 respectively.
- 11.2.3.2 As far as number of schools per sq kilometre area is concerned, in NCR there were only 0.83elementary schools and 0.22 secondary/higher secondary schools in 2016-17.In this regard, the position of the districts in Delhi is the best, where it has been found that there are 3.86 elementary schools and 1.41 secondary/higher secondary schools per square kilometre area.

Table 11.1: Elementar	y Schools and	Secondary	Schools in	NCR Region	in 2016-17
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District/State	No. of Elementary Schools (per Lakh Population)	No. of Secondary Schools (per Lakh Population)	No. of Elementary Schools (per Sq. Km.)	No. of Secondary Schools (per Sq. Km.)
Delhi	34.11	12.43	3.86	1.41
Haryana	86.28	31.72	0.59	0.22
Uttar Pradesh	79.62	9.27	1.08	0.13
Rajasthan	134.59	47.18	0.62	0.22
NCR	74.44	20.06	0.83	0.22

Source: UDISE 2016-17, NIEPA, New Delhi

11.2.3.3 In Uttar Pradesh there are 1.08 elementary schools and only 0.13 secondary/higher secondary schools per square kilometre area. The situation in elementary education is relatively worse in Haryana and Rajasthan where there are only 0.59 and 0.62 schools per square kilometre area while the situation in secondary /higher secondary education is relatively better than Uttar Pradesh where there are 0.22 schools each per square kilometre area.

11.2.4 Government and Private Schools

- 11.2.4.1 As far as elementary schools are concerned in 17 out of 23 NCR districts in three states, the government schools are more than the private schools. These districts include 11 districts from Haryana (out of 13), 4 districts from Uttar Pradesh (out of 8) and both the districts from Rajasthan. In the whole NCR region are Mewat district (84.2 percent) in Haryana has the highest percentage of government elementary schools followed by Mahendergarh (71.7 percent). However, Faridabad district (30.3) again in Haryana has the lowest percentage of government elementary schools in the region.
- 11.2.4.2 At secondary level, the percentage of government schools is relatively quite less. Out of 23 districts in three states of NCR region in only Mewat district's percentage of government schools (secondary/higher secondary) is more than 50. In Uttar Pradesh not even one district (out of 8 in NCR) has even 15 percent government secondary/higher secondary schools. Baghpat district has highest percentage of government secondary/higher secondary school in Uttar Pradesh (12.9 percent) followed by Shamli district (12.5 percent). Gautam Budh Nagar district (3.3 percent) in Uttar Pradesh has the lowest percentage of government secondary/higher secondary schools in the NCR.

District/ State	Elementary		Secondary/H.Secondary			
	Govt.	Private	Govt.	Private		
		Delhi				
East Delhi	48.3	51.7	59.1	40.9		
Central Delhi	50.6	49.4	32.2	67.8		
New Delhi	58.9	41.1	54.5	45.5		
North Delhi	53.3	46.7	51.3	48.7		
North- East Delhi	36.9	63.1	62.7	37.3		
North- West Delhi	57.1	42.9	54.0	46.0		
South Delhi	51.7	48.3	61.3	38.3		
South- West Delhi	45.3	54.7	45.3	54.7		
West Delhi	45.5	54.5	43.4	56.6		
		Haryana				
Faridabad	30.3	69.7	18.6	81.4		
Gurgaon	58.5	41.5	33.3	66.7		
Jhajjar	58.9	41.1	44.0	56.0		
Mewat	84.2	15.8	61.6	38.4		
Palwal	57.7	42.3	33.4	67.6		
Panipat	48.6	51.4	36.9	63.1		
Rewari	70.1	29.9	46.6	53.4		
Rohtak	53.9	46.1	40.8	59.2		

Table 11.2: Elementary Schools and Secondary Schools by Management in NCR Region in 2016-17 (percent)

District / State	Eleme	entary	Secondary/H.Secondary						
	Govt.	Private	Govt.	Private					
Sonipat	57.0	43.0	42.6	57.4					
Bhiwani (including Charkhi Dadri)	68	32	47	53					
Jind	68	32	48	52					
Karnal	59	41	40	60					
Mahendragarh	72	28	42	58					
Uttar Pradesh									
Baghpat	59	41	12.9	87.1					
Bulandshahr	60	40	10.9	89.1					
Gautam Buddha Nagar	41.9	58.1	3.3	96.7					
Ghaziabad	35.5	64.5	5.5	99.5					
Hapur	60.1	39.9	5.3	94.7					
Meerut	48.5	51.5	9.9	90.1					
Muzaffarnagar	44	56	11	89					
Shamli	52	48	12	88					
Rajasthan									
Alwar	56	44	42	58					
Bharatpur	55	45	46	54					

Source: UDISE 2016-17, NIEPA, New Delhi

11.2.5 Enrolment in School Education

- 11.2.5.1 Enrolment at elementary level in the NCR is found to be the highest in Delhi where total children enrolled is 29,88,501 which is followed by Uttar Pradesh (2799184), Haryana (2549300) and Rajasthan (1098240).
- 11.2.5.2 However, keeping in view the number of districts falling in each sub region, the average elementary level enrolment per district in NCR districts reveals that it is the highest in Uttar Pradesh (3,49,898) followed by Delhi (3,32,055) while in Haryana it is lowest (1,96,100). However, Rajasthan having only two districts in NCR, has 5,49,120 children enrolled at elementary level.
- 11.2.5.3 At the secondary level total enrolment in Delhi (12,32,736) is the highest among the NCR followed by sub regions of Haryana (10,00,333), Uttar Pradesh (9,12,068) and Rajasthan (3,98,580). However, average secondary level enrolment per district for NCR sub regions shows that it is also the highest in Rajasthan (1,99,290), followed by Delhi (1,36,970), Uttar Pradesh (1,14,008) and Haryana (76,949).

Table 11.3: Enrolment in Elementary and Secondary Schools in
NCR Region in 2016-17

District/State	Eleme	ntary	Secondary			
	Total	Average	Total	Average		
Delhi	29,88,501	3,32,055	12,32,736	1,36,970		
Haryana	25,49,300	1,96,100	10,00,333	76,949		
Uttar Pradesh	27,99,184	3,49,898	9,12,068	1,14,008		
Rajasthan	10,98,240	5,49,120	3,98,580	1,99,290		

- 11.2.5.4 As far as enrolment at elementary level is concerned in 6 out of 9 districts of Delhi, enrolment in Government schools is more than 50 percent and these districts are East Delhi, North Delhi, North-East, North-West and South Delhi district. In rest 3 districts enrolment in Government schools at elementary level ranges between 37 and 45 percent. Among the 13 NCR districts of Haryana in all but one district i.e. Mewat (79.7 percent), enrolment in government schools is less than 50 percent ranging from 22.3 percent in Faridabad and 27.3 percent in Jhajjar to 44.1 percent in Palwal, and 46.3 % in Jind.. However, in NCR districts of Uttar Pradesh baring Shamli with 43.9 %, not even one district has even 40 percent enrolment in Government schools at elementary level ranging from 21 percent in Ghaziabad to 38.4 percent in Hapur. Even in two NCR districts of Rajasthan, enrolment at elementary level is less than 45 percent in government schools.
- 11.2.5.5 Enrolment at secondary level shows that in NCR out of 9 districts in Delhi enrolment in 7 districts is more than 50 percent in Government schools with about 82 percent in North-East Delhi. In only two district namely Central Delhi (26.3 percent) and New Delhi (43.1 percent) enrolment in Government school is less than 50 percent at secondary level. In rest of the NCR districts in Haryana, Uttar Pradesh and Rajasthan out of 23 districts except Mewat (67.6 percent) and in Haryana enrolment at secondary level in all districts is less than 50 percent in the Government schools. In this regard the position is least in Uttar Pradesh where in any of the 8 NCR districts, enrolment in Government schools is less than 10 percent of the total enrolment in secondary schools. Muzaffarnagar has highest percentage of enrolment in Government school, which is as low as only 8.6 percent while in Hapur it is only 0.7 percent..

11.2.6 Higher Education in NCR Region: Present Status and Future Prospect

- 11.2.6.1 Statistics reveal that Delhi/NCR region contributed to 7.5 percent of India's GDP during the last few years in a row. Paramount to achieving this feat has been the numerous educational institutions in the industrial corridor of the NCR region. The foremost requirements for any educational institution to achieve success are impeccable placement records from reputed corporate companies, involvement in numerous research-oriented activities and the presence of an accomplished faculty. Apart from imparting the academic curriculum, instilling key skills such as personality development, communication and obtaining knowledge regarding the current trends are essential in modern education to produce employable graduates.
- 11.2.6.2 The Delhi/NCR region comprises of several multi-national companies owing to its close proximity to almost 6 northern states of India. Hence, the students can gain vital exposure from the regular collaborations that these companies have with various educational institutes in the vicinity. Out of 903 Universities in the country, around 25 per cent of Universities and out of 39,050 colleges, more than 28 per cent colleges are located in 4 NCR states.
- 11.2.6.3 Besides, the percentages of general colleges are more than the professional and technical colleges in NCR states/region except in Delhi which has also large number of technical and professional education institutions.

State	Uni versi ty	Colleges	General Colleges	Govt. Colleges (%)	Pvt. Colleges (%)	Medical	Technical	Colleges Per Lakh Population	Average Enrolment Per College
Delhi	27	178	8	55.7	44.3	3	7	8	1531
Haryana	40	964	25	20.3	79.7	3	6	30	611
Uttar									
Pradesh	76	6922	44	12.4	87.6	2	10	28	816
Rajasthan	79	2957	48	19.7	80.3	8	6	33	526

Table 11.4: Higher Education Institutions in NCR States in 2017-18

11.2.6.4 College density, i.e. the number of colleges per lakh eligible population (population in the age-group 18-23 years) varies from 8 in Delhi to 33 in Rajasthan as compared to All India average of 28. In larger states such as Rajasthan and Haryana, very few Universities have come up during the period 2017-18. Since enrolment in various programmes at Post Graduate and Under Graduate level has increased over the years in regular mode of education, the average enrolment per college has gone upto as high as 1531 in Delhi leading to high scope for establishment of new colleges in Delhi NCR region. Besides, except in Delhi, where both government and private sector have almost equal share of colleges, in other NCR states, the share of private sector is quite high as compared to government sector (79.7 per cent in Haryana, 87.6 per cent in Uttar Pradesh and 80.3 per cent in Rajasthan). In view of this, there is enough scope for developing NCR region into a major global technological and educational centre in the country by expanding the access to professional and technical education.

11.2.7 Skilled Workforce

11.2.7.1 With NCR region shaping up into a major hub of economic activities, demand for skilled workforce is expected to be huge in coming decades. NCR has already left Mumbai metropolitan area behind in terms of economic activity concentration. It is urbanising at a great pace and a large number of people come to the NCR region in search of employment. Skilled and educated manpower is an important resource for economic development and NCR needs to be ready for the future.

11.2.8 New Initiatives by the Government of India

- 11.2.8.1 The Ministry of Education (MoE), Government of India has recently formulated the "National Education Policy (NEP)", 2020 which envisions an India-centered education system that contributes directly to transforming the nation into an equitable and vibrant knowledge society, by providing high quality education to all. The NEP 2020 aims to make "India a global knowledge superpower" by (a) strengthening the existing school education system by restructuring school curriculum and strengthening early childhood care and education reforms, in curriculum content, effective governance of schools, regulation of schools, etc., (b) increasing GER, restructuring of institutions, adopting multidisciplinary education, improving research, encouraging foreign universities, vocational education, etc. in Higher education and setting up of National Education Technology Forum (NETF). Brief about NEP-2020 is provided at **Annexure D-11.2**.
- 11.2.8.2 The Government of India has also initiated several new programmes to improve the education sector in the country. Some of these initiatives are as follows:

- a. DIKSHA Portal¹, MoHRD has been introduced as a digital platform for the teachers. It is expected to serve as National Digital Infrastructure for Teachers, as, all the teachers nationwide will be equipped with advanced digital technology through this portal. The DIKSHA platform offers teachers, students and parents engaging learning material relevant to the prescribed school curriculum. This national program is a call particularly to individuals & organizations across the country to contribute e-learning resources in the education domain to ensure that quality learning continues for learners across India.
- b. SWAYAM programhas been initiated to achieve the three cardinal principles of Education Policy viz., access, equity and quality. The objective of this effort is to take the best teaching learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. More than 2000 courses can be accessed on it. Even Credit transfer facility of up to 20% is allowed from this portal by AICTE and UGC².
- c. NEAT (National Educational Alliance for Technology) for using technology for better learning outcomes in Higher Education. The objective is to use Artificial Intelligence to make learning more personalised and customised as per the requirements of the diversity of learners. There are a number of start-up companies developing this and MHRD would like to recognise such efforts and bring them under a common platform so that learners can access it easily. Educating the youth is a National effort and MHRD proposes to create a National Alliance with such technology developing EdTech Companies through a PPP model³.
- d. Ministry of Skill Development and Entrepreneurship (MoSDE), has formulated the National Skills Qualifications Framework (NSQF), a quality assurance framework which organizes qualifications according to a series of levels of knowledge, skills and aptitude. These levels are defined in terms of learning outcomes which the learner must possess regardless of whether they were acquired through formal, non-formal or informal learning. This will enable a person to acquire desired competency levels, transit to the job market and, at an opportune time, return for acquiring additional skills to further upgrade their competencies .
- e. NSDC (National Skill Development Corporation) is a Public-Private Partnership Company was set up by Ministry of Finance as a PPP model, for coordinating/ stimulating private sector initiatives in skill development. Conceived as "private sector led", driven by market needs and impart world class skills, its envisioned mission is to open up the "Skills Economy" to make it market led, by initiating a comprehensive change process by innovative approaches for skill development in terms of outreach, throughput, flexibility, labour, market relevance and transparency. The Government of India through MoSDE holds 49% of the share capital of NSDC, while the private sector has the balance 51% of the share capital.
- f. Govt. of India has established various Training and Research Institutions like Central Staff Training and Research Institute (CSTARI) Kolkata, National Instructional Media Institute (NIMI)-Chennai, NIESBUD-Noida, NIEPA-Delhi, National Council for Vocational Education and Training (NCVET), National Institute of Technical Teachers Training & Research (NITTTRs), etc. which are helping in imparting training and

¹<u>https://diksha.gov.in/</u>

²<u>https://storage.googleapis.com/swayam1-pub-data/wqimgtest_def7ed99-3086-48a1-9148-a0dc7ab7d461.pdf</u> ³<u>https://pib.gov.in/Pressreleaseshare.aspx?PRID=1585558</u>

developing course material on various aspects. NCVET has a target of skill training of one crore youth/ annum through apprenticeship, skill training labs in schools and promoting entrepreneurship through YUVA programmes. It also includes STRIVE which is a long term training and SANKALP which is short term training program.

11.3 KEY ISSUES AND CHALLENGES

- 11.3.1 As evident from the above data and analysis, the NCR has specific problems and issues with implications for educational planning, administration and skill development. The key issues and challenges are as follows:
 - 1. The NCR is highly diversified in terms of demographic composition, socio-economic condition and educational development.
 - 2. There is a very high degree of educational disparity among the districts and social groups in the region. The educational facilities and opportunities are concentrated mainly within the national capital, Delhi and few contiguous districts such as Gurgaon, Faridabad and Gautam Buddha Nagar (NOIDA). Other districts serve as satellites to the metropolitan region.
 - 3. The region faces high incidence of migration from other states to the National Capital for education and employment.
 - 4. The region is predominantly urban, with sizeable population living in the urban slums, whose educational needs are different from other groups.
 - 5. A major challenge is to reach the unreached, provide them with quality education, skill and education which can get them a livelihood, either by employment or by entrepreneurship.
 - 6. There exists a big gap between educational institutions in terms of quality of education imparted in the institutions. The common citizen, especially the poor people have to depend on poor quality government Hindi medium schools for education of their wards.
 - 7. The NCR has high and increased privatization of educational facilities of all levels. Delhi has the largest number of good quality private unaided schools. However, the common NCR citizen, especially the disadvantaged and weaker sections, have no or very limited access to these (as provided under RTE Act Section 12 1 (c)).
 - 8. There is lack of co-ordination and convergence between educational bodies and other institutions in the region.
 - 9. Due to paucity of land, many urban areas are facing problem in locating new institutions and expanding the existing facilities, as education infrastructure is land intensive.
 - 10. The COVID-19 pandemic had significantly disrupted various sectors in India including education. Only few of private schools could adopt online teaching methods and the low-income private and government school counterparts, on the other hand, remain non-functional for not having access to e-learning solutions. A large proportion of the student population remained unassessed due to the digital divide. There is an urgent need to evolved technological tools so that students get best learning options in NCR.
 - 11. The estimated demand for skilled labour in Delhi itself stands at about 28.2 Lakh.⁴ Prominent

⁴Shri Manish Kumar, Managing Director, National Skill Development Council (NSDC)

sectors requiring the skilled labour include Transport & Logistics, Retail, Healthcare, Media & Entertainment and Telecom.

- 12. In addition to education, skill development opportunities for all including the disadvantaged groups like elderly, social disadvantaged groups, women, transgender, etc. needs attention. As northern and north part of India is young and shall be aging by 2035⁵, NCR should be ready for an aged NCR and should plan for geriatric care job roles as well.
- 13. As per Periodic Labour Force Survey (PLFS) 2017-18 report, state of Uttar Pradesh has shown highest number of unemployed persons in the country and Rajasthan was at 8th position. Countrywide, almost 61% of the unemployed persons are in the age-group 21 to 30 years.Unemployment in the NCR can be reduced by appropriate skilling and education.

11.4 POLICIES AND PROPOSALS

- 11.4.1 To deal with above problems and issues, recommendations are as follows:
- 11.4.1.1 Design an education and skilling system that offers lifelong learning opportunities and its indicator shall be the number of Lifelong Education facilities made available in NCR. Education Frameworks and National Vocational Education Qualifications Framework (NVEQF)6/ National Skills Qualifications Framework (NSQF)7 to work together in synergy development of lifelong education facilities in NCR.
- 11.4.1.2 All existing and proposed educational institutions to have adequate accommodation facilities for staff and students in combination with government hostels for students/teachers, which may be planned in institutional zones and its utilization be ensured for the envisaged purpose.
- 11.4.1.3 Provisions should be made for Special Needs Schools for disabled persons in NCR and provide vocational education according to the level of disability. Every district should have at least one such Special Needs School in NCR and possibilities of providing land for such sites at concessional rates be explored.
- 11.4.1.4 Like the medical education reforms there should also be higher education reforms in terms of land requirement and infrastructure requirements so that land and other infrastructure requirements are realistic and also to make good quality private higher education more affordable. Further like many Western universities, vertical spread of higher education infrastructure rather than horizontal spread should be encouraged.
- 11.4.1.5 Regarding issue of paucity of land as in Delhi, possible solutions could be opting for vertical growth, rather than horizontal growth. Hostels and academic building can be ten story plus.
- 11.4.1.6 Reputed well performing schools/ educational institutions located in cities like Delhi and CNCR towns, be encouraged to set up their branches in areas beyond CNCR and CMAs. The low performing institutions can also be adopted for capacity building and quality improvement.
- 11.4.1.7 Create Institutional hubs and allow sharing of infrastructure like grounds and laboratories and other equipment, amongst institutes and benefit the student community. Explore possibilities of keeping the laboratories of engineering colleges and medical colleges open, 24x7. A Dual-Use Scheme, may be devised enabling opening up of school facilities like

⁵Smt. Sunita Sanghi, Senior Adviser, Ministry of Skill Development and Entrepreneurship (MSDE) ⁶<u>https://www.mhrd.gov.in/nveqf</u>

⁷https://www.mhrd.gov.in/sites/upload_files/mhrd/files/NSQF%20NOTIFICATION.pdf

play grounds and sports facilities for public use.

- 11.4.1.8 Creating avenues for lifelong learning: Expand access to higher education institutions through Open and Distance Learning, Multiple Open Online Courses (MOOCs) and hybrid system of learnings and Certification in specialized areas could be offered to increase access to certification courses
- 11.4.1.9 There should be at least one Indian Institute of Management (IIM) in NCR.
- 11.4.1.10 Spatial imbalances in school, college and university education infrastructure should be evened out by making provisions to allot land for development of the same in the educationally deficient sub-Regions of the NCR.
- 11.4.1.11 There should be combined orientation and sensitization of educational function and monitoring of implementation of educational programmes and schemes in the NCR districts. Data related to the districts should be available to the educational planners of the NCR districts.
- 11.4.1.12 A Joint Task Force comprising of educational functionaries from the NCR districts should be constituted well equipped with all the infrastructure facilities, to take educational planning and monitoring needs. Ways to improve and expand the linkages amongst the region's high schools and vocational training, technical certification programs, community colleges, and other higher education institutions, be explored though exchange programs and other such initiatives.
- 11.4.1.13 The educationally backward districts and Special Focus Groups in the NCR should be the focus of NCR educational planning.
- 11.4.1.14 Educational needs of the slum areas in the NCR Region should be given due attention. The area specific and group specific educational schemes should be launched for such areas such as Mewat and Bulandshahar.
- 11.4.1.15 There should be effective implementation and monitoring of RTE provisions in the Region.
- 11.4.1.16 Elementary Education need special focus in terms of language and mathematic outcomes. Parents involvement at elementary level along with additional classrooms and smart classrooms will be very useful and also improve in the elementary school premises shall be very effective for improvement of education.
- 11.4.1.17 Student teacher ratio in many NCR schools is higher than the RTE mandate of 1:30. Apart from filing vacancies it is important to transfer the surplus staff to deficit schools. Restructuring of complicated teacher cadres and better planning and more vigorous process for teacher recruitment. Inclusion of workbook for regress practice to ensure master of competency should be made mandatory in NCR especially for NCR schools.
- 11.4.1.18 Vocational schools in secondary education in NCR should be modernize. In most of the schools one or the two trade offered are outdated. The review of trade as per the requirement of secondary vocational trade should be undertaken in every five years. Even in Industrial Training Institute (ITI) and Polytechnics there is a need to not only to review the trade but also to upgrade and provide new infrastructure in many of the older ITIs and Polytechnics.
- 11.4.1.19 The educational opportunities in universities, colleges and other educational institutions (technical and professional education) should be made accessible, by making special provision for the people residing in the NCR.
- 11.4.1.20 Well performing educational institutions especially located in Delhi, should either branch out in the adjoining NCR districts or adopt low performing institutions, for capacity building and quality improvement. Suitable land provision for the same should be made.

- 11.4.1.21 All existing and proposed educational institutions to have adequate accommodation facilities for staff and students in combination with government hostels for students/teachers, which may be planned in institutional zones and its utilization be ensured for the envisaged purpose.
- 11.4.1.22 With increasing pressure on land in the NCR, possible solutions could be opting for vertical growth, rather than horizontal growth.
- 11.4.1.23 Provisions should be made for Special Needs Schools for disabled persons in NCR and provide vocational education according to the level of disability. Every district should have at least one such Special Needs School in NCR and possibilities of providing land for such sites at concessional rates be explored. Schools for other groups such as the socially disadvantaged, adults, backward classes, etc. also need to be suitably located in all the districts.
- 11.4.1.24 Develop and implement land use and infrastructure plans for education districts that create the conditions for the continued co-location of education and skill development facilities and services, to support the district and its growth, have high levels of accessibility, attract associated businesses, industries and commercialization of research and also facilitate housing opportunities for students and workers within reasonable time from settlements.
- 11.4.1.25 States may explore possibility regarding introduction of 'School District Concept' and *'Creation of Campus Towns'*. A school district can be an area including all schools that are situated within that area and are governed by a particular authority. Institutional hubs can be created and allowed sharing of infrastructure like grounds and laboratories and other equipment, amongst institutions and benefit the student community.
- 11.4.1.26 Specialised institutions should be created to offer courses in skill enhancement viz. health care, beauty & wellness, nursing, house help, baby sitters, old age care, handyman, handlooms, food processing, agriculture and local food systems, etc and other courses in consultation with NSDC and are openly networked to leverage technology for wider propagation. Skills should be aspirational and go beyond livelihood, fulfilling the psychological needs. Soft skills are important and have to be inculcated right from early education. Employability gets affected if soft skills like communication, presentation and articulation, are lacking. Aspirational Job Roles include Elderly Caretaker; Child Caretaker; Household Multipurpose Executive; Home Cook; Private Tutor/Governess; Household Supervisor; Supervisor- Day Care/Old Age home/Special Needs home; Tiffin Service Provider, Gardener, Landscapers., etc.
- 11.4.1.27 Promote DIKSHA Portal for passive learning. Distance /online teaching locations be planned in each village, town and city, ward-wise, and made operational within phased timelines of the Regional Plan 2041.
- 11.4.1.28 For High-grade educational facilities, world-class universities and institutions of higher education should be encouraged to be set up, at least one in every major town of the NCR so as to ensure spatial balance and access to facilities. Connectivity to all education and skilling institutions through public transport system should be improved and facilities be created so as to enable reduction in travel distances.
- 11.4.1.29 A NCR Center for Student Assessment (NCSA) should be created as a state of the art centre to provide thought leadership and technical support to central and state governments. NCSA shall specialize in all aspects of large scale and school assessments. Also, a NCR Center for Education Technology (NCET) as a dedicated centre for planning and executing a long-term vision to leverage computer and information technology for improving learning outcomes should be created in the NCR.

The NCET can provide thought leadership, research and technical support to central government and state governments on large scale educational technology implementation as that would be the future of education delivery.

- 11.4.1.30 There are a large number of industrial hubs / estates in the NCR. Therefore, there is a good demand for skilled manpower. Industries should be encouraged/incentivized to offer internships and apprenticeship to the students. Industries may consider NCR villages as internship assignments/ locations. Industry-education institutions partnerships and specialized training (in manufacturing, for example) that offer pathways into specific careers should be encouraged. Improve the connections between small employers and the region's workforce training resources. Industry visits by school and collages should be mandatory across NCR and internship without stipend, but with credits could be looked into. Programs designed to support migrants seeking jobs or start business, specialized education/ training, and entrepreneurial support should be initiated.
- 11.4.1.31 Use of Internet of Things (IoT) to enhance education delivary should be incorporated. High quality courses to democratize education through digital platforms should be made. Open and Distance Learning (ODL) courses at appropriate levels can significantly increase skilled human resource in workforce. Digital Integration of schools should be achieved through internet and IoT to make teaching data driven through enabling sharing of learning data and digital resources across schools. Globally, EdTech (refer **Annexure P-11.1**) is being used to tackle multiple challenges and with different cases. EdTech may be used extensively in Schools in NCR also.
- 11.4.1.32 NSDC should have a special role in NCR. There should be NSDC coordinator in each NCR district to assist DM/DC in working of District Skill Registry Centers above along with other staff for better synergies.
- 11.4.1.33 Convergence of all skill development related initiatives/programmes (e.g. Mudra, Start up, Stand up India) is required as the students are not well aware due to information asymmetry.
- 11.4.1.34 District Skill Development Committee (DSDC) should prepare District SkillDevelopment Plans (DSDP) for each district of NCR as derivative of State SkillDevelopment Plan.DSDP should be part of District Development Plan and Sub-Regional Plan (SRP).
- 11.4.1.35 A Joint Task Force comprising of educational and skill development functionaries from the NCR districts should be constituted to oversee and manage related activities in NCR. Data related to the districts should be made available and to review the status regularly.
- 11.4.1.36 Each sub-region should have a Skill Registry Office at the District Headquarter, Tehsil Headquarter, Block Headquarter with digital platform linked to Aadhar and capture skill of residents & migrants. This Registry should be linked to Swayam Portal for further learning, to NSDC portal for further skilling and for getting certification. It should also be linked to soft skill training videos, and should be used for assisting migrants (going out & coming) and should be having details of ration cards, etc. too for buying. NSDC may explore possibilities of working with States, towards creation of a Multi-Sector Training Centers demonstrating aspirational value for training in every NCR district as per its skill needs. UP region having most unemployed youth may make special efforts on the aspect.
- 11.4.1.37 Skill sector councils should have special focus on NCR Districts on area of high potential of skilling needs like construction, tourism, health care including paramedical

skills, domestic services, FinTech, IT-literacy, etc.

- 11.4.1.38 A Labour(Workforce) Management Information System maintaining records regarding migratory workers, uncertified & informally trained workforce and those required to be skilled etc.,should be created, so that the industry is better equipped for skilling.
- 11.4.1.39 Each district should have Migrant Facilitation Centres (MFCs) also providing orientation about the city/town, shelter home allocation till rented accommodation arranged, list of local contractors registered, Fair Price shops, govt. dispensary details, accident insurance coverage etc. Regular medical check-ups and requisite counselling for migrants be organised every fortnight /weekly at these MFCs. The registration be linked with aadhar number and thus with the common data base which would also include data on qualifications, skill set/ updates /Skill mapping, education, local address and employment related details etc.
- 11.4.1.40 All Gig workers needs police verification and for this Ministry of Home Affairs may be requested to establish a process leading to a NCR Portal for Police Verification, with request for police verification being simply routed to concerned police stations through this portal.
- 11.4.1.41 The list of ten suggested sectors for special focus in NCR for skilling are 1) Construction 2)Retail 3) Fintech 4) Paramedical Services 5) Domestic Services 6) Tourism 70 Driving 8) Care for Special Needs 9) E-Commerce linkages services 10) Soft Skills. However, these sectors can be reviewed regularly.
- 11.4.1.42 Apprenticeship by all Govt. and private school and colleges should be mandatory in NCR districts. Visit to District Skill Registry by Companies shall also be mandatory in the region.
- 11.4.1.43 The current shortage / excess should be worked out in the Sub-regional Plans and presented in the form of tables for schools, colleges, etc. as per URDPFI Guidelines.
- 11.4.1.44 Based on the population projections for 2014, future requirement needs to be assessed and the future requirement of schools, colleges, etc. as per URDPFI Guidelines needs to be presented. in the Sub-regional Plans
- 11.4.1.45 Policy Provisions be elaborated in the Sub-regional Plans of the respective Sub-region, Master /Development Plans and other lower level Plans. Broad Policy Provisions for Sub Regional and lower level Plans are given **Annexure P-11.2**.
- 11.4.1.46 All NCR States should prepare scheme by 2023 for creation of Institutional hubs and allowing sharing of infrastructure like grounds and laboratories and other equipment, amongst institutes.
- 11.4.1.47 DIKSHA Portal for passive learning be made operational 2026 across NCR.
- 11.4.1.48 A Legal Framework be devised by all NCR States for protecting the welfare and rights of the Domestic workers by 2023.
- 11.4.1.49 Schemes be prepared by the NCR States by 2023 to improve female literacy rates in NCR districts, especially in districts having the lowest female literacy rates in NCR.
- 11.4.1.50 Gross Enrolment Ratio (GER) related targets be specified in each sub-regional plan for each district with phasing. Specific Scheme in this regard should also be prepared by 2023.
- 11.4.1.51 Schemes be prepared by NCR states to ensure the Open and Online leaning.
- 11.4.1.52 Infrastructure like Film city with single window clearance and industry friendly policy are needed and may be planned in NCR where in the MESC arranged skilled manpower in coordination with state/district administration can be provided with better opportunity in the industry.
- 11.4.2Key projects

Specific projects envisaged to be taken up in NCR regarding education and skilling are listed in Table 11.5 below, but not limited to:

Table	11.5:	Specific	projects	envisaged	to	be	taken	up	in	NCR	regarding	education	and
skillin	g, 202	1-2041											

Sl. No.	Proposed Projects/Policies	Phase –I (2021- 2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1.	Projects/ Schemes for up- gradation of existing higher educational institutions with adequate accommodation facilities for staff and students	To be done by 2026	-	-	-
2.	Projects/ Schemes for Special Needs School	At least one in each district.	-	-	-
3.	Projects/ Schemes fordeveloping world-class universities	At least one in each sub-region.	-	-	-
4.	Projects be developed to upgrade at least 10 Scientific Research Institutions	At least one in each sub-region by 2023	Remaining 06 by 2031	-	-
5.	Projects for the development of National Center for Student Assessment	To be developed in Haryana sub- region	-	-	-
6.	Projects for having a National Center for Education Technology	To be developed in U.P sub-region	-	-	-
7.	Projects for having Skill Registry	To be developed in each district by 2023	-	-	-
8.	Projects for having Multi- Sector Training Centers in consultation with NSDC	At least one in each district.	-	-	-
9.	Projects be prepared to establish/ upgrade Teachers' Training and Faculty Development Institute	Al least one in each district	-	-	-
10.	Projects be prepared to establish/ upgrade Colleges, ITIs, technical institutions, etc.	To be done for each district	-	-	-
11.	Project for establishing/ developing Indian Institute of Management (IIM)	At least one in NCR			

Chapter 12

SPORTS & SOCIAL SUPPORT SYSTEM

A. SPORTS

12.1 INTRODUCTION

- 12.1.1 Sports play an important role in physical development of human body, makes physically and mentally fit and keeps free from different diseases. Stress is a natural physical and mental reaction to life experiences. Exercise and other physical activity produce endorphins in the brain that act as natural painkillers and also improve the ability to sleep, which in turn reduces stress. Sports thus become an automatic activity which acts as a great stress buster and therefore becomes an essential component enhancing quality of life. As per National Center for Biotechnology Information (NCBI), India is deemed as the world's capital of diabetes, with diabetic population in the country being close to hitting the alarming mark of 69.9 million by 2025 and 80 million by 2030. Obesity is another problem which is on the rise. Hence, sports sector deserves due importance, to ensure healthy, active and efficient citizens in NCR.
- 12.1.2 Ministry of Youth Affairs & Sports (MoYA&S) has a Department of Sports, established to create the infrastructure and promote capacity building for broad-basing sports as well as for achieving excellence in various competitive events at the national and international levels. It pursues the twin objectives of personality building and nation building, i.e. developing the personality of youth and involving them in various nation-building activities.
- 12.1.3 Sports Authority of India (SAI), which is a the apex national sports body, established in 1984, under the Ministry, for the development of sport in India, has various Training Centers, Centers of Excellence and Academic Institutions, in the country. Patiala, which is already a designated Counter Magnet Area (CMA) of NCR, has one of the two Sports Academic Institutions of SAI, namely Netaji Subhash National Institute of Sports. One of the ten "SAI Regional Centres" (SRC) of SAI are in NCR at Sonipat and another one at Lucknow, which is also one of the CMAs of NCR. While NCR also has one of the 14 "Centre of Excellence" (COE/COX) of SAI at Sonipat, two of its CMAs (Patiala and Hisar) also have one Centre of Excellence each. SAI 's Sports Training Centres in NCR and its CMA include those at Lucknow (UP), Patiala (Punjab), Hisar, Sonipat, Bhiwani (in Haryana), Jaipur & Alwar (in Rajasthan) and Bawana in Delhi. India's leading Sports Colleges are located in NCR and its Counter Magnet Areas (CMAs) which includes Indira Gandhi Institute of Physical Education and Sports Sciences, Delhi; Netaji Subhas National Institute of Sports, Patiala; Guru Gobind Singh Sports College, Lucknow; Lakshmibai National Institute of Physical Education (LNIPE), Gwalior, etc. (refer brief given at Annexure-D-12.1.1).
- 12.1.4 Health cost of Government budget can be reduced by investing in sports as has been observed from data and studies available for US and Europe. As per WHO report on Global Action Plan on Physical activity 2018-30, regular physical activity is proven to help prevent and treat Non-Communicable Diseases (NCDs) such as heart disease, stroke,

diabetes and breast and colon cancer. It also helps to prevent hypertension, overweight and obesity and can improve mental health, quality of life and well-being. Globally, physical inactivity is estimated to cost INT\$ 54 billion in direct health care, in 2013, of which 57% is incurred by the public sector and an additional INT\$ 14 billion is attributable to lost productivity (17). Estimates from high-income, as well as low and middle income countries (LMICs) indicate that between 1–3% of national health care expenditures are attributable to physical inactivity,1hence health and sports need to be looked into jointly. Further, to develop a sports culture, education needs to play a pivotal role. Sports can be a tool for society development if masses are educated in that manner.

- 12.1.5 Current generations display great interest and promise in sports. Opportunities available in this sector can be further maximised through an organised infrastructure, in a way where coaches and kids can have best place for training.
- 12.1.6 As large numbers of sports are being played by in country, all sports lovers should have ample opportunity to pursue sport of their choice. For the popular games like cricket, soccer and hockey, land is a key resource, and needs to be planned for.
- 12.1.7 Raahgiri campaign is evolving and expanding to include evenings as well as day time. It's a common platform for campaigning and engaging in important social issues like health, childhood, climate, Govt. and NGOs are also using this platform to reach out to people to educate them. It is one of the ways to interact with people directly, so that decision makers are always eager to make use of it (refer **Annexure-D-12.1.2**)
- 12.1.8 "Khelo India" is a new initiative of Ministry of Youth & Sports, GoIto improve the sports infrastructure in India as well as to identify and nurture sports talent at grass- root level. Under this scheme, talented players identified in priority sports disciplines at various levels by the High-Powered Committee and are provided with annual financial assistance of INR 5 lakh per annum for 8 years.
- 12.1.9 Prior to launch of Khelo India, sports promotion and development in India was carried out through three separate schemes, i.e., Rajiv Gandhi Khel Abhiyan focusing on sports infrastructure in rural areas; Urban Infrastructure Scheme and National Sports Talent Search focusing on identifying sports talent. These three programme were merged into a single central sector scheme 'Khelo India: National Programme for Development of Sports' from the financial year 2016-17.
- 12.1.10Under the scheme of "Assistance to National Sports Federations", the government has been providing financial assistance to the recognized National Sports Federations (NSFs) for supporting girls/women's exposure, training and participation at national/ international level. In addition, both central/state governments are supporting sports person who perform well and bring medal for the country/state, financially along with employment opportunities. Major Initiatives taken by the Govt. of India and NCR participating States Govt. regarding Sport are placed at **Annexure D-12.1.3**.

12.2 EXISTING STATUS

12.2.1 NCR has more than 300 Sports Training Institutes imparting sports education and training to national and international sports persons. Delhi Development Authority (DDA) has a network of Sports Complexes in Delhi (14) catering to the sports requirements. Uttar Pradesh and Haryana sub regions of NCR also have good number of sports facilities, in form of sports clubs and stadiums. Rajasthan too, has a stadium at district level and there

¹https://apps.who.int/iris/bitstream/handle/10665/272722/9789241514187-eng.pdf+

is a Multipurpose Indoor Stadium in Alwar, which is also part of NCR. Sports infrastructure scenario and types of sports played in NCR is provided below in **Table 12.1** and **Table 12.2**, respectively.

	No Sports	0)wnersh	ір	Training Capacity			
Sub Region	Institutions	Central Govt.	State Govt.	Private	National	International	Others	
NCT Delhi	91	83	8	280	NA	NA	NA	
*Haryana	193	NA	173	20	621	88	7362	
*UP	22	2	18	2	460	212	450	
*Rajasthan	1	NA	1	NA	NA	NA	NA	
NCR	307	85	200	302	1081	300	7812	

Table 12.1: Sub-region wise Sports facilities and Training Capacity in NCR, 2019

Source: NCR Monitoring and Planning Cell, Govt. of NCT Delhi, Govt of Haryana, Govt of UP and Govt of Rajasthan *Note: NCTD- Excluding Data on Training Capacity

HSR: Excluding Data for Faridabad and Panipat w.r.t Sport facilities and Rohtak, Mahendragarh, Mewat and Palwal districts for training capacity

UPSR: Excluding Data for Hapur district

RSR: Excluding Data for Bharatpur district

Table 12.2: Type of sports played in NCR

Sub Region	Type of sports
NCT Delhi	Swimming, Basketball, Badminton, Hockey, Football, Cricket, Athletics,
	Volley Ball, Netball, Tennis, Boxing, Judo/ Wrestling / Kabaddi , shooting,
	Archery (All most all kinds of sports facilities)
Haryana	Badminton, Boxing, Hockey, Gymnastics, Athletics, Cricket, Wrestling,
	Hockey, Volleyball, Cycling, Judo, Basketball, Archery, Football, Kho-Kho,
	Table Tennis, Handball, Wushu, Kabaddi
UP	Athletics, badminton, kho-kho, volleyball, wushu, cricket, judo, wrestling,
	taekwondo, swimming, hockey, Judo, Basketball, Wushu, Weightlifting,
	Kabaddi, Athletics, Volleyball, , Gymnastic, Boxing, Shooting, 10m air pistol
	shooting, Archery, Volleyball
Rajasthan	All Sports Athletics, Boxing, Badminton, Hockey, Swimming, Wrestling, etc.

Source: NCR Monitoring and Planning Cell, Govt. of NCT Delhi, Govt of Haryana, Govt of UP and Govt of Rajasthan

- 12.2.2 NCR exhibits great potential which should be harnessed and integrated with the overall development of the region. Almost all kinds of sports facilities are there in NCR.
- 12.2.3 Advance action is required for nurturing the sports culture, having upgraded and world class sports infrastructure, trained coaches, to prepare future sports persons, as well as to host sports events, and also a fit, healthy NCR.
- 12.2.4 Delhi-NCR has hosted many sports events over the years, including the Asian Games in Delhi in 1951 and 1982 and the Commonwealth Games and Hockey World Cup in 2010. Delhi and its surrounding region has always played very important role in organising major sports events in the country.
- 12.2.5 With the rising stature of India globally, NCR needs to take the lead to host key multisports events like Commonwealth Games, Summer Youth Olympics, Para Olympic Games and the Asian Games and even the Summer Olympics, etc. in coming decades.

12.3 KEY ISSUES AND CHALLENGES RELATED TO SPORTS

- 12.3.1 The Sports eco-system in India leaves much to be desired in an international context. Right from the scope of identifying talent, to the infrastructure in place to nurture the talent, India has over the years been lagging on this front. While thinking of developing a holistic structure for sports, aspirations of common citizens need to be kept in mind.
- 12.3.2 Barring few specific sports, the sector has been facing issues related to lack of infrastructure both in terms of physical buildings and equipment as well as adequate training and coaching.
- 12.3.3 The sector needs to have structural approach, possibly a Pyramid approach for having a wider base to produce champions, and hence, the entire population needs to be involved.
- 12.3.4 Sports is a big industry and can provide many career opportunities in various sectors, and this potential is to be leveraged in NCR. In the last decade, India's sporting industry has grown significantly, leading to mushrooming of private academies in every corner of the country. Although, it has resulted in rise in demand for coaches at all levels, but in the absence of any governing body, there are no guidelines for running an academy or uniformity in the payment structure. Academies are mostly run on the fame of the people associated with them.
- 12.3.5 Further, International coaches are reluctant to take up assignments in public sector sports institutions/departments due to reasons that include absence of adequate incentives for coaches, amongst others. Private coaching facilities have good infrastructure however, it is not affordable for all.
- 12.3.6 It is also observed that various government and private school premises which have large playgrounds stay underutilised beyond school timings, and thus result in underutilisation of resources. Further, academies allow an average of two hour coaching after the school closes, which is insufficient.
- 12.3.7 In case of Delhi DDA& GNCT Delhi, which has a network of Sports Complexes and Stadiums, however, demand and supply gap persists, as it has limited capacities and affordability issues. Along with the existing sports infrastructure in NCR sub regions, aspect of coordination with educational institutes/ universities need be initiated to promote sports infrastructure sharing and usage, to upgrade and enhance the facility usage. The existing sports clubs and stadiums need to be at par with international standards.
- 12.3.8 While governments are supporting sports person who are performing well and bring medals for the country or state, financially along with employment opportunities, but similar encouragement is required at the grass root level.
- 12.3.9 Adequate support provisions for traditional Indian games as well as for differently abled population is also lagging and its integration with the existing and proposed infrastructure is an often neglected aspect.
- 12.3.10Health, Education and Sports planning need to be done in an integrated manner to leverage synergies for improving wellbeing of citizens, which is a challenge.
- 12.3.11Alongside core sports infrastructure like sports fields, grounds and stadiums and quality equipment, the necessary sports ancillary infrastructure and manpower/ staff is also important to be in place in time.

B. SOCIAL SUPPORT SYSTEM

12.4 INTRODUCTION

- 12.4.1 Typically, Social support means having friends and other people, including family, to turn to, in times of need or crisis to give a citizen, a broader focus and positive self-image. Social support enhances quality of life and provides a buffer against adverse life events. These supportive resources can be emotional (e.g., nurturance), informational (e.g., advice), or companionship (e.g., sense of belonging); tangible (e.g., infrastructure, financial assistance) or intangible (e.g., personal advice). Social support can be measured as the perception that one has regarding assistance available, the actual received assistance, or the degree to which a person is integrated in a social network. At planning level, one can plan for the tangible part, i.e. for structural/infrastructural support, which in turn could act as the providers of emotional, informational or even tangible support. These act as the foundational services and structures that support the quality of life in a region, city or neighbourhood. This includes infrastructure that goes beyond basic economic functions to make community, an appealing place to live in.
- 12.4.2 Apart from child, women and elderly care centres, Postal Services also act as an important social support system, especially in the rural areas.
- 12.4.3 National Employment Service or Employment Exchange, operated by the Directorate General of Employment and Training, Ministry of Labour, are also considered important social support system as they bring about a better matching of the demand for, and the supply of work opportunities. Assisting in starting self-employment ventures through vocational guidance activities, registering the applications of job-seekers and notifying them about vacancies, collection and dissemination of Employment Market Information, vocational guidance to students and the youth, are the major functions of Employment Exchanges. Similar, facilities are also available at State level.
- 12.4.4 Department of Social Justice and Empowerment is building an inclusive society wherein members of the target groups can lead productive, safe and dignified lives with adequate support for their growth and development; Department of Social Justice and Empowerment, apart from various other tasks has mandated for Rehabilitation of victims of alcoholism and substance abuse & their families, programmes of care and support to senior citizens, rehabilitation of beggars and welfare of transgender persons. It further strives to achieve a drug free society by counselling, de-addiction, after care and rehabilitation of drug users to make them drug free, crime free, gainfully employed and a productive member of society.
- 12.4.5 National Social Assistance Programme (NSAP) is a Centrally Sponsored Scheme of the Government of India that provides financial assistance to the elderly, widows and persons with disabilities in the form of social pensions. The NSAP includes five subschemes as its components (a) Indira Gandhi National Old Age Pension Scheme (IGNOAPS) (b) Indira Gandhi National Widow Pension Scheme (IGNWPS) (c) Indira Gandhi National Disability Pension Scheme (IGNDPS) (d) National Family Benefit Scheme (NFBS) (e) Annapurna Scheme.²
- 12.4.6 In view of aging population and for the citizens who have crossed the age of 60 years described as senior citizen/aged/elderly needs, special care and services related to their physical, medical and psychological needs is crucial. Ministry of Housing and Urban

²Source: <u>http://nsap.nic.in/Guidelines/nsap_guidelines_oct2014.pdf</u>

Affairs (MoHUA) recognized the need for Retirement Homes for the special care of elderly. Model Guidelines for Regulation and Development of Retirement Homes, 2019 has been prepared by the MoHUA where regulation and monitoring of retirement homes with various models for operating retirement homes, planning norms, physical standards and norms etc. has been detailed out³.

- 12.4.7 Social support in current scenario can primarily be associated with support for needy which could mainly comprise of women, children and aged. Within a decade, there will be one billion elder persons worldwide. According to data from World Population Prospects: 2019 Revision⁴, world by aged population is set to be one in six people over age 65 (16%), up from one in 11 in 2019 (9%). The number of persons aged 80 years or over is projected to triple, from 143 million in 2019 to 426 million in 2050. In India, about 110 million elderly, of which 30 million are estimated to be living alone; 90 percent of them work for livelihood and about 12 million are blind. These figures are expected to increase to 173 million by 2026.⁵
- 12.4.8 The Post offices have graduated to provide services, meeting societal needs like Social security needs of pensions, beneficiary payments, G2C services; Digitalized services using digital E-Sewa portal of CSC; Door step banking, remittances, Direct Benefit Transfers (DBT) and utilities using India Post Payments Bank (IPPB) and now operates on ERP platform with real time information on service-empowering citizens, apart from the regular insurance, mailing and parcel trans-shipments services.
- 12.4.9 Public distribution system (PDS) is considered to be the most important food security network in India and has a crucial role in stabilising food prices and making food available to the poor at affordable prices. This system can continue to play significant role and shoulder additional responsibilities which can provide social support to the society.
- 12.4.10India is a signatory to the following three UN Conventions:
 - a) Single Convention on Narcotic Drugs, 1961, as amended by the Protocol of 1972 on Narcotic Drugs,
 - b) Convention on Psychotropic Substances, 1971 and
 - c) Convention on Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988

12.5 EXISTING STATUS

- 12.5.1 The social support infrastructure is underprovided in NCR. As per available data, there are a only a total of 61 Hostels with a capacity of 4,589 persons, including Working Men Hostels (7 in no. and 18% of the total capacity) and Working Women hostels (19 in no. and 35% of total capacity), Youth Hostels (11 in no. and 2% of total capacity) and Other Hostels (24 in no. and 46% of total capacity).
- 12.5.2 About 34 old age homes are there in NCR, with a total capacity of 2039; U.P. accounts for 46%, followed by Haryana with 42% and NCT of Delhi accounts for a meagre 11%. Considering the elderly population of NCR to be 43.31 lakhs, the social support infrastructure is severely underprovided; less than 0.05%. Provision of the infrastructure i.e. old age homes vis-a vis the elderly population show that in NCT of Delhi it is 0.02%, in Haryana, it is 0.05% and in U.P., it is 0.07%. Social Support infrastructure scenario of NCR is provided at **Annexure-D-12.1.4**.

³http://mohua.gov.in/upload/uploadfiles/files/Retirement%20Model%20Guidelines%20Book.pdf

⁴World Population Prospects: 2019 Revision-<u>www.un.org/en/sections/issues-depth/ageing/</u> ⁵Mission Director (Age Care), Help Age India

- 12.5.3 Other important categories that need adequate social support may include the victims of alcoholism and substance abuse & their families, beggars and transgender, etc. These target groups demand to lead a productive, safe and dignified lives with adequate support for their growth and development. Such aspects need to be looked into with the NCR perspective.
- 12.5.4 Major Initiatives of NCR participating State governments regarding Social Support Systems created in the sub region are as briefed at **Annexure D-12.1.5**

12.6 KEY ISSUES AND CHALLENGES RELATED TO SOCIAL SUPPORT SYSTEM

- 12.6.1 Almost 16 lakh people in Delhi are above the age of 60 years and city has lot of migrant population from other states coming for their livelihood, career, health and other facilities. Similar situation is possible in most urban areas of NCR. Population ageing is both an opportunity and a challenge, therefore, concerted multi-stakeholder & multi-sectoral action is needed.
- 12.6.2 As suggested by WHO, the future demands Age-friendly cities through anticipating and responding flexibly to ageing-related needs and preferences, respecting their decisions and lifestyle choices; and promoting their inclusion in and contribution to all areas of community life. Cities/ habitations are required to be age friendly cities, affordable, accessible, safe, participatory/ inclusive and protecting those who are most vulnerable.
- 12.6.3 With more working women and rise in nuclear families, adequate child care centers, crèches in urban centers are need of immediate future.
- 12.6.4 Unemployment allowances are being provided by States, but focus should be on supporting the unemployed with employment opportunities.

12.7 POLICY AND PROPOSALS: SPORTS

12.7.1 Development and Sustainability of Sports Culture

- 12.7.1.1 States to promote the concept of 'Sports for All' in NCR. This shall facilitate in having a paradigm shift from the commonly held view that sport is an unnecessary diversion from children's studies rather than an integral part of education and development and a potential career pathway. Government's priority on mainstreaming sport as a tool for individual, community, economic and national development through engaging youth, could help change this and thus need to be taken forward.
- 12.7.1.2 Sports should be mandatory like other course subject in school with proper physical education and sports training integrated in the curriculum. Educational institutions should assign weekly durations for sports activities, both indoor as well as outdoors.
- 12.7.1.3 State Sports departments may initiate state level programs on the lines of 'Athlete Career Program', of International Olympic Committee (IOC) and the International Paralympic Committee (IPC) in conjunction with Indian Olympic Association (IOA), which discusses on how athletes can take up a particular sport and establish themselves in it in future.
- 12.7.1.4 In past Delhi has hosted multi-sports events like Asian Games (1951 & 1982), Commonwealth Games (2020). Keeping in view the rising stature of NCR, globally, joint efforts have to make by all NCR participating States to host key multi - sports events like Olympics, Paralympic, Asian Games, Commonwealth Games, etc. in coming decades.

- 12.7.1.5 Sports institutions should rope in eminent sports personalities as Director or HoDs or positions of importance and benefit from their rich experiences. People behind successful sports persons be also honoured and rewarded/ incentivised for success of their pupil, to encourage them produces more champions.
- 12.7.1.6 Sports should be linked with health and lifestyle aspects, and considered as important. Efforts towards encouragement of healthy lifestyles and active living for all ages, with provisions for healthcare, education, recreation, cultural arts and entertainment opportunities should be promoted.
- 12.7.1.7 Women and girl participation in sports may be encouraged, through awareness and education. Initiatives like "Raahgiri"campaign should become a regular affair across NCR towns.
- 12.7.1.8 Sports competitions for children out from the formal education system should be organised. Such 'Open Sports Competitions' be organised at Block level every six month at least.

12.7.2 Infrastructure for competitive & non-competitive Sports

- 12.7.2.1 Issues such as insufficient private sector funding; restrictive guidelines for availing government grants for sports infrastructure (only select government entities are eligible to undertake infrastructure development projects); poor asset utilisation and inefficient monetisation planning leading to suboptimal returns on developed sports infrastructure assets, which deters further investment, may be addressed on priority.
- 12.7.2.2 Address the issue of shortage of indoor as well as outdoor sports infrastructure, especially, at grassroots level, and improve asset management of existing infrastructure Plan for training facilities for both novice at the grassroots and elite athletes at top level.
- 12.7.2.3 Multi-storey Sports facilities (indoor & outdoor) with adequate measures be developed in NCR, in order to address the issue of land availability and shortage of sports infrastructure. This will ensure variety of sports facilities at local level in each society/ colony.
- 12.7.2.4 Educational Institutions to mandatorily have or co-shared facilities of play grounds, gymnasiums, swimming pools, etc. They may collaborate amongst themselves through MoUs, etc. to meet the requirements, as per specified standards, to enable efficient usage of available infrastructure. Schools/colleges having large playgrounds be directed to optimally utilise their sports infrastructure, by allowing its use beyond the institution's normal timings.
- 12.7.2.5 District administrations may look for properties at different level (Tehsil/ block/ /school) which can be utilised for sports activities at nominal / affordable charges.
- 12.7.2.6 Efforts be made to formulate norms to ensure that sports infrastructure is accessible to all irrespective of social and economic status.
- 12.7.2.7 Location of stadiums and other sports avenues be such that sports aspirants from both towns and villages can approach and avail the facilities. It is be ensured that fitness centers are provided at local level like Gram Panchayat and Block headquarters as well. Local authorities may replicate Delhi initiative for open gymnasiums in the parks.
- 12.7.2.8 Explore possibilities of increasing and attracting investment in high-performance sport infrastructure and have world-class facilities in NCR where players can be trained for international level competitions.
- 12.7.2.9 PPP for sports infrastructure development be encouraged.

12.7.3 **Support Infrastructure for Sports**

- 12.7.3.1 Concerned departments may look into providing necessary sports ancillary infrastructure i.e. fitness centers, open gymnasiums in the parks and energy-harvesting outdoor gym6 (at local level like Gram Panchayat and Block headquarters). and related adequate skilled manpower/ staff. These may include right Coaches/ Trainers, Physiotherapist, Physical Therapist, Nutritionists, Dieticians, Medical staff related to sports injuries, Medical Assistant, Sports Medicine Aide, Sports Massage Therapist, Sports and Fitness Nutritionist, Strength and Conditioning Coach, Exercise Physiologist, Sports Physician, Sports Psychologist, Video Analysts etc.
- 12.7.3.2 The issue of appropriate remunerations for coaches, trainers, physiologists, etc. should be adequately addressed, and could be performance based.
- 12.7.3.3 Concerns regarding inadequate staffing for running the facilities and supporting the sports aspirants also needs to be adequately addressed (e.g. at least four personnel are required for maintenance of a cricket ground).
- 12.7.3.4 Facilities for related skill development to meet the international standards and related institutes be established in NCR with professionally trained support staff to improve the quality of training for aspiring athletes and other sportspersons.
- 12.7.3.5 Promote executive-level sports management training opportunities for development of trained professionals to manage leagues and major sporting events.
- 12.7.3.6 Promote high performance training centres and coaching centres with facilities enabling players to have a proper health & fitness Program for respective sport.
- 12.7.3.7 Establish Sports Libraries and Sports Museums, Traditional Games Park (Olympic, Paralympic, Traditional Games, Martial Arts, etc.) in each district which would encourage the interest of coming generations in sports and promote 'Sports Tourism' in NCR. These may be located within sports facility premise or separately at appropriate location in the city.
- 12.7.3.8 Sports related Medical/ Rehabilitation Centres for injured players should be set up in each district in NCR.

12.7.4 **Research, Innovation, Education and Training**

- 12.7.4.1 Formulate and implement effective policies for Sports Education. Sports Colleges/ Universities (e.g. Sports School Rai in Sonipat District, Haryana) to educate individuals regarding all skills and courses, required for sportsperson be proposed, as per SAI guidelines and state requirements. The existing facilities also be upgraded on priority.
- 12.7.4.2 Promote courses/ research in sports sciences (including nutrition, psychology, medicine and sports education), in higher education to help enhance performances in sports.
- 12.7.4.3 Sports Research Centres and laboratories be promoted in NCR.
- 12.7.4.4 Players of international eminence be appointed as State Observers for the development of various sports in the NCR constituent states. Among other responsibilities, they may assess the existing sports infrastructure/ equipment, quality of scientific backup and medical facilities at the venues of the national/ state coaching camps and report the critical gaps.

⁶https://newatlas.com/tgo-green-heart-electricity-generating-gym/23078/

- 12.7.4.5 Provide accreditation to school/college on the basis of sports performances and maintenance of health and physical fitness of children. Advocate 15% time of the total school time in physical and sport activities with at least 60-90 minutes for the same.
- 12.7.4.6 For Financial Support School / College may dedicate 15% amount of the fees / income on sports and provide kit & equipment, diet, etc.
- 12.7.4.7 State departments should collaborate with SAI and Sports Federations to train coaches, to meet international standards.
- 12.7.4.8 Awareness campaigns to raise awareness on sports benefits be regularly organized.

12.7.5 **Design and Planning**

- 12.7.5.1 Open Playground should be mandatorily provided as distinct from parks in all colonies, group housing schemes and in each ward, etc.
- 12.7.5.2 Housing societies of Delhi and various towns of NCR to mandatorily have adequate area for sports/ fitness within the society for kids. Any kind of sports be it swimming, bicycling, badminton court, squash court, basketball court, etc. should be developed to promote the sports culture in kids.
- 12.7.5.3 Dedicated play fields/areas in parks and grounds be designated in the Master /Development Plans which would encourage outside play activities of children and youths. Necessary updation /amendments may be made in the Master /Development Plans if such provisions are not available.
- 12.7.5.4 Group Housing Society to have playgrounds/sports facilities and sports persons may be offered benefit of low cost of houses in the complex, and in return, may coach the children of society for specific time/period. Builders/ Group Housing Society may allow sports persons to take the possession of the house by paying 10%, and offer his services to other buyers.
- 12.7.5.5 Necessary amendments in bylaws (FAR, TDR, etc.) be done to encourage existing and proposed townships / society to accommodate/ provide sports facilities (indoor as well as outdoor) as per plot size.
- 12.7.5.6 Legacy planning be done before the construction of stadia/ complex/ assets beings in order to incorporate future requirements post international events as per the legacy plan into design of assets.
- 12.7.5.7 In Uttar Pradesh, all playgrounds are registered in revenue records/ provided in Khatauni and their identification and fencing being done. It is suggested that like the State of UP, all playgrounds should be identified and fencing of such area be done to avoid encroachments across NCR.
- 12.7.5.8 Mapping of Sports facilities including infrastructure and coach facilities, etc. be mandatorily done in all Sub-Regional Plans/ District Development Plans/ Master Plans/ Development Plans, etc.

12.7.6 Support to Traditional Games

12.7.6.1 Traditional Sports and Games Park could be created to support the traditional games like Kabbadi, Kho Kho, mallakhamb, etc.

12.7.6.2 Traditional games requiring fewer infrastructures can help fill the requirement of children getting involved in play activities, which in turn can help in reducing the abusive nature of the children.⁷

12.7.7 Sports Economy

- 12.7.7.1 Sports sector is growing and generates income and employment. NCR States should recognise sports as an 'industry'8. In addition, all efforts be made to give 'Sports' a tag of organised sector, through working out and providing it with clear guidelines say, for working /running Sports Academies, to boost investor confidence, in the sector.
- 12.7.7.2 The changing outlook towards fitness is fuelling the increase in demand for sportsrelated goods and services. Investment prospects in the sports sector are dispersed across the entire supply chain, including the manufacturing and retail of equipment and apparel as well as in advertising, talent management, and training. This potential should be tapped by NCR districts, especially those having specialisations in sports goods production, etc. like Meerut.

12.7.8 Institutional Framework

- 12.7.8.1 State departments and district authorities to periodically evaluate available/needed sports infrastructure, to make gap assessments and take action accordingly.
- 12.7.8.2 Better Coordination is required amongst Educational, Health and Sports departments. Physical training teachers should work in coordination with coaches and nutritionists.
- 12.7.8.3 City administrations may enter into agreements with Sports Federations to manage the sports infrastructure created and proposed to be created. Accountability be set in sports federations to enhance their effectiveness in supporting the athletes/ sportspersons being produced.
- 12.7.8.4 NCR States should make necessary arrangements to organize International/ National sport events like IPL in Cricket, Pro Kabaddi, etc. regularly. Concerned departments may come up with Annual Sports Calendar to encourage sports events in NCR. States should endeavor to develop NCR as "International Sports Destination".
- 12.7.8.5 NCR States should formulate policies/ guidelines for coordination between existing sports infrastructure & educational institutes and promoting Sports Education, by 2022.

12.8 POLICY AND PROPOSALS : SOCIAL SUPPORT SYSTEM

12.8.1 Aged and Elderly

- 12.8.1.1 Interventions be made for having Elder Friendly Planning, Design and Construction of building as well as other infrastructure in public places (shopping centres/markets, healthcare institutions, recreation facilities, etc.).
- 12.8.1.2 Public transport availability be planned for older people to reach key destinations hospitals, health centres, public parks, shopping centres, banks and seniors' centres with all such areas being well-serviced with adequate, well-connected transport routes
- 12.8.1.3 Envisage elderly friendly habitations for future and accordingly plan for required quality Old Age Homes/ Care centres. Activities and events be well-communicated, including information about the activity, its accessibility and transportation options.

⁷Brazil is such an example where Night crimes reduced when children are involved in various activity like night sports 8State of Mizoram has accorded 'industry' status to sports.

- 12.8.1.4 Necessary arrangements be made to address isolation issues and foster community integration through social, cultural & religious activities. 'Elderly Clubs' can be formed at local level.
- 12.8.1.5 Necessary arrangement made and initiatives be taken to provides Digital aids with regard to health and general wellbeing through tele-counselling, tele-medicine, etc. Door step delivery services also be ensured.
- 12.8.1.6 Old Age Home, Care Centres and Elderly Clubs need to be set up. Old age homes etc. be increased accruing to percentage of elderly population in district/ block/ tehsil. Such facility be provided for at least 15% of the population in this category. In addition subsidized rental scheme may also be launched/ made for the elderly.

12.8.2 Women and Children

- 12.8.2.1 Efforts be made for creating support centers for widows &war widows, dowry &rape victims; acid attack survivors and burn victims; domestic violence victims and even women hoping to restart their careers.
- 12.8.2.2 Ensure that there is no shortage of Child Daycare Service/ Crèches. Have and encourage Safe Places such as "after-school Clubs" for children after school hours.
- 12.8.2.3 Campaigns be organized for increasing awareness about, 'Women and Child helplines'. The effectiveness of such help lines be improved.

12.8.3 **Physically Challenged**

- 12.8.3.1 AdequateCare Centres be planned for physically / mentally challenged persons.
- 12.8.3.2 All public places like roads, workplaces, shopping centres/markets, healthcare institutions, recreation facilities, walkways, etc., should have disabled friendly design features in NCR.

12.8.4 **Drug Addicts, Alcoholics & their Dependents**

- 12.8.4.1 Integrated Rehabilitation/Reform Centers be planned in NCR districts in coordination with Dept. of Social Justice and Empowerment.
- 12.8.4.2 State departments may benefit from MoSJ&E program National Action Plan for Drug Demand Reduction (NAPDDR) (refer **Annexure D-12.1.6**)

12.8.5 **Outdoor Spaces, Buildings, Transport & Other Support facilities**

- 12.8.5.1 The concept of "Happy City" be adopted across NCR and Mental Wellbeing Mapping be introduced to gauge the happiness status on regular interval.
- 12.8.5.2 All Green spaces and walkways/pavements be well-maintained, safe, elder friendly with adequate accessible shelter, toilet facilities and seating. All walkways in public/private areas be pedestrian-friendly (even level with anti-skid tiles and wide enough to accommodate wheelchairs with low curbs that taper off to the road), be free from obstructions (e.g. street vendors, parked cars, trees, garbage, droppings, etc.) and supported by easily accessible public conveniences.
- 12.8.5.3 Outdoor seating particularly in parks, transport facility stops and public spaces be spaced at regular intervals and patrolled to ensure safe access by all.
- 12.8.5.4 Hassle free seamless connectivity of walking & cycling network be ensured with public transport.

Draft RP-2041 for NCR

- 12.8.5.5 Buildings be accessible and be equipped with features like elevators, ramps, adequate signage, railings on stairs, Highlighters on the stair case, Stairs with low risers, Anti-skid flooring, Rest areas with comfortable chairs& changing room facilities, etc.
- 12.8.5.6 Roads be with adequate non-slip, regularly spaced pedestrian crossings, well-designed and appropriately placed traffic islands, overpasses or underpasses, to assist pedestrians to cross busy roads. Pedestrian crossing lights to allow sufficient time for older people to cross the road and with both visual & audio signals.
- 12.8.5.7 Transport stops and stations be accessible, with ramps, escalators, elevators, appropriate platforms, public toilets, and legible and well-placed signage, with shelter from weather, clean and safe, and adequately lit. Accessibility be enhanced in MRT/RRT stations and ramps connecting building at intermodal interchanges.
- 12.8.5.8 Buses should be equipped with ramps to get on to as well as having an automated step which lower to the ground to allow for ease of access.
- 12.8.5.9 Necessary amendments be made in the bylaws to enable provisions of lift in all existing building/complexes.
- 12.8.5.10 Plan adequate "Working women-men Hostels" to cater to the working force travelling daily from distant places spending considerable time and money on travel. Such hostels should be equipped with all latest infrastructure and digital facilities updated form time to time.
- 12.8.5.11 Plan for Orphanages/ Night Shelters/ Multipurpose Community Hall; Yoga Meditation, Spiritual & Religious Discourse Centres; Music/ Dance and Drama Training Centre, Adult Education Centre, etc.
- 12.8.5.12 Plan for accessible and certified/approved 'Distributive Services' like Milk (Booth)/ Milk and Fruit & Vegetable Booth, LPG godowns, etc. as per habitation sizes.
- 12.8.5.13 Plan for cremation ground, burial ground & cemetery with latest facilities like electric/CNG crematoriums with approved/ trained staff, providing required services.
- 12.8.5.14 The persons receiving unemployment allowance be simultaneously provided skill training to make them employable. The renewal of unemployment allowance be based on skill attained (at least one) during the period when allowance is availed.
- 12.8.5.15 NCR states to work jointly on having a platform for vacancy analysis that may include an information system where in all vacancies and available skilled manpower with locations, are monitored and coordinated with employment exchanges for filling up vacancies. Job-Portal in line with NCT Delhi be created in for all sub-regions.
- 12.8.5.16 'Facilitation Centers' for migrants be set-up in Cities/ towns in NCR.
- 12.8.5.17 Revive the postal infrastructure and utilize the infrastructure with value addition through offering 'Citizen Centric Services' and all e-Sewa services such as Aadhaar, Passports, PAN, PMFBY, EC registration, Labour services, FASTag, utilities bill payments and eStamp, etc. Post offices may have digitized parcel lockers and should look into mechanization of physical delivery, may be usage of Drone facilities after necessary approvals. The infrastructure be community driven entity and Haryana model where Panchayat buildings house post office, could be adopted in rest of NCR. The URPDFI guideline, 2015 propose one Post Office for Population of 15000 and a Head post office for 2.5 lac population, it should be adhered to. Post offices staff could be used for quick field surveys since they have GPS enabled smart phones.
- 12.8.5.18 In order to protect vendors' livelihood rights and social security, a 'Plan for Street Vending' has to be prepared by every local body as also mandated in the "Street

Vendors Act, 2014". The plan should contain, inter-alia, earmarked vending zones, spatial norms for street vending, covering existing as well as accommodating future growth in the number of vendors. In this regard, necessary amendments be made in the existing Master Plans/Development Plans, Zonal Plans, etc. and significant steps be taken towards regulation of street vending in the Region, to provide respite to street vendors from undue harassment and help them carry out their business peacefully.

12.8.5.19 Mapping of Social Support System/ Facilities and uses should also be done in the Sub-Regional Plans/ District Development Plans/ Master Plans/ Development Plans, etc.

12.8.6 Institutional Arrangement

- 12.8.6.1 NCR states may empanel/enlist various reputed NGOs, Self Help Groups (SHGs), etc. which could be taken as Knowledge partners by Authorities/ Corporations/ ULBs.. Further, in order to make NCR socially supportive to old, women, child and people with special needs, such knowledge partners can contribute significantly during planning & development process, advice in customization/changes in the existing infrastructures & facilities. They can also train human resource on social issues, challenges and help in running few facilities, showcasing it as Model Facilities for other cities and areas to replicate.
- 12.8.6.2 States/ULBs to plan for providing public spaces and amenities for increased social interaction/ community engagement, sharing space by co-locating schools with other public services, such as health clinics, senior citizen centers, senior housing, Child & Day care centers, after-school programs, etc. Co-location can offer cost savings, community integration, and inter-generational support.
- 12.8.6.3 Each Sub-Regional Plan should provide detailed status of various existing sports facilities and social support infrastructure for various categories like handicaps, old age, etc. and projections for various needs with regard to sports and social support infrastructure (expected facilities based on different social groups) should also be worked out based on prevailing guidelines therein and international practises.
- 12.8.6.4 10. Action Plan for the development of adequate physical infrastructure for Sport and Social Support System should be prepared by the respective NCR participating States.
- 12.8.7 Key projects envisaged to be taken up in NCR regarding sports and social support systems are given at Table 12.3 below:

 Table 12.3: Key projects envisaged to be taken up regarding sports and social support system in NCR (2021-2041)

SI. No.	Proposed Projects	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1.	Projects for having Sport	To be done by	-	-	-
	Facilities equipped with the	2026			
	required Coaches,				
	physiotherapist, medical support				
	and hostel facilities at Tehsil and				
	District Headquarters				
2.	Projects for having fitness	At least two	75% of	100% of	-
	centers, open gymnasiums in the	districts in	districts in	districts in	

Sl. No.	Proposed Projects	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	parks and energy-harvesting outdoor gym ⁹ (at local level like Gram Panchayat and Block headquarters).	each sub- region.	each sub- region.	each sub- region.	
3.	Projects for Establishing Sports Libraries, Sports Museums, Traditional Games Park (Olympic, Paralympic, Traditional Games, Martial Arts, etc.) in each District	At least two districts in each sub- region.	100% of districts in each sub- region.	-	-
4.	Projects for Sports related Medical/ Rehabilitation Centres in each district.	At least two districts in each sub- region.	100% of districts in each sub- region.	-	-
5.	Projects for establishing Sports University, Sports Research Centres and laboratories in NCR	At least one i region.	n each sub-	-	-
6.	Project for having Sports Equipment and apparel manufacturing hub of international standards	At least one each sub- region.	-	-	-
7.	Project for having Old age home, care center and elderly clubs.	To be set up in each Tehsil and district Hq.	-	-	-
8.	Project for having Care Centres for physically/ mentally challenged persons	To be set up in each Tehsil and district Hq.	-	-	-
9.	Projects for setting up efficiently functioning Integrated Rehabilitation/ Reform Centres in each district of NCR	To be done by 2026	-	-	-
10.	Projects for setting up 'Migrants Facilitation Centers (MFC)' in Cities/ towns in NCR.	In all Class-I towns/ cities.	-	-	-

⁹ <u>https://newatlas.com/tgo-green-heart-electricity-generating-gym/23078/</u>

Chapter 13

SAFETY, SECURITY& DISASTER MANAGEMENT

13.1INTRODUCTION

- 13.1.1 Safety and security lie at the heart of the prosperity of any nation. Safety is freedom from physical or emotional harm. Security is freedom from the threat or fear of harm or danger. Both safety and security affect an individual's well-being. Citizens want to feel safe (protected from risk or injury) and secure (free from danger or threat). In general, public safety and security consist of maintaining social privacy, eliminating risks, and optimal use of opportunities. In this new reality, national, regional and local governments need to view citizen safety and security concerns are prevalent and important in both rural and urban context; security is a prerequisite for lively urban spaces.
- 13.1.2 A safe city is increasingly being considered essential in ensuring secure living and prosperity. Safety, in today's scenario, covers the entire spectrum starting from safety within the home to safety while on road, safety at workplace irrespective of the nature of work, safety of patients in hospitals, safety of children in schools and various other aspects of day-to-day life. Public safety has emerged as an important function for governments across the globe. It refers to the duty and function of the state to ensure the safety of its citizens, organisations and institutions against threats to their well-being as well as the traditional functions of law and order. Safety was considered important enough to find a mention in the country's constitution that also forms the basis for the legal framework.
- 13.1.3 Traffic and crime issues are also under the safety concerns of citizens. Disregard of traffic rules leads to accidents and in turn loss of innocent lives, damage of vehicles, increasing insurance costs. Increasing cases of road rage adds to social insecurity issues. As per National Crime Records Bureau (NCRB), on an average, the 4.5 lakh accidents annually cause 1.5 lakh deaths, in the country. Over speeding and rash driving are major reasons for accidents. Decreasing speed by 5% can reduce chances of accidents by 30%. Two wheelers account for many fatal accidents but focus continues to be generally on car and truck accidents. However, despite, the citizens being exposed to safety risks related to Electrical, Fire, Road, Transportation, Home, School, Work Place and a host of other such risks, there is no single agency or Govt. body that acts as a nodal point.
- 13.1.4 In 2018, MHA set up a new Women Safety Division with the prime mandate to strengthen measures for safety of women of the country and instil a sense of security in women. (Refer **Annexure D-13.1**). It includes the 'Safe City Implementation Monitoring (SCIM) Portal', a joint endeavour of city's police and municipal bodies, to monitor the safe city project and was introduced in the eight cities of the country including Delhi in NCR. The portal aids in online tracking of deployment of assets and infrastructure. The safe city project funded through the Nirbhaya Fund involves identifying crime hotspots and saturating them with CCTV cameras, drone-based surveillance and deployment of Automated Number Plate Reading (ANPR) equipment through an integrated smart control room. In addition, the Emergency Response Support System (ERSS) has been implemented in most of the States including NCR constituent area. It was launched in Uttar Pradesh and Rajasthan in April 2019, Delhi implemented in September 2019 and Haryana in Feb. 2020. Further, assistance of
Centre for Development of Advanced Computing (C-DAC) is available for technical assistance for citizen safety in public places. (Refer **Annexure D-13.2**).

- 13.1.5 Government of India has taken initiative for safety in Schools through the National School Safety Project which is a demonstration project to promote a culture of safety in schools by initiating policy level changes, capacity building of officials, teachers, students and other stake holders by undertaking information, education and communication activities, promoting nonstructural mitigation measures and demonstrating structural initiatives in a few schools.
- 13.1.6 Public Security represents one of basic foundations of comprehensive security in any social system. But today security is challenged in all aspects of our daily lives and trust in the institutions that should keep us safe is low. The sustainable development of public security leads to strengthened independence and stability of the social system.
- 13.1.7 Technology is moving at a great pace and it is envisaged that intelligent sustainability will soon become autonomous; products will become services, jobs will be leveraged by freelancers and robots shall soon be part of life. About 40% of the task will get automated globally. One additional robot per thousand will reduce the employment rate by 0.20%; 4 terabytes of data are delivered by autonomous cars daily. It is also anticipated that the commercial Unmanned Aerial Vehicle(UAV)/ Drone market is expected to quadruple in the next four years, 30% of vehicle value will come from software in 2030, 40% of existing banking roles will be disrupted by machine learning, 20 billion smart needs may become the next banking customers. About 2 billion people will be added in the world population by 2050, 5 years should be added to the life expectancy in the next 10 years. 80% of the world population will be on the internet in 5 years, 80% of the internet traffic is coming from video and TV.1 Government is now moving towards Artificial Intelligence enabled governance. In today's digital technology era, almost every crime has digital denomination to it. It could be conventional crime, financial crime or a technology enabled crime.
- 13.1.8 Government of India's initiative of "Digital India" have put forth Digital and Financial Inclusion as national priorities. India is expected to become \$5 trillion economy and a \$1 trillion digital economy by 2025. India is among the top three global economies in number of digital consumers and expected to clock the fastest growth in digital payments' transaction value in 2019-2023 with a CAGR of 20.2%. Cyber safety and security in the digital world is of prime importance today and in near future, to maintain user confidence in the system and enable the country to meet its targets of trillion dollar digital economy.
- 13.1.9 Cyberspaces have overlapping social, technological, psychological areas. In IT sector, there is need of new jurisprudence policies, digital policies and governance. There are inter-dependencies of systems in digital cyber threats. World Economic Forum Global Risks inter-connection assessed cyber-attacks as one of the top risks2. Appreciating the importance of Cyber Security in current as well as future scenario, various measures have been taken by Government of India. National Association of Software and Service Companies (NASSCOM), the premier trade body for the IT-BPM Sector has setup Data Security Council of India (DSCI), for making the cyberspace safe, secure and trusted, by establishing best practices, standards and initiatives in cyber security and privacy. DSCI has developed 'Techsagar'- (Technology Capability Repository), an online portal of India's technological capability i.e. India's cyber tech repository having 25

²Source: The Global Risks Interconnections Map 2020

¹Dr. Sanjay Bahl, Director General, CERT-In

https://reports.weforum.org/global-risks-report-2020/survey-results/the-global-risks-interconnections-map-2020/

technology areas. Smart city and energy sectors are two examples for cyber security technology stack. The 25 Technology areas under Techsagar of DSCI are as placed at **Annexure D-13.3**.

- 13.1.10Ministry of Electronics and Information Technology (MeitY) and Data Security Council of India (DSCI) has conceptualized National Centre of Excellence (National CoE) for setting up connected, concerted & coordinated efforts to trigger and multiply cyber security technology development in the Country (refer Annexure D-13.4). Further, to put in place an institutionalized structure for effectively building the capacity and infrastructure for handling the cybercrimes investigations, DSCI, Infosys Foundation and the CID, Karnataka Police have inked an MoU to set up the Centre for Cybercrime Investigation Training & Research (CCITR), Bangalore (Annexure D-13.5) National Cyber Security Policy (NCSP) 2013 (Refer Annexure D-13.6), a framework by MeitY aims at protecting the public and private infrastructure from cyber-attacks. The policy aims to protect information and information infrastructure in cyberspace, build capabilities to prevent and respond to cyber threats, reduce vulnerabilities and minimize damage from cyber incidents through a combination of institutional structures, people, processes, technology and cooperation. Further, the draft of National Cyber Security Strategy 2020, that envisages creating a secure cyberspace in India, is being prepared to fill the gaps and meet the target envisaged in NCSP.
- 13.1.11MHA, GoI has also come up with Indian Cyber Crime Coordination Centre (I4C) scheme in 2018 (refer **Annexure D-13.7**), which integrates all police stations and a Cybercrime Reporting Portal has been launched wherein citizens can report online Cybercrimes pertaining to Child Pornography (CP)/ Child Sexual Abuse Material (CSAM) or sexually explicit content such as Rape/Gang Rape (CP/RGR). NIC is also developing dashboard for Chief Information Security Officers (CISO).
- 13.1.12Apart from the social safety and security, the safety of life and property from risks due to natural calamities and disasters is also a major aspect to be addressed. Earthquake has the highest fatality and damage potential in India. More than 300 districts in the country are in the multi-hazard-prone category and about eighty percent of buildings are vulnerable to varying degree of disasters. As far as disaster management aspect is concerned, various new developments include adoption of recent international initiatives like Sendai Framework for Disaster Risk Reduction - 20153, Sustainable Development Goals 2015-304, Paris Agreement on Climate change at the 21st Conference of the Parties (COP) under United Nations Framework Convention on Climate Change (UNFCCC) on Climate Change-20155, that provide new direction to disaster management and disaster risk reduction measures into our development decisions and policies. The four priorities for action under the Sendai Framework are: Understanding disaster risk; strengthening disaster risk governance to manage disaster risk; Investing in disaster risk reduction for resilience; Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction. Effects of urban heat island are not only limited to increase in heat, but they can also lead to a higher inconsistent rainfall. Further, the impact of climate change is found to be more in urban area than the rural area.

³https://www.unisdr.org/files/44983_sendaiframeworkchart.pdf

⁴https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%2 0Development%20web.pdf

⁵https://unfccc.int/files/essential_background/convention/application/pdf/english_paris_agreement.pdf

- 13.1.13India is prone to various hazards with 85 % of Indian landmass affected by one or more natural disasters (12% with Floods; 15% Landslides; 59% Earthquakes and so on).
- 13.1.14Major government initiative with respect to disaster management would include the Disaster Management Act, 2005. As per the Act, National Disaster Management Authority (NDMA) have been formed for laying down the country level policies, plans and guidelines for disaster management for ensuring timely and effective response to disaster, whereas State Disaster Management Authorities (SDMAs) and District Disaster Management Authorities (DDMAs) have been set up for laying down policies and plans for disaster management in the state and districts respectively including provisions for prevention and mitigation measures. NDMA has implemented the Scheme 'Strengthening of State Disaster Management Authorities (SDMAs) and District Disaster Management Authorities (DDMAs)' with the objective to improve the effectiveness of all SDMAs and selected DDMAs and make them functionally operational by providing dedicated DM professionals.
- 13.1.15Further, NDMA has also come up with the National Disaster Management Plan, 20196; Upgraded earthquake Hazards Maps and Seismic Vulnerability Assessment of Buildings Types in India ; Mobile Radiation Detection Systems (MRDS) to handle Radiological Hazards in Metros/ Capital Cities/ Big Cities in India; Aapda Mitra-Scheme for training the community volunteers with the skills to respond to their community's immediate needs in the aftermath of a disaster also and a National award to individuals and institutions in the field of Disaster Management.
- 13.1.16As per NDMA Guidelines, 2014, for natural hazards, i.e. earthquake, flood, drought and urban flood management are given as follows: Identification of seismic zones, seismic retrofitting of critical infrastructure and incorporation of earthquake resistant features in development codes are the mitigation strategies (earthquake management); identification and marking of flood prone areas, preparation of flood vulnerability maps and integration of the Flood Management Plan with the Development Plan (Flood Management);Preparation of Drought Management Plan at district and State lev el in integration with Disaster management Plan and development plans (Drought Management) and Designing of Storm Water Drainage systems in consonance with the land use Plan (Urban Flood Management).
- 13.1.17As per NDMA Guidelines, 2014, for manmade hazards, i.e. industrial, nuclear and fire services management, emergency preparedness and response mitigation plans need to be formulated.
- 13.1.18Other important schemes of Government of India for mitigation of various risks i.e. Flood and earthquakes are given as under:
 - a) National Earthquake Risk Mitigation Project (Preparatory Phase) included (i) Techno-legal Regime involves adoption, enforcement and updation of Techno-legal Regime in concerned Cities/States (ii) Institutional strengthening (iii) Capacity Building (iv) Public Awareness & Sensitization.
 - b) Flood Risk Mitigation Scheme (FRMS) covers activities like a) Pilot Projects for development of model Multi-Purpose Flood Shelters and b) Development of River Basin specific Flood Early Warning System and Digital Elevation Maps for preparation of Inundation Models for giving early warning to the villagers for preparation of River Flood Mitigation in the region. Under the Scheme, financial support is to be provided to the Flood prone States for undertaking pilot scheme in

⁶https://ndma.gov.in/images/policyplan/dmplan/ndmp-2019.pdf

respect of above two activities.

- c) The National Disaster Management Services (NDMS) Pilot Project provided the reliable telecommunication infrastructure and technical support for Emergency Operation Centre (EOC) operations at MHA, NDMA, NDRF HQ, states & selected vulnerable Districts.
- 13.1.19Diseases/ Epidemics: The global battle against COVID-19 has proved to be a challenge for many countries, India included. While the characteristics of the disease and principal modes of transmission are similar across the world, local factors such as population density, patterns of social interaction and the capability of local public health systems determine the course of the disease.7 To tackle the spread of COVID-19 in the country, Ministry of Home Affairs (MHA) has also been coming up with guidelines at regular intervals which mainly emphasized upon Face Covering, Social distancing, identification of containment zones, permitting limited activities inside and outside of containment zones, usage of Aarogya Setu app, screening and hygiene related activities, Staggered working hours etc. Emphasis has also been laid upon to improve the health infrastructure, in order to tackle the disease.
- 13.1.20The India Meteorological Department (IMD), an agency of the Ministry of Earth Sciences, Government of India is the principal agency responsible for meteorological observations, weather forecasting and seismology and also assists in developing Heat Action Plans for cities. IMD is aiming for an Upgraded Observational System and forecasting modelling platform in the next 5 years. From April 2019, IMD has also started predicting lightning, 48 hours in advance for different districts and 3 hours in advance for specific locations.

13.2EXISTING STATUS

- 13.2.1 The fast urbanisation trend with urban population share of about 55% in NCR however requires special focus on the upcoming security and safety threats in urban areas. Geoclimate conditions and rapid development of the region makes it vulnerable to disasters, both manmade disasters like fire, collapse of houses, chemical, biological, radiological and nuclear (CBRN) hazard, serial blasts, road accident hazards, industrial accidents, environmental pollution, etc. and natural disasters like earthquakes, flood, etc. While floods, as a recurring annual phenomenon, bring devastation in the region, earthquakes so far have caused higher casualties and emerged as a considerable threat. With rapid urbanization and resultant development, public safety and security has become a key issue which needs urgent attention as it is key prerequisite to offer better quality of life in the region.
- 13.2.2 NCR needs to be ready to adopt the change in the society and the governments need to be prepared for it. There are multiple challenges from safety and security point and NCR needs to be prepared to address them.
- 13.2.3 The safety and security status of NCR is given as below:
 - a) All NCR States are covered under Crime and Criminal Tracking Network and Systems (CCTNS) using Investigation Tracking System for Sexual Offences (ITSSO). The purpose is to digitalise the data and develop a national data base of crimes and criminals that would help enhance the operational efficiency of the crime investigation agencies. As per IPC crime data for NCR in 2018, the total number of cognisable IPC Crimes in NCR was 4,02,509, wherein NCT Delhi accounted for the lion's share of 2,49,012

⁷https://ndma.gov.in/images/covid/response-to-covid19-by-kerala.pdf

crimes i.e. nearly 62% of the total crimes. Haryana sub-region accounted for 77,342 IPC crimes i.e. 19% followed by UP sub-region which accounted for 54,795 crimes i.e. nearly 14% and Rajasthan sub-region accounted for 21,360 i.e. 5%. Nearly 50% of major crimes in NCR included Vehicle Thefts (72,027), followed by Crime Against women and Children (46,475) i.e. 32%, and the rest being accounted for by Kidnapping & Abduction (13,048), Arms Act (11,500) and crimes under NDPS Act (3,333).

- b) In Delhi, the Delhi Police have different Control Rooms, workshops & training centers, etc. and at present all its systems are integrated by Cyber Highway Connectivity (Annexure D-13.8).Brief of Initiatives of Uttar Pradesh Police in this direction are as placed at Annexure D-13.9. In case of Uttar Pradesh, Digital mapping has been done for village boundaries and jurisdiction of police station.
- c) NCR is home to strategic institutions of National Importance and cyber security should be the priority of the Government. Future security issues may include attacks directed towards numerous systems and devices spread across NCR as enhanced threat surface provides huge opportunities for hackers to launch attacks.
- 13.2.4 Status of Disaster Risks in NCR:
 - a) Earthquakes : National Capital Region (NCR) is located on folded crustal ramp with basement rocks of Delhi Super group, bounded by two regional faults viz. Mahendragarh- Dehradun Sub Surface Fault (MDSSF) in the west and Great Boundary Fault (GBF) in East Delhi. The ramp trending NNE-SSW across 'fore deep', is juxtaposed to Himalayan thrust belt. Another important structural element of the belt is NW-SE trending Delhi-Sargodha Ridge (DSR) which passes through Delhi and is flanked by basins on either side, viz Sahaspur Basin in the north and Bikaner Basin in south west. The geotechnical mapping, geophysical survey and remote sensing studies have indicated presence of many lineaments around Delhi. As per the Vulnerability Atlas of India, published by Building Material and Technology Promotion Council (BMTPC), Ministry of Housing and Urban Affairs (given at Annexure D-13.10), fault lines of consequence in the domain having been defined in unanimity are Great Boundary Fault (GBF), Mahendragarh- Dehradun Sub Surface Fault (MDSSF), Moradabad Fault, Delhi Sardodha Ridge (DSR) and some highlighted importance of Sohna Fault and Mathura Fault.
 - b) The Seismic Hazard Zoning Map of India of the Vulnerability Atlas of India also indicates that NCR lies in:
 - High damage risk zone-IV (expected MSK intensity VIII) with regard to earthquake (BIS IS 1893, Part 1:2002);
 - Very high damage risk zone B (with regional basic speed (Vb) = 50m/s) with regards to wind and cyclone hazard and
 - Areas liable to floods
- 13.2.5 Some of the districts having plethora of multi-story buildings and also highly populated urban villages make it more vulnerable from earthquake and fire disasters. Therefore, in terms of probable damage scenario, the National Capital Region is most prone to earthquake and chances of a high intensity earthquake in near future cannot be ignored. Considering the areas affected during past earthquake of magnitude 6.5, it can be



expected that such an earthquake occurring in NCR could adversely affect the entire region with damaging intensities and could affect more than 50% of Central NCR depending on the location of the epicentre (refer figure 13.1 below).

Figure 13.1: Earthquake Hazard Zones of NCR

- 13.2.6 Disaster Management Cell, Noida has initiated the School Safety programmes/ evacuation drills in Gautam Buddha Nagar District; wherein about 80,000 students and 8000 teachers participated and sensitized in these programs till date.
- 13.2.7 Floods: As per the past history of the floods in the Ganga and Yamuna sub-basins, the districts affected are Meerut, Ghaziabad & Bulandshahr in U.P. and Rohtak, Panipat &

Sonepat in Haryana. Flood levels in Yamuna cross the danger level almost every year and people living in low lying areas behind the 'bunds' (embankments) are forced to evacuate to the top of the bunds or on road sides at higher elevations.

- 13.2.8 For flood management, Central Water Commission (CWC) is entrusted with monitoring of flood situation and issuing flood forecasts. Flood Forecasting Network covers 325 stations including 197 low lying area/ cities and towns besides 128 reservoirs all over the country. The network also covers NCR areas of NCT of Delhi, Haryana, UP and Rajasthan.
- 13.2.9 Fire: Increased population density and mixed occupancy, construction of high rise buildings having multi activities, roads, industries are the major development activities, which causes man made hazards like fire, Chemical, Biological, Radiological, and Nuclear (CBRN) hazards, road accidents, etc. Fire hazards in NCR can be attributed to following main reasons:
 - Non-implementation of fire safety norms as part of building bye-laws.
 - Encroachment, overcrowded and haphazard growth affect the movement and timely approachability of fire tenders in emergency.
 - Inadequate safety measures in the electrical installation and sub-standard wiring and over loading of electrical system.
 - JJ clusters constructed with highly flammable material and some constructed with very toxic materials like plastics, polyethylene sheets, bamboo, soft wood etc. without proper access for fire tenders.
 - Storage of flammable/explosive material in the vicinity of populated area and hazardous commercial activities;
 - Inadequate pumping facilities hamper fire fighting and control of fire.
 - Inadequate availability of special fire fighting equipment with local bodies especially for high rise multi storied buildings, where it is a prerequisite.
- 13.2.10With respect to fire, as a disaster, there are standards mentioned in the National Building Code but implementing the recommendations in industrialization and urbanization process as well as in unorganized sector is yet to be done in totality. According to 13th Finance Commission Report (2010-15) there is a deficiency of 98% Fire Stations, 80% Fire Fighting & Rescue Vehicles and 96% fire personnel.8
- 13.2.11In NCR, there are about 145 Fire Stations with an average population of 4,09,103 per fire station. According to Urban and Regional Development Formulation and Implementation (URDPFI) guidelines, on an average there should be 2 lakh population per fire station or 5-7 km radius between each fire station. In NCR, the average population is 4.1 lakh per fire station. Hence, average population per fire station is quiet high in this region. Sub Region Wise information of population served by each fire station in NCR (Annexure D-13.11) shows that Delhi has more fire stations and average population per fire station is relatively low as compared to the other Sub-Regions i.e. 2.75 lakhs per Fire station, followed by Haryana Sub Region with 3 lakhs population per fire station and Rajasthan Sub Region with 4.4 lakh population per fire station. In UP Sub Region, the average population per fire station is 6 lakhs per fire station i.e. very high. (Refer Fig. 1 below the Sub Region wise average Population per

⁸https://www.prsindia.org/uploads/media/13financecommissionfullreport.pdf

Fire station). The average population per fire station is high in NCR, which implies high response time to fire incidences and increase of resultant loss due to fire.

13.2.12With respect to fire, as a disaster, there are standards mentioned in the National Building Code but implementing the recommendations in industrialization and urbanization process as well as in unorganized sector is yet to be done in totality.



Fig. 13.2: Sub Region wise average Population per Fire station

13.2.13Chemical, Biological, Radiological, and Nuclear (CBRN) Hazard

- a) The CBRN scenario gains importance because in recent past, a number of examples of CBRN incidents in India and worldwide have resulted in severe adverse implications. Nuclear (Bulandshar, U.P., 1993) and Radiological (Cobalt-60 in Mayapuri, New Delhi 2010) incidences have taken a heavy toll on human life and economy in urban settings. The incidents in Nuclear Facilities in NCR are given in Table1.4 of Annexure-D-13.10.
- b) CBRN hazards may arise in a number of ways, such as-explosion in a plant, accidents in storage facilities of chemicals, misuse of chemicals, improper waste management, technological system failures and human error.
- c) For the purpose of specialised response to a threatening disaster situation or disasters/emergencies both natural and man-made such as those of CBRN origin, the Disaster Management Act, 2005 has mandated the constitution of a National Disaster Response Force (NDRF) comprising of eight battalions located at strategic locations and deployed proactively as required. Presently four out of eight of them have been equipped and trained to respond to situations arising out of CBRN emergencies. One such battalion is located in Greater Noida in NCR which cover States of U.P., Uttarakhand, Haryana, Delhi, Chandigarh, Punjab, J&K and Himachal Pradesh while Rajasthan state is covered by NDRF Battalion located in Gandhi Nagar (Gujarat).
- 13.2.14Emergency Operation Centers have been set up in only 60% of the total districts in NCR; Centers have been set up in Delhi and Rajasthan Sub-Region, whereas 75% districts in UP Sub- Region have set up Emergency Centres followed by Haryana that has Centres in only 35% of the districts. It is observed that Disaster Management provisions are yet to be incorporated in Master/ Development Plans. Delhi has incorporated the provisions whereas other Sub-Regions are way behind in this task refer Table 2 of Annexure D-13.11.
- 13.2.15Regarding the capability for disaster risk mitigation, district level authorities have been constituted and the status of Constitution of District Disaster Management Authority

and District Disaster Management Plan in NCR are attached at **Annexure D-13.11**. It shows that barring only a few, most of the districts have constituted District Disaster Management Authority and District Disaster Management Plans have been prepared.

13.3 KEY ISSUES AND CHALLENGES

- 13.3.1 One of the major concerns for achieving liveability and good quality of life in NCR is the safety of the vulnerable category i.e. women, child and elderly. The schematic diagram is as placed at Annexure D-13.12 highlighting some of the key issues in public safety mapped as a part of Accenture- NASSCOM report.
- 13.3.2 Road accidents and crime issues are also under the safety and security concerns of citizens in NCR. Disregard of traffic rules, over speeding and rash driving lead to accidents and fatality. Though two wheelers account for many fatal accidents, but focus continues to be generally on car and truck accidents. Increasing insurance costs result from the increased accidents and related loss of lives, injury and damage of vehicles. Increasing cases of road rage also adds to rising social insecurity issues.
- 13.3.3 According to the Seismic Hazard Map of India, U.P. sub-region of NCR lies is in High damage risk zone-IV of the Seismic Zoning map of the country. Expected MSK intensity is VIII regarding earthquake; Very high damage risk zone B with regards to wind {with regional basic speed (Vb) = 50m/s} and cyclone hazard and areas are liable to floods. Some of the districts having a plethora of multi-story buildings and also highly populated urban villages become more vulnerable from earthquake and fire disasters. Chances of a high intensity earthquake in near future cannot be ignored.
- 13.3.4 At the micro level, high density, narrow lanes is a challenge in old urban areas/unplanned residential /slum areas: Density of housing is higher near urban areas which vary from 1500/Km2 to 7000/ Sq.Km and many of these high density areas also lie in moderate-high seismic zones.
- 13.3.5 Other major challenges for Earthquake Risk Mitigation includes (i) Huge stock of vulnerable structures (ii) Lack of awareness among various stakeholders about the seismic risk (iii) Inadequate monitoring and enforcement of earthquake-resistant building codes and town planning bye-laws (iv) Lack of formal training among professionals in earthquake-resistant construction practices.
- 13.3.6 Inter-State & Inter-District Coordination, Inter-Agency Coordination and balance between conflicting interests of various agencies is one of the concerns across NCR. Delayed responses for a public safety situation and loss of life/property is accounted for by multiplicity of public safety agencies like the police for citizen safety and security, fire agency for fire safety; disaster management agencies to handle disasters; multiple public and private emergency management services to handle medical emergencies; NGOs and other agencies for women & child safety; other domestic public safety issues like gas leakage is handled by local gas dealers at city level, etc.
- 13.3.7 Further, Emergency Operation Centers and Emergency Response Centers are lacking in few districts of NCR and it is observed that Disaster Management provisions are yet to be incorporated in Master/ Development Plans, which is a concern.

13.4 POLICIES AND PROPOSALS

13.4.1 The policy recommendations and proposals are based on and have been aligned with the International and National initiatives, emerging global best practices and knowledge base; framework and guidelines pertaining to public safety, security and disaster management. The international initiatives regarding disaster management as mentioned above includes agreements i.e. Sendai Framework for Disaster Risk Reduction – 2015, Sustainable Development Goals 2015-30 and Paris Agreement on Climate change at the 21st COP under UNFC on Climate Change-2015. The national initiatives refer to the National Disaster Management Plan (NDMP) which provides a framework and direction to the government agencies for all phases of disaster management cycle.

- 13.4.2 NCR should be developed as a safe, secure and resilient region. The policies and proposals of the proposed NCR Plan for 2041 also aim to identify the priorities for action for achieving a safe, secure and resilient region and cover aspects of capacity development and financial structure, which can be implemented over short, medium and long term. The policies should be translated into the plans at various hierarchies and need to be implemented and monitored. All initiatives in safety and security sector should be aimed towards improving the perception of safety about NCR at both national as well as international level, attaining international standards.
- 13.4.3 All Guidelines issued by Central Government and its Departments from time to time should be implemented in a time bound manner, with improvements as may be necessary as per local requirements.
- 13.4.4 Policing Services are important for the region. Every activity happening in the NCR, need to be monitored. Strengthening of Zonal Integrated Police Network (ZIPNet) introduced in 2004 with the main objective to share Crime and Criminal Information (CCI) in real-time and adoption across NCR by 2022 (refer **Annexure P-13.13**). Technology based security systems and increased mobile patrols, air policing using drones and helicopters etc. for both emergency response and evacuations need should be introduced in the region. Drone and helicopter based air policing for emergency response, evacuations etc. have been proposed in a phased manner i.e. in at least two districts in each sub-region for the near future and for all the districts in the later phase. Hence a network of Drone launch pads across NCR is proposed phase wise to be set up in each Metro Centre, Regional Centre and district headquarter and eventually in all remaining towns/ cities.
- 13.4.5 A network of CCTV cameras i.e. automated incident detection capabilities is proposed to be installed on the inter-state/ City entry/ exist points and in markets, in & around education institutions & health facilities, major intersections, transportation hubs, recreational areas, mandis, business centres, tourists spots, etc. is to be done in Metro Centres and Regional Centres in the first phase followed by the remaining areas/ cities & towns of NCR in the next phase. NCR Crime Coordination Support Office/ Cell at NCRB is also proposed to be set up.
- 13.4.6 Improved sensitivity towards crime against women & child is imperative. Adequate Women Police Stations in all NCR districts in a phased manner with PCR and equipment need to be ensured. The improvement of Infrastructure in existing Women Police Stations and establishment of new Women Police Stations in all NCR districts should be initiated in the near future.
- 13.4.7 Adopt and implement the concept of 'Safe Cities' across NCR: It is modern city concept based on providing comfortable living environment for population by means of innovative technologies. Implementation of these technologies enables using all municipal maintenance systems in a cost-effective and environmentally friendly manner. A perfectly operating security system forms the basis for a modern city infrastructure and an innovative component of security system integrated into the information and analytical complex. People Priority zones need to be developed in few zones in the Metro Centre and Regional Centre.
- 13.4.8 Safe Neighbourhoods and Communities / Community policing need to be promoted through constitution and registration of Neighbourhood Help groups/ Local vigilance groups of resident volunteers for crime prevention, community safety and neighborhood policing; Coordination of Local vigilance groups with the RWAs,

Guards & Private security agencies for increased surveillance of Neighbourhoods; Promotion of gated residential areas; Ensuring personal security including women through physical training activities like self-defence & martial arts, awareness programs, etc. ; Conducting periodic training and awareness programs for citizens to inculcate respect ,care and concern for women, children and olds at district and local level conducted by Police personnel through the services of various NGOs, youth clubs, etc. and Provision for funds for the safety needs of communities.

- 13.4.9 Road Safety and Traffic Management need to be achieved : Road accidents being the major safety concern, policies aimed to improve safety and traffic management need to be detailed out in the Sub-Regional Plans and are as follows; improve road engineering for both vehicles and pedestrians (i.e. signages, road markings and traffic controls, lighting); install technology based traffic regulatory system, promote regular awareness campaigns and lane driving campaigns; explore possibility of having dedicated lanes for two-wheelers (as per modal split data of the town); provide for well-equipped ambulances and trauma centres at strategic locations and integrate with 112 ERS and even for highway patrol vehicles on all road networks having RoW of 6.5 mtrs & above. strictly monitor compliance of speed governors in vehicles; develop cycle tracks throughout NCR(with cycle stands at all public places) for providing last mile connectivity and reduction of pollution and congestion; spread car pool lanes to encourage car-pooling for improvement of traffic system and security ; facilitate training through more numbers of driving schools and strict licensing procedures.
- 13.4.10Policies aimed to provide safe and convenient travel including late night travel options and secure transport for vulnerable groups like children, women, old and physically challenged also need to be implemented through 'Complete Streets', 'Vision Zero', connective sidewalks, public restrooms, and places to sit or rest in all communities in each of the Metro Centre and Regional Centre of all sub-regions. Streets are proposed to be reclaimed so as to meet the needs of the public by creating 'People Priority Zones' that restrict vehicular access, create public spaces, improve safety, reduce congestion, and improve air quality. Ensure eyes on the street and mixed land use in all new developments, promoting informal sectors like hawking/street-vending, making parks and public spaces more accessible, visible from the street, better landscaped and well lit streets.
- 13.4.11Safety for pedestrians, rail operators, and motorists need to be enhanced at highwayrailroad grade crossings
- 13.4.12Quick Incident/ Accident Response systems pertaining to the State Security systems need to be enabled through mobile services and cyber cell.
- 13.4.13Surveillance and Monitoring need to be improved: Convergence of information technology (IT) and operational technology (OT) infrastructure is required for better cyber monitoring9; Improve incident detection and management and invest in the use of traffic cameras or other sensors with automated incident detection capabilities on the inter-states entry/exit points; explore possibility of having Public elementary school routes with security cameras; possibility of covering the entire cities under surveillance be explored with no area being left grey. Install and upgrade the network of safety cameras and drone systems and Explore possibilities of establishing Emergency Camera Image Transmission System (ECITS), which enables use of private security

⁹IT/ OT convergence is the integration of IT systems used for data-centric computing with operational technology (OT) systems used to monitor events, processes and devices and make adjustments in enterprise and industrial operations.

cameras to grasp the situation of damage at the site in the event of a large-scale disaster such as terrorism.

- 13.4.14 Safety and Security of Public Places need to be ensured: Adequate lighting need to be provided at all public places/roads, walkways, cycling tracks, parks, etc. ; installation of an integrated & coordinated network of CCTV cameras covering all public places/important junctions/ transport networks, etc. of all towns and rural settlements, in a phased manner need to be ensured; dedicated Command & Control Centres is required to be setup in each town/ settlements which should be inter-linked for sharing of critical information and comfort and safety for international visitors/ tourists, by way of removing language barriers through Multilingual support at transit hubs (such as major railway stations and stations that offer direct airport access), Easy to understand signage (digital signage and using advanced technologies actively), and having a facility ensuring Health Care at places of tourist interests apart from major transit points should be ensured. Panchayats should be empowered to impose fine for offences like tampering of public property/facilities/infrastructure, electricity thefts, etc. in their jurisdictions.
- 13.4.15Safety and security of critical infrastructure need to be ensured: Measures/ Suggestions such as Standardized Building Permit System, Structural Safety Assessment of Critical infrastructure and selective retrofitting thereon, Training of Engineers, Masons, barbenders etc. can go a long way in improving the structural safety mechanisms in NCR; concerned departments of NCR states to actively interact and coordinate with and contribute to the National Critical Information Infrastructure Protection Centre (NCIIPC), the designated National Nodal Agency in respect of Critical Information Infrastructure Protection; identify critical infrastructure installations in each district which may include power/ energy generation/ distribution centres, treatment plants, IT hubs, mandis, food storage, hospitals, business centres, Airport/ Transport corridors, etc. and make specific infrastructure protection plan; State governments may take action/initiatives for a Resilient Self-Healing Cyber Security Framework for the power grid and make efforts to make cities cyber secure; physical Safety and security of IT industry are very important for business in the region and same may be ensured by the Authorities of respective areas and safety audits across the spectrum including building, road, school, hospitals etc. may be a conducted regularly.
- 13.4.16Cyber Security needs to be improved: State Govt. should follow the National Cyber Security Strategy 2020 (draft), while working towards and creating internet security code of ethical conduct for each internet, and upgrading principle based standards, policing, and capabilities for digital age, and thus providing transparency which is the new ethic ; States should take action to implement the steps of Central Government under I4C, for spreading awareness on cybercrime, issue cyber related alerts/ advisories, promote capacity building etc. to prevent cybercrime and expedite investigations. In addition, the State departments should coordinate and work on the National Cybercrime Reporting Portal launched to enable citizens to report the cybercrimes online.
- 13.4.17For Data Security, suggestions of Cyber security Centre of Excellence (CCoE) need to be adhered i.e. Collaborations and sharing of knowledge, best practices, networking, further extensive research and development for Data security with other Industry bodies, incubators, accelerators and cohesive facilitators; and encouragement of a cyber security system so as to minimize risk of cyber-attacks, through a strong network/ partnership between Govt-Industry-Academia-Subject Matter Experts. The purpose of partnership is to keep pace with Technology evolution, adoption of Technology by Consumers and Businesses and Risks and Cyber threats.

- 13.4.18All CISO and IT security executives of NCR state departments may mandatorily start using the dashboard for Chief Information Security Officers (CISO) and IT industry should take all initiatives to ensure security of apps, being put forth for public use.
- 13.4.19Initiatives for control of Scams targeting senior citizens, dangerous drugs and cybercrime are also essential to give a firm sense of safety in NCR. These may include measures against specialized scams and organized crime; Cybercrime measures like enhancing equipment that support computer hacker tracking abilities and measures that help victims of stalking and domestic violence.
- 13.4.20Haryana to make efforts and be part of list of states getting support for strengthening DNA analysis and Cyber forensic facilities under Nirbhaya Fund. Further, ERSS be expeditiously implemented in Haryana, being the only State in NCR who is yet to implement the system. This shall be done by 2022.
- 13.4.21Setting up a Centralized Tourist Support/ Assistance Centre for crime control is essential in NCR with Police and Tourism Ministry officials that would act as a single window for Crime/Case related information and provide Soft skills training for police/ immigration/ airport security officials at cutting edge.
- 13.4.22Develop Resilience Plans at the Sub-Regional level to address gaps and weaknesses : All Sub Regions of NCR should prepare Resilience Plans including a Comprehensive Risk Sensitive Land Use Plan, Generation of spatial and non-spatial database, Multi Hazard (Natural Hazards and Human-induced Hazards) Profile, Spatial Hazard Risk Vulnerability Assessment (HRVA), Impact assessment of hazardous and uses/activities; multi hazard zonation maps and earmarking of areas for environmental protection (providing important environmental services such as: Biodiversity Preservation; Flood Control; Water Production; Erosion Control & Mitigation of Heat Islands); Strategies to encourage land use and transportation infrastructure (that improve the ability to withstand climate change impacts and natural hazard risks) and consideration of all of the above in the planning and location of utilities, assets and operations. Regarding the manmade disasters, there are certain areas which lead to proliferation of diseases; areas with high communicable diseases (if any); areas that are affected by toxic ground water, areas having industrial hazards need to be identified and planned for, accordingly Updated classification of land (example - Degraded Land) should be mentioned in the plan.
- 13.4.23Resilience pertaining to critical infrastructure: Resilience supports the preservation of critical infrastructure that includes lifeline sectors (Energy, Water, Drainage, IT/ Communications, Transportation, and Emergency Services). Assessment of Critical infrastructure should be function based and should include an analysis of the ability of essential lifelines to endure, sustain, and regenerate against a range of significant stresses, risks and threats and reflect local knowledge and priorities.
- 13.4.24Risk assessment models should be developed with the help of geospatial technologies to understand the existing ground conditions for quantification of risk and assessing needs & gaps with regard to residential, commercial and industrial buildings in terms of micro identification of exposure to hazards, vulnerability and risk analyses, capacity assessments and identification of risk mitigation measures.
- 13.4.25Urban development in the whole region must be checked for safety against a probability of occurrence of seismic intensity "VIII" and upgraded for required seismic resistance in buildings and infrastructure as found necessary to withstand minimum Peak Ground Acceleration value of 0.24g. A study of Seismic Hazard micro zonation will be helpful for micro level planning of urban agglomeration i.e. for identifying areas of low and high hazard zone, suitable area for different types of constructions i.e. Low and high rise, etc. (Seismic Hazard micro zonation is basically determination of frequency

dependent transfer function due to impedance contrast between bedrock and overlying soil at the site and will provide site specific parameters for design of buildings.) A comprehensive study of the vulnerability due to fire hazards in the region and in different areas of fast growing towns should be taken up and adequate safety provisions be made for future planning of NCR and improvement in the quality of electrical cabling, wiring and distribution systems should be made. Major development proposals should be submitted with a Fire Statement, which is an independent fire strategy. Create a greener energy system with more capacity through scaling up of renewable resources, manage demand with energy-efficient buildings and variable pricing and through electrification of vehicles etc.

- 13.4.26Considerations of Monitoring, Forecasting and Early Warning Systems should be incorporated in the Resilience Plans. A Centralized command and control center room for monitoring purpose should be set up in all States as in Uttar Pradesh. The information related to the hazardous buildings should be linked directly to the control room. While Delhi has 2 radars in the city (at Airport and at Lodhi Road which compliment to each other and cover entire city), such infrastructure is required at each district level. These provide information every 10 minutes and have capacity to detect hail storms, internal structure of the clouds etc. Similarly the whole of NCR can be strengthened with such infrastructure i.e. Radar Rain Gauge. The information about 1-km mesh resolution may be updated every half an hour and available on the internet. All urban areas may be covered under this by 2025 and rural areas by 2030.
- 13.4.27Resilience Action Plan: The resilience plans and proposals should clearly identify the priorities for action under various phases of disaster management and cover aspects of capacity development and financial structure, which can be implemented over short, medium and long term. Policy guidelines for preparedness and Integrated planning for the areas (i.e. Block, Urban, Rurban Clusters and Village level) including structural and non-structural measures and policies for protection/ Disaster risk reduction of Natural Conservation Zones (NCZ) and other environmental protection zones should be detailed out for framing the action plans.
- 13.4.28Land use planning, Regulation and Enforcement of building codes through Robust Building Permit System need to be ensured at Sub-Region / District level and local level to reduce impacts of natural disasters. Engineered structures will be mandatory across NCR due to major parts of NCR being in hazardous seismic zones.
- 13.4.29Encourage modifications in the building permission laws based on global best practices and introduction of technology based solutions like of Tokyo, Hong-Kong, Singapore with all the safety measures even for riverine areas.
- 13.4.30 Development proposals should maximise building resilience and minimise potential physical risks, including those arising as a result of fire, flood and related hazards; these measures should be considered at the start of the design process to ensure they are inclusive and aesthetically integrated into the development and the wider area. By 2026, all NCR states should ensure that only GPS and speed governor enabled public transport & goods vehicles are on roads. Preparation of an inventory of historic buildings facing disaster risk and chalking out initiatives preservation, protection and risk mitigation should be taken up on priority.
- 13.4.31This entire endeavour can be achieved through setting up of an Information Systems and Observatory/ Regional Lab/ Centralized System of Knowledge Sharing and Human Resource Development & Training in each NCR participating States. Enhancing the capacity of resilience through awareness, research, is important. Research centres for new kind of disasters/ pandemics (like Covid-19) should be established.

- 13.4.32Increase collaboration among various public safety and security agencies to provide integrated response for any incident. This is illustrated in schematic diagram at **Annexure P-13.1.**
- 13.4.33Policy guidelines for the Early, Mid and Long-term Recovery Policies aimed to improve road engineering, install technology based traffic regulatory system, promote lane driving campaign, provide for well-equipped ambulances and trauma centres, develop cycle tracks throughout NCR, spread car pool lanes to encourage car-pooling for improvement of traffic system and security should be detailed out in the Sub-Regional Plans. Transportation Policy for the zone should be developed for reduction of response time for Ambulance, Fire Engines during emergencies. Similarly, disaster response plans should be prepared for buildings such as schools, hospitals, dormitories, etc.
- 13.4.34Strengthening of Disaster Risk Governance and Capacity Development: Institutional structure/ Framework so as to facilitate implementation of plans, proposals and schemes should be strengthened. Capacity Development for Preparedness and Hazard-wise Responsibility Matrices for Disaster Risk Mitigation is imperative for implementation of the resilience plan. Training and awareness generation for Preparedness for various stakeholders need to be given. Policy for Inter-Agency and inter-district Coordination should be detailed out for plan implementation. For this, constant dialogues amongst the policy makers, operational managers who implement etc. should take place. Bolstering the capacity for disaster management of institutions with authorization concerning planning, decision-making and enforcement, and enabling audits on these issues is also crucial. Empowerment of local authorities, as appropriate, through regulatory and financial mechanism to work and coordinate with civil society, communities and indigenous people and migrants in disaster risk management at the local level should be mandatory. This would also help in community preparedness.
- 13.4.35Institutional structure/ Framework so as to facilitate implementation of plans, proposals and schemes should be strengthened. Departments/ Agencies dealing with safety and security like Police Departments of NCR states may set up the NCR counter part of Centre for Cybercrime Investigation Training & Research (CCITR). Such Departments/ Agencies may have MoUs with DSCI, Infosys Foundation (the philanthropic arm of Infosys) to have an institutionalized structure for effectively building the capacity and infrastructure for handling the cybercrimes investigations; Possibilities to have 24x7 Security Operations Centre (SOC) to monitor & remediate attack attempts that would handle incident, security audit and certification of all applications, entire security audits carried out for cyber assets need to be explored; NCR Back Office for round the clock operations and represented by state officials to aid Crime investigation that will be a hub of all relevant information for investigation support and maintain liaison with States in NCR and provide relevant information to Investigation Officers (IOs) on demand should be set up.
- 13.4.36 All emergency services to be brought under one umbrella like NDRF police, medical services and fire services and Agency wise Responsibility Matrices for Disaster Risk Response should be put forth at state & district level. The Institutional mechanism under the Ministry of Earth Sciences to support the other agencies needs to be benefitted by other concerned departments in NCR. Capacity development in terms of training pertaining to the scope & approach of recovery process the reconstruction & rehabilitation should be imparted to officials of various agencies and also other stakeholders including communities.
- 13.4.37Funding and Operational Plan: Policy for Financial arrangement for risk mitigation and enhancement of resilience, for fund allocation for disaster preparedness/ risk

reduction and disaster response need to be differentiated with separate considerations. While funding for risk reduction needs to be based on spatial vulnerabilities of the region i.e. spatial context of investments, disaster response would depend upon the type, scale and frequency of the disasters. Sources for phase wise Fund mobilization for disbursement should be worked out.

- 13.4.38Other policies which are also to be detailed out in SRPs and other Local level plans are given at **Annexure P-13.3**.
- 13.4.39 Key projects envisaged to be taken up in NCR regarding Safety & Security and Disaster Management are given at Table 13.1 below, but not limited to:

Table 13.1: Key projects envisaged to be taken up regarding Safety & Security and Disaster Management in NCR (2021-2041)

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1.	PrepareSchemesforimprovement of Infrastructurein Women Police Stations andestablishingnewWomenPoliceStations in allNCRdistricts	To be done by 2026	-	-	-
2.	Prepare Schemes for developing/ earmarking areas/ spots to act as strategic locations for emergency vehicles such as ambulances, vehicles from Trauma centers and even for highway patrol vehicles on all road networks having RoW of 6.5 mtrs & above.	To be done by 2026	-	-	-
3.	Schemes for reading having 'Complete Streets', 'Vision Zero', connective sidewalks, public restrooms, and places to sit or rest in communities.	At least one Scheme in each of the Metro and Regional Centres of all sub-regions.	Continue	with more such	schemes
4.	Schemes to have network of Drone launch pads across NCR	To be set-up in each district headquarter in 2023 and All Metro and Regional Centres by 2026	All other towns/ cities.	-	-
5.	Schemes for having network of CCTV cameras (a) Schemes for having Automated incident detection capabilities on	To be done by 2026 in Metro and Regional Centres	To be done in remaining areas of NCR	-	-

SI. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	 the inter-state/ City entry/ exists points (b) Schemes for having network of security cameras covering markets, in & around education institutions & health facilities, major intersections, transportation hubs, recreational areas, mandi, business centres, tourists spots, etc. 				
6.	Schemes for having People Priority zones	Develop at least 03 such zones in each of the Metro and Regional Centres	Develop in remaining cities/ towns	-	-
7.	Scheme to set up NCR Crime Coordination Support Office/ Cell at NCRB	To be done by 2022	-	-	-
8.	Scheme be prepared for air policing using drones and helicopters for emergency response, evacuations etc.	At least two districts in each sub- region.	100%ofdistrictsineachsub-region.	-	-
9.	Project for installation of Radars (including Radar Rain Gauge)	One or two in each district based on the requirement by 2024.	-	-	-

Chapter 14

Tourism and Heritage

14.1INTRODUCTION

- 14.1.1 India is home to 38¹ World Heritage Sites including 30 cultural, 07 natural and 1 mixed, as recognized by UNESCO. Out of total 38 World Heritage Sites in India, 04 sites exist in NCR and about 06 sites are within close proximity to NCR. Furthermore, NCR has around 295centrally protected monuments under ASI and more than about 70 state protected monuments under State Archaeological Departments. All these monuments are preserved with funding from central (ASI) and as well as CSR activity². NCT Delhi consists of 03 World Heritage Sites and has the highest number of centrally protected monuments (174³), followed by Haryana sub-region (66) and Uttar Pradesh sub-region (31) and Rajasthan sub-region (24). State protected monuments are more in Rajasthan sub-region (38), alongside a larger number of unprotected monuments. About 65% of the tourists who come to India (about 12 million annual foreign travellers) visits only five places in India, even if they are here for 15 days. Two of these places are in NCR, namely Red Fort and QutubMinar whereas another two i.e. Taj Mahal and Agra Fort are in close proximity. Brief of World Heritage Sites, Centrally & State Protected monuments/ sites and museums in NCR is given at Annexure-14.1.
- 14.1.2 Tourism is very local subject and can be best delivered at the local level. Satisfied tourist creates positive image bringing in more tourists. Tourism is the only industry which is privately driven leading to job opportunities created in every nook and corner of the country. Tourism not only creates jobs in the tertiary sector, it also encourages growth in primary and secondary sectors of industry. This is known as the multiplier effect which in its simplest form is how many times money spent by a tourist circulates through a country's economy. With a multiplier of 1.9236, direct and indirect contribution of tourism to Gross value added (GVA) was estimated at 5.35% in 2015–16. The contribution of tourism to Gross Domestic Product (GDP) was estimated at 5.20%.The direct and indirect share of tourism employment to the total employment comes out to be about 12.38%⁴.

14.2EXISTING STATUS

14.2.1 Culture is an inherent part of the concept of 'quality of life' and giving an identity to the region. The cultural needs of a society thus require consideration along with economic and social aspirations, especially in the context of tourism, tourists and local communities. Multicultural NCR influences from North and North Central Cultural Zones which mostly includes Punjab, Haryana, Rajasthan and Gangetic Uttar Pradesh and has blended to a unique vibrant culture with distinct socio-cultural phenomenon. Rajasthan is a land of plenty of tourism products that offer everything except sea/beaches includes colourful art & craft, cultural fairs & festivals, delicious cuisine, dances & music, lakes, etc., Uttar Pradesh sub-region has two very important rivers Ganga and Yamuna adding to the cultural value of the area as they are linked to cultural heritage and ecological and natural beauty. Haryana has a bountiful culture, heritage, festivals, folklores and a vibrant landscape linked with rich cultural heritage of the Vedic period, Surajkund International Fair is well known across the globe.

¹ Source: <u>https://www.incredibleindia.org/content/incredible-india-v2/en/experiences/unesco-world-heritage-sites.html</u>

² Source: Shri Kamal Vardhan Rao, Chairman, ITDC

³ Source: <u>http://www.nma.gov.in/announcements/Draft%20Categorisation(3).pdf</u>

⁴ Source: The Third Tourism Satellite Account of India, 2015-16, Ministry of Tourism, GoI.

Needless to mention, Delhi has its ownhistorical and global importance. Delhi, the capital of India is one of the key arrival destinations for both foreign and domestic tourists. It is among top tourist destinations in the country with the number of domestic tourists rising continuously. It grew from 18.49 million in 2012-13 to 22.62 million in 2014-15. As per survey conducted by NSSO (72nd round, 2014-15) on tourism, illustrated that the majority of tourists (95 per cent) visited Delhi during the year for 'holidaying, leisure and recreation'.5 In 2018, Foreign Tourist Arrivals (FTAs) at Delhi Airport was 28.83% amongst top 10 Indian international check posts accounting for 83.75% FTAs (i.e. 8.84 million out of total FTAs of 10.55 million)6. During 2018, about 9.49% of the total foreign tourists visited in Delhi, 13.09% in State of Uttar Pradesh, 6.08% in State of Rajasthan and 0.26% in State of Haryana. In respect of domestic tourists the share was 1.57%, 15.37%, 2.71% & 0.26% in Delhi, Uttar Pradesh, Rajasthan and Haryana, respectively⁷ (refer brief provided at **Annexure--14.2**).

14.2.2 NCR is sprinkled with dazzling gems which includes captivating ancient monuments, fascinating museums and art galleries, architectural wonders, vivacious performingarts scene, fabulous eating places and bustling markets. With its rich and diverse cultural heritage, the mother city Delhi is, and shall continue to act as a gateway for visiting the region as well as the country. As regard development of tourism sector the focus should be on: (a) exposure of rich cultural heritage of Delhi NCR globally, (b) development of recreational facilities to the tourist and thus promote region as one of the most popular and preferred tourist destinations and achieve increase in the number of foreign tourist arrivals, (c) making NCR environmental & eco-friendly tourism and cultural & heritage destination. These efforts together shall contribute to the economy of the region and generate additional employment opportunities.

14.3KEY ISSUES AND CHALLENGES

- 14.3.1 Key actions for the development of sector would require working towards: (a) Ensuring safe and secure Tourist Destinations across NCR, (b) Attracting Private Investment for Heritage conservation, Cultural and Tourism activities, (c) Infrastructural Development to support sector requirements, (d) Development of Tourism Destinations and Tourist Circuits inter &intra-regional, (f) Seamless Travel within Circuits, (g) Joint Marketing Programs, & (h) Human Resource Development for skilling.
- 14.3.2 Major hurdles being faced by tourism sector include (a) lack of awareness amongst people about website showcasing monuments and heritage sites of India; (b) high GST and high visa fee, although E-visa has helped; (c) missing air connectivity, although efforts like private airlines getting international licenses, UDAN scheme of GoI where small cities are integrated, are of great help; (d) comfort, security & safety issues; (e) pollution; (f) cleanliness specially hygienic rest room facilities of international standards; (g) missing informative Signage; (h) areas around iconic sites not of international standards; and (i) management measures, etc. Addressing all such issues appropriately shall require coordinated efforts of NCR participating States which would be a greater challenge.
- 14.3.3 Rigorous efforts would be required to capitalize on cities /area's unique cultural, heritage and tourism potential and establish a 'hook of attraction' to attract the target market. People of NCR along with their cultural heritage shall have to be inextricably

⁵ Source: Economic Survey of Delhi, 2018-19, Chapter 21-Tourism in Delhi

⁶ Source: India Tourism Statistics at a Glance, 2019

⁷ Source: India Tourism Statistics, 2019 (page 104) -

http://tourism.gov.in/sites/default/files/Other/India%20 Tourism%20 Statistics%202019.pdf

linked to their present as well as future and also shall have to be vibrant instead of staying static8, to achieve vision of becoming a 'Smart Tourist Hub'.

- 14.3.4 For Heritage & Tourism sites, achieving international level for four key quality aspects8 (4Qs) i.e. (1) Quality of infrastructure/ services (2) Quality of monument/site, (3) Quality of intangibles & (4) Quality of people, have to be ensured which shall be a big challenge.
- 14.3.5 The existing Archaeological Act (Ancient Monuments and Archaeological Sites and Remains– AMASR Act) and Heritage Zone provisions are very stiff, as sometimes even repair of these very monuments is delayed because of these provisions.
- 14.3.6 Safety and security issues news goes global and grossly impacts tourism of a particular place. Accordingly, maintaining the same in such a vast region is a challenge.
- 14.3.7 Major Schemes of Union Ministry of Culture includes (a) Safeguarding the Intangible Cultural Heritage and Diverse Cultural Traditions of India⁹; (b) Financial Assistance for Promotion of Art and Culture - under this scheme Ministry provides financial assistance to dramatic groups, theatre groups, music ensembles, children theatre and for all genres of performing arts activities10; (c) Financial assistance for promotion and strengthening of regional and local museums; (d) Pension and Medical Aid to Artistes; (e) "Certificate of Excellence" Scheme for Museum Professionals, amongst others.
- 14.3.8 Ministry of Tourism has two major Schemes i.e. Swadesh Darshan and PRASAD. Swadesh Darshan Scheme is launched for integrated development of theme based tourist circuits in the country. This scheme is envisioned to synergise with other schemes like Swachh Bharat Abhiyan, Skill India, Make in India, etc. with the idea of positioning the tourism sector as a major engine for job creation, driving force for economic growth, building synergy with various sectors to enable tourism to realise its potential11 . Whereas, PRASAD Scheme, was for integrated development of pilgrimage destinations in planned, prioritised and sustainable manner to provide complete religious tourism experience, it focuses on development and beautification of identified pilgrimage destinations.
- 14.3.9 Ministry of Tourism has also taken up initiative of identification, diversification, development and promotion of niche tourism products of the country like, Adventure, Medical, Wellness, Golf, Polo, Meetings Incentives Conferences & Exhibitions (MICE), Eco-tourism, Film Tourism, Sustainable Tourism, Cruise, etc. to overcome 'seasonality' challenge in tourism and to promote India as a 365 days tourist destination¹²
- 14.3.10Similarly, Ministry of Housing & Urban Affairs (MoHUA) had launched Heritage City Development and Augmentation Yojana (HRIDAY) which was applicable for selected cities.
- 14.3.11Further, IRCTC, a subsidiary of the Indian Railways, is contributing to tourism promotion by offering its products ranging from budget package i.e. Rs. 900/day to Rs. 75000/ night (Maharaja Express). IRCTC has got Bharat Darshan (800 capacity,

⁸Source: Ms. Nirupama Y. Modwel, Principal Director, INTACH

⁹<u>http://www.indiaculture.nic.in/scheme-safeguarding-intangible-cultural-heritage-and-diverse-cultural-traditions-india</u>

¹⁰Source: <u>http://www.indiaculture.nic.in/scheme-financial-assistance-promotion-art-and-culture</u>

¹¹Source: <u>http://swadeshdarshan.gov.in/index.php?page/guidelines</u>

¹²INDIAN TOURISM INFRASTRUCTURE - Investment Opportunities & Challenges-FICCI <u>http://ficci.in/spdocument/23099/FICCI-report-TIM-2019.pdf</u>

sleeper class), budget train (capacity 170 passengers) & Luxury Train (84 capacity & stay in 4-5 star property). In NCR, IRCTC is promoting Delhi Mega Darshan project.

- 14.3.12The Govt. of India has launched (2017)– "Adopt A Heritage: ApniDharohar, ApniPehchaan', initiative for ensuring the quality & inclusive provision of amenities &facilities across heritage, natural, & tourist sites through active participation of private and public sector organisation and individuals, to be known as "Monument Mitras"¹³.
- 14.3.1324X7 Tourist helpline which is Toll Free Multilingual Tourist Info Line (1800111363 or on a short code 1363) is being run by the Ministry of Tourism in 10 International Languages besides Hindi & English for providing information relating to Travel & Tourism in India to the domestic and International tourists to assist them while travelling in India.
- 14.3.14Other key issues and challenges related to development of Heritage, Culture & Tourism activities in NCR are provided at **Annexure-14.3.** Further, a brief of schemes & initiatives of Government of India, Tourism & Hospitality Skill council and NCR participating States is provided at **Annexure-14.4**.

14.4POLICIES AND PROPOSALS

- 14.4.1 NCR can be developed as a 'Smart Tourist Hub' equipped with ultra-modern and state of the art soft and hard infrastructure. More heritage sites of the region can be maintained as per the guideline of UNESCO, so as to increase the total number of World Heritage site by 2041.
- 14.4.2 Tourism in NCR can act as a potent engine for inclusive social and economic progress through its forward and backward linkages and has ability to create employment through local skills & capabilities. There is a high scope for profuse employment generation and related activities in the form of accommodation projects, food-oriented projects, amusement parks and water sports, etc.

14.4.3 Making NCR - A Tourism Hub

- 14.4.3.1 Approach of focusing on '3Cs of Tourism' i.e. Conservation, Conversion & Creation shall have to be jointly followed to transform NCR as a 'Smart Tourism Hub' in the future. This would involve synergy amongst heritage, tourism & culture along with digital technology for further necessary integration. Key specific activities and initiatives need to be identified and taken up for:
- 14.4.3.1.1 Conservation of Heritage Sites, Culture & Nature (Wild life sanctuaries, Bird sanctuaries, National Parks, etc.)
- 14.4.3.1.2 Conversion of Local Attractions into Iconic Places: Each NCR district may identify its local attractions points which can be developed as Iconic Places. Every village/town/ settlement with more than 2000 population should have a local iconic space/ place which should be a symbol of local culture, heritage, aspirations, etc., centrally located and where every people should feel good cutting across diverse sections. It can be a park, sculpture, pond/ water body, etc. but no human Statute as far as possible. Such iconic places should act as a "Pride of the Settlement". CSR funds, MP funds, Gram Nidhi, funding from Voluntary sources, etc. should be utilised for the development of such iconic spaces.
- 14.4.3.1.3 Creation of World Class Tourist Circuits
 - a) Showcase the rich heritage of NCR and help increase tourist footfall, concerted efforts would be required with respect to the quality aspect

¹³<u>https://pib.gov.in/newsite/PrintRelease.aspx?relid=186491</u>

(4Q). While the quality of infrastructure should be world class, the monument/ site quality be on higher side in term of its conservation/ preservation/ protection and showcasing. Further, the quality of intangibles shall have to be improved for each of the sites with the availability of related history, story, performances, events, etc., In addition, quality of people involved in the sector should be of high level of knowledge, commitment, passion and dedication.

- b) "Value, protect, conserve, interpret and foster NCR's unique and diverse Archaeological and Built Heritage as (a) a channel for continuing cross cultural linkages at the national & international level, (b) a means for nation testimony to regional cultural identity at the national level, (c) a development tool for socio-economic upliftment at the local level, (d) sustainability for passing down rich heritage & culture to future generations, with all inclusive, multi-sectoral & multidisciplinary approach, involving entire gamut of stakeholders from range of custodians and experts to visitors.
- c) Following key stakeholders should work together/ in tandem for making NCR a Heritage-Cultural- Tourism Hub/ Destination in Asia and World:

Stakeholders	Suggestive Role			
Government Agencies	Conservation, Governance, Information portal,			
and Local Bodies	Helpline/Emergency, Education, Electricity & other			
	infrastructure, etc,			
Private sector	Infrastructure, Amenities, Philanthropy & Conservation			
Institutions/ Individual	Expertise, Domain Knowledge, Training & Skilling			
Experts				
People/ Communities	Visitors, Local communities comprising citizens,			
_	students, craftsman, artists, performers, guides, other			
	service providers etc.			

- d) Efforts be made to increase NCR's overall percentage shares in domestic & foreign tourist visits and overall domestic tourist traffic by upgrading existing infrastructure and leasing out maintenance of such infrastructure to private players. New destinations can be developed around the cities using PPP model. It is essential to create stimulating value propositions, foster a tourist friendly environment and brand the NCR as a "must-discover" destination.
- e) All three sites identified by the Ministry of Tourism in NCR, namely, Humayun Tomb, QutabMinar& Red Fort, be developed on priority as World Class Iconic Places keeping their operation 24x7.
- f) NCR participating States to identify and develop at least 100 "Smart Tourist Destination/Sites" showcasing theme-based museums, heritage and natural sites, in line with Swadesh Darshan, PRASAD and HRIDAY schemes. Indicative list of Tourist Destination/Sites which can be developed is provided at **Annexure-P-14.1**.
- g) Develop "World Class Museums" such as Bilbao or the Asian Civilization Museum in Singapore, in each sub-region. Every district in NCR can have a Museum. NCR is so rich in culture and heritage

that in some places even more than one museum can be set-up (refer Table 14.1.8 of **Annexure-D-14.1**).

- h) On site 'Virtual Museum' may be aspired for all ASI protected and world heritage, as these becomes an immersive experience, especially for showcasing living heritage14. Through use of projection mapping, 3D pop-ups using 3D glasses, touch screen walls, holographic installations, transparent screens, 360 views, augmented reality for visual art, bar-code related or scanning apps, etc. such virtual museums be developed in phases.
- i) Identify, plan and develop globally competitive and world-class Tourism circuits, at least one in each sub-region, from entry to exit. NCR, being part of the Golden Tourism Triangle shall be developed as 'world's prime tourist destination' by the respective NCR States. Indicative list of tourist circuits which may be developed as globally competitive and world-class Tourism circuits is provided at Annexure-P-14.2.
- j) In NCR, three Blue Green Getaway Circuits may be identified for development of tourism infrastructure such as accommodation facilities, food and beverage facilities, accompanying facilities and communication facilities etc. including last mile connectivity. NCR States Government concerned may develop these circuits. Details are as under.

Circuit Name	Destinations		
NCR Blue Green	5 NoOkhla Bird SanctuarySanctuary – SurajKund Lake		
Getaway Circuit -I	- Badkal Lake- Damdama Lake - Asola Bhatti Wildlife		
NCR Blue Green	9 NoOkhla Bird Sanctuary - Asola Bhatti Wildlife		
Getaway Circuit -II	Sanctuary – SurajKund Lake - Badkal Lake- Damdama		
-	Lake- Sultanpur Bird Sanctuary-Khaparwas Wildlife		
	Sanctuary- Bhindwas Wildlife Sanctuary – Nahar		
	Wildlife Sanctuary.		
NCR Blue Green	4 NoKeoladeo National Park-Band Baretha Wildlife		
Getaway Circuit -III	Sanctuary- via Rajghar Siriska Tiger Reserve- Siliserh		
-	Lake		

- k) In addition to existing 04 UNESCO World Heritage Sites in NCR, at least 05 more sites be listed under UNESCO World Heritage Sites by 2040.
- NCR States may identify, promote and develop niche tourism like, Adventure, Medical, Wellness, Golf, Polo, Meetings Incentives Conferences & Exhibitions (MICE), Eco-tourism, Film Tourism, Sustainable Tourism, Cruise, etc. to achieve the round the year.
- m) Promote "Fly-from-Delhi NCR" through creation of world–class facilities hubs. International and regional air connectivity of NCR should be enhanced through increasing capacity of existing Airport, developing International Airports like Jewar, implementing Regional

¹⁴The Banaras Virtual Experiential Museum located in historic Man Mahal next to DashashwamedhGhat can be followed as a best practice.

Connectivity Scheme–UdeDeshKaAamNaagrik (RCS-UDAN) and reviving/ upgrading unserved airports and unserved helipads in NCR.



Figure 14.1: NCR Tourism circuits

14.4.4 Support Infrastructure

14.4.4.1 Tourism infrastructure projects, viz., hotels, resorts, equipment, parks etc., involving investment of Rs. 1 crore be recognized as 'infrastructure' and necessary

amendment be made to enable promoters to avail loans on a priority basis¹⁵. NCR States may develop special tourist zones with 300 acres of land parcels (based on smart cities models) for theme parks, etc.

- 14.4.4.2 Basic infrastructure components like airports, railways, roads, waterways, electricity, water supply, drainage, sewerage, solid waste disposal systems, services and security systems should be developed for boosting tourism sector as well.
- 14.4.3 States may take up activities towards development of quality tourism infrastructure which may include development/ upgradation of destination entry points such as passenger terminals (of road, rail and water transport), Tourism Information/ Interpretation Centres coupled with facilities like first aid centres, ATM/ Money exchange counters, public conveniences merged with lockers, cloak room facilities, waiting rooms/ changing rooms, etc.
- 14.4.4.4 Initiatives may be taken towards procurement and use of latest technology/equipment for eco-friendly modes of transport, parking facilities, tourist activities such as Light & Sound Show, water and adventure sports. Further, efforts towards establishing craft haats/ bazaars, souvenir shops, cafeteria, rain shelters and watch towers especially at tourist vantage points, and overall improvement in communication through establishing telephone booths, mobile services, internet connectivity, Wi-Fi hotspot, etc. may also be taken.
- 14.4.4.5 Conservation and development of all heritage sites should be undertaken and completed through either government funding or through NGOs/Corporate Social Responsibility (CSR) activities.
- 14.4.4.6 Ensure Health Care facilities at places of tourist interests apart from major transit points.
- 14.4.4.7 Centralized Tourist Assistance Centre
 - a) Setup a Tourist support Centre in NCR with Police and Tourism Ministry officials to act as a single window for Crime/Case related information
 - b) Setup School for Soft skills training for police/ immigration/ airport security officials at cutting edge.
- 14.4.4.8 Concerned departments/ agencies to make efforts to connect local communities to tourism by encouraging them to set up small enterprises to supply the tourism industry (accommodation, food and material), in an organized manner. Employment opportunities can be expanded by ensuring that investors and operators in the organized sector are encouraged to hire staff locally.
- 14.4.4.9 Social Impact Initiatives (SIIs) like Heritage heroes; Monuments Friends, etc. be undertaken and promoted for engagement of locals.
- 14.4.4.10 NCR States make efforts to make the tourist/ pilgrimage/ historic/ cultural spots more visible and inviting, by developing aesthetics of the site and surrounds, routes to the site from the nearest arriving point, hygiene, and quality amenities & facilities, a checklist of important aspects is given at **Annexure-P-14.3**.

14.4.5 Heritage & Culture- Conservation & Promotion

- 14.4.5.1 GNCTD is in process of enacting Heritage Building Act for preservation of 100 years old buildings. Other NCR states should also take similar steps towards protection of their culture and heritage.
- 14.4.5.2 A 'Common Heritage Conservation Policy for NCR' can also be formulated by the Ministry of Culture, Govt. of India/ ASI in collaboration with NCR State Governments, so that all agencies can work in tandem. Ministry of Tourism, ASI,

¹⁵NITI Aayog - Strategy for New India @ 75 - <u>https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf</u>

State Department of Archaeology, Tourism and Planning departments to ensure that their works/ projects are in accordance with the Common Heritage Conservation Policy for NCR'.

- 14.4.5.3 A "Conservation and Management Committee" under DCs/DMs of each district could be assigned the responsibility of local level regular monitoring and granting permissions regarding repair, maintenance and upkeep of ASI, historical, cultural sites, etc. Suitable amendments in ASI Act could be explored in this direction.
- 14.4.5.4 Conservation of heritage be adopted as part of the mainstream development activity, as it also relates to the employment in local communities in crafts, and crafts related activities and thus an inclusive culture milieu be cultivated.
- 14.4.5.5 The Govt. of India initiative "Adopt A Heritage: ApniDharohar, ApniPehchaan", be implemented across NCR. State Departments may identify old buildings for conservation and heritage/ tourism and as being promoted in Rajasthan, conversion of old Forts, Palaces and Havelis into Heritage Hotels should be promoted in NCR for: (a) Quality accommodation and Royal experience to tourists, (b) Theme Wedding Destinations, (c) Exotic sets for Film Shooting, (d) Ethnic Culinary Experience, etc.
- 14.4.5.6 NCR should adopt a strategy to celebrate region's pluralism and cultural diversity and establish its brand through harmonious sharing and preserving of cultural heritage and celebrating multi-ethnic identities, through multiple arts & cultural events year-round. An indicative list which could act as database for cultural resources of a place is provided at **Annexure-P-14.4**.
- 14.4.5.7 The concerned Ministries/ departments may jointly develop a year-round calendar of events & not just places to see, to attract more & more visitors. In this regard, existing platforms like India Expo Centre & Mart at Noida, Surajkund at Faridabad and India International Convention & Expo Centre (IICC, Dwarka), etc. be fully utilised.

14.4.6 Tourism Development

- 14.4.6.1 NCR States may take initiatives to promote and develop activities/ projects related to accommodation, food-oriented, amusement parks, water sports, restaurants, recreational, connectivity (by road, water,etc.)and shopping facilities, etc. and the same may be detailed out in the Sub-Regional Plans/ District Plans based on local communities, skills and capacities. Care be taken to ensure that the cultural significance and capacities of the communities are not compromised for such tourism projects.
- 14.4.6.2 Specialized tourism realms like pilgrimage tourism, medical tourism, village/ rural tourism, agri-tourism, sports tourism, leisure tourism, eco-tourism, adventure tourism (like balloon safari, water sports, etc.), social/ solidarity tourism16, walking tours, etc. may be the new focus along with the traditional focus area. Walking tours be mandatory for each city above one lakh population and all tourist places.
- 14.4.6.3 IRCTC should promote NCR tourism by extending its infrastructure in Delhi to NCR area. IRCTC in consultation with concerned Ministries/ Departments may work towards announcing packages of 2 nights/ 3 nights/ 4 nights or 5 nights depending on the destinations in NCR, which can be a group of destinations or as a standalone destination apart from circuits (refer **Annexure-D-14.1**). For example Promoting Rewari area through a steam train, a joy ride and Rail museum and Locomotor shed.

¹⁶Solidarity tourism is an ethic for travelling that holds as its central goals the creation of economic opportunities for the local community, positive cultural exchange between guest and host through one-on-one interaction, the protection of the environment, and political/historical education

14.4.6.4 NCR States may explore possibilities of implementing a 'Web based Single Window Clearance System' allowing investors to avail the necessary State Government approvals to establish and start their business operations through a single platform without any physical touch point with the approving / licensing authority, thus adding to the 'ease of doing business' initiatives.

14.4.7 NCR Tourism Platforms

14.4.7.1 Sub-region wise portals for single window clearance for tourism sector may be developed which can be further linked to form a 'Unified Pan-NCR Single Window' for tourism. This can help in developing synergies almagest NCR sub-regions and incentivize planned mutual leveraging in terms of designing day trips, events management, etc. for Delhi based visitors and also for visitors coming into Delhi from non-NCR, pan-India, foreign visitors, etc. Such unified portal can also help in smooth, seamless medical tourism, since there are facilities across NCR which are accessed by patients from Delhi and beyond. An appropriate land availability policy may also be made and included in the single window portal at sub regional level.

14.4.8 Planning & Design

- 14.4.8.1 The spatial dimension of cultural resource such as historic towns, villages, systems, cultural landscapes, sacred landscapes, etc. should be indicated in the Sub-Regional Plans, District Plans & Local Plans as "special" areas, under cultural categories. Archaeological Parks, Heritage Zones, etc. should be included in overall planning process and protected under law.
- 14.4.8.2 At the site level, for every historical & cultural property under ASI, State, a plan should be prepared for every site. The conservation policy should be reflected in the plan of each site.
- 14.4.8.3 Heritage, Cultural and Tourism sites should be clearly identified on the land use plan of towns and cities to prevent encroachment and inappropriate development in their precincts.
- 14.4.8.4 Any pollution or dust creating activities like stone crusher, dumping sites should be strictly prohibited near or along Heritage, Cultural and Tourism sites, across NCR.
- 14.4.8.5 Champaner-Pavagarh Archaeological Park (refer **Annexure-P-14.5**) as best practice/ experience should be followed in NCR for finding innovative answers for the protection of heritage area and promoting tourism activities. All Heritage, Cultural and Tourism sites should be used as instruments to direct land use policy towards more decentralized patterns of development.
- 14.4.8.6 NCR States should make efforts to 'Create an elegant barrier free NCR. Another action shall be for preservation of historic scenery – restoration of historic structures.
- 14.4.8.7 Encourage preservation of cultural facilities through incentives & initiatives such as Transfer of Development Rights (TDR), Value Capture Finance (VCF)17, etc. Possibility of 'Dedicated Fund' can be created to support Cultural heritage of the cities/ towns/ rural areas across NCR. Heritage protection budget should be substantially increased in the public budget by the States.
- 14.4.8.8 NCR States to revitalize the Old city areas through Selective Redevelopment, Rehabilitation and Preservation of Traditional Heritages.

¹⁷Value Capture Financing (VCF) is a type of public financing that acts as a tax collection mechanism and aims to recover part or full of the value that infrastructure generates for private landowners. It owes to act as a funding source for investment.

- 14.4.8.9 While planning for sustainable tourism infrastructure, integration of basic infrastructure and amenities along with all tourism facilities may be looked into and developed.
- 14.4.8.10 Short term tourists add to population of an area and facilities should be planned for them as well.
- 14.4.8.11 Strategy should be to have High-grade cultural facilities for which action may be to provide 2-3 theatres, 6 galleries, 1-2 museums and 4 libraries per lakh population18.
- 14.4.8.12 Prepare plan for protection and rejuvenation of potential waterways and take actions to enhance sustainability and liveability by improving and managing access to waterways for recreation, tourism, cultural events and water-based transport. Design places for people, increase access to open spaces, and have great places that bring people & environment together. All towns/ cities above 10,000 population should have at least one water body for recreation and cities above 01 lakh should have at least two water bodies.

14.4.9 Awareness & Publicity

- 14.4.9.1 Periodic awareness and publicity and campaigns be launched to promote heritage and tourist attractions, cultural activities, congregations and other events of NCR for both national and international outreach.
- 14.4.9.2 State tourist departments and individual organizations/ departments handling/managing heritage & tourist destination points, may collaborate with other national & surrounding tourist destinations to publicize each other's attractions. This will enable mutual publicization of each other tourist destination attractions which could be a part of tourist circuit.
- 14.4.9.3 On-line 'Virtual Museum' tours be designed to publicize tourism resources and visit experience that awaits the visitors and thereby attracting interest from people.
- 14.4.9.4 Common objective should be to prepare a comfortable environment for national as well as international visitor and small efforts like having multilingual signs and having mix of Indian and western-style toilets etc. would be helpful.
- 14.4.9.5 Ensure comfort and safety for international visitors/ tourists, by way of removing language barriers through Multilingual support at transit hubs such as major railway stations and stations that offer direct airport access, Easy to understand signage digital signage and using advanced technologies actively, etc.
- 14.4.9.6 Use digital platforms, print media, broadcast media, outdoor advertising, etc. for creating awareness about NCR tourism, especially for lesser known points of interests in NCR.
- 14.4.9.7 Each district should come up with its specific tourism resources publicity plan/campaign, to attract interest from foreign people.
- 14.4.9.8 States should fix annual targets towards achieving the indicative Tourism KPIs as given at **Annexure-P-14.6**, under the guidance of Ministry of Tourism.
- 14.4.9.9 Concerned departments need to ensure free flow of authentic information regarding new policies and new developments that are required and feedback from ground.

14.4.10Safety, Security, & Accessibility

14.4.10.1 Proper security arrangements be made by constructing walls/ fencing and trained tourist guides-cum-guards may be adequately deployed at all tourist site. A

¹⁸In Line with Shanghai

security system is important for all tourist areas, Heritage sites and cultural events to ensure safety of the site and people visiting them.

- 14.4.10.2 Tourist police and women's security is of utmost importance in the region. NCR States should have and expand Tourist police facilities in a coordinated manner.
- 14.4.10.3 Heritage, Cultural and Tourism sites should be hygienic, pollution free, universal accessible, disabled friendly & equipped with world class facilities. These sites should also receive priority in transportation and other infrastructure planning.
- 14.4.10.4 Suitable multilingual grievance redressal system for tourists be established in each sub-region with 24X7 facility and different digital platforms be utilized in this regard. The local administration should have a ready response teams for grievances.

14.4.11Skills, Training, & Capacity Building

- 14.4.11.1 State Departments related to Heritage, Cultural and Tourism should collaborate with Tourism & Hospitality Skill council (THSC) and such councils at States level to look into skill training of tourist guides and tour operators including soft skills, at or near the respective sites, preferring the local population who are living the culture, as may be applicable.
- 14.4.11.2 Refresher courses for Tour Guides & Operators should be mandatory and continuous refresher courses be arranged periodically for keeping them updated to international standards. The courses can also be as videos recorded in local language. Important words/ terminologies of languages of main tourist origin countries should be compulsorily taught to all guides & operators and specific foreign languages proficient guides be developed. Indicative guidelines for Tour Guides & Operator are given at **Annexure-P-14.7.**
- 14.4.11.3 Avenues of communication amongst concerned government departments/officials and Tour Operators and Guides, should be open at all times, as feedback received and action on same by authorities shall be mutually beneficial to visitors, operators, guides and departments.
- 14.4.11.4 The tourist police in NCR should be trained to assume the dual role of security police and guides.
- 14.4.11.5 Crowd management is important as more footfalls although means more revenue but also demands better facilities and arrangements to make each visitor feel important and valuable guest in this regard, special arrangements be made at local level for crowd management during mass gathering events in NCR. Necessary training arrangements for all concerned also be made in each sub-region.
- 14.4.11.6 NCRPB has constituted a Committee of Tourism Secretaries (CoTS) of NCR participating States under the Chairpersonship of Member Secretary, NCRPB. This protocol has been worked out, for a high level of lateral co-ordination among Centre, State, local government & other related agencies to integrate new tasks that are required for the NCR.
- 14.4.11.7 The Committee (CoTS), shall act as an Inter Departmental/Ministerial Platform for cross promotion of areas of Tourism interest across NCR through related Tourism Boards and other bodies like PHDCCI and FICCI who already have their respective Tourism Committee to promote tourism activities both nationally and internationally. NCR States with the help of such bodies can endeavour to organize various tourism conclaves, road-shows and related activities in close cooperation with the Ministry of Tourism, GoI, and International Tourism Boards based in India. These Tourism Committee through its various activities shall also focus on identifying and bringing together all stakeholders and organizations related to tourism industry in NCR on one platform.

- 14.4.11.8 State may adopt one or more of the following suggested strategies to implement the projects in para 14.4.12:
 - (i) Adopt Revenue Generation Model through PPP Schemes,
 - (ii) Professional and focused marketing effort with Information Technology and Promotion may be adopted
 - (iii) Each ASI site to be treated as separate profit centre. For example Domestic Tourists Marketing could be developed and implemented for capitalising each heritage site to its optimum interlinking both tangible and intangible benefits, events, programs, performances besides the built heritage experience of the site.
 - (iv) ASI revenues to be ploughed back to the site
 - (v) National Culture Fund should be effectively utilized. The Ministry of Tourism extends financial support¹⁹ under the Domestic Publicity and Promotion including Hospitality Scheme for organizing fairs/ festivals/ tourism related events may also be benefited from (as in 2020 the support is to 30 lakh for UT and 50 lakh for State).
 - (vi) Bring more sites under "Adopt a Heritage" & processing of the pending MoUs should be accelerated.
 - (vii) Crowd funding/ community funding/ CSR to be targeted along with Complete Tourist Experience to cater to all segments of Society and Officials, School students', families, guides, drivers, police officials and others.
- 14.4.11.9 Along with above, the other policies which are also to be elaborated/ detailed out in Sub-Regional Plan and local level plan like Master/ Development Plans, etc. are given in **Annexure-P-14.8**.
- 14.4.12Key projects envisaged to be taken up in NCR regarding Heritage, Culture and Tourism sector are given at Table 14.1 below, but not limited to.

Table 14.1: Key projects envisaged to be taken up regarding Heritage, Culture and Tourism sector in NCR (2021-2041)

SI. No.	Proposed Projects	Phase –I (2021- 2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)	
1.	Develop World Class Tourist Circuits	Identify, plan and develop World Class Tourist Circuits by 2026 with continuous Up-gradation/ Augmentation of capacities for increased number of tourists. Monitoring and compliance to be done by concerned Tourism Department for respective Tourist Circuits and jointly for inter Tourist Circuits.				
2.	Develop Smart Tourism Hubs in NCR, in line with HRIDAY.	Tobeimplemented inClass- I townsand Rural Areas.Projects falling	To be implemented in Class- II towns and remaining	To be implemented in Class-III and Class-IV towns	Up-gradation /Augmentation of capacities for increased number of	

¹⁹INDIAN TOURISM INFRASTRUCTURE - Investment Opportunities & Challenges-FICCI <u>http://ficci.in/spdocument/23099/FICCI-report-TIM-2019.pdf</u>

SI. No.	Proposed Projects	Phase –I (2021- 2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)	
		on Tourist Circuits to be given priority.	rural areas. Up-gradation /Augmentati on of capacities for increased number of tourists.		tourists.	
3.	Develop at least one heritage Site in each sub-region to qualify as a World Heritage Site	-	Develop a world heritage site in each sub- region	Develop at least one more world heritage site in each sub-region	-	
4.	Develop 100 "Smart Tourist Destination/Sites" showcasing theme-based museums/ virtual museums', heritage and natural sites	Develop at least 25 "Smart Tourist Destination/Sites" in each sub-region, in line with Smart Cities & HRIDAY initiatives of MoHUA, PRASAD scheme, etc. with continuous Up-gradation/ Augmentation of capacities for increased number of tourists.		Development of remaining -		
5.	Develop "World Class Museums" & 'Virtual Museum'	Develop at least one "World Class Museum" & 'Virtual Museum' in each sub-region		-	-	
6.	Develop areas around iconic sites/ places/point of international standards in NCR	Each NCR district to identify at least one local attraction point/ event (like annual mela, fair, local festival, adventure & tracking routes etc.) and develop it as Iconic Places of international standards.		Each NCR district to identify its local attractions points and develop it as Iconic Places of international standards.	Each NCR district to identify its local attractions points and develop it as Iconic Places of international standards.	
7.	Develop Blue Green Gateway Circuits facilities; be identified for development of tourism infrastructure such as accommodation facilities, food and beverage facilities etc. including last mile connectivity. NCR and concerned State Government may develop these circuits.	Identify, plan and develop Blue Green Circuits Circuits by 2026 Each NCR State to identify its Circuits				

Chapter 15 ENVIRONMENT

15.1INTRODUCTION

- 15.1.1 The NCR as notified, covering an area of about 55,083 sq. km, constitutes the whole of NCT Delhi and sub-regions of three neighbouring states (i.e., Haryana, Uttar Pradesh, and Rajasthan). Two major rivers, Yamuna and Ganga, flow from north to south direction. River Yamuna passes almost through the middle while River Ganga forms the eastern boundary of the region.
- 15.1.2 Situated in Semi-Arid Bio-Geographic Zone the area supports apart from the rivers, numerous wetlands and dry deciduous to Thorn forests as characteristic ecosystems of the area. As per the Agro-climatic Classification for resource development, based on soil type, climate including temperature and rainfall and its variation and water resources availability the NCR falls under Upper Ganga plains and Trans Ganga Plains.
- 15.1.3 As stated under the Regional Planning Aspects in the URDPFI Guidelines 'Sustainability' leads to balance in Regional Development which implies efficient use of available resources and opportunities for development in all parts of the region. Sustainability of regional planning depends upon management of major environmental inputs namely water (both surface and ground), minerals, maintenance of green cover, protection of sensitive environmental areas and linking areas with special opportunities for development like religious, archaeological etc.
- 15.1.4 Some of the major environmental concerns that can be addressed by regional planning approach are control of pollution as per policies, norms (Air, water and land degradation) maintenance of water courses, green cover, forests and eco-fragile areas.
- 15.1.5 The regional plan can control and regulate activities which have impact on environment and while planning, the environmentally sensitive areas should be identified which are non-conducive for development. Such areas should be either protected or developed while following relevant notifications.
- 15.1.6 Creation of a sustainable physical and social environment for improving the quality of life of citizens is one of the major objectives of the plan. In 2015, the United Nations adopted the 2030Agenda for Sustainable Development -"a plan for people, planet and prosperity", which includes 17 Sustainable Development Goals (SDGs) that service as a roadmap for the national and international policies that should be implemented to achieve a better and more sustainable future for all. Under SDGs, 'environmental protection', is expressed directly through Goals 13 (Climate action), 14 (Life below water), 15 (Life on land) and indirectly through Goals 7 (Affordable and Clean Energy) and 11 (Sustainable Cities and Communities)¹. The SDGs are the

https://www.unsdsn.org/the-role-of-sustainable-development-solutions-networks-sdsns-in-the-protection-of-the-environment

blueprint to achieve a better and more sustainable future for all. Details Sustainable Development Goals (SDGs) are given at Annexure D-15.1

15.1.7 Assessment of Climate Change over the Indian Region" report 2020 prepared by the Union Ministry of Earth Sciences (MoES), GoI warned that the rapid changes in the temperature would mean increasing stress on country's "natural ecosystems, agricultural output, and freshwater resources, while also causing escalating damage to infrastructure." This ultimately means a serious impact on "country's biodiversity, food, water and energy security, and public health." India's average temperature has risen by around 0.7°C during 1901–2018. This rise in temperature is largely on account of GHG-induced warming, partially offset by forcing due to anthropogenic aerosols and changes in land use & land cove (LULC)².

15.2 EXISTING STATUS

- 15.2.1 As per India State of Forest Report (ISRF) 2019, of Forest Survey of India, total forest cover and tree cover is 24.56 % of the total geographical area of the country (forest cover is 21.67% and tree cover is 2.89 %). As per the report, the area under forests in NCR is about 3262 (sq. km) which constitutes about 5.75% of its total area, which is much below national average.
- 15.2.2 NCR is a dynamic urban region with about 230 urban centres, thousands of wetlands, numerous lakes &ponds and 11 notified wildlife sanctuaries/National Parks and endowed with other environmentally rich natural features such as ridge, forest, rivers, green areas, etc. needs to be planned in a way to achieve an environmentally sustainable pattern of urban development through a rational land use pattern and conservation.
- 15.2.3 There are about 64 of Ambient Air Quality Monitoring Stations in NCR. With rising air pollution in the region, 07 cities inNCR i.e. Delhi, Faridabad, Ghaziabad, Noida, Meerut,Khurja and Alwarare identified asNon-Attainment cites under the National Clean Air Action Plan³.
- 15.2.4 Water Quality in Yamuna, Hindon, Najafgarh drain and West Kali has deteriorated due to direct discharge of un-treated sewage (e.g. Delhi–1901 MLD (45% gap); Ghaziabad– 417MLD (84% gap); Noida 64 MLD (29% gap) leading to almost Stagnant river. Drainage & Sewerage System issues like Sewerage network in Delhi covering only 45 % population and inadequate sewerage system in other NCR towns, inadequate infrastructure for treatment of Sewage and wastewater (e.g. Treatment capacity exists for only 3200 MLD in Delhi, Noida and Ghaziabad).
- 15.2.5 A snapshot of Environment scenario in NCR is as presented at Annexure D 15.2

15.3 KEY ISSUES AND CHALLENGES

15.3.1 Draft National Forest policy, 2018 cleared by various Ministries of Govt. of India

²https://link.springer.com/content/pdf/10.1007%2F978-981-15-4327-2.pdf

³CPCB – <u>http://cpcbenvis.nic.in/airpollution/finding.htm</u>

stipulate to continue 33% tree and forest cover and two third in hills and mountains. Policy calls for "promotion of trees outside forests and urban greens". The target of the policy is yet to be fully achieved in NCR. A brief of the Draft National Forest Policy⁴-2018 is at **Annexure D -15.3**

- 15.3.2 Ministry of Jal Shakti (MoJS) has identified many Districts and Blocks across the country as water stressed. From the information made available by MoJS, Urban local Bodies (ULBs) identified as water stressed. These districts and Urban Local Bodies have to undertake efforts for conservation, restoration, recharge and reuse of water.
- 15.3.3 Farmers mainly in Punjab, Haryana and western Uttar Pradesh burn an estimated 35 million tons of crop residue from their fields, after rice harvesting, as a low-cost straw-disposal practice to reduce the turnaround time between harvesting and sowing for the second (winter) crop. Even NITI Aayog in 2018 stated that burning of agricultural biomass residue, or Crop Residue Burning (CRB) in the neighbouring states of NCR is one of the major sources of air quality deterioration in Delhi in the months of October and November. It is also observed that UP, Punjab and Haryana had got highest Crop residues burnt in the country. Impacts of Crop Residue Burning is a greater concern which constitutes, (a) Smoke & soot particles in air causing air pollution (b) emission of greenhouse gases (GHGs) such as carbon dioxide, methane and nitrous oxide causing global warming, (c) Loss of Nutrients (N, P, K & S), (d) Mortality of active beneficial soil bacteria (e) Soil hardening & erosion due to no cover, (f) Wastage of valuable energy rich residues.
- 15.3.4 During 2018, "Perception Study on Air Quality" conducted by the ASAR Social Impact Advisors, which works on social and environmental issues revels that the awareness level was higher in the metros with the Delhi and NCR of three terms i.e. Air Quality Index, Particulate Matter 2.5 and Particulate Matter 10 and about 89% people in Delhi feel sickness or discomfort due to the bad air quality and most of the people believe vehicles and felling of trees are the major causes behind pollution. The top four causes of the deteriorating air quality were identified to be motor vehicles (74%), industrial units (58%), tree cutting (56.9%) and construction activities (48.2%)5. The issue of degrading air qualities need to be address to be a liveable NCR.
- 15.3.5 The steps taken by the authorities under the Graded Response Action Plan (GRAP) devised by the Environmental Pollution Control Authority (EPCA), could not achieve much of its objective of reducing air pollution of Delhi-NCR. While stubble burning of rice crop during winter months contributes heavily (40-50 per cent) to air pollution, the pollution levels due to rest of the sources i.e. road transport, construction/demolition activities, road sweeping, industries and power plants, burning of garbage/waste and diesel generators, have not been mitigated

⁴Source: PIB &Livemint

 $[\]label{eq:stars} \end{target} $$ \end{target$

significantly enough6. Innovative measures shall be needed to curb stubble burning, vehicular pollution and others.

- 15.3.6 High noise levels continue to be a serious urban problem in NCR. Delhi was ranked second amongst world's noisiest cities, as per ranking compiled by 'The World Hearing' with data from Mimi Hearing technologies GmBH, WHO and SINTEF in 2018. It is observed that against the permissible noise levels⁷ (55 dB during the day and 45 dB at night in residential areas), the sound level in cities/ towns often exceeds 70 dB which is alarming concern for all citizens, especially, elderly and children. Faulty & leaking silencers, over-use of horns and vehicles plying on roads accentuate noise level, besides the noise from other sources are causes of concern. As NCR has to be a Safe-Happy-Liveable region, the measures to reduce noise levels below acceptable limits would be essential. Major Causes and Effects of Noise Pollution are given at Annexure D -15.4
- 15.3.7 To provide optimum Green Spaces in urban areas of NCR is also a challenge due to increasing demand for various urban & economic activities. Some of the issues amongst others include (a) segregated land use/small areas for development, (b) unorganized dump yards for household/industry waste leading to more wasteland, (c) dried wetlands, (d) loss of private urban green space, and (e) loss of wildlife, etc.
- 15.3.8 National Clean Air Programme (NCAP), 2019 a time-bound national level strategy to tackle increasing air pollution was launched by the MoEF&CC. The NCAP is a mid-term, five-year action plan with 2019 as the first year. The main aim of the programme would be 20-30% reduction of PM2.5 and PM10 concentration by 2024. Dovetailing of the existing policies and programmes including the National Action Plan on Climate Change (NAPCC) and other initiatives of Government of India in reference to climate change will be done while execution of NCAP8. Clean Air Action Plan has been prepared for many non-attainment cities. Their provisions have to be embedded in the regional plan.

15.4 POLICIES AND PROPOSALS

15.4.1 General

- 15.4.1.1 NCR States should ensure that development and construction activities are carried out in the region safeguarding the Environment and improving ecosystems of the region.
- 15.4.1.2 NCR states should follow the recommendations of the 2014 report of Principal Committee under the Chairmanship of the Secretary Water Resources GOI, also considered by National Green Tribunal, in 2015 while giving directions for maintenance of requisite environmental flow in river Yamuna downstream of the barrage at Hathnikund in Haryana and at Okhla in Delhi so that there is enough fresh water flowing in the river till Agra for restoration of the river's ecological

⁶<u>https://www.thehindubusinessline.com/opinion/why-air-pollution-in-delhi-ncr-hasnt-been-tackled-effectively/article31081532.ece</u> ⁷<u>https://tspcb.cgg.gov.in/Environment/Ambient%20Noise%20Standards.pdf</u> ⁸<u>http://moef.gov.in/wp-content/uploads/2019/05/NCAP_Report.pdf</u>

functions and can help in Preservation & Rejuvenation of the Yamuna Flood Plains in NCT Delhi along with adjoining tracts in UP and Haryana. Recommendation may also be followed for Hindon and other rivers also as applicable. (refer **Annexure P-15.1 A & B**).

- 15.4.1.3 The already constituted and existing regulatory body, Unified Center for Rejuvenation of River Yamuna- Restoration and Beautification (UCRRY), under Hon'ble Lieutenant Governor, Delhi, may look into the implementation of the Final report of 'Floodplain Development Yamuna River, NCT of Delhi', 2015. UCRRY may further look into the River rejuvenation in whole of NCR by inviting active participation from Govt. of U.P and Haryana. It may also look into the ways of tackling the key issues of Yamuna River in Delhi as also identified in Hon'ble NGT guidelines, i.e. Reclamation, Restoration and Rejuvenation of riverbed and floodplains, Encroachment on floodplains, Pollution in river and large scale dumping of solid waste.
- 15.4.1.4 All dried/depleting lakes and water bodies in NCR be revived in a phased manner by cleaning natural drainage channels and desilting, followed by plantation of appropriate species⁹ type.
- 15.4.1.5 Policies and plans being devised at district and local level, shall keep in view, the values of the ecosystem services. Urban biodiversity should be considered as an integral part of overall planning, as gives value back. All deteriorated green spaces should be rejuvenated across the region.
- 15.4.1.6 Every urban area in NCR should have optimum green open spaces for its citizens.
 Each urban area shall have earmarked open spaces in its residential areas, with 15-20% land reserved as green in each residential sector. Banks of all water bodies should be developed in a manner that they are lined with trees¹⁰.
- 15.4.1.7 NCR states should ensure that Environmental Monitoring is being carried out regularly and adequate number of well-equipped laboratory for Air, Water, Noise quality analysis are set up across urban and rural areas of NCR and online Real Time Monitoring System (RTMS) for monitoring of various environmental qualities, is effectively and efficiently implemented and made operational.
- 15.4.1.8 Continuous Weather Monitoring Station be mandatorily established at each district of NCR.
- 15.4.1.9 For better utilization of crop residue generated in NCR and to follow "waste to energy mission", the region shall have to widely adopt the biogas plants for managing the crop residue. (refer Annexure P-15.2 for strategies on residue management) It is estimated that large scale industrial biogas plants can generate about 5000 cubic mtr of bio gas per day and small family type biogas plants can

⁹ Chennai restoring its Otteri 18 acre dried lake.

¹⁰Naya Raipur Development Plan
generate 1 to 10 cubic mtr biogas per day.

- 15.4.1.10 Promote better utilization of recreational areas by planting trees along streets, creating more green urban spaces, green facades, rooftop gardens or green roofs, and providing incentives to use green elements in new ways. Another similar activity could be better cleaning and maintenance of parks and open spaces.
- 15.4.1.11 While preparing the Master Plans/ Development Plans and demarcating the urbanisable area boundaries in the sub-regions of NCR, the respective NCR constituent State Governments should ensure that the hazardous industries should be located in the most optimum/ strategic manner in suitably planned industrial areas, taking into consideration the future growth directions and economic profile of the settlement(s), so that the adverse environmental impacts of such hazardous industries on the settlement, can be mitigated.

15.4.2 Ambient Air Quality

- 15.4.2.1 Efforts be made by the NCR States/ ULBs/ Authorities to have minimum 15-20% of area in each city/ town under tree/ green cover, which shall not be categorised as forest. People should be allowed to cut or replace planted trees on their private land and any permission in this regard can be granted by the district administration through an online time-bound portal including grant of TDR in lieu of the land parcel, if the planted land need to be protected/ or restricted for any development. This should be done in public interest & combating the climate change, by encouraging more privately owned planation.
- 15.4.2.2 Green corridors/ Tree barriers should be developed whereable possible along roads to act as buffer and enable reducing the air and noise pollution impacts, especially in residential and institutional areas.
- 15.4.2.3 In order to reduce vehicular pollution, clean vehicle fuel (CNG, electricity, solar batteries, hydrogen fuel, etc.) be adopted across the region.
- 15.4.2.4 States should take initiatives to change the harvesting technology and encourage farmers to use environment friendly harvesting techniques and/or bacteriasalry based mulching in place of combines and which results in longer stem portion being left uncut due to height of fittings. This leaves much longer straws standing which are difficult to be mulched and mixed into the soil. Manual cutting is costly and time consuming; however, burning is faster and cheaper but is environmentally disastrous. (refer **Annexure P- 15.1.3**)
- 15.4.2.5 To handle the issue of stubble burning, every village or group of villages should

have bank/pool of harvesting equipment. Each Gram Sabha should buy one or two happy seeder machines and leasing to farmers via roaster should be increased as an income generation activity.

- 15.4.2.6 States may adopt better harvesting techniques like in-situ management which involves ploughing back the stubble in the ground; happy seeder machine; or simply cut, bail and transport the straw to cardboard factories or bio-mass based power plants. Options being offered be tied with an appropriate financial or institutional mechanisms.
- 15.4.2.7 Indian Agricultural Research Institute (IARI)^{11,} PUSA has developed affordable technique (which involve use of bio-organism to dissolve Stubble) for tackling the problem of Stubble Burning which further reduce pollution & make soil fertile by maintaining the moisture of filed for longer duration. NCR states may collaborate with IARI for mandatory adoption of such techniques. IARI technology should be made freely available to all villagers/ farmers at least 15 days before the start of harvesting time, along with detailed guidelines, methods, etc. for its proper use. This can be distributed by the Agriculture Departments of the State as they supply seeds and other agriculture related items. Gram Panchayat Pradhan/ PRI and Agriculture Departments of the respective NCR State should work closely on it. A brief note on IARI recommendations for tackling the problem of Stubble Burning is annexed at Annexure P-15.1.2.1.
- 15.4.2.8 Norms and standards stipulated by the MoEF&CC/ CPCB or any other competent authority for SPM and other emissions should be strictly enforced.
- 15.4.2.9 Achieve 30% reduction in Ambient Air Quality levels by 2024 and increase number of moderate, satisfactory and good air quality days. Recommendations of various studies being undertaken from time to time should be implemented by NCR states. Broad Recommendations of the Comprehensive Study on Air Pollution and Green House Gases (GHGs) in Delhi given at Annexure P-15.1.4.
- 15.4.2.10 Identify sources and hotspots of Air Pollution in each districts/ urban areas and formulate action plan for elimination of polluting sources.
- 15.4.2.11 Maximize mechanical sweeping of major roads (2 lane & above) in all NCR towns during early morning hours or night sweeping.
- 15.4.2.12 Implement robust compliance mechanism for industrial emission. Reliable Continuous Emission Monitoring System (CEMS) data may be used for self-

 $[\]label{eq:limbulk} \end{tabulk} \end{tabul$

monitoring and reporting by industries.

- 15.4.2.13 Fully covered and closed carriages only will be allowed for sand, coal, flyash, construction material, and such things in entire NCR.
- 15.4.2.14 Promote Pollution under Control (PUC) checks at entry of the vehicles in plants and bulk material handling in rakes to reduce pollution by road transportation related to large industries.
- 15.4.2.15 Air quality monitoring equipment should be setup in all urban Wards and all villages in NCR in a time-bound manner. It should be on-line for entire NCR. CPCB may undertake this task or may designate any agency. State Pollution Control Boards (SPCBs) should undertake regular air quality monitoring and set-up necessary equipment in their respective sub-regions. Funding for this can be arranged from multi-lateral agencies.

15.4.3 Water Quality

15.4.3.1 Surface Water

- 15.4.3.1.1 In water supply, TDS norms should be comparable with world standards. NCR states should adopt global norms of clean water supply. ULB & concerned agencies should be supported by the respective State Governments in this regard. (Global norms of clean water supply is given at **Annexure P-15.1.5**)
- 15.4.3.1.2 Dredging and regular cleaning of rivers and natural channels should be carried out and the waste should be properly disposed of, so that it could not get back into the river/ channels.
- 15.4.3.1.3 All concerned departments/ district administration/ ULBs should take necessary action for revival, clean up and beautification of water bodies in their respective Sub-regions.
- 15.4.3.1.4 MoEF&CC has taken initiative for the rejuvenation of 13 rivers including forestry interventions. River Ganga and Yamuna are part of this initiative. Similarly, possibilities be explored to investigate rejuvenation and reviving as applicable, of Sahibi River in Rajasthan and Haryana sub-region. For its revival/ rejuvenation an Action Plan can be prepared by CPCB by 2022, so as to resolve the issues by 2024.
- 15.4.3.1.5 Zero discharge of un-treated sewage & industrial discharge into Rivers (Yamuna, Hindon, Kali) should be promoted by all NCR states across the region by 2026.
- 15.4.3.1.6 Efforts be made to maintain Environmental Flow/ sufficient water in Yamuna and Hindon rivers, round the year. In case of Yamuna, State of Haryana shall release 10 cumecs water directly into main stream of the River from Hathnikhund barrage and maintain e-flow of the river till Wazirabad, as per NGT's order dated 11.06.15.
- 15.4.3.1.7 Efforts should be made to achieve water quality required and permissible for

bathing purposes in Yamuna, Hindon& Kali rivers. Best use water quality levels designated by CPCB are as given at **Annexure-P-15.1.6**.

- 15.4.3.1.8 Water quality monitoring of all the important surface water bodies and treatment plants should be carried out on regular basis. Efforts should be made to re-cycle and re-use of treated sewage effluent.
- 15.4.3.1.9 Govt. of NCT Delhi has taken initiative to rejuvenate waterbodies in a planned manner and has formulated a standard set of operating procedures (SOPs) for rejuvenation of waterbodies for its City of Lakes project wherein, instead of taking up the projects individually, 30-50 waterbodies of similar parameters shall be clubbed under a package and projects will be executed after floating bids in parallel. Similar initiatives could be taken up by NCR States for rejuvenation of all water bodies towns and cities of NCR. Each of such sites shall have recharge pits for 50% of STP capacity based on Delhi project for Najafgarh area.
- 15.4.3.1.10The status of the various canals, especially the unlined and perineal; need to be assessed to check their contribution to ground water recharge. Agra Canal carries polluted water and its impact needs to be assessed.

15.4.3.2 Ground Water

- 15.4.3.2.1 In certain areas of NCR, some harmful chemical and metals are found which leads to skin & other diseases. Heavy metal/ chemical occurrence in water should be strictly monitored across the region and boring in such areas should get stiff penalties. Sub-regional Plan should give special focus to such areas.
- 15.4.3.2.2 Norms and standards stipulated by the MoEF&CC / CPCB or any other competent authority, regarding permissible for chemical emissions/release should be strictly enforced.
- 15.4.3.2.3 All identified water recharge structures in NCR should be well maintained and kept clean.
- 15.4.3.2.4 For sustainability, States may take all necessary steps to protect identified environmentally sensitive areas of water channels across the NCR

15.4.4 Waste Management

- 15.4.4.1 'Waste to Energy' concept should be widely adopted across the region and necessary actions should be taken by the respective NCR States in this regard.
- 15.4.4.2 NCR states should encourage non-polluting industries to reduce emission. The region should also incentivise circular economy.
- 15.4.4.3 Latest and new collection and disposal technologies should be adopted by all ULBs/ Authorities and dealing agencies in NCR.
- 15.4.4.4 Chemical waste (e.g. oily sludge, halogenated solvent, etc.) should be properly handled according to the prescribed norms. The disposal of chemical and hazardous waste into the air, soil and waters should be prevented and penalised in NCR areas.

15.4.4.5 Electronic waste is emerging as a serious public health and environmental issue and India is the "third largest electronic waste producer in the world" after China and USA, as per UN's Global E-waste Monitor 2020. NCR should lead by an example for the country in properly managing the e-waste in an organized manner and promote reuse as far as possible. Extended Producer Responsibility (EPR) should be strictly enforce across NCRwith district level EPR coordinator working closely with pollution control offices and supervised by District Magistrates.

15.4.5 **Forest and Biodiversity**

- 15.4.5.1 Canopy cover in Reserve and Protected forests needs to be improved through determined afforestation and conservation programmes. Afforestation drives in reserve forests can be done by the Forest Department of the respective participating States.
- 15.4.5.2 Necessary initiative be taken by states to remove any /all transportation-related barriers to wildlife crossings and reconnect key wildlife habitat corridors by providing 'animal bridges' and 'animal underpasses' for smooth movement of wildlife. SRPs should make special provision for this as applicable.
- 15.4.5.3 NCR has many protected areas in the form of Wildlife Sanctuaries, Bird Sanctuaries, National Parks which includes Asola Bhatti Wildlife Sanctuary, Sultanpur National Park, Nahar Wildlife Sanctuary, Bhindawas Wildlife Sanctuary, Khaparwas Wildlife Sanctuary, Okhla Bird Sanctuary, Hastinapur Wildlife Sanctuary, Sariska Tiger Reserve, Bandh Baretha Wildlife sanctuary and KeoladeoWildlife Sanctuary. The Eco-Sensitive Zones¹² of these have been identified and notified. They have to be incorporated in the Landuse and Landcover maps and the development would have to be regulated within the zone.
- 15.4.5.4 Delhi Development Authority has developed about 06 Biodiversity parks in Delhi (area ranging from 100 acres to 700 acres). Similarly, another Biodiversity park is developed in Gurugram and Noida. Authorities/ ULBs in NCR should develop similar Biodiversity parks in other areas of the regions and work towards achieving highest standards in biodiversity in NCR.
- 15.4.5.5 Efforts should made by the NCR States, Development Authorities, ULBs, etc. to have at least one Botanical Garden and Zoo. This should be developed in each of the Metro and Regional centre by 2025.
- 15.4.5.6 Efforts be made to earmark and protect views of scenic and cultural landscapes areas in NCR.
- 15.4.5.7 NCR States to earmark areas and prepare maps that indicate how ecologically important areas and natural features will be managed (e.g. slopes and ravines, and other natural features). Make efforts for conserving and protecting environmentally-sensitive areas and increasing the amount and connectivity of green-space.

¹²Reference - <u>http://moef.gov.in/rules-and-regulations/esz-notifications-2/</u>

- 15.4.5.8 Road side plantation and social plantation programmes need to be undertaken by involving all concerned agencies and community such as eco-clubs of schools, Resident Welfare Associations (RWAs), etc. to increase the overall green/ tree cover in NCR.
- 15.4.5.9 States may introduce incentives for restoring degraded forests which can also provide a fillip to rural employment.
- 15.4.5.10 The elements under Natural Conservation Zones as in RP-2021 shall remain and be continued to be conserved. Activities like intensive tree plantation programme be initiated in barren/waste land/ hills. Water bodies could be used for water aerodromes and related infrastructure could be allowed in and around such areas. Water recharge areas be shall be allowed to have recharge structure. The 0.5% of total area under NCZ in a sub-region allowed for related compatible development could be either at one place or multiple areas, subject to other approvals, Acts of different States and related sectors and land use compatible with the area.

15.4.6 Noise Pollution

- 15.4.6.1 All highways shall have noise barriers/ tree corridors, especially when they are passing through or close to residential areas, hospitals, old age homes, educational institutions, courts, religious places, etc. The elements of noise/tree corridors should be included as part of the overall highway construction/development/improvement costs, as applicable. Appropriate dense plantation should be done in such areas along roads.
- 15.4.6.2 Noise level norms should be strictly enforced in all religious places as per respective location, by bringing in awareness and not just by force.
- 15.4.6.3 Limits on the noise emission of vehicles should be introduced¹³. Limits on the sound pressure levels for vehicles reduce the noise emission from the engines. However, the main noise from traffic on highways is rolling noise. This may be reduced by quiet road surfaces (porous asphalt, "drain asphalt") or by promoting use of quiet tires for smooth ride on any road.
- 15.4.6.4 Many countries have banned honking and it has proved to be very effective way of preventing noise pollution. Similar steps be taken by the NCR States and honking be banned in NCR in phases. CBDs and dense residential area should be taken up first.

15.4.7 **Technology and Innovations**

15.4.7.1 The floating water drones/ robot technology can help in cleaning and collecting garbage from rivers and water bodies. Autonomous Drones technology like Waste-

¹³In Europe, the maximum permissible noise levels range from 69 dBA for motor vehicles to 77 dBA for cars, and 83 dBA for heavy twowheeled vehicles to 84 dBA for trucks.

Sharks/ Aqua-drones¹⁴ which work similar to vacuum cleaners that "feed" on plastic in a similar way to whale sharks feeding on their prey as they drift through the ocean, should be adopted by the NCR States for cleaning of rivers/ channels & water bodies and to help in reducing water pollution.

- 15.4.7.2 Adopt Clean Technologies like mechanical collectors, wet scrubbers, fabric filters (baghouses), electrostatic combustion systems (thermal oxidizers), condensers, absorbers etc. and fuel switch over – to cleaner fuels.
- 15.4.7.3 Pollution mitigation technologies like smog towers, smog guns should be looked into. Delhi has already initiated installing smog towers in 2020 and other urban areas in NCR should follow the same. The ionization technique is under stage of experimentation. Such techniques are good for micro climate management. This would help in dispersing the pollutants and reduce the concentration.
- 15.4.7.4 Explore adoption of air filter technology to bring in air filters for micro climatebased interventions. It may be installed at major traffic intersections in order to bring down the PM levels.
- 15.4.7.5 CPCB has come up with guidelines for managing end of life vehicles. It has been made available to manufacturers and recyclers. It is important to set up infrastructure for recycling end of life vehicles as per the guidelines¹⁵. In this regard, possibilities for setting up infrastructure for recycling can be explored in Nuh areas of Haryana or in Rajasthan sub-region.
- 15.4.7.6 Air quality monitoring equipment should be modernized by adopting improved technology, reliability of their readings and public disclosure of their reports on a regular basis. NCR State should mandatorily adopt norms for automatic and continuous readings in all industrial locations, all water bodies, major traffic intersections, near hospitals/schools, etc. in time bound and phased manner. Funds for the same can be arranged from NCRPB / CPCB or State Pollution Control Boards.

15.4.8 **Planning and Design**

- 15.4.8.1 NCR districts should work towards establishing an urban-rural park system that centers on national parks, regional parks, urban parks, local parks and community parks. By 2035, the park space per capita throughout the region should be 10 sq. meters.NCR States should investigate opportunities to provide new open space so that all residential areas are within 400 metres of open space and all high density residential areas (over 60 dwellings per hectare) are within 200 metres of open space.
- 15.4.8.2 Efforts be made by all NCR States to develop linear parks and Green areas along

¹⁴https://en.reset.org/blog/wastesharks-how-floating-drones-are-helping-clean-our-seas-09262018and https://www.delltechnologies.com/enus/perspectives/how-trash-eating-drones-are-taking-on-water-pollution/#scroll=off 15https://mpcb.gov.in/sites/default/files/standing_orders/Guidelines_Handling_Processing_and_Recycling_ELV_26092019_0.pdf

the watercourses.

- 15.4.8.3 Areas for environmental protection should be identified and detailed out in Sub-Regional Plans, District Plans and Master/ Development Plans. The Plans should define areas that must be protected for providing important environmental services such as, Biodiversity Preservation; Flood Control; Water Production; Erosion Control; & Mitigation of Heat Islands, etc.
- 15.4.8.4 Efforts should be made to construct conveyance system (pipeline) in the industrial areas to carry industrial waste water from individual industries to the CETP. To utilize the CETP treated water by the industries themselves reverse pipeline (i.e. from CETP to the individual industry) be provided. The existing treatment facility at the CETP should be upgraded by providing Reverse Osmosis (RO) System, so that the treated water can be used in the process itself by the industries¹⁶. This can also be done in institutional and residential complexes including universities and colleges. This shall be mandatory for every industrial cluster/estate, etc. in NCR.
- 15.4.8.5 Closed conveyance system, RO system, reverse pipeline, etc. be mandatory as per the capacity of each industrial area, apart from mandatory compliance with parameters of CPCB/SPCBs.
- 15.4.8.6 Catchment areas along rivers/ channels and around water bodies (10 ha./ 50 ha. size & above) should have about 100 mtr green buffer and should be kept clean.
- 15.4.8.7 Area comprising not less than 100 metres around places like residential, hospitals, old age homes, educational institutions, courts, etc. should be designated as "Silence zone" wherein the noise limits should be below 50 dB during the day time and 40 dB during night time¹⁷. Honking be banned on priority in all such places Indicative Ambient Noise Standards given at **Annexure P-15.1.7**.
- 15.4.8.8 Social audit should be mandatory for all CETPs, STPs, WTPs, etc.
- 15.4.8.9 Provision of environmental services be prepared including mechanism that enables the preservation of areas that contribute to the maintenance of the overall environmental quality through compensating the land owners.

15.4.9 Skill upgradation, Awareness and Capacity Building

- 15.4.9.1 Necessity of reaching out to people and such that people at large start participate in the environment management, is must and for this, necessary and regular awareness campaigns need to be organized by concerned departments of respective states, at each settlement level.
- 15.4.9.2 Departments should continue reaching out to schools and colleges/ RWAs to make them aware about the issues with involvement of social scientists.
- 15.4.9.3 Organize intensive and sustained Information, Education & Communication (IEC) Campaign-for scientific understanding and practicing Sustainable Lifestyles to deal

¹⁶ As done in case of Industrial Area Bhiwadi.

¹⁷https://tspcb.cgg.gov.in/Environment/Ambient%20Noise%20Standards.pdf

with the environmental challenges.

15.4.9.4 Awareness among drivers (Transporters) on vehicle maintenance, safe & fuelefficient driving and importance of PUC checks, should be created, to manage vehicular pollution.

15.4.10 Major Projects and Implementation Strategies

15.4.10.1 Key projects envisaged to be taken up in NCR for improvement of overall environment are given at Table 15.1 below, but not limited to:

Table 15.1: Key projects envisaged to be taken up regarding environment in NCR (2021-2041)

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1.	Prepare project for revival of the major water bodies including cleaning and beautification.	Initiallytwodistrictsineachsub-regionbecovered.	All districts to be covered.		
2.	Floodplain Development of Yamuna River:a) Haryana Sectionb) NCT Delhi Sectionc) U.P. Section	Work be comple	eted by 2030	-	_
3.	Floodplain Development of Hindon and Kali River	Work be completed by 2031		-	-
4.	Development of Bio-diversity parks	At least one in each district	-	-	-
5.	Projects for the development of new common effluent treatment plants (CETPs)	As required in each district/ industrial areas	-	-	-
6.	Up-gradation of existing CETPs with conveyance system (including reverse Pipeline)	By 2025	-	-	-
7.	Projects for tree planation/ afforestation and development of green corridors along rivers/ water bodies/ waste lands, etc. on government land	-	-	-	-
8.	Projects for setting up Air quality monitoring stations and modernization of equipment	To be completed by 2026	As per the requirement	-	-
9.	Establish Continuous Weather Monitoring Station at each	At least one in each district			

Sl. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
	district.				
10.	Projects for setting up of recycling plant for "end of life vehicles"	TobedevelopedinNuhareaorRajasthansub-regionby2026	-	-	-
11.	Projects to have Botanical Garden	At least one in each Metro and Regional center by 2025	-	-	-
12.	Projects to have Zoo	At least one in each Metro and Regional center by 2025	-	-	-

Chapter 16 DIGITAL INFRASTRUCTURE

16.1. Introduction

- 16.1.1. Digital Technologies, as gift of modern science, is largely different from any other traditional infrastructure. Importance of various digital technologies including Information Communications Technologies (ICTs) and various other platforms is widely experienced and accepted by one and all in the society. Digital technologies and platforms are important for telecommunication, healthcare, education, and mobility sectors, and now its role is also well recognized in other sectors like agriculture, administration, tourism, etc. From international market to domestic market, corporate communication to personnel communication, telecommunication, ICTs, and various other digital platforms are the prime way to maintain the continuous and instantaneous flow of sharing information and helping in quicker decision making. Digital infrastructure and services are increasingly emerging as key enablers and critical determinants of a country's growth and well-being.
- 16.1.2. For scalable and sustainable infrastructure, the role of technology has also become crucial as growth, overcrowding, budget constraints and inadequate infrastructures are putting increasing pressure on cities, states, and countries. Leaders of cities around the world and private companies are thinking of how to improve the infrastructure, create scalable systems, and processes for economic growth, social development, and environmental sustainability. ICTs and digital platforms not only have significant influences over the economy in term of GDP per capita but also serve people by creating job opportunities. As a result, due to the potential role of digital technologies and applications, a modern world as well as economy without these, cannot be thought for one moment.
- 16.1.3. As per McKinsey Global Institute report on "Smart Cities: Digital Solutions for a More Liveable Future, 2018", smart applications in eight domains i.e., mobility, security, healthcare, energy, water, waste, economic development & Housing and Engagement & Community, affect multiple aspects of the quality of life and results in a more efficient, responsive, and sustainable city that deliver better outcomes for the people. It is estimated that by use of smart applications 30-300 lives saved each year in a city of 5 million; 30-40% fewer crime incidents; 8-15% lower diseases burden; 15-30 minutes shaved off the daily commute; 25-80 litters of water saved per person per day and 20-35% faster emergency response times (*refer Annexure-D-16.1*).
- 16.1.4. Government of India has issued Nation Digital Communication Policy 2018 with three Missions:
- 16.1.4.1. *Connect India*: Creating Robust Digital Communications Infrastructure to promote Broadband for all as a tool for socio-economic development, while ensuring service quality and environmental sustainability.
- 16.1.4.2. *Propel India*: Enabling Next Generation Technologies and Services through Investments, Innovation and IPR generation to harness the power of emerging digital technologies, including 5G, AI, IoT, Cloud and Big Data to enable provision of future ready products and services; and to catalyse the fourth industrial revolution (Industry 4.0) by promoting Investments, Innovation and IPR.

- 16.1.4.3. *Secure India*: Ensuring Sovereignty, Safety and Security of Digital Communications to secure the interests of citizens and safeguard the digital sovereignty of India with a focus on ensuring individual autonomy and choice, data ownership, privacy, and security, while recognizing data as a crucial economic resource.
- 16.1.5. A suite of open Application Program Interfaces (APIs) linked to Aadhaar—such as the Unified Payments Interface and Bharat Interface for Money/Bharat QR code for payments, eKYC for electronic verification of customers' identities, and Digi Locker for online document storage—makes up a large part of India's digital foundation and has propelled the country's digital evolution.
- 16.1.6. The introduction of the Goods and Services Tax (GST) Network, which brings all transactions by about 10.3 million indirect taxpaying businesses onto one digital platform, and the digitisation of records at the Ministry of Corporate Affairs are emerging as powerful platforms in the country.
- 16.1.7. The government also triggered a growth spike in digital payments through the launch, in 2014, of the Pradhan Mantri Jan-Dhan Yojana, the national financial-inclusion drive, which led millions of people to open Aadhaar-authenticated bank accounts linked to mobile phones. Indians have opened 337 million Jan-Dhan accounts, a threefold jump in four years as per Ministry of Finance 2019
- 16.1.8. Innovation in the public and private sectors has been essential in driving digital adoption in India and two factors have been primarily responsible for this accelerated pace: (1) The government's dedication to digitising key aspects of the economy, and (2) the private sector's innovation and investment to promote broader internet access and increased use. In many areas where digital adoption has been quickest, these combined public and private influences are clear to see as observed from Figure Error! No text of specified style in document.6.1.



Figure Error! No text of specified style in document.6.1 Increase in the Digital Adoption across sectors in India (McKinsey Global Institute, 2019

- 16.1.9. The public sector programmes have laid a solid foundation for private digital innovation. The government accelerated the national digitisation process by building a foundation of digital infrastructure and public platforms—scalable databases and websites—and then introducing digital applications and services. As observed from **Error! Reference source not found.** below which created real incentives for citizens to go online.
- 16.1.10. In addition, NCR participating States have also taken initiatives for development of digital infrastructure. Briefs of some of these major initiatives of Govt. of India presented at *Annexure-D-16.2*.

Error! Reference source not found. Initiatives undertaken by the Government of India to build ICT infrastructure for Digital
India

Initiative	Description	Current Status
BharatNet	Aims to provide broadband access to 250,000 Gram Panchayats (GPs) through a network of Optical Fiber Cable	 Length of OFC laid: 4,47,804 Kms No. of GPs where OFC Laid: 1,55,485 GPs No of GPs Made Service Ready (On fibre & satellite) 1,43,115 GPs
Smart Cities	Creation of 109 smart cities (target revised from 100) by 2022. INR 5 billion allocated to every city over 5 years for this purpose	 189 projects worth Rs. 2,237 crores (280 million euro) have been completed Implementation is underway for 495 projects with a cost of Rs. 18,616 crores (2.33 billion euro); Tenders have been floated for 277 projects with a cost of Rs.15,885 crore (2 billion euro) 1,987 projects worth Rs.1,01,992 crore (12.76 billion euro) are at detailed project report (DPR) stage.
Common Service Centers (CSCs)	CSCs are centers through which e-governance and related services will be made available to villages	 A network of 2.70 lakh VLEs, of which 1.63 lakh are in Gram Panchayats, are actively providing various online public utility and financial services to citizens, quality healthcare, apart from boosting entrepreneurship and employment in villages and smaller towns across the country.
Digitization of Post Offices	Digitization of post offices including setting up centralized data centers, networking of all post offices and enabling digital payments	• As on 31.03.2019, total 129089 Rural Branch Post Offices (Out of 1,30,000 rural Branch Post Offices in the country) have been rolled for Computerizing.
Universal Access to Mobile	Aims to provide mobile access to more than 55,600 villages that do not have mobile coverage	 About 5.5. lakh villages of about 6 lakh villages already have mobile service coverage. 55,669 balance villages to be covered Accessibility of villages and sparse population make it commercially unviable.
Public Wi-Fi Hotspots	Creation of public Wi-Fi hotspots in India to enable citizens to access content without depending on mobile data	 India currently has 3.06 lakhs wifi hotspots. Public WiFi hotspots in the country are expected to see sevenfold jump to 21 lakhs by 2021, according to estimates prepared by digital media platform DigiAnalysys.
India Stack	It is a set of open APIs that enables development of payment-enabled applications, using Aadhaar as the base for authentication	 1.2 Billion Enrolled for UIDAI, 30.6 Billion authentications to date, 745 Million in May 2019. 7.2 Billion eKYC to date, 41.5 Million in May 2019 alongwith 3.5 Billion documents. 722 Million UPI/ NPCI transactions registered in May 2019 and 185 Million transactions registered using AEPS & Aadhaar Pay in March 2019.
National Cyber Coordination	The Ministry for electronics and IT has planned to set up a center to safeguard India's cyberspace	 Outlay of Rs. 415.86 Crore The first phase of National Cyber Coordination Centre (NCCC) has become operational.

Initiative	Description	Current Status
Center (NCCC)	against potential threats	• NCCC has been set up to scan the country's web traffic to detect cyber security threats. It scans the cyberspace in the country for cyber security threats at metadata level to generate situational awareness.
E-Kranti	Electronic Delivery of Services	• Deliver government services digitally to improve efficiency, transparency, and reliability. Progress has been made on 33 of e-Kranti's 44 "mission mode projects"—high-priority e-governance tasks with clearly defined objectives and measurable outcomes.
E-governance		• Re-engineer government to improve service and efficiency. Examples include Aadhaar, e-visa, and e-procurement. The central government published 926,070 electronic tenders in 2017–18, up from 476,983 in 2014–15 (Central Public Procurement Portal, 2019).
Public Finance Management System	PFMS for faster and more transparent transfer of Govt. money	 Transferring subsidies directly to the people through Direct Benefit Transfer using their bank/Post office account. PFMS has interface with the Core Banking System (CBS) of over 300 Banks, including all Public Sector Banks, all Regional Rural Banks, major private sector banks, Reserve Bank of India, India post and Cooperative Banks.
Information for All		• Increase access to government information, starting with the open data platform data.gov.in. Currently, around 255,004 documents, data sets, and other resources are available on the site.Another platform, MyGov.in, facilitates citizen engagement with government.
Early Harvest	MeiTy Scheme 2019-20	 7000 Cr. Incentives for significant increase in manufacture of mobile headsets in India Implement quick-turnaround projects to illustrate digitization's benefits. Examples include a biometric system to track the attendance of 901,713 central government employees, secure government email, a national portal for lost children, and conversion of schoolbooks to e-books (Government of India, 2018).

- 16.1.11. Govt. of India is already playing key role on various aspects related to digital technologies. Few of these important efforts are mentioned below:
 - a) *Govt. E-marketplace*: Supported scale up & program management of GeM to streamline public procurement impacting 18% of GDP
 - b) *Aadhaar/ UIDAI* Supported UIDAI with thinking through use cases across sectors including financial inclusion, health, education, food. Eight most uses of Aadhaar Card are given at *Annexure-D-16.2.2*.
 - c) *Education* Support build of digital MIS platform for public school education system and support roll-out of Diksha across 4 states, 200k schools
 - d) Food- End to End Public distribution system transformation solution for India.
 - e) *Logistics* Developed proof of concept of logistics platform for infra planning, congestion reduction, mode optimization etc. with MoC, Logistics Division Supported development of e-tolling solution for National Highways
 - f) *Infra development productivity* Transformation of 12 major ports, 400+ stations',10 airports, program mgmt. of 90,000 kms of highways

- g) *National Emergency Response System (NERS)* as per MHA directive of December 2017 all the States need to mandatory adopt ERSS using C-DAC's software solution, with a single emergency response number '112' to handle different distress signals from citizens (voice, panic messages, email, web, sms, etc.).
- h) Optical Fibre Cable (OFC) connectivity is available in all State Capitals, Districts HQs and upto the Block Level. Further, Government of India has taken initiative for setting up National Optical Fibre Network (NOFN) connectivity to 2,50,000 Gram Panchayats of the country under BharatNet project of BBNL. This project envisages providing broadband connectivity with adequate bandwidth which shall boost Information and communication Technologies (ICT) applications such as e-Commerce, e-Banking, e-Governance, e-Education and Tele-medicine.
- i) Indian Telegraph Right of Way Rules 2016 formulated byDepartment of Telecommunications (DoT) to regulate installation of over ground and underground telecom infrastructure in the country. These rules have enabling provisions for (a) Single Window Clearance mechanism through online portal for grant of permissions, (b) Defined time period of approvals, (c) Deemed permissions, (d) Dispute resolution mechanism, (e) Nominal one time administrative fee:
- j) *Nation Digital Communication Policy* 2018 was released by Department of Telecommunications (DoT)
- k) National Programme on Artificial Intelligence (AI)- focuses on project implementation, applied research on AI and mission projects of Central Government, State Governments. NITI Aayog has prepared 'National Strategy on Artificial Intelligence' termed as "AI for All" and it focus on leveraging AI for inclusive growth in line with the Government policy of "Sabka Saath Sabka Vikas".
- 1) '*MyGov platform*' is another unique initiative taken by MeitY which is a participatory governance initiative involving the common citizen.
- 16.1.12. Further according to as per Review Report of Study Group on Telecommunication (2019) as part of second review of NCR Regional Plan 2021, India envisages to be a "fast follower" of the fifth-generation (5G) technology, even as the country's pan-Indian 4G LTE networks continue to see exponential data consumption due to falling data rates and rapid uptake of smartphones and 4G feature phones. GoI has already committed budgetary support for a 5G technology test bed that will be anchored at the Indian Institute of Technology in Chennai.
- 16.1.13. It is widely recognized that digital technology is an important component of infrastructure' for economic development and so as for the mega Delhi-NCR. NCR has a large network of digital infrastructure and it has always been a leader in development of new technologies for various sector. This role of leadership needs to be continued in the new era of 'Smart Cities' and 'Digital India'. The role of planning for the NCR cannot be over emphasized in context of new technologies such as deployment of fifth generation Cellular Network (5G Network), Internet of Things (IoT), machine to machine communication etc.

16.2. Existing Status

- 16.2.1. As per analysis of Visual Capitalist, India offers the lowest cost globally for 1 GB of data i.e., 9 cents compare this to developed nations, UK-\$1.39, USA-\$8.00.
- 16.2.2. In the NCR, the digital infrastructure facilities have been developed with 25.65 lakh Wireline Connections (DELs), 16.05 lakh Wireline Broadband Connections, 417.11

lakh Wireless Broadband Connections, 49,605 PCOs, about 14000 VPTs connected with optical fibre, about 16000 CSCs and host of services being provided on digital seva portal. Following Table 1616.2, 16.3 and 16.4 summarize the existing status of telecom facilities in the NCR region. Brief of existing digital infrastructure and facilities in NCR is provided in *Annexure-D-16.3*.

 Table 16.2 Wireline Connections i.e., Dedicated Exchange Line (DELs), Broadband, Public Call office (PCO) and Village

 Public Telephone (VPT) connection in NCR

State/ District	No. of Wireline Connections (DELs)	No. of Wireline Broadband Connections	No. of Wireless Broadband Connections	No. of PCOs	No. of VPTs
NCT of Delhi	1949012	1225950	19090492	47389	0
Haryana	437337	260654	10877171	928	465
Rajasthan	20359	7233	2554102	93	36
Uttar Pradesh	159178	111370	9190183	1195	853
Total	2565886	1605207	41711948	49605	1354

Source: Draft Review Report of Study Group on Telecommunication (2019) as part of second review of NCR Regional Plan 2021 (2019)

Table 16-3 Base Transceiver Station (BTSs) installed in NCR and connected through Optical fibre

State/ District	No. of BTSs	No. of BTS connected over Optical Fibre	% of BTS connected over to Optical Fibre
NCT of Delhi	12,821	4,946	38.58%
Haryana	14,974	4539	33.31%
Rajasthan	3,444	969	28.13%
Uttar Pradesh	11,300	3,504	31.00%
Total	42,539	13958	32.81%

Source: Draft Review Report of Study Group on Telecommunication (2019) as part of second review of NCR Regional Plan 2021 (2019)

Table 19-4 Block Head Quarters (BHQs) connected with Fibre in Sub-Region/Districts under NCR

	No. of	No. of BHQs connected with Fibre						
State/ District	Block HQs	BSNL	Bharti Airtel	Idea	RCOM	RJio	Tata	Vodafone
NCT of Delhi	Not Applicable							
Haryana	82	85%	95%	59%	51%	78%	5%	59%
Rajasthan	24	92%	88%	46%	46%	88%	4%	38%
Uttar Pradesh	60	60%	90%	43%	45%	97%	2%	45%

Source: Source: Draft Review Report of Study Group on Telecommunication (2019) as part of second review of NCR Regional Plan 2021 (2019)

16.2.3. Status of implementation of Right of Way Rules policy is NCR States is given in Annexure-D-16.3 (Table 1.6). Further in 2018 DoT has also released "Nation Digital Communication Policy". 16.2.4. Delhi Police has developed "TATPAR" app which provides digital services to the citizen of NCT Delhi. Various initiatives taken for E-Governance or E-Services by the NCR States are provide at *Annexure D-16.2.1*.

16.3. Key Issues and Challenges

- 16.3.1. Availability of land and permissions for Right of Way (ROW) for laying fibre to facilitate last mile connectivity is one the major issues identified by the Telecom Departments. Alongside, construction of common ducts for laying fibre to save time, costs and efforts shall also be a challenge. Provisions of ducts, earmarking of spaces for installation of digital telecom infrastructure such as In-Building Solutions need to be ensured.
- 16.3.2. In order to bridge rural-urban divide digital, it is a huge task to provide digital connectivity in each and every village, town and city and it will involve connecting more than 200 cities/ towns and above 8000 Gram Panchayats of NCR through National Optical Fibre. Another challenge shall be to ensure that each ULB and Panchayat point of broad band is fixed up and functional.
- 16.3.3. High speed of internet shall also be a core utility to facilitate online delivery of various services. Country including NCR has been experiencing low internet speed since long. NCR being largely an urban region in terms of its population, providing flawless high speed of internet is a mammoth task.
- 16.3.4. Low and delayed telecom infrastructure development across India is another challenge for achieving Digital Fit and Smarter NCR. India's digital infrastructure is comprehensively inadequate to tackle growing increase in digital transactions. An ASSOCHOM-Deloitte report, 2016 has estimated requirement of over 80 lakh hotspots as against the availability of about 31000 hotspots for the country to reach global level
- 16.3.5. For digital technology to be accessible to every citizen, significant efforts are needed to customize applications and services, for catering to local and regional needs and accordingly develop an application ecosystem.
- 16.3.6. Achieving high level of digital illiteracy and awareness shall be a major milestone for the success of Digital India Programme. According to ASSOCHAM-Deloitte report, 2016 around 950 million Indians were still to have internet accessibility.
- 16.3.7. With proliferation of Cloud-Based Services like DigiLocker, data security is emerging as a major challenge and concern. Country has faced increased cyber-attacks since nationwide lockdown during COVID-19 which highlights the aspect of cyber security.
- 16.3.8. Deployment of mobile towers in rural and remote areas/districts and availability of land and buildings for telecom infrastructure shall have to be addressed on priority to cater to the near future requirements.
- 16.3.9. Delhi Service Area (metro circle which includes Delhi adjoin cities of UP & Haryana) shall have to be extended to whole of NCR, to guarantee seamless & uniform regulatory framework in the region.
- 16.3.10. According to Akamai report (third quarter) 2016 on internet speed, India was at the 105th position (5.6 Mbps1) in the world in average internet speed. This rank is the lowest in entire Asia Pacific region.

16.4. Policies & Proposals

16.4.1. Emerging Policy Thrust

¹https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/q4-2016-state-of-the-internet-connectivity-report.pdf

- 16.4.1.1. As per NITI Aayog, India needs to power its data & digital revolution and the time is to transform India from a data rich nation to a data intelligent nation. In this regard, Artificial Intelligence (AI) is being considered as future.
- 16.4.1.2. The next Industrial Revolution will be founded on Digital Infrastructure and Artificial Intelligence that will expedite production and management decisions based on the Internet of Things (IoT), the Cloud, Blockchain, Big Data, Virtual Reality, and the combination of digital and real infrastructure. Digital as a Service would be its enabler by providing the entire interconnection, integration and virtualization of its Space, Services and Structure (3S).
- 16.4.1.3. With the rising accessibility of drones, many of the most dangerous and high-paying jobs within the commercial sector are ripe for displacement by drone or a UAV (unmanned aerial vehicle) technology. The use cases for safe, cost-effective solutions range from data collection to delivery. And as autonomy and collision-avoidance technologies improve, so too will drones' ability to perform increasingly complex tasks. A brief of initiatives taken for Drone & UAVs in India is provided at *Annexure-D-16.4*.
- 16.4.1.4. To achieve three prolonged missions i.e., "Connect India", "Propel India" and "Secure India", under the Government of India 'Nation Digital Communication policy 2018' (NDCP-2018) deployment of vast digital infrastructure is required in urban as well as rural areas. It is essential that adequate digital infrastructure for NCR is planned for different schemes, initiatives and ambitious projects of the Government of India such as Digital India, Smart Cities and BharatNet, etc. Brief of NDCP-2018 is given at *Annexure-D-16.5*.
- 16.4.1.5. Necessary set-up needs to be created for NCR to be "Smart NCR" with seamless digital infrastructure for (a) bridging the digital divide, (b) achieving Sustainable Development Goals (SDGs), (c) safe & secure Cyberspace, (d) seamless connectivity of systems-promoting interoperability features, and (f) citizen participation.
- 16.4.1.6. As data, internet and voice services are majorly consumed indoors and to facilitate seamless and quality services, the provisions of related digital technologies shall become important to ensure uninterrupted telecom services in the region. The emergences of smart and digitally ready buildings are expected to transform the NCR as a benchmark region. High speed internet is and shall be a core utility for future. Collaborated efforts of Central Government Ministries/ Departments/ Agencies and NCR States, shall transform the region into a digitally empowered society and knowledge economy.
- 16.4.1.7. Three primary focus areas of the 'Digital India' program as under, to be well articulated & implemented for making NCR a smart region:
 - a) Digital Infrastructure to every citizen ensuring High speed internet, Unique digital identity, Mobile phone & bank account, Access to a Common Service Centre, Private space on Cloud, and Secure cyber-space
 - b) Digital Services and Governance on demand through Integrated services, Availability of services through online & mobile platforms, Portable Citizen entitlements on Cloud, Ease of doing business (EODB), Financial transactions electronic & cashless,
 - c) Digital Empowerment of citizens though Digital literacy, Digital resources, Digital Collaborative digital platforms, on-line building plan approvals, and No physical submission of documents.
- **16.4.2.** Infrastructure & Digital Platforms

16.4.2.1. It is imperative to recognize digital technology as an essential infrastructure for developing NCR as an economic hub. Accordingly, key elements that need to be focused on for a healthy Digital Service Sector are illustrated in Figure 16-2.



Figure 16-2 Elements Required for a Healthy Digital Service Sector

- 16.4.2.2. Efforts are to be made to bridge the digital divides between urban and rural areas by connecting the towns/ cities and panchayats through OFC network and provide & support in collaboration the other similar infrastructure. Goal of "Smart NCR" needs to be achieved through development of smart cities/ towns and villages with an advanced IT centric approach along with elements likes permission and approvals to building, roads, RoW to utilities, smart metering of water & power/energy, Smart parking, etc.
- 16.4.2.3. All cities, towns and villages in NCR should be operating on Networked Information. About 200 smart cities/ towns and smart village clusters by 2031 and additional 300 by the end of 2041 should be created in NCR. States should come up with specific targets & phasing in their Sub-Regional Plans to achieve 100% digital connectivity with support infrastructure. Broad indicative sector wise applications/ infrastructure is provided at *Annexure-D-16.6*. In phase-I (2021-25) all district HQs & Major Cities (10,000 and above population) along with all identified Ruraban Clusters and rural areas with 2000 population and more shall have smart infrastructure. Similarly, in phase-II (2026-31) all Teshsil/ Sub-divisional HQs, Block HQs & other towns & rural clusters shall have smart infrastructure. NCR States should respectively prepare specific projects reports on this aspect to achieve the target
- 16.4.2.4. To exploit potential of digital initiatives, especially in the domains of mobility, security, healthcare, education, energy, water, waste, economic development, employment, housing, engagement & community participation, emergency services, besides other relevant aspects the concerned State Departments may jointly plan and promote smart applications for future. These applications be together put under in a broad framework of 'Digital Services Platform for NCR'. Each NCR districts and ULBs could play a pivotal role for creating common platform and common database in this regard. An indicative list of digital platforms/ domains/ initiatives which could be considered is provided at *Annexure-P-16.1*

- 16.4.2.5. NCR sub-regions should utilise the common digital platform which will be the key driver for sharing of data which is an important factor. Flow of information be ensured through this platform for various Govt. initiatives such as Government Land Information System (GLIS), Mining Surveillance System (MSS) of Ministry of Mines; Industrial Information System (IIS) of DPIIT; Road Information System for Ministry of Road Transport & Highways, etc. Similar programmes be developed by the NCR States to support and improve the efficiency of common digital platform, for wider access and dissemination of NCR specific data/ information amongst stakeholders.
- 16.4.2.6. NCR participating States may set mandatory provisions for common duct spaces/ trenching, cabling, IBS, FTTx, spaces for mobile towers/micro sites, cell on wheels (COW), Wi-Fi hotspots, etc., within the residential, commercial, and Industrial areas. These are necessary to deploy shareable digital infrastructure. These aspects be detailed out and demarcated in the Sub-Regional Plans & Master/ Development Plans in consultation with the stakeholders, as per "NDC Policy 2018" as amended from time to time.
- 16.4.2.7. Technological Infrastructure should be created by the local Governments for sharing of infrastructure like network, CCTV, sensors for traffic management to waste management (streetlight pole to be used for CCTV, parking sensor, traffic light controller etc.) and all information should flow on common infrastructure.
- 16.4.2.8. Public health and related departments may explore possibilities of introducing guided rails for moving camera and related equipment inside sewers for remote inspection and sensors to monitor flow of sewage and blockage.
- 16.4.2.9. As Master data management is a prerequisite for having sound and agile digital platform Master database should be created for NCR and be managed properly for its effectiveness. All IT platforms in NCR should follow Service Oriented Architecture (SOA) model. SOA model should be ensured by the NCR constituent States and all other stakeholders.
- 16.4.2.10. Government initiatives like UMANG (Unified Mobile Application for New-age Governance) App which enables varied user applications like soil health card, digitized land record, crop loan, seeds fertilizers, irrigation facilities, etc. may be supported and promoted by the NCR participating States, especially to facilitate farmers.
- 16.4.2.11. Taking inspiration from Smart Cities initiatives NCR States may establish an "Integrated Command and Control Centres" at each district level. Infrastructure Common ICT facilities like (a) A Unified Data Centre, (b) A high speed backbone communication network, (c) Geographic Information Infrastructure (GIS Portal), and (d) Sensor networks following common protocols and standards be created & strengthen in NCR.
- 16.4.2.12. Bharat Net be implemented 100% in NCR and all Block HQs. should have effective and operational 100% fibre (OFC) connectivity. Further the RoW rules 2016 of Indian Telegraph (IT) Act shall be 100% mandatory.

16.4.3. Digital Technologies & Service Delivery Platforms

- 16.4.3.1. Digital payment modes like NETC FASTag, BHIM UPI, etc. be followed across NCR for various services lik, toll plaza (all National Highways, State Highways, Expressways), city toll plazas, enforcements vehicle linked fines, fuel payments, parking, payments of utilities bills/ dues, ticketing, etc.
- 16.4.3.2. Promote, support, and introduce services of Drones or UAVs for sector likes safety surveillance, firefighting, emergency services/ responses, humanitarian aid & disaster

relief, conservation & protection of natural resources, healthcare, agriculture, waste management, construction monitoring and infrastructure development, urban planning, transport, telecommunication, advertising, service deliveries, etc. Appropriate guidelines for Drones or UAVs be formulated for operation, monitoring & control and related infrastructure planning be done accordingly.

- 16.4.3.3. Common Service Centers (CSCs) services be effectively utilized to make NCR digitally empowered. CSC provides facilities like Tele-marketing, Tele-medicine, Tele- agriculture, etc. and various programs (*refer Table 1.5 of Annexure-D-16.3*)
- 16.4.3.4. Smart logistic solutions be developed, especially for Agricultural sector. NCR participating States should collaborate with specialised organisations like IFFCO to create innovative & smart solutions for their respective areas. The E-Nam facility be widely adopted & promoted in NCR for welfare, development and help of the farmers. Further for providing employment and growth in rural India, rural BPOs may be set up for employing the skilled rural youth & enhancing the digital base.
- 16.4.3.5. Government e-Marketplace (GeM) be widely used across NCR for providing end-toend services and advantages to buyers & sellers, as indicated in *Annexure-P-16.2*.
- 16.4.3.6. Use of Electric and autonomous vehicles for smart and environment friendly mobility be promoted in NCR.
- 16.4.3.7. Adopt use of robot services (BOTs) in NCR for: (a) Domestic and industrial functions to be promoted in NCR; (b) Elderly care; & (c) healthcare in diseases involving physical social human diseases like Covid-19.
- 16.4.3.8. Efforts be made such that Artificial Intelligence (AI) assist and co-exist with manual activities especially in utilities like power, water, sewerage, medical care etc. AI may also replace physical manual involvement in 4Ds i.e., Dull, Dirty, Dear, Dangerous works. These activities could include scavenging of sewers manhole, disaster management, bomb disposal, waste segregation and activities that increase overall efficiency and helping in reduction of cost.
- 16.4.3.9. NCR States may work towards achieving SDGs through specific ICT initiatives, (*refer Annexure-P-16.3*) to ensure sustainability of services deliveries for social, environmentally as well as economic sectors.
- 16.4.3.10. Aadhar be utilized as a tool for good governance across NCR and Aadhaar Biometrics be utilised for individual authentication.
- 16.4.3.11. NCR participating states may create digital platform on the line of "TATPAR" app of Delhi police.
- 16.4.3.12. A responsible Public Digital Platform (PDP) be created for Public Service Delivery (PSD). Indicative approach/ principles for PSD are provided at *Annexure-P-16.4*.
- 16.4.3.13. All departments/ agencies/ Authorities/ULBs/ Panchayats to work towards providing Sustainable Cities Services. In order to cover various sectors Management Systems such as Smart Water Management Systems, Smart Energy Management Systems, Smart Transportation Management Systems, Smart Waste Management Systems, Smart Healthcare Management, Smart Education, Smart Security, Smart Buildings Systems can be looked into.

16.4.4. Growth via Digitization

16.4.4.1. NCR States may work towards creating a big data repository for the Development of a regional Big Data integrated pilot zone for NCR. Coordinated efforts amongst agencies form all sectors like industrial development corporation/ authorities, stormwater agencies, and other users be ensured so that the aggregated data has applicability across purposes.

- 16.4.4.2. Concerned NCR state departments may mandatorily introduce common standards open up data ports, develop inter- connected public application platforms, develop information infrastructure facilities including a comprehensive sensor network with full coverage and ubiquitous internet, a smart city spatio-temporal cloud platform and a spatial information service platform. These may be introduced and incorporated in all existing and future Master/ Development Plans of urban areas & large rural settlements in NCR in a phased manner.
- 16.4.4.3. All efforts need to be made to utilize GIS platforms while planning for Sub-Regional/ District/ City/ Town/ Village/ local level. Alongside such efforts GIS based Land and Asset Management System be also created.
- 16.4.4.4. States may ensure availability of skilled workforce, a vibrant start-up scene and infrastructure being built to purpose, with actively nurtured cooperation between city/ towns, rural areas, business, and science.
- 16.4.4.5. All new towns in NCR be planned and designed with technology and smart utilises as enablers to bring convenience and nature closer to residents, for their well-being and thus making towns liveable and sustainable.
- 16.4.4.6. Monetization of data is source of non-traditional revenues and this aspect could be explored by concerned State departments.

16.4.5. Ease of Doing Business

- 16.4.5.1. All concerned State Governments may endeavour towards adoption of latest technologies across all service delivery sectors and thus contribute towards enhancing EODB in the region. Indicative interventions could be towards having real time management of traffic, energy, water, health, etc.
- 16.4.5.2. State should work towards 100% adoption of existing Online Building Plan Approval System (OBPAS) in phased manner within five years. The authorities/ agencies/ ULBs where OBPAS is already in operation may offer handholding assistance to other towns/ areas which are lagging behind and which yet to adopt the same.
- 16.4.5.3. Similarly, 100% online permissions with deemed approval and time bound decision, be ensured across NCR for economy related matters, including roads (like Telegraph RoW), power, industries, etc.

16.4.6. Cyber Security & Resilience

- 1.3.1.1. Taking affirm steps towards security all services sector of NCR may identify each critical data and devise the related disaster recovery plan.
- 1.3.1.2. All Departments may mandatorily ensure that all their IT platforms are backed up by a Data Centre and Mission Data Centre.
- 1.3.1.3. Level of cyber security protection may be enhanced by all concerned departments through followings:
 - a. protection of communication networks, major information systems and data resources,
 - b. reliability of information infrastructure, and raise the level of information security & protection,
 - c. proactive use of advanced technology and facilitate use of secure communications technology in government departments and financial institutions, etc.
 - d. put in place a robust notification and warning mechanism for cyber and information security matters,

e. step up real-time surveillance, notification and warning as well as emergency response, and establish a comprehensive cyber security defence system.

16.4.7. Training, Skilling & Capacity Building

- 16.4.7.1. NCR States need to collaborate with NSDC, NASSCOM and MeitY, etc. for devising and conducting programs for training, skilling, capacity building of the workforces in the digital sector across various sectors in NCR.
- 16.4.7.2. The key focus areas for the training programs and skilling & capacity building could be AI, Big Data Analytics, Cyber Security, Mobile Tech., Virtual Reality, Blockchain, Cloud Computing, Internet of Things, Robotics Process automation, 3D Printing, amongst others.
- 16.4.7.3. All Govt. Departments in NCR may ensure compulsory GIS trainings for its concerned staff to improve digital facilities across various sectors.
- 16.4.7.4. Along with the above, the other policies which are also to be elaborated/ detailed out in Sub-Regional Plan and local level plan like Master/ Development Plans, etc. are given in *Annexure-P-16.5*.

16.4.8. Major Projects & Implementation Strategies

- 16.4.8.1. For effective implementation of various initiatives of the Governments, policies & proposals of Regional Plan and for making the region a "Smart NCR" creation of a centralized agency under MeitY and NCR partnering States is proposed to drive the strategies by 2026. In this regard following is proposed in line with Singapore model:
 - a. Smart NCR and Digital Government Group (SNDGG) is proposed to set up under the under MeitY, GoI with the objective to take a collective approach to building a smart NCR region,
 - b. Technology integration be made priority at the highest level in every Ministry and as a revised organizational structure a Chief Digital Strategy Officer (CDSO) may be appointed in each district to oversee the digitization plans,
 - c. Structurally enable open innovation: A digital experimentation and implementation unit shall be set up where officers could develop products in sandbox environment.
- 16.4.8.2. MeitY with its partnering knowledge experts may take NCR specific initiative for Platform based Delivery of Public Services and address digital citizen centric requirements.
- 16.4.8.3. Set up system for online, time bound single window system for approvals/ NOC for RoW for IT network across NCR by 2022 with deemed approval facility.
- 16.4.8.4. Public Wi-Fi hotspots may be set up in all urban areas above 10 thousand population and rural areas of 2000 population by 2023. Further at least 10 such spots be set up by 2023 in each Metro and Regional centres in NCR. All railway station, bus terminals, metro/ RRTs stations should have public Wi-Fi hotspots by 2024. All Central/ State Archaeologicalsites and protected monuments locations/ spots, all tourist places with more than 1000 tourist foot fall per year.
- 16.4.8.5. NCR States should implement digital solutions for a more liveable future as given in *Annexure-P-16.1.1*. NCR States should implement these solutions in entire by 2031. This is expected to give outcomes as per the *Annexure-P-16.1.1*.
- 16.4.8.6. NCR States should formulate policies to set mandatory provisions for common duct spaces/ trenching, cabling, IBS, FTTx, spaces for mobile towers/micro sites, ROW

for digital network, cell on wheels (COW)/ portable cell towers, Wi-Fi hotspots, etc., within the residential, commercial, and Industrial areas by 2023.

- 16.4.8.7. Guidelines for Drones or UAVs for operation, monitoring & control for infrastructure planning in NCR sub-regions be formulated by each NCR States by 2023.
- 16.4.8.8. Online Building Plan Approval System (OBPAS) be adopted and made operational across NCR in all metro centres and regional centres by 2023 and all remaining urban settlements by 2026.
- 16.4.8.9. Set up a sandbox with RERAs of NCR States for the region, especially for areas around Delhi i.e., Gurgaon, Faridabad, Noida, Greater Noida, Ghaziabad, as pilot to initially serve home buyers to transact easily, builders to comply effectively and enable RERA authorities to be more efficient.

16.4.9. Key projects

16.4.9.1. Specific projects envisaged to be taken up in NCR regarding digital infrastructure are given in Table below, but not limited to.

S. No.	Proposed Projects/Policies	Phase –I (2021-26)	Phase –II (2026-31)	Phase –III (2031-36)	Phase –IV (2036- 41)		
1.	Scheme for Speed up expansion of band width capacities of international internet communication gateways and enhance overall traffic handling capabilities.	To be done by 2026	-				
2.	Scheme for development of wireless broadband system in NCR	To be done by 2026	-	-	-		
3.	Scheme for 100% coverage of free high-speed wireless local area network in hotspots and along main transport routes within the region	To be done by 2026	-	-	-		
4.	Scheme for full fibre access for provision of fixed broadband services in NCR	To be done by 2026	-				
5.	All ULBs and Panchayats in NCR should have Public Portals data, service delivery, peoples' feedback, etc.	To be done by 2026	-				
6.	Scheme for Developing a 'International Innovation and Technology Hubs' in each sub-region in collaboration with MeitY.	At least one Hub in each sub-region by 2026	Another Hubs in e	ach sub-region			
7.	Schemes be prepared to have Smart/ Digital Cities and Smart Village clusters in NCR	About 200 smart cities/ towns and smart village clusters by 2026	500 smart cities/ towns and smart village clusters by 2031	Remaining areas by 2041.			
8.	Scheme for upgrardtion of infrastructure of each District Disaster Management Authorities (DDMAs) to establish an "Integrated Command and Control Centres" at each district level	At least two districts in each sub- region.	Rest of the districts.		-		
9.	Ensue the facility of Digital Payment modes like NETC FASTag, BHIM UPI, etc. across NCR for various services like, Toll Plaza (all National Highways, State Highways, Expressways), City Toll Plazas,	To be done by 2022	-	-	-		

Table 16.5 Key projects envisaged to be taken up regarding digital infrastructure in NCR (2021-2041)

S. No.	Proposed Projects/Policies	Phase –I (2021-26)	Phase –II (2026-31)	Phase –III (2031-36)	Phase –IV (2036- 41)
	Enforcements Vehicle Linked Fines,				
	Fuel Payments, Parking, Payments of				
	utilities bills/ dues, ticketing, etc.				

Chapter 17

HOUSING AND HABITAT

17.1 Introduction

- 17.1.1 NCR is expected to be mega urban region of 11 Crore population by 2041 which shall be more than the population of many developing countries. The region presently consists of about 230 urban settlements of varied size/ class, including 04 Metropolitan cities (Delhi, Faridabad, Ghaziabad and Meerut) and the number of Metropolitan cities in NCR are expected to be double (08) by 2041. In addition, about 11,700 villages form part of NCR. The housing aspirations are diverse and vary in case of villages and small towns as compared with major cities like Delhi, Noida, Gurugram, etc. Further, being a hub of various activities related to industries, construction, education and medical facilities, etc., NCR has increasing demand for various categories/ typologies of housing such as those for industrial workers, construction workers, students/ young singles and affordable rental housing.
- 17.1.2 Rapid urbanization and white-collar migration is expected to ensure strong growth for the commerce in the NCR, which in turn will increase residential demand. Further, the traditional concept of luxury housing in the suburbs will also witness a major shift affected by the demands of the new age home buyers. The luxury housing will evolve to accommodate a holistic and elevated living experience that the developers will have to incorporate. With concepts like 'Housing for All', affordable housing will continue to be the key growth driver and sub-urban cities will get more traction. Simultaneously, focus shall have to be shifted towards specific housing requirement such as those for neglected, differently abled, elderly, etc.
- 17.1.3 The concept of 'Co-living' is gaining widespread acceptance in the country. This trend is giving impetus to an organized rental market in cities across the country, including NCR as well, in the same way as co-working spaces did for shared office space. The rise in gig economy has led to high demand in co-working spaces in large cities. This trend of Co-living and Co-working spaces is expected to grow in the coming decades.
- 17.1.4 Over the year, the real estate industry has evolved from a brick and mortar industry to a service-driven product offering and the growth of this sector is now largely driven by evolving customer requirements and technological transformations. A favorable policy environment shall allow it to further flourish in the coming years. As reported by the Indian Brand Equity Foundation¹, the real estate sector in India is expected to reach a market size of US\$1 trillion by 2030 and contribute 13 per cent of the country's GDP by 2025.
- 17.1.5 Technological interventions are going to reshape the overall housing sector. Smarttech and innovation in the sector is no longer a distant future. In terms of construction, the key players will adapt to the latest technology – data gathering, artificial intelligence and machine learning which will play a key role in redefining the realty sector in India. Along-with improvement in quality of construction, the technology will also help boost timely completion of the projects. Smart homes could be the first choice of customers in coming years. The Real Estate market shall tap this space with ambitious projects. According to industry estimates, the Indian smart home market is currently valued at about \$893 million and is expected to grow by leaps and bounds in the next five years.

¹https://www.financialexpress.com/money/6-key-trends-that-will-shape-real-estate-in-india-in-2020/1814378/

- 17.1.6 Sustainable and green living, is expected to become a way of life with both developers and home buyers supporting green technology. This will continue to grow with developers focusing on technological advancements in procuring raw materials that are eco-friendly and sustainable designs that are environment sensitive.
- 17.1.7 Hence, for improved quality life in NCR, concerted efforts would be required to achieve a "Liveable", "Happy" and "Inclusive" region. As one solution cannot fit all, different cities, towns and villages would be required to be treated differently as per the demand and future requirements. The objective should be to make life easier for common man, to create some prosperity in the society and alongside, solve day to day problems, especially related to shelter within region.

17.2 Existing Status

- 17.2.1 According to Census of India 2011, there were around 1.06 Crore households in NCR while the number of houses primarily used for residential purpose were about 97.7 lakhs. Further, about 15 lakh houses were lying vacant, about 3.6 lakh houses were in dilapidated condition and around 1.09 Crore were total dwelling units available for residential use. While the *urban housing surplus* in urban areas of NCR was about 5.45 lakh, the rural areas had *rural housing shortage* of about 2.54 lakh i.e. about 1.59 lakh in Uttar Pradesh sub-region & about 1.16 lakh in Haryana sub-region. Hence, there was *net housing surplus* of around 2.9 lakh houses in the region. The percentage of dilapidated houses was more in the rural areas of the NCR (about 55%). In terms of ownership, it was found that about 79 percent of the houses in the NCR were self-owned while 18 percent were rented. The housing scenario of NCR is given at **Annexure-D-17.1.**
- 17.2.2 Delhi has almost 110 lakh population residing within core areas while urban extensions areas have another 30 lakh population. As per MPD-2021, 42% of residential allocation is in group housing. Beside there are a large number of temporary shanties or 'jhuggies' or slum pockets in various towns of the NCR. As per Census 2011, about 7.4 percent of the total population of the NCR live in slums. As of 2019, there are approximately 200 slum pockets in the NCR.
- 17.2.3 In Delhi, land owners/group of owners can pool land parcels of any size for development as per prescribed norms and guidelines of the Master Plan. The Land Pooling Policy for Delhi mandates that in each land pooled parcel, 60% of the land is to be developed by land owners/consortium for residential, commercial, partly Public Semi Public (PSP) land uses and balance 40% is to be used for various city level infrastructure requirements including roads, greens, PSP facilities, development of utilities i.e. water, sewerage, electricity etc. with involvement of private sector.
- 17.2.4 The major objectives of the National Housing and Habitat Policy (NUHHP), 2007 are:
 - a) facilitating accessibility to serviced land and housing for EWS and LIG
 - b) land assembly, development and disposal to be encouraged by both private and public sectors
- 17.2.5 National Urban Rental Housing Policy (2015) has been formulated by MoHUA with the vision to create a vibrant, sustainable and inclusive rental housing market in India. The policy targets the shelter for the homeless, social rental housing, need based rental housing (for migrants, working men, students etc.) and market based rental housing (employees of ULBs/State/PSUs/NGOs etc.)

- 17.2.6 National Urban Policy Framework (NUPF) 2018 is an integrated and coherent approach formulated by MoHUA towards the future of urban planning that could be an Opportunity for course correction. In addition, the national housing policy clearly articulates the difference between affordable and social housing.
 - a) Social Housing- For these homes, full financing is made available to vulnerable segments of society that meets the eligibility criteria set up the govt.
 - b) Affordable Housing- Cost is benchmarked at rates deemed as 'affordable' by the government. These rates vary in accordance to the real income structure of the concerned area.
- 17.2.7 Different agencies and countries have defined "affordable housing" as the economic potential of an individual to buy a house. In India, the Reserve Bank of India (RBI) had tweaked the affordable housing definition in July 2014. According to RBI the cost of a house now could be INR 6.5 million and INR 5 million in the metros and non-metros respectively, to be qualified as affordable housing. The RBI also said that it will periodically review the definition of affordable housing, on account of inflation. A small note on different views about Affordable housing, its definition and elements is at **Annexure-D-17.2**.
- 17.2.8 The National Real Estate Development Council (NAREDCO) under the MoHUA in 1998 is mandated to induce transparency and ethics in real estate business and transform the unorganized Indian real estate sector into a matured and globally competitive business sector.
- 17.2.9 Real Estate (Regulation and Development) Act, 2016 (RERA Act) is considered as one of the landmark legislation. Its objective is to address grievances of buyers and to bring transparency and accountability in country's real estate sector. This is in line with the vast and growing economy of India as in future many people will be investing in real estate sector.
- 17.2.10 The Pradhan Mantri Awas Yojana (PMAY) Housing for All has also been implemented in the towns of NCR. PMAY (Urban) launched in 2015 in mission mode to provide housing in all urban areas by 2022. It provide Central assistant to implementing agencies for about 1.12 Cr. Houses through four verticals or options. One of the option is in-situ slum redevelopment with private participation using land as a resource where extra FSI/ TDR/ FAR is given if required to make the project financially viable. Another option is affordable housing in partnership with private/ public sector where 35% of constructed houses are of EWS category. Similarly, the PMAY (Gramin) aims to provide *pucca* house with basic facilities to all houseless or *kachha*/ dilapidated householders by 2022. A brief note on Govt. initiatives in NCR is at Annexure-D-17.3.
- 17.2.11 To promote private investment in housing sector, Government had allowed 100% FDI in housing sector and the budget (2014-15) has gone one step further in this direction by listing slum redevelopment as an accepted component under the corporate social responsibility (CSR) to attract more private funds.
- 17.2.12 In various sub-regions of the NCR, the *policies and programmes* for new housing provision and slum improvement by the respective state governments were as follows:
 - a) Haryana Sub Region The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was implemented in Faridabad town in the Haryana Sub Region. Under this Mission, the Sub Mission of Basic Services for the Urban Poor (BSUP) was implemented. Further, the Integrated Housing and Slum Development Programme (IHSDP) was also implemented in the towns of Dadri, Rewari and Jhajjar. For improving the slums, the Rajiv AwasYojana (RAY) was implemented in Faridabad, Gurgaon, Rohtak and Panipat. Another programme

called the Rajiv RinnYojana (RRY) was implemented for urban poverty alleviation so that the urban poor/slum dwellers could improve their living standard. Also, the National Urban Livelihoods Programme (NULM) was also launched in various towns of the state. Many night shelters have been constructed in various towns. Affordable Housing in Partnership (AHIP) was also initiated in Faridabad for rehabilitation of slum dwellers in affordable housing units on a PPP mode. The TCPO of Haryana has modified its policy for allotment of land/flats to the EWS in the licensed colonies developed by the private colonizers so that its misuse could be checked. All the EWS plots generated by the private colonisers were to be handed over to the Haryana Housing Board at a predetermined rate for allotment to the EWS by the Board.

The Government of Haryana also initiated an Urban Homeless Policy Haryana 2011, Affordable Housing Policy and Slum insitu Rehabilitation Policy for improving the housing situation in the state. The Government of Haryana has also been implementing the Pradhan Mantri Awas Yojana(PMAY) as well as the Deen Dayal Jan Awas Yojana (DDJAY). Under DDJAY, 2 lakh houses were to be constructed in the low and medium potential towns of the state.

- b) Rajasthan Sub Region In the state of Rajasthan, several central and state government policies have been implemented. The RAY was implemented in the city of Alwar which is a part of the Rajasthan sub region. The Government also enacted a Rajasthan Slum Development Policy in the year 2012 under which basic civic and social infrastructure and amenities and housing including rental housing and transit housing was to be provided. Under Integrated Housing and Slum Development Programme (IHSDP), slum dwellers were to be provided shelter and basic infrastructure. Besides construction of houses, infrastructure development including roads, drains, toilets, sewerage systems, street lights, water supply lines, etc. were to be provided. Another programme called the Mukhya Mantri Shahari BPL Awas Yojana was launched by the Government of Rajasthan in the year 2012-13. Under this scheme, 1 lakh BPC families were to be benefitted by providing subsidy for construction of houses. In terms of night shelters for the homeless, 3 night shelters were constructed in the town of Alwar. The Rajasthan Housing Board has been constructing houses for the EWS and LIG and have added a substantial number of dwelling units.
- c) Uttar Pradesh Sub Region

The RAY and IHSDP have been implemented in the state of Uttar Pradesh. The Government of Uttar Pradesh has enacted several policies viz. State Housing Policy 2009, State Housing Policy for EWS and LIG, 2011, State Housing Policy for Urban Villages, 2011, Manyavar Shri Kanshiramji Shahari Garib Awas Yojana and the Manyawar Shri Kanshiramji Shahari Dalit Bhulya Basti Samagra Vikas Yojana. These have been implemented in various towns of the state. In addition, in order to encourage investments from the private sector, several township policies have been initiated viz. Integrated Township Policy 2005, Hi-Tech Township Policy 2007 and the New Township Policy 2009. In addition, the development authorities and the UPHDB have also been providing housing for various sections of the society.

In the participating states of Delhi, Uttar Pradesh, Haryana and Rajasthan, the major stakeholders providing housing/ implementing state/central government housing policies are as follows:

Table	17.1:	Major	stakeholders	providing	housing/	implementing		
state/central government housing policies								

	State	Parastatal Agencies	State / Central Government	Private Developers	Cooperatives	Others
1	Delhi	DDA, DUSIB	Govt. of India / Govt. of NCT of Delhi	Pvt. Developers	Cooperatives	Individuals and Others
2	Uttar Pradesh	UPHDB, and Development Authorities, ULBs	Govt. of Uttar Pradesh	Pvt. Developers	Cooperatives	Individuals and Others
3	Haryana	Haryana ShahariVikasPradhikaran (HSVP), HHB, Development Authorities, ULBs	Govt. of Haryana	Pvt. Developers	Cooperatives	Individuals and Others
4	Rajasthan	RHB, UIT, ULBs	Govt. of Rajasthan	Pvt. Developers	Cooperatives	Individuals and Others

- 17.2.13 It must also be noted that the NCR also has many unauthorised colonies / land subdivisions being undertaken by people who are not in a position to afford the formal housing supply systems. This is a huge and affordable informal housing market.
- 17.2.13 Considering land acquisition as an expansive, tedious and time consuming affair, new/ innovative models for development like Redevelopment, in-fill development, land pooling, Town Planning Schemes (TPS), Joint Development, Transferable Development Rights (TDR), Private Land Pooling model, etc. are other emerging alternatives for the development of housing and related infrastructure. A brief about some of the major Land Supply Models being followed in India is given at **Annexure-D-17.4.**

17.3 Key Issues and Challenges

- 17.3.1 Though, as per Census-2011 there was an excess of housing in urban areas of NCR and substantial number (15 lakh approx.) houses were vacant, affordability stays a major concern. Further, while there is currently an excess of supply in urban areas and a shortage in the rural areas, the situation by the year 2041 would demand additional housing in both urban as well as rural areas and therefore, the agencies concerned need to gear up to the projected demand for housing, in terms of size, well as location and affordability.
- 17.3.2 While urban housing shortage in India has come down from 18.78 million units in 2012 to 10 million units in 2019, the aspect continue to be a major challenge. Most of the housing shortage (over 95% lies in the Economically Weaker Section (EWS) and Lower Income Group (LIG) segment². India is expected to gain a staggering 218 million people in its urban areas from 2011 to 2030 (United Nations 2012)³ which will increase pressure on the existing housing infrastructure and demand for new.

²<u>http://www.businessworld.in/article/Additional-25-Million-Affordable-Units-Will-Be-Required-By-2030-Reports/05-08-2019-174391/</u>

³<u>https://www.pdpu.ac.in/downloads/SPM-JEM2020Chapter4.pdf</u>

Prevailing demography, cultural, social, economic flow from all sides, managing vast region of NCR a challenge.

- 17.3.3 The Royal Institution of Chartered Surveyors (RICS) & Knight Frank report, 2019 estimated that there will be demand for 25 million additional affordable units by 2030⁴. However, to address the huge demand, a subsidy-based approach may not be enough for maintaining sustained growth in the affordable housing segment. An analysis of the demand-supply shows, that on an average, nearly 0.6 million homes are required every year in the top eight cities (including Delhi) against supply of 0.2 million units per year. There is a huge supply gap for urban housing and more so in the EWS and LIG category.
- 17.3.4 Large scale unauthorised land colonization continues to be a major concern. Since it is more affordable as compared to the formal supply, there demand for the same is high and flourishes on account of a lack of strict controls.
- 17.3.5 The Lal dora and extended lal dora in Delhi and surrounding areas in NCR like Haryana etc. continue to present a chronic problem of disorganized development emits very old municipal and revenue laws.
- 17.3.6 Urban villages The existence of more than 300 urban villages within Delhi presents an anachronism and a planning challenge in Delhi. Situation is compounded by multiparisu (16) land owning agencies in Delhi and ambiguity in their categorization and land ownership details.
- 17.3.7 Availability of water for portable and non-portable uses is often quoted as a reason for non allowance of higher FAR in Delhi. The problem of water availability is genuine however, instead of restricting FAR and building heights, other practical coordinated solutions are urgently required and critical for future growth of Delhi.
- 17.3.8 At micro level, FSI/FAR along with other factors, such as maximum building heights, set-back requirements, plot-coverage ratios, and minimum parking requirements are aspects to be dealt with carefully as they often impact the efficiency with which households and businesses are able to make use of available land. Efficient functioning of land markets is further hampered by weak systems for appraising land values, determining property rights, and conducting public land acquisitions.
- 17.3.9 NCR attracts a very large construction workforce, mostly migrant labour, however, shelter provisions for them are minimal. Towns with proximity to NCT Delhi, like Gurugram, Faridabad, Noida, Greater Noida, Ghaziabad,Bhiwadi- Neemrana, etc. and two major industrial belts (Noida & Greater Noida and Manesar-Bhiwadi-Bawal-Daruhera & Rewari) are industrial and commercial activities hubs while Rohtak, Meerut, etc. are developing as Institutional hub. These cities are attracting a large number of workers, students and young singles that need shelter in terms of one room accommodation with good transport facilities. Further, housing for the elderly people and other special groups is another aspect which needs attention.
- 17.3.10 Core areas and substantial housing stock of cities/ towns like Delhi, Gurugram, Faridabad, Noida, Ghaziabad, Meerut, etc. across NCR are getting older (more than 50 years) day by day and need redevelopment and refurbishment. Currently, most of the redevelopment is being undertaken by individual families on bunglow plots. Estimates indicate that redevelopment can help cater about 40% of the housing demand of Delhi. For example, out off total area of Delhi of 1483 sq. kms. The urban areas of Delhi is in 2005-06 was 290 sq.km, thereby the area of rural Delhi stood at 558 sq. km i.e. 37.65% The population share in rural Delhi is much less than the urban part of Delhi.

⁴https://content.knightfrank.com/news/13251/6506-article-1.pdf

- 17.3.11 Land requirement to meet future housing need is a major concern as there is limited access to suitable land banks for affordable housing projects. For example, in Rajasthan sub-region about 2.97 lakh DUs are estimated to be required till 2031 with land requirement of around 9758 Ha. by 2031 to develop the required housing stock.
- 17.3.12 Predominance of conventional construction practices that result in delayed progress in urban areas and the limited use of prefabricated and pre-engineered materials. Further, there are insufficient numbers of trained masons despite the operation of the Construction Sector Skills Development Council since 2013.
- 17.3.13 Completion of unfinished projects and filling up of vacant housing is a major challenge and the governments concerned, alongwith the respective RERAs and the Ministry of Finance, Government of India should strategies to achieve the same.
- 17.3.14 There are numerous difficulties and delays in land acquisition for housing and other provisions. Land acquisition for RoW for utilities and for major transportation projects has also led to avoidable delays. Further, the land pooling model has not been adequately explored and it is felt that the same be adopted in the NCR.
- 17.3.15 At macro level, the authorities continue to give permission as and when developer comes, often with little consideration to city scenario as a whole which creating lopsided development is a matter of concern. Certain completed residential apartment projects have negligible occupancy due to lack of 'last mile connectivity' in terms of public transport and unavailability of basic support system. Numbers of housing projects/ units are lying vacant and unsold due to various reasons.
- 17.3.16 Despite Urban areas is responsible for generating close to 70% of revenue, not much of it is being shared with the ULBs. Only about 1% share of GDP is spent by ULBs in India compared to 10% share in other comparable countries. Lack of revenue disables the ULBs to work effectively. ULBs also have capacity constraints to formulate and design mass housing projects. Continued rise in the number of slum dwellers is a resulting issue that needs to be tacked efficiently.

17.4 Policies and Proposals

- 17.4.1 In view of the difficulties associated with conventional land acquisition for housing provision, *alternative methods of land assembly* may also be adopted simultaneously so as to implement projects in a timely manner. While the options of various models of public-private partnerships are already in vogue in the constituent states of the NCR, the same may also be adopted in Delhi. The Gujrat Town Planning Scheme approach can also be tried in NCR fruitfully.
- 17.4.2 The global experiences prove that great agglomeration of populations are adequately served very dense and very high rise buildings, adequately planned with green spaces, ventilation, amenities and provision of major service and facilities close by. The population projections by UN for Delhi NCR, clearly warrant a similar strategy for Delhi and NCR.
- 17.4.3 The residential, commercial, industrial and institutional requirements for the largest human agglomeration on earth in the next 10 years clearly require a massive redevelopment of the Delhi and NCR urban areas since land is a limited resource. This may be achieved by the following strategies:
 - i. Floor Space Index (FSI)/ Floor Area Ratio (FAR) are non-financial instruments available with govt. to encourage development in required uses in any spatial area. These should be used imaginatively in NCR to meet future multiparous requirements. While provision of utilities like road, electricity, etc. is comparatively easier the

utilities like water supply, sewerage present a larger challenge. These twin challenges of water and sewerage shall be address by mandatory following the provisions below:

- a) All new high-rise building shall be permitted only of they are made on a zero-net basis and have a dedicated, on site, decentralised sewerage treatment plant of adequate capacity and provided that such building have duel piping both at inlet and out let levels for water supply and sewerage. The black water from the toilets should have a separate out let line to be taken to the FSMP on site which could be on site or made for a cluster of such high rise. The portable water supply form Delhi Jal board/city water supply/local underground water sources should be only for portable purposes and should supply only in the kitchens or pantry or residential/other buildings. Water from all the other sources in a building should be treated adequately in the on sight decentralised STP to CPHEEO standards for NCR standards whichever are cleaner. This will solve both the issues of water supply availability and sewage disposal.
- b) Such high-rise building mandatory should have adequate rain water harvesting and ground water recharge facilities as laid down for that plot and building size as per MoHUA formulated Model Building bylaws 2016which include provisions for rain water harvesting for all type of buildings and waste water recycling system. All the future buildings especially high-rise building should have engineered structures mandatorily as almost complete NCR is in seismic zone IV.
- c) To improve quality of leaving and reduce transport cost and pressure on transportation infrastructure,a15 minutes neighbourhood by walk or cycle and walk to work should be planned in all new developments and also in all redevelopment areas including in slums, etc. across NCR. This will necessary require creation of mix-used zones both spatially -horizontally and vertically as well as earmarking a mix-used areas by recognition/permission of mix-used in existing areas/redeveloped areas, TOD areas and another areas as required.
- ii. Parking requirements for such massive development required for the future most populous NCR requires major rationalization. No parking of any kind shall be allowed in entire NCR at night other than designated parking lots. Arrangement shall be made by the NCR States for imposing deterrent penalties and towing away such vehicles.
- iii. Every such high-rise building will have multi-level underground parking or separate adequate high rise for multi-level parking which should be preferable mechanized. There should beat least one helipad for emergency evacuations for each cluster of such high rise buildings. All high rise building in NCR shall also be energy efficient as per Bureau of Energy Efficiency (BEE) guidelines by 2026.
- iv. Currently height restrictions of different DMCs in Delhi prohibit water and electricity connections by respective authorities beyond certain heights which is 15 mts. in most places, and in some areas goes upto 21 mts. Future ready NCR these height restriction should be removed such height restrictions should be applicable only in identified heritage areas. Not only in Delhi but also across NCR.
- v. All new developments of neighbourhoods or redevelopment of old neighborhoods shall necessary provide for quality education, quality health care, quality recreation and vibrant commercial spaces along with good playgrounds and sports facilities these shall also provide ample green spaces, walking areas along with blue green infrastructure.

17.4.4 Entire NCR has got ample potential for the development of green field township these townships also and in taking pressure not for Delhi and other towns and be formed nuclei of polycentric development these new green field townships can also be specialised township like medi-cities, tech-cities, edu city, entertainment cities with multiple theme parks, etc.

17.4.5 Transited Oriented Development (TOD)

a) Optimum use of high volume transport corridorslike expressways highways mass transit railways Metros/RRTS etc. and to ease the cost of feeder transport system many countries have made provisions not only to encourage but to mandated construction of all new residential, institutional, office complexes within the designated distance from such mass transit corridors. For example Hongkok has significant housing, office and commercial spaceswithin 500 mts. of the radius transit corridors. MoHUA has also notified a TOD policy NCR region has a large metro network and planning to have many RRTS corridors in future.Hence it is proposed that all the transit corridors and transit nodes shall be the axes of urban densification Intensive development with high FAR, mixed land use, exemption from height restrictions if any shall be permissible in entire NCR along such high volume transit corridors and TOD nodes.

17.4.6 Mixed use provisions around educational and medical hubs

- a) Educational institutions require ample space not only for the teaching facilities but also residential accommodation for the faculty, student and support staff further such large concentration of young population has its own demands of hostels, recreation, shopping, health facilities food joints restaurants, banks, ATMs, etc. Hence mixed use provisions allowing all these facilities should be permitted upto at least 1 km. radius of University or top educational institute like IITS, IIMS, NITS, Medical colleges, engineering colleges, etc. Mixed use and also liberal FAR should be allowed for an organized development of such facilities in these areas.
- b) Similarly, NCR has many health facilities which cater to patient not only from NCR across the country and also for abroad. Such high put fall of patient who sometimes also stay for extended periods due to combers travels, along with the requirement of support health infrastructure like diagnostic centres, pharmacies, food joints, etc. translate into every justified mixed landuse requirements hence areas around at least 1 km radius from such premier medical hubs both in public and private sectors like AIIMS, RML, Medi-city, Fortis, etc. which should allow residential landuse for doctors, and support staffs, from the hubs, short term accommodation for the attendants of patients, shops for medicine and other requirement of patient and attendants, eating places, banks, ATMs , etc, Mixed use and also liberal FAR should be allowed for an organized development of such facilities in these areas.
- c) For achieving 'end of homelessness', better quality of housing and safe liveability in the NCR, necessary steps have to be taken to create affordable housing by creating conditions for emergence of appropriate size, quantity and price of supply in a balanced manner, along with all support physical and social infrastructure, across the region.

17.4.7 Planned Housing along Transport Corridors (TOD)

a) In NCR, housing projects should be planned and developed to address the requirements at agglomeration level and not limited to the specific city or town. These projects should involve building of adequate housing units in urban and rural areas and provide every family with a pucca house, with water connection, 24x7 electricity

supply & access and toilet facilities, etc. States may identify the preferred locations/ areas of its population of residing and general tendency in this regard and develop such area on priority. Areas beyond Gurugram, Faridabad, Rewari and Nuh (Mewat), Ghaziabad, Meerut, Hapur, Rohtak, Panipat, etc. and transport corridors like Metro Rail, RRTS and Expressways could be looked at for future housing projects so that housing and transportation are interlinked. Transit Oriented Development (TOD) with incentives would go a long way in creating projects which are easily accessible and will get occupied quickly.

b) As the population in housing pockets evolves, the amenities provided must also respond to meet their changing needs. Housing supply needs to be in the right areas & right type and should take into consideration unique character of local neighborhoods. New towns need to be planned and designed with technology as enablers to bring convenience and nature closer to residents, for their well-being.

17.4.8 **Sub-Regional Housing Action Plans** - The concerned departments in the sub regions need to assess local housing market conditions, by tenure, including assessing housing supply, demand and affordability and prepare district wise Housing Action Plans. The housing typologies and densities should result in compact, walkable neighborhoods related to public transportation. Different cities, towns and villages should be treated differently for their demand and future requirements.

17.4.9 Vacant Housing and Stalled Projects

- a) Unfinished projects need to be taken over and completed so that possession can be handed over to the purchasers. Necessary steps need to be initiated in this regard by the state governments/ authorities/ agencies as well as the central government. Legal provisions for the same are already available in the RERA legislation. Further, by ensuring safe and quick public transportation links and adequate physical and social infrastructure would help project occupancy. All stalled and unfinished residential apartments should be completed by 2023 and the respective state governments, in association with the respective RERAs and the central government should prepare strategies towards achieving this goal.
- b) NCR States should take necessary steps so that the large quantum of vacant housing in NCR towns is reduced. It shall be ensured that no residential areas/ projects lying vacant. Alongside, focus should also be on creating of infrastructure for economic activities and employment generation.
- c) Identify abandoned and intestate/ ownerless properties and such properties shall ordinarily best in the local govt. appropriate laws, if not existing, may be made in this regard. Upon besting the local/ state govt. shall be free to allot these properties for appropriate public use, with or without re-development as necessary.
- *d*) The properties could be kept vacant due to various reasons like primary place of residence of owner, fear of losing ownership to long duration tenants, fear of owner of being charged for un lawful activities of tenants, benami property, etc. To deal with such with such cases following steps are recommended: ,
- 1) The property rights of the owner should be secured through necessary provision in Tenancy laws,
- 2) In case of any un lawful activities the house owner should be indemnified, unless there is proof of the owner being involved in such activities
- 3) In case of benamai, unused/ un occupied properties etc. such properties should be encouraged to put into use by levying appropriate monitory penalty which should not be more than 1/4th of the estimated property tax on rentals from the nearest similar

property. However such penalties may not be applicable to the properties which are declared through an Affidavit as the primary pace of residence/permanent address by the owners. Concerned Deputy Collector shall issue appropriate circle rates in these regard if required. Such elements should also be made part of the rental policy.

- Properties which were hitherto vacant for three years, and monetary penalty were levied and paid, if such properties are put in rental use they may be given some rebate in such a way so that the vacant property tax paid by the owner is given back to the owner in an equal number of years as a rebate against the penalties payable by him for the period of the property be rented out. This rebate shall be admissible in monthly property tax payments; provided that such rebates in any month shall not be higher than the maximum monthly charged penalty in the past.
- An appropriate policy should be framed to identify vacant/ unoccupied houses and bring them to the rental market. For this a NCR Committee can be constituted with Divisional Commissioners and representatives from State Finance Departments and MoHUA, Govt. of India as members.
- e) Registry / inventory of unoccupied and unsold homes in NCR should be prepared by the respective sub-divisional Magistrate (SDM), who shall also be responsible for monitoring the levying and collection the penalties.

17.4.10 Affordable Housing

- a) Costs need to be benchmarked at rates deemed as 'affordable' by the State governments. These rates vary in accordance to the real income structure of the concerned area. Affordable housing should be promoted with priority focus on safety of the citizens and should be incorporated in each sub-regional/ district/ Master/ Development Plans. Such housing should be located close to work centres in a decentralized manner. Some global examples for encouraging affordable housing in Sydney and London are annexed as **Annexure –D.17.5.1 and 17.5.2**
- b) In Indian context, one of the four options of PMAY(U) allows extra FSI/ TDR/FAR for project viability to private developers using land as a resource for in-situ redevelopment. Whereas the financial support from the Govt. is permissible for affordable housing option in PMAY (U), it is suggested that since cast support through interest subsidies or financial assistance have a higher financial implication than permitting extra FSI or extra FAR, hence, at least for NCR area extra FSI or extra FAR should be made available for both public/ private developers to provide for affordable housing in NCR, provided these high rise building are made on a net zero discharge model with decentralized dedicated STPs on site with duel inlet and duel outlet networks for water/ sewerage.
- c) Encourage and facilitate affordable housing development through measures such as reduced parking requirements, streamlined and prioritized approval processes, below market rate leases property publicly owned, and fiscal measures.

17.4.11 **Rental Housing**

a) NCR is one of the most important economic growth engines, attracts huge number of migrants. These migrants will need place to stay as they are important for economic growth. In order to address housing need for migrants, rental housing market should be developed instead of ownership based housing model. Concessions on property tax could be given to encourage people to offer their properties on rent. Supply of affordable rental units for households with low or low to moderate incomes should be supported through policies, such as density bonus provisions like FAR, TDR,
inclusionary zoning or other mechanisms, particularly in areas that are well served by transit. Aggregators for different kinds of rentals need to be encouraged through appropriate policy measures. This will enhance the overall availability of Rental Housing at local level in each city/ town. The local authorities/ ULBs should devise appropriate rental strategies in order to facilitate tenants and encourage owners for giving their flats on rent. Fiscal incentives can be given to property owners so that they are encouraged to put out their properties on rent without fear of eviction difficulties.

- b) A portal for vacant properties including houses, flats, office spaces, etc. should be made for each urban area and town/ city in NCR. All the Development Authorities, ULBs, parastatal PSU/ agencies and all the developers/ agencies registers with RERA and Authroies/ ULBs of the States should register and provide details of their vacant properties. This portal should be made at each sub-regional level and should be linked with NCR portal for vacant properties. This will help in easy identification of vacant properties. This portal should have details of super areas, built up area, carpet areas along with rate and stage of completion and readiness for possession, In case of the properties which were in rent earlier, the details of the last rental. This should also have details of the Development Authorities, ULBs, parastatal PSU/ agencies or developers who can be connected by the prospective buyers or renties. These portal could be managed by the respective District Magistrate and supervised by RERA. A system of third party verification of the properties listed on this portal should also be there. This will facilitate market intelligence about available rental spaces and can also act as an aggregators for rental offices space, rental houses, rental commercial spaces, etc. and will boost ease of business and economic development in NCR.
- c) States should launch Rental Housing Scheme for NCR area. The effort should also be supported through CSR activities and those benefitting from such facilities.
- d) Housing properties, both government and private, be put in Common Rental pool, if not rented/ occupied in five years. The respective Municipal Corporation, Development Authorities, Housing Boards etc. may take up this aspect and monitor it, as applicable. NCR States shall prepare Common Rental Policy in this regard.

17.4.12 Slum Improvement and Low Income Housing

- a) There are many slum areas in the NCR towns and these need to be redeveloped/relocated/improved so as to improve the living conditions of the poor. NCR States should work towards achieving a common goal of "Slum Free NCR". In this regard Action Plan/ Project Plan should be prepared by each NCR States following the national and international best practices. Since the quantum of low income population is high, more emphasis needs to be given to the same. Adequate reservations need to be made in housing projects so that 'small size-low price' housing is created for the low income families.
- b) Increase housing supply for low and middle income group of people. Public Sector should provide Affordable Housing to the Low and Middle Income Groups and improve conditions in existing slums.
- c) States may come up with collaborative programme with agencies/ organization like ULBs. Development Authorities, Housing Boards, NBCC, NHB, HUDCO, RERAS, BMTPC, NAREDCO, CREDAI, etc. to develop social housing in NCR via multiple channels. Such collaborative program for social housing should be prepared/ developed by 2023.

- d) States should make necessary amendments/ provisions for providing rebates for social housing and mixed use residential developments. Necessary framework for land readjustment/ pooling to enable mixed-use development shall be created.
- e) At micro level, alternative housing units be provided to people affected from infrastructure expansion projects like road widening, opening roads within the same area or nearby or direct compensation based on consultation.
- f) Complete the social housing system by providing low-rent housing, public rental housing and resettlement housing, etc. Low-income housing should account for 8%-10% of all housing across each city/ town in NCR.
- g) While further Transfer of Houses allotted to weaker section should ideally be banned, and be considered void if still done. However, it should be ensured that in case the transfer does happen and is to be allowed, it should only be considered for persons of weaker section only. Special provisions be made at the point of registration. Such efforts shall help achieving envisaged benefits of housing for all. . NCR States may bring out necessary laws/ rules in this regard, if needed.
- h) For adequate and well located social housing opportunities, explore possibilities for having Special Zones of Social Interest (SZSI), which are designated to the provision of affordable housing, particularly for EWS & LIG.
- i) ULBs/ Authorities should identify the slum areas and prepare in-situ development scheme or alternatively earmark required land where rehabilitation of slums could be carried out and initiatives be taken accordingly.

17.4.13 Housing for Industrial and Construction Workers

- a) In industrial areas of the NCR like Noida, Greater Noida, Manesar-Bhiwadi-Bawal-Daruhera, Rewari, etc., shelter arrangements for industrial workers/ labourers should be made by the concerned authorities/ agencies locally, to avoid proliferation of slums. Land could be allotted to large industries and they could be encouraged to develop housing for their own employees/workers so that they can stay close to their place of work and thereby reduce work commute and increase productivity. The respective ULB/ authority, in coordination with Migrant Facility Centers (MFCs), should maintain a detailed account of construction workers and temporary shelter to these construction workers and their families should be facilitated at local level as per the requirement. Strict compliance from the contractor side, who is hiring/ brining the construction workers, should be ensured by the respective ULB/ Authority in NCR.
- b) Construction Workers Fund under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 should be used for acquiring lands/dwelling units for workers. Also, the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979, as in-force, should be duly adhered to. This fund should be utilised for constructing housing facilities for construction workers which are prominently the migrants. The utilisation of this fund should be monitored by State RERA or the State Labour Departments, acting through the District Magistrate. The housing size for the construction of houses can be upto 30 sq. mt. or as per the EWS parameters of PMAY (Urban). Such constructions can be carried out through private developers under strict supervision.

17.4.13 Institutional Housing

a) All institutions across NCR should create the required housing facilities on their institutional plots so as to cater to their various housing needs through residential apartments, hostels and transit housing, etc. About 15-20% of the land allotted to the institution shall be eligible for residential use for all people working or studying in such institutions. Residential use should be permitted along with the institutional uses so that *walk-to-work* facilities could be developed. In order to facilitate students and

young singles concerned development authorities, housing boards, ULBs and other governmental agencies should ensure and encourage development of housing in this niche segment in NCR as per demand.

- b) Housing for Special Groups (Students, Single Men/Women Workers, Elderly,) There are many special requirement groups such as students, single workers, elderly, hospice, terminal care homes, supported housing, assisted living homes, etc. who have specialized requirements. Facilitate housing opportunities for students and workers within 15 minutes of the precinct, by 2025.
- c) It shall also be ensured that all new building for dwellings meet requirements related to 'accessible and adaptable dwellings'.
- d) Projects should be developed to have these components, either on ownership or rental basis, as may be feasible, with suitable concessions .Non-financial incentives form Govt. like extra FAR/ extra FAR should be considered for these groups along with other financial sweetener as feasible.

17.4.14 Development of Residential Heritage Areas

- a) Heritage residential areas need to be identified in the NCR towns and an appropriate strategy to conserve them needs to be worked out.
- b) While the larger urban areas of NCR requires dense development the heritage zones, heritage monuments and heritage buildings which are yet not declared monuments also need to be protected from dilapidation and such buildings and areas should be developed in a way to preserve their heritage features. Provision of pedestrian shopping streets in such heritage zones and around buildings will enhance the aesthetics and longevity of such places where the property. In case of Government owned properties, the Government can fully invest on its own to undertake conservation work and provide recreational landscapping and facilities in such places or the Government allows private entities to undertake such facilities in selected places. However, response has not been wide spread and the huge number of such significant heritage spot in Delhi and surrounding areas requires additional strategies for development of such areas whether owned by Government or by private individual or by Trusts, etc. It is propose that the heritage areas and heritage building shall be entitled to special FAR part of which could be used for the development of the place and significant part of the FAR can be used as TDR to be used by the Heritage Conservationist Investors (HCI) elsewhere in the same city in designate areas such as new development areas or redevelopment areas. Where such building and zones are ASI protected or identified, ASI shall be among the mandatory consultants for such projects. The street in such areas should be well planned with pedestrian facilities, adequate lighting, resting places & rest room, drinking water spouts, adequate CCTV surveillance, open air cafes, hygienic eateries etc.
- c) Further those heritage conservations areas and building which are owned by private entities are required to be conserved. Heritage places which presents situation where the owner of such places has no incentives to conserved these areas as heritage places due to economic reasons and it is seen that many such heritage building have been distracted/modified /restructured by their past and current owners. Such heritage place owner should be eligible for the Heritage Transferable Development Rights (HTDR) which can be transferred to other appropriate place provided that the heritage place is simultaneously restored and preserved as required. Similarly, private land owners in non-heritage conservation zones oppose all conservation measures due to economic reasons. Hence similar conservation transferable development rights (CTDR) against non-heritage conservations should be granted to such private land

owners in such cases to compensate them against loss of opportunity on their private lands for the larger public interest.

17.4.15 Support Infrastructure

- a. To ensure fast development of NCR towns, it must be ensured that the projects are populated well. This can happen only when there is good support infrastructure in terms of schools, public transportation and safety. Adjoining areas particularly Meerut,Baghpat,Noida, Greater Noida, Ghaziabad, YEIDA, Gurugram-Manesar-Sohna, Faridababd-Bahadurgarh, Sonepat-Kundli, Bllabhgarh, Bhiwadi-SNB Complex,etc. should be connected with a high quality and high speed inter & intra-city train and bus services. Adequate social infrastructure like education, health, daily needs, recreational facilities, etc., should be created at local level and security of residential areas and housing complexes must be ensured. This will also help in fast occupancy of vacant housing.
- b. All new projects will have adequate provision for fire safety, CCTV surveillance, 24X7 pharmacy, 24X7 medical assistant, milk and groceries. Playground apart from park and walk ways, convenience stores further all the housing projects should have APP based entry permissions.
- c. Each NCR participating States should ensure that the external development charges (EDC) are spent at site of respective projects and the required infrastructure is developed within and outside the housing projects. No diversion of EDC be allowed and mechanism be developed that any violation in this regard attract penalty.
- d. In case of group housing being developed by the parastatal agencies or by the private developers, the necessary support infrastructure is some time either missing or not developed or fully operational hence external trunk services in roads, drainage, street lights, sewerage, etc. should be developed along with internal utilities before any possession by any allottee/residents is permitted in the residential group housing. Further, the EDC charges collected by the local authorities for these trunk services should be put in a dedicated preferably in escrow account to ensure timely completion of the services.
- e. Housing projects in all the NCR towns should mandatorily be made to adopt various 'green building' features and this should be provided for in the respective building bye laws. In all the new projects for all kind of uses green building, solar lighting and rain water harvesting provision should be mandatorily followed and enforced. For exiting areas necessary interventions be made and possibilities be explored to have such provisions
- f. Housing projects/ complexes across NCR should mandatorily have decentralized sewerage and water treatment systems/ facilities (STPs/ WTPs).

17.4.16 Safety and Liveable Residential Neighbourhoods

- a. Mixed-use buildings with *active façades* that bring life to the streets should have incentives especially near public transportation corridors or stations, where the city's development and growth is oriented through self-applying rules, optimizing urban land and allowing the preservation of residential neighborhoods in-between.
- b. *'Façade regulations'* should be notified and implemented bearing in mind the safety and aesthetic considerations of residential areas.
- c. Create accessible, pedestrian-friendly neighborhoods where families with children, seniors, and the disabled can safely walk, bike, and take public transit to jobs and services.

17.4.17 Housing Technologies

- a) Sixteen new emerging technologies have been identified, evaluated and promoted under PMAY(U)⁵. These alternate and sustainable technologies offer safer and disaster resilient affordable housing and will also improve the quality of construction in a cost effective and environment friendly manner across states/regions and achieve economies of scale in urban areas. These technologies should be adopted in NCR. The NCR States should get benefited from the Global Housing Technology Challenge⁶ launched by Govt. of India which will bring in internationally proven construction technologies for adoption and enable all stakeholders to learn from the best practices around theworld. At the same time, local construction technologies should also be promoted to fulfill and suit the local demand.
- b) Authorities/ ULBs should use technology for protecting government land, so that informal settlements / squatting on such land parcels can be avoided.
- c) Fiscal support should be provided to agencies that use recycled products made from waste. The use of such products should be standardized and adapted to shortlisted design types and pre-fabricated technologies.
- 17.4.18 **Housing Information System (HINSY)** It is necessary that a Housing Information System should be developed for the whole of NCR. This should be an interactive web-portal for public, government agencies and the private sector. This would be a 'one stop shop' for all housing related data so as to help the consumers, planners, government agencies, real estate developers, etc.

17.4.19 Efficient Use of Land and TDR

- a. Since land is in limited supply and due to constraints of acquisition, forest resources, etc., it is imperative that the land available be used to the optimal level. For this, high densities need to be promoted. Further, if this is linked with TOD, then efficient use of land can take place. Further, transfer of development rights (TDR) should also be permitted so that people who cannot develop at a certain place can transfer their development rights to another place. Further, lands lying idle with various sick/loss making public sector undertakings (PSUs) of the central/ state governments may be used for affordable housing projects under 'Housing for All'.
- b. Development rights can be used in a very structured manner. Each sub-region should have a policy for TDR and the same should be implemented by the all concerned stakeholders in order to ensure the optimum use of land.
- c. Explore possibilities for making necessary regulations to levy penalties for non-usage of FAR. To promote efficient usages of FAR, it must be made saleable through the concept TDRs across NCR or at least across the sub-region with adjustment as reasonable. FAR bonuses in exchange for the delivery of inclusionary housing be given.
- d. Land Pooling Models should be developed and adopted in various towns of the NCR.
- e. In NCR cities/ towns, mixed land use shall be adopted and cities/towns should focused on vertical growth.
- f. Urban governance reforms, such as removing the need to obtain permission for nonagricultural use in the case of land that has been earmarked for residential purposes in master plans, amending rental laws and others, have the potential to alleviate the challenges to achieving the goal of 'Housing for All' by 2022-23.

⁵ NITI Aayog Strategy for New India

⁶ Global Housing Technology Challenge - <u>https://ghtc-india.gov.in/Content/ConceptNote_on_GHTC-India.pdf</u>

- g. Explore possibilities of having different densities for different areas as towns develop in different ways. As Housing is a state subject, NCR States should look into the matter and Cities/ Towns should be planned with varying density norms in their subregions as per the requirement of respective town/ city. Higher density should be planned and implemented in order to reduce the pressure on land, especially agricultural land.
- h. High density of population need to be compatible to a high-density urban development.

17.4.20 Institutional Mechanisms and Financing

- a) All the Housing and Urban Development Agencies such as development authorities, urban local bodies, housing boards, etc. should play a coordinated role in addressing the housing development issues. Coordination between the housing development agencies and infrastructure development agencies is needed so that integrated development takes place. Development controls and bye laws should be suitably modified in order to encourage balanced housing development which is safe, affordable and accessible. Suitable bulk and retail housing finance mechanisms need to be leveraged in order to ensure smooth development in a timely manner. Private and cooperative capital also needs to be suitably tapped.
- b) Public Sector Housing Agencies should play greater role as Housing Facilitator instead of Housing Provider. PPP and cooperative housing options be adopted for creating large scale public and social housing facilities.
- c) Promotion rather than regulation shall be defining and allowing increased freedom of design and planning. Identify and reform State and Central regulations that negatively affect development of diverse housing types.
- d) Appropriate incentives should be given in PMAY (Urban & Rural) projects in NCR for their timely completion. This should be followed across NCR in public good will & welfare.
- e) The funds/ revenue earned by development authorities be shared with the respective local bodies, while transferring the assets for O&M. In case the revenue from urban areas goes to centralized fund, it may be ensured that, it comes back to the ULBs and not more that 10% is diverted elsewhere.

17.4.21 Redevelopment & Up gradation

- a) All cornered Authorities & ULBs across NCR should identify old areas of various cities and town and prepare Redevelopment Plan for slums, old housing projects/ areas (50 years above), with a scope for more housing and allied facilities towards more intensive and serviceable uses of such land parcels. Options for In-fill Development should be explored to maximise the housing stock or the required infrastructure. Redevelopment in large cities can include an optimal mix of volunteer redevelopment and mandatory redevelopment. Further, the redevelopment can be incentivized.
- b) Unauthorised colonies, slums, Jhuggi-jhopari clusters, in Delhi and other parts of NCR should be redeveloped. Voluntary redevelopment shall also be allowed and similar TDR and FAR facilities be given in these projects.
- c) NCR should be slum free in five years. It is proposed to be achieved by using the TDR tool and reserving 10-15% of developed land area or 20-25% of FAR whichever is more for EWS and LIG.
- d) Number of dilapidated houses is increases in NCR is a major concern. Retrofitting norms should be decided as per local requirement by the respective urban local bodies within two years by 2023.

- e) In NCR steps be taken for providing alternative housing units for dilapidated houses and accordingly, redevelopment should be undertaken. Old public housing apartment blocks should be systematically upgraded. Upgrades can include amenities such as new lifts or improvements to the areas through the addition of neighborhood, etc.
- f) It should be ensure that any dilapidated /eyesore structure be adequately covered to maintain the esthetic of places/areas. Such building should be marked and if not fully covered/redeveloped appropriate monitoring penalties should be levied.
- g) Mechanism be developed to ensure review of building structures for structural safety at ward level in Urban areas and village level in rural areas, every 2 years, through a Third party which may be empaneled by State departments. Provision of emergency services to critical buildings, if building conditions are deemed to pose a severe health and safety threat, then emergency action needs to be taken to secure conditions of health and safety.
- h) To deal with Targeted 'High Risk Buildings', a multi-faceted approach within the City be adopted to identify, target and upgrade 'high risk buildings' that pose health and safety threats.

17.4.22 Lal Dora and extended Lal Dora

- a) Lal Dora (LD) and extended Lal Dora (ELD) in Delhi and other parts of NCR have been presenting a chronic problem specifically due to complex mix of very old revenue and municipal laws. Despite interventions by various courts and even by the Hon'ble Supreme Court situation in these areas has continue to deteriorate. Delhi today has for long had over 200 sub-standards, cramp pockets of insanitation and haphazard growth which have grave threats of fire safety and possibilities of clandestine ways of earning money. Tajinder Khanna Committee Report and the report of the Expert Committee (2007) on LD & ELD in Delhi have highlighted in detail the complex situations in these areas. TDR and transferable FAR shall be given in such areas as rational mechanism to implement this.
- The Expert Committee (2007) has recommended the FAR of 400 to 500 with 40% b) ground coverage for plot sizes 2000/4000 sq, mt. and above respectively to enable group housing for the residents of the villges to pool their small plots for high-rise group housing with minimum 12 mt. wideroad. The Committee have repeatedly recommended mixed land use in such areas except villages with heritage structures and those in reserve forest and ridge area which need special planning and development. It is now proposed that the relevant revenue law and municipal law which were framed more than 50 years ago should be reviewed according to the current times and future requirement of Delhi and NCR. Accordingly, for the harmonious development it is recommended that the Delhi Land Reform Act, 1954 may be reviewed and amended to give the same rights to its villagers as in the villages of NCR States adjacent to Delhi, in terms of usage of the land, mortgage, transfer, end usages post transfer, dwelling units improvement, mixed use of the land, etc. In fact it will be more suitable to repeal land reforms actand to bring all the villages of lal dora and extended lal dora land under the under the planned development of DD and respective DMC: However, the villages area with special character like heritage structure or should be eveloped with special heritage zone and settlements in reserve forest or in ridge area shouldbe developed with appropriate tourism/conservation activities as per provision indicated in the heritage and conservation of development provision of this chapter or as per the policies of MoEF&CC regarding forest settlement/ridge area. It is also recommended that redevelopment of lal dora and

extended lal dora be undertaken rigorously as in other areas of Delhi for a harmonious development.

- c) Non availability of land ownership details of properties in urban areas has been a persistent problem where largely property tax registers denote ownership. With modern survey technologies like drones, GIS mapping etc. this gap in urban land management can be easily rectified. Hence it is proposed that urban land ownership records shall be created for each individual plot and for each group housing/commercial complex etc. expeditiously. All urban areas of NCR should have land record management system on a digitized mode with GIS based cadastral Maps in phases. All parts of Delhi including existing Lal Dora/Extended Lal Dora areas, all metro centres and all regional centres shall prepare and operationalized Electronic Land Record Management System(E-LRMS) as above till 2024 and the remaining urban areas shall complete this 2026.
- d) All NCR towns and cities shall include redevelopment policies as above as part of their Master/ Development Plans.
- e) Provision for Ownership of plot in urban areas should be adopted and to be made on e-mode. Cadastral Maps should be on GIS platform and all land records be mandated for all urban and rural abadi areas across NCR.

17.4.23 Other Aspects

- a) All Master Plans should also secure the land for hierarchy of public open spaces and identified critical open spaces large and small that need to be protected from the development and should create institutional structure to protect them. All Master/Development Plans should also ensure acquiring the rights of ways for arterial transport grid for future.
- b) All urban areas of NCR shall include policy provisions for mixed landuse development in their Master/Development Plans.
- c) In order to protect vendors' livelihood rights and social security, a 'Plan for Street Vending' be prepared by every local body as also mandated in the "Street Vendors Act, 2014". The plan should contain, *inter-alia*, earmarked vending zones, spatial norms for street vending, covering existing as well as accommodating future growth in the number of vendors. In this regard, necessary amendments be made in the existing Master Plans/Development Plans, Zonal Plans, etc. and steps be taken towards regulation of street vending in the Region, to provide respite to street vendors from undue harassment and help them carry out their business peacefully.
- d) Each sub-region should take strict actions against unauthorized colonization; illegal shelter consolidation and proliferation of slums. Development should take place in accordance with the Plans and regular monitoring should be undertaken to avoid haphazard and illegal development & construction activities.
- e) All roads in Delhi including their maintenance should be under one Authority. This Authority can have sub-agencies if need. Similarly for drains there should be one common agency for all drains with such sub-agencies as required.
- f) The Construction sector professionals, builders in NCR should take out mandatory insurance for 10 years to compensate their buyers against any faults in their construction/ consultancy.

g) Along with the above policies and proposals, the other policies which are also to be considered/ elaborated in Sub-Regional Plan and Master/ Development Plans are given at **Annexure-P-17.1**

17.4.23 Key projects

Specific Projects envisaged to be taken up in NCR regarding housing infrastructure are given at Table 17.2 below, but not limited to:

Table 17.2: Key projects envisaged to be taken up regarding housing infrastructure in NCR (2021-2041)

SI. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1.	Projects for "Slum Free NCR" through in-situ development/ redevelopment	At least 02 projects in NCT-Delhi and in eachdistrictby 2024	Rest of the district by 2030	_	-
2.	Projects for augmenting/ developing hostel facilities (student/ youth hostels, working men & women hostels, special need hostels, etc.)	At least onein NCT-Delhi and in each district Hq. & Tehsil Hq. and Metro & Regional Centres with adequate capacity.	Additional hostels as per the need.	-	-
3.	Projects for redevelopment/ urban rejuvenation/ renewal	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2026	Such projects in remaining urban areas	-	-
4.	Projects for development of Social Housing and Supported & Specialized Accommodation (either on ownership or rental basis)	At least onein NCT-Delhi and in each district Hq. & Tehsil Hq. and Metro & Regional Centreswith adequate capacity.	Such projects in remaining urban areas	-	-
5.	Projects for the development of affordable housing	At least 02 projects in	Such projects in remaining	18	19

SI. No.	Proposed Projects/Policies	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
		NCT-Delhi and in each Metro and Regional Centres by 2026	urban areas		
6.	Projects for the development of rental housing	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2025	Such projects in remaining urban areas	20	21
7.	Projects for the development of construction workers housing	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2025	Such projects in remaining urban areas	22	23
8.	Policy for allowing extraFSI/ extra FAR for high rise building with net zero discharge be notified by each sub-region	By 2023	23.0.1	23.0.2	23.0.3

Chapter 18

POLICY ZONES AND REGIONAL LANDUSE

18.1 Policy Zones

- 18.1.1 Keeping the objectives stated in para in the introduction chapter in view, the Regional Plan-2041 has proposed the development of NCR through five policy zones, namely, (i) NCT Delhi, (ii) Central National Capital Region (CNCR) (iii) Highway Corridor Zone (iv) Conservation Zone (natural and manmade) and (v) Rest of NCR, for which the following development policies have been envisaged.
 - i) NCT Delhi – Efforts have made in the past plans to deflect population of NCT Delhi which have met with limited success. In fact, the UN Report has projected that the Delhi region will overtake Tokyo and will become the world's largest urban agglomeration by 2030. NCT Delhi is surrounded by the NCR States from all sides and has no possibility of horizontal expansion like other parts of NCR. Hence, the only policy option for NCT Delhi is to adopt vertical growth patterns like of similar global urban agglomerations, along with massive redevelopment not only in identified areas but also in slums, urban villages, other current low rise areas, etc. along with zero-net discharge buildings, rain water harvesting, ground-water recharge, water recycling and decentralized sewerage systems on the one hand and preservation of identified environmentally sensitive areas and conservation of Delhi's rich heritage areas on the other hand. The governance in NCT Delhi should be 'smart' to increase the ease of living and to improve the quality of living in Delhi. Smart economic portals will also be provided to improve ease of doing business. Heavy industries shall continue to be banned in NCT Delhi and only industrial activities as permitted by the Delhi Pollution Control Authorities shall be permitted.
 - Central National Capital Region (CNCR) CNCR area will be defined as area from ii) the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal expressway (KMP) up to 5 Km beyond outer edge of the ROW of this first ring of expressways. Keeping in view the development potential of these expressways and to harness the development impulses of the national capital and to prevent the haphazard and lopsided development the entire CNCR should be covered by the notified development/ controlled/ regulated area of the Authorities/ Bodies located therein, hitherto non-notified areas shall also be brought under development control norms for planned growth and development. This belt of CNCR around NCT Delhi shall form the "Ring of Opportunity" for both NCT Delhi and rest of the NCR on either sides. NCR area being a unique planning area and having been created with a larger objective of harmonious economic development of the region, it is important that development control norms and regulation of this special planning area of CNCR should be innovative and shall not be limited by the normal development norms. The activities like logistic parks, multi modal transport hubs, ICDs, dry ports, recreational/ theme parks, specialized townships (like Medi-cities, tech-cities, Edu-cities, etc.), skilling hubs, MSME clusters and other activities which are not only land extensive but also require support infrastructure, should be encouraged and permitted in these areas and respective master plans should clearly earmark areas for such land uses. The NCR participating states shall also prepare a separate sub-set of plans in the SRPs for their CNCR area. However, care should be taken to conserve the State identified environmentally sensitive area.

iii) Transit Oriented Development (TOD) Zones as Highway Corridor Zones (HCZ)

To prevent unplanned development along major transport corridors, and to harness the development potential of these connectivity alignments, Highway Corridor Zone (HCZ) were proposed in the past plans to enable the planned development in minimum 500 metres on both side of the highways. Now with the development of Metro rail, network, Rapid Rail Transport Systems and expressways, these connectivity corridors and the transit nodes therein, provide unique opportunities for intensive development along these which will also facilitate ease of transport, reduce transportation costs and improve quality of life for much larger populations than originally planned by these connectivities. Hence, it is proposed that intense development will be encouraged on both sides of all the rail transit corridors, expressways, NHs and their transit nodes in an area up to 800 meters to 01 kms on both sides. These TOD corridors shall have dense residential, office, institutional, commercial among other spaces which generally require trunk transport facilities. Accordingly, the TOD corridors shall have high FAR say up to 500 or above if justified, with mixed land use both vertically and horizontally.

The ToD corridors shall be identified, delineated and notified by the respective NCR States Governments. The State Governments shall also prepare detailed development layout plans/ development plans for these areas depending up to on the potential of these areas and local conditions. However, these areas should be developed beyond the Right of Way (ROW) of the connectivity network and the green buffer on either side of the Expressways, National Highways, SHs as per the prevailing policy of MoRTH and State Governments respectively. However care will have to be taken while planning these zones to ensure that the activities being permitted in this zone are segregated from highway traffic through proper green belts, service roads and controlled access to the highways.

iv) Conservation Zone (natural and manmade)

a) NCR is endowed with rich natural and manmade heritage sites. This zone will include environmentally sensitive natural features in NCR such as Aravalli ridge, protected & reserved Forests, Wild life & Bird Sanctuaries, major Rivers such as Yamuna, Ganga, Kali, Hindon and Sahibi, large lakes such as Badkal, SurajKund, Damdama and Siliserh Lake, and identified Ground Water Recharging Areas such as wetlands (e.g. Najafgarh wetland), ox-bow lakes and paleo-channels, which are required to be conserved and protected. In case of other Rivers, Water-bodies, Ground Water Recharging Areas States will set benchmarks, parameters and minimum sizes in their respective Sub-Regional Plans, and identify such environmentally sensitive areas which will be conserved.

NCZ as provided and detailed out by NCR State Governments for the Regional Plan-2021 shall be continued. Activities like intensive tree-plantation programme be allowed and initiated on barren/waste land/ hills, and on the banks of Canals/drains water bodies. Water bodies could be used for water aerodromes and related infrastructure could be allowed in and around such areas. Water recharge areas be shall be allowed to have recharge structure. The 0.5% of total area under NCZ is allowed for related compatible development could be either at one place or multiple areas, subject to other approvals, Acts of different States and related sectors and land use compatible with the area. No other activities of any kind shall be permitted except as per the applicable central and state Government laws.

- b) Manmade heritage sites are the protected and listed monuments & heritage sites which are required to be conserved.
- c) Such environmentally sensitive natural features and monuments & heritage sites shall have to be identified and delineated in the sub regional plan prepared by the respective State Governments for conservation and heritage/ tourism purpose.
- d) These conservation zones can be protected and conserve with the help of innovative non-financial instruments like special development rights which could be made transferable to incentivize the private owners of such protected areas to protect, conserve and develop. Accordingly, conservation transferable development rights (C-TDR) and heritage transferable rights (H-TDR) shall be considered by the respective NCR participating States

v) Rest of NCR

In the Rest of NCR, the basic policy of Regional Plan for accelerated development of both urban and rural areas will be implemented. Large Rural Investment Zones, special economic zones, heavy industries should be planned this area which can supply to and benefit from the logistic parks, ICDs, air cargo terminals, dry ports, etc. in the CNCR area. It is also proposed to introduce the concept of shot& medium term lease of land for 5-10 year instead of current 70 to 90 years industrial uses like successful global industrial production hubs in China, Vietnam, Taiwan, etc. and to reduce the burden of high land cost and simplify changes of industrial land uses. It is expected that this shall be possible though new system of land arrangement from land owners by encouraging third part land aggregators either in the Govt. sector or Private sector or by both, who would undertake land arrangements from land owners and consolidate them on the one hand and enter into dynamic 5-10 year lease arrangements with investors/ industries on the other hand. Such a system will also enable NCR to dynamically change its industrial production to adapt to fast changing global and domestic opportunities and impulses.

Fast, efficient and affordable rail (RRTS, ORC OORC, New rail links etc.) road (Expressways, NHs etc.) and air connectivity to be provided in this zone. Physical and social infrastructure has to be substantially upgraded at local and regional level (both by State and Central Governments) in order to induce the growth in these areas, specifically in the settlements i.e., Metro Centres, Regional Centres, Sub Regional Centers, etc. The land use in these areas should also be innovatively planned to support such accelerated development. This will make them more attractive for locating economic and allied activities, employment and income generation and for attracting private sector investments.

A schematic map of above policy zones is provided in Figure 18.1 below:



Figure 18.1: NCR Policy Zones-2041

18.2 Regional Land use

18.2.1 Introduction

18.2.1.1 Land Use Planning" is multi-dimensional aspect derived from the complex interrelationship of physical (space), ecology (existing system on the land); and human systems of land use (demographics, economic development, industrial, commercial, residential and societal needs, and law. The main purpose of land use planning process is to allocate land uses to meet the needs of people while safeguarding future resources. The term "land use" encompasses not only land use for agricultural and forestry purposes, but also more importantly for settlements, industrial sites, roads and other human activities.

- 18.2.1.2 Section 10 (2) of the National Capital Region Planning Board Act, 1985 states "The Regional Plan shall indicate the manner in which the land in the National Capital Region shall be used, whether by carrying out development thereon or by conservation or otherwise, and such other matters as are likely to have any important influence on the development of the National Capital Region". Further, Section 10(2) (a) of the National Capital Region Planning Board Act, 1985 emphasizes that the Regional Plan shall indicate "the policy in relation to land use and the allocation of land for different uses"
- 18.2.1.3 The Regional Land Use Plan translates broad planning policies and proposals into physical (spatial) form to illustrate the manner in which land in NCR is to be used for various purposes. However, the reservation of areas for specific land uses, which are of regional or sub-regional importance, will be detailed out in the Sub-Regional Plans, District Development Plans, Master/Development Plans and Gram Panchayat Development Plans, etc., which are to be prepared by the respective participating States within the overall framework of the Regional Plan.
- 18.2.1.4 Keeping in view the emerging scenario in planned development of cities and towns, Ministry of Housing and Urban Affairs (MoHUA) formulated the 'Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines, 2015. For balanced development of all settlements with the region, the Guidelines provides framework for plan formulation at the regional and urban level. All the cities and towns across nation will have the benefit of expeditious preparation of statutory Master/ Development Plans, with the use of these guidelines.
- 18.2.1.5 MoHUA launched Atal Mission for Rejuvenation and Urban Transformation (AMRUT) Scheme in 2015 which focused to establish and ensure adequate and robust infrastructure, necessary for urban transformation through implementation of urban revival projects. Formulation of GIS-based Master/Development Plans¹ for 500 AMRUT Cities is one of the important reforms under AMRUT, which has been approved as a 100% centrally funded sub scheme with budget outlay of Rs. 515.00 crores for the purpose. Town and Country Planning Organization, MoHUA has formulated "Design and Standards for formulation of GIS based Master Plan for AMRUT Cities", 2016. It suggests utilisation of Very High Resolution Satellite (VHRS) data for preparing large scale urban base map at 1: 4000 scale or better. These Design and Standards will be immensely helpful in preparation of digital plans for regions, cities, towns, villages, etc. About 20 NCR cities/ towns have been identified for development and GIS based plan formulation under AMRUT (refer Annexure-D-18.1).
- 18.2.1.6 Smart Cities Mission² of MoHUA is a bold, new initiative which is meant to set

¹http://amrut.gov.in/upload/uploadfiles/files/designandStandards_AMRUT(3).pdf ²http://smartcities.gov.in/upload/uploadfiles/files/What%20is%20Smart%20City.pdf

examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country. Three cities of NCR, namely, Delhi (NDMC), Faridabad and Karnal are being developed under this Mission.

- 18.2.1.7 Ministry of PanchayatiRaj(MoPR) has formulated Rural Area Development Plan Formulation and Implementation (RADPFI), Guidelines, 2017 which provides specific land use provisions for rural areas. In addition, MoPR has also published Guidelines for preparation of Gram Panchayat Development Plans (GPDP) in 2018³. These Guidelines will be helpful in ensuring effective spatial planning at grass root level.
- 18.2.1.8 Ministry of Rural Development (MoRD) has prepared the Model Planning Guidelines⁴ for Rurban Cluster, 2019 which cover various aspects such as Rural Landuses, Reserving Land for Public Purposes, Spatial Plan Making Process, development control mechanisms, service level benchmarks for utilities and services, funding and enforcement mechanisms for the preparation and implementation of the Integrated Cluster Action Plan (ICAP). NCR participating States have identified 12 clusters in NCR,which are being developed under the Rurban Mission. (Refer Annexure D-18.2).
- 18.2.1.9 Realising the importance of maintaining and preserving urban greens, TCPO, MoHUA has prepared the Urban Greening Guidelines⁵, 2014 which acts as a model for States and Cities particularly the State Town Planning Departments, Urban Development Authorities and Urban Local Bodies. The Guidelines suggest practices and methods for protecting and enhancing urban greenery in a sustainable manner. . (Refer Annexure D-18.3).
- 18.2.1.10 MoEF&CC has prepared the National Forest Policy of India (revised draft⁶also prepared in 2018) calls for promotion of trees outside forests and urban greens, in order to achieve the 33% of India's geographical area should be under forest and tree cover.

18.2.2 Existing Status

- 18.2.2.1 The Regional Plan -2021 has provided six broad categories of the Regional Land Use, namely, Agriculture, Built-Up, Forest, Wasteland, Water Bodies and Others. The same categories have been retained for carrying out the existing broad land use analysis based on Land Use/Land Cover Analysis of Bhuvan Geo-Platform of NRSC-ISRO⁷, GoI based on three season Resources at-o rectified LISS-III data of 2015-16, published in 2019. The description of Land Use and Land Cover Classes as per ISRO is provided at Annexure-D-18.4.
- 18.2.2.2 The broad analysis of the existing land use (2015-16) is given below Table-18.1 and details are given at Annexure-D 18.1.5. It is clarified that these details from Bhuvan Portal/NRSC have been presented in annexure as a purely schematic layout

³ GPDP Guidelines

⁴ Model Planning Guidelines for Rurban Cluster, 2019

http://rurban.gov.in/doc/Model%20Planning%20Guidelines%20for%20Rurban%20Cluster.pdf http://mohua.gov.in/upload/uploadfiles/files/G%20G%202014(2).pdf

⁶ Draft National Forest Policy: <u>https://smartnet.niua.org/sites/default/files/resources/draft_national_forest_policy_2018.pdf</u> ⁷ <u>https://bhuvan-app1.nrsc.gov.in/2dresources/thematic/LULC503/lulc.pdf</u>

and this schematic layout is tentative and gives a purely indicative analysis which is based on a satellite imagery of 1:50000 input scale and are to be referred merely for indicator purpose and for broad understanding. However, state shall prepare existing land use maps and details based on separate and more detail satellite inputs at a scale not less than of at least 1:10000 and the existing land use details for the Master Plans/Development Plans shall be prepared by State based on separate satellite inputs at a scale of 1:4000. The District Plans shall similarly prepared existing land use maps based on satellite inputs of scale not less than 1:10000.

Landuse Category	NCR		NCT Delhi		Haryana Sub-region		UP Sub-region		Rajasthan Sub- region	
	Area (Sq.Km)	%	Area (Sq.Km)	% share in NCR	Area (Sq.Km)	% share in NCR	Area (Sq.Km)	% share in NCR	Area (Sq.Km)	% share in NCR
Agriculture	45029.6	81.66	514.1	1.1	21481.6	47.7	12881	28.61	10152.9	22.55
Built-up	4569.2	8.29	850.5	18.6	1995.1	43.7	1377.3	30.14	346.4	7.58
Forest	1800.9	3.27	14.8	0.8	192.6	10.7	98.2	5.45	1495.3	83.03
Wastelands	2511.2	4.55	75.5	3	1010.1	40.2	96	3.82	1329.6	52.95
Water Bodies including wetlands	873.1	1.58	28.1	3.2	322.7	37	386.4	44.26	135.9	15.56
Others	360.1	0.65	0	0	325	90.3	23.1	6.41	12	3.32
Total	55144*	100	1483	2.69%	25327	45.93%	14862	26.95%	13472	24.43%

Table 18.1 - Broad Indicative Analysis of the Existing Land Use in NCR (2015-16)

Source: Bhuvan Portal

*The district wise land use/ land cover area published by NRSC on Bhuvan is slightly more (55144-55083 =60.99 Sq.Km) from the recorded area of NCR, which can be clarified by the States.

18.2.3 The definition of existing land uses are given below:

- 18.2.3.1 Agriculture land includes lands primarily used for farming (including fallow land) and for production of food, fiber, and other commercial and horticultural crops which is the predominant use of land constitutes about 81% of the total NCR.
- 18.2.3.2 Built-Up area consists of human habitation developed due to non-agricultural use and that has a cover of buildings, transport and communication, utilities in association with water, vegetation and vacant lands which constitutes above 8% of the total area of NCR and is the second largest use of land in NCR.
- 18.2.3.3 Forest includes Evergreen/ Semi-Evergreen, Deciduous, Forest Plantation and Scrub Forest. The term forest is used to refer to land with a tree canopy cover of more than 10 percent and area of more than 0.5ha. Forests are determined both by the presence of trees and the absence of other predominant land uses and trees reached minimum height of 5m (MOEF, 2011). Forest areas constitute 3.27% of the total area of NCR.
- 18.2.3.4 Wastelands consist of Barren Rocky/ Stony Waste Land, Gullied/ Ravenous Land, Scrub Land, Salt-Affected Land and Sandy Area. Wastelands constitutes 4.55% of

the total area of NCR.

- 18.2.3.5 Water bodies consist of wetland, river/ stream, canals, ponds, lakes, tanks and reservoirs. All submerged or water-saturated lands, natural or man-made, permanent or temporary, static or dynamic, vegetated or non-vegetated, which necessarily have a land-water interface, are defined as wetlands. Land under this category constitutes 1.58% of the total area of NCR.
- 18.2.3.6 Others: land under this category includes grass land/ grazing land. These are the areas of natural grass along with other vegetation; predominantly grass-like plants (Monocots) and non-grass-like herbs (except Lantana species which are to be classified as scrub). This category constitutes 0.65% of the total area of NCR.
- 18.2.3.7 The broad analysis of District and Sub-Regional land uses is given in Annexure-D18.1.5. The tentative spatial distribution of the land use at regional level is indicated in schematic Map of Existing Land Use/ Land Cover-2015-16 given at Annexure-D18. -1.6. It is clarified that these details from Bhuvan Portal/NRSC have been presented in annexure as a purely schematic layout and this schematic layout is tentative and gives a purely indicative analysis which is based on a satellite imagery of 1:50000 input scale and are to be referred merely for indicator purpose and for broad understanding. However, state shall prepare existing land use maps and details based on separate and more detail satellite inputs at a scale not less than of at least 1:10000 and the existing land use details for the Master Plans/Development Plans shall be prepared by State based on separate satellite inputs at a scale of 1:4000. The District Plans shall similarly prepared existing land use maps based on satellite inputs of scale not less than 1:10000.
- 18.2.3.8 NCR States have prepared Sub-Regional Plans for their respective sub-regions. Further, in accordance with the prevailing Acts, the States have prepared Master Plans/ Development Plans for all the Metro Centres and Regional Centres, proposed in RP-2021. Govt. of Haryana, Uttar Pradesh and Rajasthan have also prepared Master Plans/Development Plans for sub-regional centres and other towns.
- 18.2.3.9 NCR States have also declared/ extended the development/ control/ regulated areas to cover the highway corridor zones. Govt. of Haryana has brought entire stretch from (a) Delhi boundary to Karnal through Sonipat-Panipat, (b) Delhi boundary to Hodal through Faridabad-Palwal, (c) Gurugram-Manesar-Bawal-Dharuhera-Rewari, (d) Bahadurgarh-Rohtak-Jhajjar-Rewari under controlled area. Govt. of Rajasthan has notified areas from Haryana-Rajasthan border to NCR boundary through SNB complex as urban areas. Similarly, Govt. of U.P. has declared (i) Ghaziabad-Muradnagar-Modinagar-Meerut-Kataauli-Muzzafarnagar (except a small stretch), (ii) Ghaziabad-Hapur-GarhMukteshwar& (iii) Hapur-Bulandshahr till NCR boundary, under development/ regulated area.
- 18.2.3.10 Further, in order to protect/ conserve the environmentally sensitive natural area, NCR States have identified/ mapped the Natural Conservation Zones (NCZ) in their respective Sub-Regional Plans and Master/ Development Plans.
- 18.2.3.11 Ample physical and social infrastructure has been created by the Central Govt. Agencies and the NCR participating States across NCR, especially in the CNCR towns. States have also developed Industrial Townships/ Parks/ Estates, etc. like Manesar, Bawal, Dharuhera, Jhajjar, Rohtak, Greater Bhiwadi, Neemrana, Noida,

Greater Noida, Ghaziabad-Loni, Meerut, etc. across NCR districts. Each NCR district has planned industrial areas/Parks/ Estates making region a manufacturing hub.

- 18.2.3.12 NCR is endowed with environmentally rich natural features and environmentally fragile and sensitive areas like Aravalli Ridge, forest areas, rivers and river beds, streams/ channels/ natural drains, wetland, lakes/ ponds/ paleo-channels & other water bodies, wildlife sanctuaries, national parks, etc.
- 18.2.3.13 Information under the recorded forest area under of NCR as available from ISFR 2011 and 2017 shows a net marginal increase in forest cover; however density of forest has decreased.

18.2.4 Key Issues & Challenges

- 18.2.4.1 The land demand for urban/ industrial/ commercial and expansion of rural settlements and construction of transport networks to be met from converting agricultural land or other land uses like waste lands, etc. Conversion of Agricultural Land to Non-Agricultural Uses is a major challenge that has to be tackled.
- 18.2.4.2 Large scale haphazard development of urban activities /constructions outside notified controlled/ development/ regulated areas, by way of conversion of rural land to urban activities has occurred as prevailing Acts and Policies of the NCR participating States do not have any control on location of urban activities in rural areas. In the absence of proper legislation to control land uses in rural areas and areas outside the controlled/development/regulated areas, the conversion of non-urbanizable areas into urban uses, especially industries/ educational/ institutions has continued unabated in such areas, which were otherwise supposed to remain agriculture / green especially along the transport corridors.
- 18.2.4.3 The Regional Plan-2021 proposed Highway Corridor Zones (HCZ) along the National Highways converging to Delhi. There is a need to identify the growth potential of other highway and expressway corridors which are not converging to Delhi. It has been observed that ribbon urban development is taking place along national highways, which are not converging to Delhi and also along expressways; therefore, such corridor along highways and expressways need to have necessary plans to avoid haphazard developments.
- 18.2.4.4 Conformity of the existing Master/ Development Plans of settlements in the region for various perspective years with the Regional Plan policies is crucial.
- 18.2.4.5 Effective and integrated planning and development of entire NCR especially CNCR and NCT Delhi in view of large population expected to be accommodated, by 2041is a major challenge.

18.2.5 Land use Policy Zones

- 18.2.5.1 Policy provisions for the following land use zones i.e.
 - 1) NCT Delhi

- 2) Central National Capital Region (CNCR)
- 3) Transit Oriented Development (TOD) Zones as Highway corridor zones (HCZ)
- 4) Conservation Zone (Natural and Manmade)
- 5) Rest of NCR
- 18.2.5.2 NCR participating States to elaborate the details of broad land uses indicated in Regional Plan according to the Policy Zones outline above in para 4.1 and as per their detailed land uses mentioned in the policy zones section of this chapter. The state shall also bring out details of phasing , for development and zoning regulations in the respective Sub-regional Plans, District Plans and Master/Development Plans, etc.
- 18.2.5.3 This Regional Plan has hither to outline many policies and proposals covering multiple sectors in the preceding chapters. Many of these policies and proposals have land use implications. It has also been required in various policies that areas/lands be earmarked for current as well as future use for certain needs. Hence the NCR participating states shall ensure that their Sub Regional Plans, District Plans, Master Plans/Development Plans and Gram Panchayat Development Plans shall necessarily not only provide for the land uses as envisioned under the Policy Zones section of this chapter but shall also ensure that the land use provisions are made as required for implementing the policies and proposals given in the chapters of this Regional Plan relating to Economic Growth, Transport, Power, Water and Drainage, Sanitation and Waste Management, Agriculture, Rural Development, Health, Education and Skill Development, Sports and Social Support Systems, Security and Disaster Management, Heritage and Tourism, Environment, Digital Infrastructure, Zoning Housing and Habitat, Demography Settlement Patterns, etc.
- 18.2.5.4 Subject to the provisions at the above paras 18.2.5.1, 18.2.5.2, & 18.2.5.3 the land use plans in entire NCR shall broadly be under the following categories, however, NCR being special planning area, these land use categories shall be detailed in innovative way to meet the mandate and requirement of the Regional Plan:
 - a) Urbanisable areas (including existing Built-up/urban areas),
 - b) Agriculture (Rural) Zone within controlled/development/regulated areas
 - c) Green buffers
 - d) Agriculture (Rural) Zone outside controlled/development/regulated areas
- 18.2.5.5 Keeping in view rapid urbanisation, environmental degradation and to ensure orderly development in the region, a legislative tool in the form of Zoning Regulation is proposed under four broad zones for land use control & development and for enabling preparation for detailed Plans such as Sub-Regional Plans, District Plans, Master/Development Plans/ GPDPs, Local Area Plans, etc. The elaboration of the land use details and zoning regulations need to be incorporated in such Plans by the respective NCR States. The various cities/towns of NCR, the rural areas within notified areas and the areas beyond notified areas have been in the past Regional Plans, generally been detailed out as follows in the respective Master Plans/Development Plans, etc. and shall continue to be indicated accordingly

subject however to the preceding paras and shall have in addition to the land use as per the provisions of the preceding paras, be also guided as per the provisions indicated herein under:

18.2.5.5.1 **Controlled/development/regulated zone:**

Development in the controlled/development/regulated zones should be undertaken in accordance with the Master/ Development Plans for the respective areas duly notified by the State Governments provided these plans are made as per the provisions in preceding paras 18.2.5.1 to 18.2.5.5. The subzones of this zone are

- a) Urbanisable areas (including existing Built-up/urban areas),
- b) Agriculture (Rural) Zone within controlled/development/regulated areas
- c) Green buffers

a) <u>Urbanisable areas (including existing Built-up/urban areas)</u>

- 18.2.5.5.1.1 Existing and proposed built-up areas are to be regulated and guided by the Master/Development Plans and Local Area Plans including GPDP within the framework of Regional Plan-2041 and respective Sub-Regional Plans-2041 provided these plans are made as per the provisions in preceding paras 18.2.5.1 to 18.2.5.5. On the basis of the proposed population for the year 2041, new areas should be identified as development promotion zones and detailed Plans need to be prepared by the respective NCR participating State Governments.
- 18.2.5.5.1.2 While preparing the Master/Development Plans for the towns, it is to be ensured that the proposed development are not permitted in the environmentally sensitive areas except as per the statutes/ notifications/ policies/ guidelines of the respective Ministers/ departments of Govt. of India.
- 18.2.5.5.1.3 Land need to be reserved in the Master/Development Plans and GPDPs for activities, such as disposal of solid wastes, local level utility services (such as power plant, grid station, water and sewage treatment plants, etc.) dairy farming, horticulture, inter & intra-urban transport system and other essential infrastructure. Attempt should be made to rationalize the quantum of land required for all essential activities, while preparing Plans.
- 18.2.5.5.1.4 Tree cover be created /maintained within Urbanisable Areas as per the Urban Greening Guidelines, 2014 of MoHUA.
- 18.2.5.5.1.5 Fixation of density norms should be based on multiple parameters and the task should be settlement specific. However, for overall planning approach, the density ranges are suggested at Table 2 below as suggested in the URDPFI guidelines, 2014-15 of MoHUA:

Settlement	Population Range	Persons per hectare(pph)
Small Towns	Less than 50,000	75 - 125
Medium Towns	50,000 to 5,00,000	100 - 150

Large Cities	5,00,000 to 10,00,000	125-175
Metropolitan	10,00,000 – 01 Crore	125 - 175
Cities		
Megapolis	More than 01 Crore	More than 200

Source: URDPFI Guidelines, Ministry of Urban Development (http://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.p df)

- 18.2.5.5.1.6 These are suggestive population densities as per the settlement size. However, while planning for compact and TOD development, these densities shoul d be modified to suit the requirement and should be based on detailed analysis.
- 18.2.5.5.1.7 In the existing built up and urbanisable areas Hazardous industries and trading activities involving obnoxious, hazardous, inflammable substance or processes, will be prohibited.
- 18.2.5.5.1.8 The list of prohibited activities may be prepared and incorporated in SRPs and respective Master/Development Plans so as all other activities not mentioned therein would be deemed permitted subject to applicable laws. Since entire NCT-Delhi is under Controlled/development/regulated zone, the list of prohibited activities may be prepared and incorporated in MPD-2041 so as all other activities not mentioned therein would be deemed permitted subject to applicable laws.
- 18.2.5.5.1.9 The local authority according to the prescribed uses in the Master/Development Plans will govern the detailed land uses within the organisable area including Master Plan Delhi. The Master/Development Plans of all urban areas to be prepared within the framework of the Regional Plan-2041 specially as per preceding paras 18.2.5.1 to 18.2.5.5 with specially emphasis to ensure inclusion of the provisions in chapter relating to zoning housing and habitat of this Regional Plan.

b) Agriculture (Rural) Zone within controlled/development/regulated areas

18.2.5.5.1.10 Agriculture (Rural) zone within the controlled/ development/ regulated areas of urban centres provided in the Master/Development Plans of the respective controlled/development areas should be strictly adhered to provided these plans are made as per the provisions in preceding paras 4.1 to 4.5. No activities other than those defined in the notified Plans, shall be permitted.

c) Green buffers

- 18.2.5.5.1.11 Green buffers shall be created/ maintained outside urbanisable limits of urban areas. Green buffers should be developed beyond the Right of Way (ROW) of the connectivity network on either side of the Expressways, National Highways, SHs, Railway Lines or as per the prevailing policy of MoRTH, State Governments and Railways respectively.
- 18.2.5.5.1.12 No residential/institutional activities will be permissible except agriculture/horticulture/fuel station/EV charging/highway amenity

centre/emergency medical care/trauma care/emergency evacuation services/disaster vehicle recovery services/service roads/approach roads/toll plaza/police and security posts/bus queue shelter etc.

18.2.5.5.2 Area outside controlled /development/regulated areas

- 18.2.5.5.2.1 Such area will include not only rural areas but also such urban areas yet to be notified as controlled/development areas like non statutory census towns etc. These areas of NCR have to be regulated and guided by Sub-Regional Plans, District Development Plans and GPDPs/Village Plans, etc. subject due to the provisions of the preceding paras in 18.2.5.1 to 18.2.5.5 above. In these areas while agriculture and allied activities including agro processing, etc. shall be the primary land use large investment zones, rural investment zones, special economic zones, industrial zones in areas identified/planned/permitted by the central and/or NCR State Governments shall be permissible with adequate pollution mitigating measures. Heavy and hazardous industry shall be permitted only in such zones.
- 18.2.5.5.2.2 Large Educational, health, and training institutions including engineering & medical college will be permitted only with planned lay out and adequate infrastructure and utilities.
- 18.2.5.5.2.3 Subject to 18.2.5.5.1.1 above negative list/list of non-permissible activities may be prepared and expanded in the respective Sub Regional Plans so as all other activities not mentioned therein would be deemed permitted subject to applicable laws.
- 18.2.5.5.2.4 At the regional level, agriculture (rural) zone be designated for primary sector production and as open area comprising of farmlands, orchards and pastures, etc.
- 18.2.5.5.2.5 The new employment opportunities in non-agriculture sector and consequent concentration of population, the urban expansions might have to be largely made from the agricultural land and other non-urban uses. Therefore, there would be a major impact on land requirements of agriculture sector. In view of this, following is proposed:
 - a) Existing cropland land be conserved for agriculture use as far as possible. Efforts be made to increase the production through intensive cultivation by providing irrigation facilities and other necessary infrastructure. Irrigated land with multi-cropped production shall be avoided from urban activities, as far as possible.
 - b) Measures be taken for protection of prime agricultural land and ensure its needless conversion into non-agricultural/urban use.
 - c) Utilisation of land with low biological potential for farming be earmarked/ allocated for non-agriculture purposes such as new urban activities/ development purposes, after necessary certification from Soil & Agriculture Deptts.as applicable incase land is already under agriculture use.

18.2.5.6 Other Planning and Design Guidelines

- 18.2.5.6.1 To provide quality of life and ease of living to the expected more than 10 crore population of NCR Delhi by 2041 and to provide for world class infrastructure and amenities in Tomorrows greatest city on this planet, global standards of building development and conservation shall be adopted. NCR Cities and towns shall be planned with optimum high rise and high density norms; the concept of TDR should be used innovatively and effectively to benefit both Heritage/Natural Conservation and Citizen Habitats.
- 18.2.5.6.2 The infrastructure requirement in residential, institutional, educational, health and other sectors necessitates that FAR norms should be as per best practices in similar global cities. The often quoted problem of water scarcity should be handled imaginatively and effectively like Singapore which turned from huge water importer city to net water surplus city in few decades by extensive, effective and mandatory water recycling and water harvesting.
- 18.2.5.6.3 Mixed land use areas to be identified in the existing urban and urbanisable areas of Master Plans, mixed land use both vertically and horizontally may be permissible as per the provision given in the different chapter of this regional plan especially in the chapter covering zoning, housing and habitat and the policy zones section of this chapter. Older Areas of cities and smaller towns of NCR should be permitted to have mixed used since separate residential/commercial/institutional etc. Land uses may not be feasible mixed land use regulations may be prepare and incorporated in the Master Plan/Development Plan of NCR.
- 18.2.5.6.4 The tree cover/ plantation outside the designated statutory forest should be increased to have minimum 15-20% of area in each city/ town under tree/ green cover, which shall be kept out of statutory forests and shall not be covered under statutory forest. People should have authority to cut or replace planted trees on their private land. Any permission in this regard can be granted by the district administration including grant of TDR in lieu of the land parcel, if the wooded land needs to be protected/ or restricted for any development.
- 18.2.5.6.5 Planning and development of CNCR along with NCT Delhi shall have to be undertaken in an integrated manner; an integrated plan should be prepared for CNCR area jointly by the Governments of Haryana, U.P. and NCT Delhi incorporating the transport linkages and infrastructure networks including water supply, comprehensive waste management, drainage, etc.
- 18.2.5.6.6 NCR States to prepare Master/Development Plans for all small, medium and non-statutory Census towns and GPDP for rural areas, for ensuring the planned development. Further, District Development Plans shall also be put in place for overall integrated planning and development at district level.
- 18.2.5.6.7 NCR States to take initiatives to identify and develop cities/ towns in line with the AMRUT mission. All district & tehsil headquarters and cities/ town above 01 lakh population be identified and developed on priority under such initiatives by 2025, for which financial assistance can be obtained from MoHUA, NCRPB, HUDCO and other FIs.

- 18.2.5.6.8 Most of the Master/ Development Plans of settlements in the region have already been prepared for perspective year 2031/2041/2051. However, there is an urgent need to Master /Development Plans for all small, medium and Nonstatutory Census towns (above 100 nos.) for ensuring the planned development. With the advances of Remote Sensing and GIS technologies, the Plan making process can become expeditious and with integration of both spatial and attribute data, detail assessment can be made in terms of spatial growth of cities and towns, extent of unauthorised and haphazard development and laying of physical infrastructure facilities in anticipation with projected growth of population. These Design and Standards prepared by the TCPO, MoHUA for AMRUT will be immensely helpful in preparation of digital plans for cities, towns, villages, etc.
- 18.2.5.6.9 The delineation of various broad features and land uses shall have to be undertaken by the concerned Departments/ Authorities/ Bodies of the NCR States. This shall now to be clearly demarcated in Sub-Regional Plans/ Master or Development Plans/ local level Plans, etc. It shall not be possible to show each and every site in Regional Plan with specific land use category, for an area of 55,083 Sq. Km. The decision of allowing the lowest level of use, within the broad regional land use (as also mentioned in RP-2021), shall have to be undertaken by the participating states.
- 18.2.5.6.10 In order to implement the policies of Regional Plan, notified/ published under the provisions of NCRPB Act, 1985, necessary amendments, if required, be made by the respective NCR State Governments appropriately.
- 18.2.5.6.11 All plans should be prepared/ available on digital platforms/ based on Remote Sensing and GIS technologies with integration of both spatial and attribute data. The Design and Standards prepared by the TCPO, MoHUA for AMRUT may be utilized while preparing the plans. As per the AMRUT guidelines, Very High Resolution Satellite (VHRS) data be utilized for preparing large scale base map at 1: 4000 scale or better, for cities, towns, villages, etc. and the Sub-Regional and District Plans should be prepared on1:10,000 scale or better.
- 18.2.5.6.12 The time frame for preparation, submission, notification and revision of the Plans are as follows:
 - NCR States to ensure that the Sub-Regional Plans for all the sub-regions be prepared within six months from the date of notification of the final Regional Plan-2041. The District Development Plans be finalized within six months from the date of notification of the final Sub-regional Plan or within one year of notification of final Regional Plan 2041, whichever is earlier.
 - All Master / Development plans in the Sub-regions shall be notified within one year from the date of the final notification of Regional Plan 2041, or within 06 months from the date of the notification of their final Sub-regional Plans 2041, whichever is earlier.
 - Sub-Regional Plans be revised after every five years in line with the Regional Plan.
- 18.2.5.6.13 All new townships (integrated housing/ industrial/ institutional townships) across NCR should be developed incorporating the Smart Cities elements/

components e.g. DMIC smart city Dholera (Gujarat), AURIC city (Maharashtra). (refer Annexure P-18.1); NCR States to take initiatives to refurbish the exiting Cities/ Towns or townships on the above lines, in a phased manner by 2030.

- 18.2.5.6.14 Every village to have at least two water bodies (one for drinking and second for other uses as far as possible). Sufficient area for water recharge, village deity/sacred forests recognized by community at large be clearly demarcated and conserved. Alongside, spaces for ceremonies, play grounds, festival & fairs and last rites, etc, be identified and demarcated at the Village, Block, Tehsil and District level. Efforts be made through creation of iconic places as per local sentiments at each settlement level.
- 18.2.5.6.15 NCR States should identify and develop more Rurban Clusters in their respective sub-regions in line with the MoRD initiative of Rurban Mission. The Model Planning Guidelines⁸ for Rurban Cluster, 2019 may be followed. The details of such identified Rurban Clusters be provided in each Sub-Regional Plan.
- 18.2.5.6.16 RADPFI Guidelines, 2017 which provides specific land use provisions for rural areas be followed while undertaking planning of rural areas and districts. Further the GPDPs be prepared as per the GPDP guidelines 2018 for ensuring effective spatial planning at grass root level.

⁸ Model Planning Guidelines for Rurban Cluster, 2019

http://rurban.gov.in/doc/Model%20 Planning%20 Guidelines%20 for%20 Rurban%20 Cluster.pdf

Chapter 19

COUNTER MAGNET AREAS

19.1 INTRODUCTION

- 19.1.1 Section 8(f) of the NCR Planning Board Act, 1985 empowers the Board to select, in consultation with the State Governments concerned, any urban area, outside the National Capital Region (NCR) having regard to its location, population and potential for growth, which may be developed in order to achieve the objectives of the Regional Plan.
- 19.1.2 The Counter Magnet Areas (CMAs) in the NCR are envisaged as urban areaslocated sufficiently away from the NCR and have established roots and inherent potentials to function as viable independent growth foci beyond the NCR. These countermagnet urban areas would have the attributes of physical, social and economic viability, nodality with respect to transportation networks, and have the quality of physical linkages in the form of transportation and communications facilities. With significant economic growth, these identified CMAs are expected to play an important role in attracting Delhi and the NCR bound potential migrant population from their respective influence areas. The CMAs are presented as counter weights to the NCR in balancing populationand economic activities in the larger region.
- 19.1.3 In NCR Plan, 2001, five CMAs wereidentified. These are Bareilly in Uttar Pradesh; Gwalior in Madhya Pradesh; Hisar in Haryana; Kota in Rajasthan; and Patiala in Punjab. After taking into consideration parameters such as nodality with respect to transportation network, quality of linkages in the form of transportation and communications facilities, geographical size, viability, migration, etc. these CMAs were to play two distinctive and mutually complementary roles in the context of the NCR. First, the CMAs would act as interceptors of migratory flows into the NCR, which may escalate as the accelerated development of the NCR would act as a pull factor for migrants from the less developed adjoining areas. Second, regional growth centers in their own physical and social settings would be able to achieve a balanced pattern of urbanization over a period of time, counter weighting against the dominate economic and opportunity space of the NCR.
- 19.1.4 Efforts were made to study the counter magnet areas of the NCR. In 2008, the NCRPlanning Boardreviewedthe development strategy of the counter magnet areas and to suggest appropriate changes in the strategy, and evolve an alternative strategy for the development of counter magnet areas for enabling them to play an effective role in achieving the objectives of the Regional Plan for NCR. In the Fifty Sixth Planning Committee meeting held on 19 January 2008, the NCRPB considered the report and made recommendations. It identified five cities or towns to be counter magnet areas for the NCR. These CMAs covered 24 districts within their influence zone and have the potential to handle population migrating to Delhi and the NCR. These CMAs were Ambala in Haryana; Bareilly in Uttar Pradesh; Dehradun in Uttarakhand; Hisar in Haryana; and Kanpur Nagar in Uttar Pradesh. It was also decided that these counter magnet areas shall consider its zone of influence for migration as the area within about 120 km radius around them. Concerned state governments were to notify their respective counter magnet areas and prepare development plans and related plans of

action for implementation. The recommendations were approved in the Thirty First Board meeting held on 11 November 2009 and it was decided that the CMAs would not limit to urban areas only and development could be proposed in the form of corridors.

19.1.5 Further, in line with the decisions of the thirty first meeting of the NCR Planning Board, Government of Uttar Pradesh identified Kanpur-Lucknow corridor as the CMA, which falls under the jurisdictions of four development authorities, namely, Lucknow Authority, Kanpur Development Authority, Unnao-Shuklaganj Development Lucknow Industrial Development Development Authority and Authority. Subsequently, Jaipur city was also considered and approved as acounter magnet area of the NCR in thirty third meeting of the NCRPB meeting held on 1 July 2013. Later, Government of Punjab identified Patiala-Rajpura Corridor as a CMA falling under local planning area of Patiala and Rajpura towns, which were approved by the Board in its thirty eighth meeting, held on 13 September 2019. So, new CMAs are corridors falling within multiple jurisdictions.

19.2THE EXISTING SITUATION

- 19.2.1 According tothe Census of India 2011, India's 31.2 percent population lives in urban areas. The NCR is more urbanized with 62.5 percent of its population living in urban areas. One interesting fact is that if we exclude Delhi from the NCR, ithas level of urbanization only of 27 percent. It is also important to note that out of 53 million-plus cities, four cities i.e., Delhi, Meerut, Ghaziabad and Faridabad are located in the NCR. But largely the NCR has a rural character.
- 19.2.2 Further, it is also noteworthy that the regional plan prepared by the Town and Country Planning Organization, Government of India, delineated the area of 29,800 sqkm with estimated population of 14,000,000. However, the geographical area increased to 30,242 sqkm and again increased to 55,083 sqkm in Regional Plan, 2021 on demand by the participating states. So the area of the NCR has almost doubled in comparison to the area originally delineated by the TCPO. The NCR thus appears to be expansive region.
- 19.2.3 Presently, the following nineurban areas and corridors have been identified as counter magnet areas to the NCR (Fig. 19.1).
 - Ambala in Haryana (notified area considered in the development plan)
 - Bareilly in Uttar Pradesh (notified area considered in the master plan)
 - Dehradun in Uttarakhand (not yet identified and notified)
 - Hisar in Haryana (notified area considered in development plan)
 - Kanpur-Lucknow corridor in Uttar Pradesh
 - Jaipur city in Rajasthan
 - Patiala-Rajpura corridor in Punjab
 - Gwalior city and surrounding areas as notified by Government of Madhya Pradesh
 - Kota city in Rajasthan
- 19.2.4 Development plans or master plans of all the CMAs except Dehradun CMA have been prepared by the respective state governments. The respective state governments have taken little initiative for strengthening of the economic base and regional linkages in these areas to make themas counter magnet areas, which would have enabled them to undertake their assigned roles more effectively. Only a few projects have been taken up for improvement of physical and social infrastructure of these CMAs.



Fig. 19.1: Counter Magnet Areas in the NCR

19.3 KEY ISSUES AND CHALLENGES

- 19.3.1 The CMAs appear to lag behind in preparing the Plans of Action (PoA). The Plans of Action are prepared only for Jaipur and Kota CMAs. The respective state governments have prepared the master development plans without focusing on the role of these counter magnet areas. There is no specific mention of the identification and the purposes as Counter Magnet Areas in these master development plans. This may be the reason that these Counter Magnet Areas are unable to play their assigned role.
- 19.3.2 The identified CMAs need to be developed in a big way through strengthening their economic bases and creation of large scale employment opportunities by generating diverse economic activities, and creation of high quality physical and social infrastructure, intra-city mass transit systems and fast and efficient connectivity with Delhi and the NCR to act as strong countermagnets and play a significant role as interceptors of migration the NCR.

- 19.3.3 So far the concerned state governments have not come up with large development projects. Out of the nine CMAs only five CMAs have submitted a total of 14 projects to the NCR Planning Board for financial assistance(**refer Annexure D 19.1**). This is clearly in sufficient effort.
- 19.3.4 Although, six of the nine identified CMAs are from the NCR participating states, the state governments' initiatives has focussed on adding more areas to the NCR rather than focusing on and developing the identified CMAs to counter in-migration towards the NCR and decrease dependency and pressure on the NCR.

19.4POLICY AND PROPOSALS

19.4.1 In order to make the Counter Magnets Areas (CMA) capable to undertake their assigned roles more effectively, their future development proposed to cover the following aspects.

19.4.1.1 Strengthening of Economic Base of the CMAs

- (a) The success of the counter magnet areas as interceptors of in-migration entirely depends upon their capacity to generate economic activities generating adequate number of employment opportunities for the working age population living within the influence areas. In this line of thinking, the concerned state governments should develop the counter magnet areas as model industrial estates, technology parks, tourist hubs or nodes (e.g. Jaipur, Patiala, Gwalior), education cities (e.g., Kota), special economic zones for attracting economic investments.
- (b) Even more important is the challenge of attracting large investments in the CMAs. Initially, some of these projects should be taken up jointly by the state governments and the concerned central ministries. However, an enabling physical and regulatory environment should be created by the concerned states to attract private investors for large scale economic development.
- (c) Simultaneously, global scale development of physical infrastructure and attractive fiscal incentives should be provided to attract industry to these CMAs. The CMAs should be developed as opportunity areas and towns for people in their influence areas, which are well connected and integrated. The CMAs must have the potential to be the next metropolis in the area.

19.4.1.2 Upgradation of Physical and Social Infrastructure

- (a) In order to support and sustain the economic infrastructure in the counter magnet areas, physical and social infrastructure of a very high order needs should be provided in these areas for which the concerned development authorities and the state governments should jointly prepare development projects, which could be financially supported by the NCRPB through its prevailing funding pattern for the NCR areas.
- (b) Specialized social, cultural and institutional activities like universities and center of higher education like professional colleges of global standing should be established as well as development of tourist destinations should be encouraged.
- (c) Linkages with hinterlands as well as with other important metropolitan centers should be strengthened to make meaningful use of economic and physical infrastructure proposed to be developed in the countermagnet areas.
- (d) The central ministries like Ministry of Housing and Urban Affairs, Ministry of Railways, Ministry of Shipping, Ministry of Road Transport and Highways as well as Ministry of Electronics and Information Technology (MiETY)may prioritise CMAs in improving transport linkages by providing high speed connectivity through expressways, national highways, rapid rail transport systems, .airports, and by creating robust digital

infrastructure as a tool for socio-economic development in these counter magnet areas in a planned manner within a specified time frame.

- (e) Necessary steps be taken to strengthen connectivity amongst CMAs through NH/ Expressways and railways. All Counter Magnet Areas (CMAs) to the NCR should be well connected with Air, Rail, RRTS and NH/ Expressways.
- (f) All CMAs should be connected with RRTS by 2035, based on feasibility.
- (g) There are three existing unserved or underserved small airports or airstrips (Bareilly, Kota, and Patiala) in the CMAs of the NCR, which should be urgently revived and their functionality to enhance connectivity should be explored. These airports and airstrips should be developed and made fully operational by 2025. Private players should be incentivized to develop these airports and airstrips.

19.4.1.3 Major Projects and Implementation Strategies

To play the effective role of the counter magnet areas, two-prongedstrategy is envisaged for the development of CMAs (i) economic development (ii) urban development, and is elaborated below:

- (a) While the selection of counter magnet cities and town for the NCR, a zone of 120 km radius was considered as its influence area for out-migration. Therefore, the state governments encouraged bringing in new investments in the influence zones of CMAs identified in their respective states through state level policies and development interventions integrated with respective financial plans and district development plans considering the needs and aspirations of the population residing in these influence zones of the respective CMAs.
- (b) The identified six new CMAs that have high potential, present a wide range of areas that could attract investment. All the identified counter magnet areas have history of investment in industries. Potential of these CMAs with respective probable list of initial projects that could be taken up for economic development is presented in **Table 19.1**.
- (c) Prospects of the other CMAs, namely, Gwalior in MP, Kota in Rajasthan and Patiala in Punjab should be evaluated by respective state governments as these were identified as lagging behind areas in comparative potential and accordingly kept at low priority during CMA assessment exercise.
- (d) Development projects should be undertaken through public-private partnerships if CMAs and people located in these regions directly benefit. High level of investment at par with the CNCR towns is required in the identified CMAs for them to effectively act as counter magnet to the NCR.
- (e) The nodal agencies concerned should initiate basic planning exercises and identify the most effective source of funding. In most of these projects the government should participate through provision of land, and development activities should be undertakenby private firms through various kinds of public private partnerships. Public interest should take the centerstage when forging any form of public private partnership.

CMAs	Initiatives desired / Focus sectors for development	Initiatives for Driving Economic Development		
Ambala	• Ambala's major potential lies in its locational advantage i.e. Delhi-Chandigarh-Baddi. It has potential for establishment of Agro based Industries and Knowledge Centre.	Industrial ParkTransport hubKnowledge Centre		

Table 19.1: Proposed Projects for Economic Developmentinthe CMAsto the NCR

Bareilly	•	Bareilly is the center for commercial & agricultural trading activities and known for handicrafts. Advantage of corridor from U.P. to Uttarakhand can be utilized.	•	Industrial Park Food Park Transport Hub
Dehradun	•	Dehradun is known for its basic educational institutions, research institutions and serene climate. It has potential for establishment forest based industries and creation of knowledge city.	•	Food Park. Knowledge Centre.
Hisar	•	Existing industries need to be revived. Hissar has potential to become agro based industrial regional centre.	•	Technicalandmanagement-resource-cum-productioncentre.Industrial Park for SSI
Kanpur- Lucknow corridor	•	Kanpur has potential for all types of industries along with development of IT Park, Food Park / Food processing centre, leather Technology Park and creation of futuristic Knowledge City.	•	Industrial park for SSI Knowledge city
Jaipur	•	Jaipur is a heritage city hence tourism activity may be promoted. Existing industrial base can be made a fulcrum for driving future development.	•	Industrial Park Tourism development

19.4.1.4 Financing Strategy for CMAs

- (a) State governments should identify exploitable resources and capabilities available in the regionslocated close to the CMA cities to promote entrepreneurial initiatives for commercial exploitation for creating opportunities for employment for the local population.
- (b) The CMA cities should provide infrastructure to support such initiatives. These include physical infrastructure in terms of power, water, roads, rail and air connectivity. Besides, adequate and quality social infrastructure, housing, healthcare, education and entertainment are necessary to attract talent and help them relocate in these cities. Resource endowments and physical infrastructure enable investors to create value from resources available in the region.

19.4.1.5 Resource Mobilization

- (a) Enabling the identified counter magnet areas to perform successfully, it is imperative that development initiatives are undertaken in cities in time to take advantage of the prevailing economic conditions. Resource requirements for implementing these initiatives can be secured from various sources such as state and central government; private sector participation; foreign direct investments, etc.
- (b) Market mechanisms re the key drivers for attracting investments in intended locations, and local governments should take initiatives by incentivizing investors to their regions.
- 19.4.1.6 **Key development projects:** Some of the key development projects are discussed below in Table 19.2, but not limited to:

Table 19.2: Key Development Projects for Enhancing the Effective Role of the Court	nter
Magnet Areas to the NCR, 2021-2041	

S. No	Proposed ProjectsandPolicies	Phase–I (2021-2026)	Phase–II (2026-31)	Phase–III (2031- 2036)	Phase–IV (2036- 2041)
1.	Preparation of master development plans incorporating strategies proposed in the Regional Plan, 2041.	To be prepared by 2023	-	-	-
2.	Preparation of Plans of Action.	To be prepared by 2024	-	-	-
3.	Improvement of transport and communicationlinkages through road, rail and air.	At least high-speed connectivity by road and rail links.	Creation of robustdigital communicati ons infrastructure	Other high a connectivity	speed y facilities.
4.	Strengthening of economic base of all CMAs.	Strengthenin g of existing industries and other income, employment generation activities.	New economic as recommende 2041	e developmen ed by the Reg	it initiatives gional Plan,
5.	Upgradation of physical and social infrastructure to a global standard.	Upgradation o physical and so infrastructure t standard.	n of the existing d social re to a global current dema		ew physical are a global meet the mand.
6	Proejcts for provding RRTS Connectivity to CMAs	To be investigated by 2026	To be develope operational by	ed and made 2035	fully
7	Proejcts for development of Airports	To be developed and made fully opertainal by 2025	-	-	
8	Proejcts for connecting CMAs with Expressways	To be investigated by 2025	To be developed and made fully opertainal by 2030	-	

Chapter 20

IMPLEMENTATION STRATEGIES AND RESOURCE MOBILIZATION

20.1 Introduction

The Committees including sector experts which reviewed the earlier Regional Plans have emphasized that the practice of piecemeal and ad hoc decisions for development should be stopped and the programmes need to be prepared and approved only with a reasonable and implementable time schedule and phasing. Keeping such observations in view, the strategies for the Regional Plan-2041 have been formulated to suit implementation of different policies proposed in the Plan.

20.1.1 **Purpose of the Regional Plan for NCR**

20.1.1.1 NCRPB Act, 1985

Time and again, a need was felt to plan Delhi in the regional context under a suitable legislation which would control and regulate development in the region and finally Parliament enacted the National Capital Region Planning Board Act in 1985 with the concurrence of the constituent States "to provide for the constitution of a Planning Board for the preparation of a plan for the development of the National Capital Region and for coordinating and monitoring the implementation of such plan and for evolving harmonised policies for the control of land uses and development of infrastructure in the National Capital Region so as to avoid any haphazard development of that Region and for matters connected therewith or incidental thereto" (refer Annexure D-20.1 for the composition of the NCR Planning Board).

20.1.1.2 Important Provisions of the NCRPB Act, 1985 (refer Annexure D-1.3)

Under Chapter V regarding Functional Plans, Sub-Regional Plans and Project Plans

Preparation of Functional Plans

Section 16. After the Regional Plan has come into operation, the Board may prepare with the assistance of the Committee, as many Functional Plans as may be necessary for the proper guidance of the participating States and of the Union territory.

Preparation of Sub-Regional Plans Section 17:

- 1. Each participating State shall prepare a Sub-Regional Plan for the sub-region within that State and the Union territory shall prepare a Sub Regional Plan for the sub-region within the Union territory.
- 2. Each Sub-Regional Plan shall be a written statement and shall be accompanied by such maps, diagrams, illustrations and descriptive matters as the participating State or the Union territory may deem appropriate for the purpose of explaining or

illustrating the proposals contained in such Sub-Regional Plan and every such map, document, illustration and descriptive matter shall be deemed to be a part of the Sub-Regional Plan.

- 3. A Sub-Regional Plan may indicate the following elements to elaborate the Regional Plan at the sub-regional level namely :-
- a. reservation of areas for specific land-uses which are of the regional or sub-regional importance ;
- b. future urban and major rural settlements indicating their area, projected population, predominant economic functions, approximate site and location ;
- c. road net-work to the district roads and roads connecting major rural settlements ;
- d. proposals for the co-ordination of traffic and transportation, including terminal facilities ;
- e. priority areas at sub-regional level for which immediate plans are necessary ;
- f. proposals for the supply of drinking water and for drainage ; and
- g. any other matter which is necessary for the proper development of the sub-region.

Preparation of Project Plans:

Section18.

A participating State, or the Union territory, may, by itself or in collaboration with one or more of the participating States or the Union territory, as the case may be, prepare Project Plans for one or more elements of the Regional Plan, Functional Plan or Sub-Regional Plan.

Submission of Sub-Regional Plans to the Board :

Section 19.

- 1. Before publishing any Sub-Regional Plan, each participating State or, as the case may be, the Union territory, shall, refer such Plan to the Board to enable the Board to ensure that such Plan is in conformity with the Regional Plan.
- 2. The Board shall, after examining a Sub-Regional Plan, communicate, within sixty days from the date of receipt of such Plan, its observations with regard to the Sub-Regional Plan to the participating State or the Union territory by which such Plan was referred to it.
- 3. The participating State, or, as the case may be, the Union territory, shall, after due consideration of the observations made by the Board, finalize the Sub-Regional Plan after ensuring that it is in conformity with the Regional Plan.

Implementation of Sub-Regional Plans, etc. :

Section 20. Each participating State, or, as the case may be, the Union territory shall be responsible for the implementation of the Sub-Regional Plan, as finalized by it under subsection (3) of section 19, and Project Plans prepared by it.

Chapter VI

Grants and loans by the Central Government

Section 21. (1) The Central Government may, after due appropriation made by Parliament by law in this behalf, make to the Board grants and loans of such sums of money as that Government may consider necessary to enable the Board to carry out its functions under this Act.

Constitution of the Fund *Section 22*.

- 1. There shall be constituted a Fund to be called the National Capital Regional Planning Board Fund and there shall be credited thereto –
- (a) any grants and loans made to the Board by the Central Government under section 21;
- (b) all sums paid to the Board by the participating States and the Union territory; and
- (c) all sums received by the Board from such other sources as may be decided upon by the Central Government in consultation with the participating States and the Union territory.
- 2. The sums credited to the said Fund referred to in sub-section (1) shall be applied for –
- (a) meeting the salaries, allowances and other remuneration of the Member- Secretary, officers and other employees of the Board and for meeting other administrative expenses of the Board, so, however, that the total expenses shall not exceed the amount appropriated for this purpose under sub-section (2) of section 21;
- *(b) conducting surveys, preliminary studies and drawing up of plans for the National Capital Region;*
- (c) providing financial assistance to the participating States and the Union territory for the implementation of Sub-regional Plans and Project Plans; and
- (d) providing financial assistance to the State concerned for the development of the countermagnet area subject to such terms and conditions as may be agreed upon between such State and the Board.

CHAPTER VII titled Miscellaneous covers aspect regarding the Act to have overriding effect under Section 27.

Section 27. The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this Act; or in any decree or order of any court, tribunal or other authority.

Further, as per Section 29(1) of Chapter VII, regarding Violation of Regional Plan

29(1) On and from the coming into operation of the finally published Regional Plan, no development shall be made in the region which is inconsistent with the Regional Plan as finally published.

Further, as per Section 40 regarding, Acquisition of land and determination of rights in relation to land to be made by the Government of the participating State or Union territory.

For the removal of doubts, it is hereby declared that the acquisition of land or the determination of any right or interest in, or in relation to, any land or other property, where necessary to give effect to any Regional Plan, Functional Plan, Sub-Regional Plan or Project Plan, shall be made by the Government of the concerned participating State, or, as the case may be, the Union territory, in accordance with the law for the time being in force in that State or Union Territory.

20.1.2 **Coordination of Public Services**

Various State and Central Govt. departments dealing with common sector need to have proper cooperation, collaboration and coordination with an integrated common approach and avoid working in silos and cross purposes due to lack of information. Autonomy and powers of each departments be mutually respected and works be carried out in a manner such that common goal of betterment of the respective sector is achieved and are in mutual and public interests.
NCRPB has been created as a unique organization to perform the role of a facilitator amongst them.

20.2 Issues and Analysis of Earlier Regional Plan Implementation

20.2.1 Review of Regional Plan 2021 policy implementation

- 20.2.1.1 The Study Group constituted for review of RP 2021 in its Report observed that the focus needs to be on achievable targets, to ensure Regional Plan policies and proposals are effective and driven by all of its stakeholders, because the success of Regional Plan depend on its implementation.
- 20.2.1.2 It also emerged that apart from coordination, in order to achieve the aims and objectives of Regional Plans, and the actions and policies undertaken by State Governments and subordinate agencies and organizations should also have 'determination', 'guidance' or 'control'. Further, while in case of violations and deviations from the plan, the remedy under NCRPB, Act 1985, Section 29 (2) is 'the Board may direct the concerned participating State or the Union Territory to stop such activity and withhold financial assistance to the concerned participating State or the Union Territory', this provision alone may not be enough and some other measures should also be explored. Further, NCRPB should act as a main custodian of agglomeration strategy for the region, focusing on improving the level of infrastructure / services while responsibility of the respective State Governments, their municipal and other para-statal bodies should be to work out the detailed strategies for achieving the plan objectives for each sector.
- 20.2.1.3 It also emerged that although states did take initiative in preparing master and development plans, not all towns and cities could be covered. Further, the horizon period also varied from SRP and RP horizons, which resulted in avoidable issues. Little focus could be given by states regarding preparation of District Development plans or constitution of DPCs and MPCs.

20.2.2 Management Structure and Institutional Arrangements

20.2.2.1 In order to ensure that the policies and strategies get converted to results on ground, it is required to have an efficient management system for a) speedy implementation and monitoring of the Plan policies & proposals, which itself shall require tremendous coordination amongst NCR state departments and Central Govt. Ministries /department and b) for proper monitoring of the projects. The management structure and role of each level can be as follows:

State/NCR Planning and Monitoring Cell Level

- 20.2.2.2 It was observed that State Level Steering Committees (SLSC)were not very effective may be due to non-involvement of different departments that are to actually implement the policies and proposals on ground. It was also observed that he meetings of the SLSCs were not held regularly.
- 20.2.2.3 Regional Plan review Groups also observed that with its limited powers and jurisdiction, NCRPB may not be able to take up the task of comprehensive management of implementation of the Regional Plan. It, therefore, requires the

support of not only from its administrative Ministry (MoHUA) but also from other concerned Central Ministries, NITI Aayog and constituent State Governments, their local bodies; etc. who are having power under their own jurisdiction. Further, in order to implement the policies and proposals, NCP Planning and Monitoring Cells should establish their own efficient Management System for speedy implementation of the Plan proposals and for proper monitoring of the projects at its level and also at the State level. It also suggests that Secretary, Urban Development and In-charge of the NCR Cell should be vested with the responsibility to coordinate among all the agencies at the State level for implementing the policies, proposals and schemes as proposed in the Regional Plan.

20.2.3 **Resource Mobilisation**

- 20.2.3.1 Resources, both capital and skilled manpower, are the most important elements required for achieving success of a Plan. Financing of various projects is critical to the success of the Plan. It is necessary to have large investments in infrastructure such as transportation, power, water and sanitation, data management and also in social sectors such as health and education. Alongside having skilled/qualified manpower for the same. Funds for development activities in the NCR are available mainly from four sources:
 - *a)* NCRPB assisted projects, the Board provides loan up to 75% of the cost of the project.
 - b) State Government funds for its own initiatives/projects being implemented by its various development authorities, local bodies, housing boards, industrial development corporations etc.
 - c) Projects funded by Central Ministries such as Railways, Communications and Information Technology, Shipping, Road Transport and Highways etc. and
 - d) Private sector investment in infrastructure.
- 20.2.3.2 The funds available with the Board are from the following sources:
 - a) Grant from the Ministry of Housing and Urban Affairs
 - b) Market borrowing (Taxable and Tax-free bonds)
 - c) Internal accruals (Interest income)
 - d) Raising funds from multi-lateral and bi-lateral agencies like ADB and KfW etc.

NCRPB so far mobilized a total amount of Rs. 5,572.72 crore till September 2020 of which Plan funds from Central Govt. Rs.1501.60 crore, contribution from Govt. of NCT Delhi Rs. 350.75 crore and Rs.3,720.35 through Bonds/line of Credits. Year wise details are given in **Annexure D-20.2**

20.2.3.3 As per Regional Plan reviews, these funds are quite meager and prevents NCPRB from leveraging its strategic position to play an effective role in the planned development of the region. The Parliamentary Standing Committee on Urban Development (2008-09) observed that 'this [corpus] could hardly benefit the satellite towns and CMAs to be able to work as pull centers which would prevent in-migration into Delhi'; therefore, there is a need to substantially enhance the budgetary support of NCRPB.

- 20.2.3.4 Hence, it is clear that there have been resource constraints with NCRPB in financing large-scale projects in the region due to which the regional infrastructure envisaged in the Regional Plan-2021 could not be implemented. In view of the resource constraints with the NCRPB in financing development programmes in the region and in the light of the existing modalities of jointly funded projects, the NCRPB can do little to offer the facility of providing any financial assistance to its constituent states as grant.
- 20.2.3.5 RP review also suggested that NCRPB should leverage the funds from the various schemes / missions launched by the Government like Smart Cities, AMRUT, Swachh Bharat Mission, HRIDAY, Urban Transport, Prandhan Mantri Awas Yojana, and Deendayal Antyodaya Yojana National Urban Livelihoods Mission, etc. The reviews also advised to identify indigenous specialist / domain experts for specific studies with ultimate aim to create in house capacity in NCPRB for taking up this responsibility, specifically when its experience in managing extra budgetary resources since it has been managing and servicing loans taken from ADB and KfW.
- 20.2.3.6 The review study group was of the opinion that for managing the funds in an optimal manner, NCRPB should strengthen their own Monitoring Wing and NCR Cells, instead of opting for creation of another separate agency or SPV, as establishment of such agencies may result in overlapping the jurisdiction and duplication of authorities.
- 20.2.3.7 The review Groups also indicated that the implementation of Regional Plan not only required a multi-disciplinary approach, which involves tremendous amount of coordination and monitoring not only of the policies and proposals of the Regional Plan but also monitoring of the projects funded by the NCRPB. In addition creation of database is also required which needs to be regularly updated which becomes very difficult to coordinate and monitor with the meagre technical staff available in NCPRB. Therefore, there is a need to strengthen NCRPB with qualified technical and non-technical staff, instead of depending on consultants or even SPV, specifically when the geographical area and population of NCR has almost doubled.

20.3 POLICY PROVISIONS

20.3.1 General Arrangements for Implementation of Regional Plan-2041 for NCR

20.3.1.1 Implementation of the policies and proposals slated in the Regional Plan will be delivered primarily by Central/State departments and local authorities working in close partnership, under the overall coordination with Govt. of India and concerned State & Local Governments. Inter-departmental as well as inter-State coordination and support of concerned implementing departments and agencies will be the key factor for achieving the overall objective of the Regional Plan.

A. IMPLEMENTATION STRATEGIES

20.3.2 Macro Level- Implementation Strategies

20.3.2.1 NCRPB Act, 1985 stipulates provisions for implementation of the Sub-Regional Plan by the NCR participating States and NCR Planning Board is to co-ordinate the enforcement & implementation of the Regional Plan, Functional Plans, Sub-Regional Plans, Master/Development Plans and Project Plans through the participating States and NCT Delhi. Regional Plan for NCR shall be considered as agglomeration strategy for the region, focusing on improving the level of infrastructure & services and responsibility of the respective state governments, their municipal and other parastatal bodies shall be to work out the detailed strategies for achieving the Regional Plan objectives for each sector. Since the Regional Plan -2041 policies and proposals are to be implemented through the Sub-Regional Plans, Master/Development Plans and Project Plans it has to be ensured by the NCR participating States that all these Plans are prepared and finalized in a time bound manner.

- 20.3.2.2 As per Section 27 of NCRPB Act, it has an overriding effect and the provisions of the act have effect notwithstanding anything inconsistent herewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this act; or in any decree or order of any court, tribunal or other authority. Hence, NCR States should ensure that all related State legislations applicable on parts under NCR are in line with the NCRPB Act, 1985, through amendments, as may be necessary. Further, where amendments are required in Central laws, such amendments may be initiated by the States as per due process.
- 20.3.2.3 The Regional Plan polices & proposals, be further elaborated by the NCR participating States and their details be provided in the respective Sub-Regional Plans. This is to be further detailed out in District Development Plans, Master/ Development Plans, Gram Panchayat Development Plans and Village Development Plans, etc. to address local planning and development requirements of districts, cities/towns and rural areas by the respective governments, in conformity with the Regional Plan and respective Sub-Regional Plan. The SRPs shall be reviewed and revised as necessary every five years and appropriate steps shall be initiated in advance, accordingly.
- 20.3.2.4 Draft Sub-regional Plans- 2041 for NCR Sub-regions shall have to be submitted to the NCRPB by the NCR participating States within six months from the date of notification of the final Regional Plan 2041. The Sub-regional Plan 2041 maps shall be at the scale of at least 1:10000. These SRPs should provide detailed Action Plan and details regarding attempts being made to achieve SDGs. The SRPs shall be reviewed and revised every five years in line with the Regional Plan and appropriate steps shall be initiated in advance, accordingly.
- 20.3.2.5 It emerged during RP review that the matter of examination of Master/Development Plans of Controlled/Development /Regulated Areas at NCRPB level needed clarity. Hence, it is suggested that all Draft Master//Development Plans, in keeping with the spirit of Section 29(1) of NCRPB Act,1985 will have to necessarily be sent to NCRPB for its comments and finally "No Objection Certificate" (NOC) before being published for public objections & suggestions and again, for similar action, before their final notification. All Master / Development Plans be prepared for the perspective year 2041 in conformity with the perspective year 2041 of the Regional Plan and Sub-regional Plans. All Master / Development plans in the Sub-regions shall be notified within one year from the date of the final notification of Regional Plan 2041, or within 06 months from the date of the notification of their final Sub-regional Plans 2041, whichever is earlier. All Master Plans / Development Plans be GIS based and at a scale of 1:4000 as per AMRUT Guidelines. Board may authorize the statutory Planning Committee to examine the Master/Development Plans and

put up its views regarding NOCs to the Board for Metropolitan centers and Regional centres and may also authorize the Planning Committee to issue NOC with regards to other Master/Development Plans of NCR after due examination.

- 20.3.2.6 Existing Master/Development Plans be examined, reviewed and revised to bring them in sync with the Regional Plan 2041 and necessary action in this regard be taken in six months and sent to NCRPB for observations and necessary NOC in nine months from the date of notification of final Regional Plan 2041, for which the matter will be taken up in Planning Committee. Each city/town of NCR shall prepare its Master/Development Plan based on spatio economic aspects within the overall framework of the Regional Plan 2041/respective SRP 2041. The elements of Master/ Development Plans may include transport, water, waste management, power, health, education, economy, tourism & heritage, irrigation, social infrastructure (including old age homes and sports), skilling, landuse in sync with Sub-regional Plan which itself shall be in sync with Regional Plan. Master/ Development Plan shall detail out the elements of the SRP/RP and focus should also be on Citizen Centric Services through tele-medicine, e-learning, e-skilling, Citizen Service Centers (CSC) etc. to act as hubs to provide such services.
- 20.3.2.7 Each District shall prepare its District Development Plans based on Spatioeconomic aspects within the overall framework of the Regional Plan 2041 and respective Sub-Regional Plan 2041. The elements of District Development Plan may include transport, water, waste management, power, health, education, economy, tourism & heritage, irrigation, social infrastructure (including old age homes and sports), skilling, landuse in sync with Sub-regional Plan which itself shall be in sync with Regional Plan. District Development Plan shall detail out the elements of the SRP and focus should also be on Citizen Centric Services through tele-medicine, e-learning, e-skilling, Citizen Service Centers (CSC) etc. to act as hubs to provide such services. The District Development Plans be finalized within six months from the date of notification of the final Sub-regional Plan, or within one year of notification of the final Regional Plan 2041, whichever is earlier.
- 20.3.2.8 It is to be ensured by the NCR participating States and its implementing agencies/ authorities that no development be undertaken in their respective Sub-region which are in contradiction with the published Regional Plan 2041 and concerned Sub-Regional Plan 2041.
- 20.3.2.9 Every village to have at least two water bodies (one for drinking and second for other uses as far as possible). Sufficient area for water recharge, village deity/sacred forests recognized by community at large be clearly demarcated and conserved. Alongside, spaces for ceremonies, play grounds, festival & fairs and last rites, etc, be identified and demarcated at the Village, Block, Tehsil and District level. Efforts be made for creation of iconic places as per local sentiments at each settlement level.
- 20.3.2.10 Under current planning practices, land is 'notified/ reserved' for development as per Plan, whereas the land use planning, development and change is also being practiced at State level, through Development Control Regulations (DCR), therefore, this gap between planning and implementation shall be bridged.

- 20.3.2.11 Functional Plans for perspective year 2041 shall be prepared and finalized on priority for the selected elements /sectors of RP -2041 including but not limited to Transport for NCR (with a micro level plan for Central NCR); Water; Drainage; Sewage and Comprehensive Waste Management; Housing, Health, Tourism, MSME, Skill Development; Redevelopment (of older areas including Slum redevelopment). The Functional Plans to be finalized within one year and studies be commissioned for preparation of Functional Plans immediately after the notification of final RP -2041, if not earlier.
- 20.3.2.12 The performance indicators with respect to the urban services and other infrastructure should be institutionalized so that the monitoring of the projects is benchmarked against these indicators. Participatory processes should be such that there is buy-in from all stakeholders is enhanced. Greater efforts are required to increase awareness about the Regional Plan.
- 20.3.2.13 The concerned Central Ministries/Departments should formulate appropriate strategies and implement the policies, proposals and projects of Regional Plan 2041, for the development of NCR.
- 20.3.2.14 Participating State Governments should proactively coordinate and cooperate among themselves on the basis of mutual respect, and jointly formulate inter-state projects and pursue specific plans/projects in areas including innovation and technology, infrastructure, development of industries, and ecological and environmental conservation/ protection. An NCR Common Economic Zone (CEZ) has also been envisioned to boost the economic growth and encourage income generating employments by leveraging the opportunities and synergies of the NCR sub regions. This has the potential to further increase the economic strength of this region which has the country's highest GDP and to catalyze to play a significant role in achieving the national goal of reaching USD 5 Trillion economy by 2025. A Common Economic Zone coupled with common NCR wide online, time bound single window clearance platform for all economic activities, building permissions, land arrangements etc. across the NCR sub regions can be a game changer and enable NCR and northern India to leap frog into the top five Global economic regions within next five to ten years. Hence, it is strongly recommended to establish such a CEZ with a NCR wide Nivesh Mitra Platform.
- 20.3.2.15 As a facilitative step and also as an incentive to motivate the private sector entrepreneurs to be involved in the development programmes in the NCR. It would be necessary for the public sector to take the lead in the implementation of at least certain preliminary stages of regional infrastructure, like road and rail network, assembling land for expressways, social infrastructure of higher educational and medical institutions, shelter, and provide essential support facilities like R&D and policy regulations. this would possibly help the private sector to step in and establish economic infrastructure for industrial, trading and commercial activities and handle the construction, operation and management segments of various infrastructure components. Efficient, effective and structured utilization of fund under Corporate Social Responsibility (CSR) need to be looked into for NCR, at both central and state level.

- 20.3.2.16 Though normally it would be expected that the projects envisaged to be funded through private sector are remunerative enough and capable of generating sufficient re-investable surpluses, it may be possible that a few components of projects may not give sufficient returns on their own to become commercially viable. Such project components with comparatively lower FIRR's may have to be clubbed together with other project components which may have higher rate of returns so that the composite profits of the two could make the whole project viable. As an example, the expressways proposed to be taken up through the private sector on BOT basis with TOD benefits in the NCR to make it yield handsome returns and for improving their FIRR's. To maintain the desired landuse (in pockets where low rise, low density or conservation or preservation is desired) the land owners be given saleable FAR/ Development Rights so that the land owners are not at loss economically, due to the policy of maintaining the prescribed landuse and density. Immediate steps, therefore are, required for:
 - Establishing single window system for processing official clearances for development projects and enable online clearances/NOCs
 - Adopting independent regulatory mechanisms
 - Setting up machinery for quick redressal of grievances of targeted beneficiaries (consumers) of various project components

NCRPB Staffing & Manpower

20.3.2.17 As the geographical area and population has almost doubled there is a need to strengthen NCRPB with adequate staff both technical and non-technical. In addition there is a need to strengthen Project Monitoring Cell at NCRPB for efficient monitoring of projects being implemented in NCR under its financial assistance. The implementation of Regional Plan requires a multi-disciplinary approach, which involves tremendous amount of coordination and monitoring (04 State Govts. more than 350 Departments/agencies/Authorities) not only of the policies and proposals of the Regional Plan but also for the monitoring of the projects funded by the NCRPB. Since the total area of the National Capital Region has now increased to 55,083 sq. kms. from earlier size of 30,242 sq kms. as in RP 2001, creation of adequate database which needs to be regularly updated as well, becomes a herculean task, thereby it has become very difficult to coordinate and monitor with the meagre technical staff available in the Board's Secretariat.

At present, NCRPB is functioning with skeletal staff about 40 persons, including only 7 technical/ planning staff. Since the role of the NCRPB is well defined, and it has potential to contribute much more to the development in NCR, the NCRPB secretariat needs to be substantially strengthened its Planning (technical), Finance and Administration and Project Wings. Hence, as was proposed in RP-2021, it is again proposed to have one Chief Regional Planner, one Additional Chief Regional Planner, four Joint Directors (Technical), eight Deputy Directors (Technical), sixteen Assistant Directors (Technical), four GIS skilled Planning Assistants and two GIS skilled Draughtsman (Grade-III)/Technical Assistants. Based on the strengthening of the technical staff, the requirement of support staff in finance and administration wings will have to be strengthened adequately. Details of sanctioned strength, on rolls and proposed total strength of NCRPB Secretariat have been given in **Annexure P20.1**. NCRPB strengthening is a must and staff structure needs to be pyramidal with more Planners, Sector Experts, and Planning Assistant and Technical Assistants staff, GIS Experts. 20.3.2.18 Besides, restructuring and strengthening of the NCR Planning and Monitoring Cells, which are under the administrative control of the respective NCR participating states at the Sub-regional level, their functioning should be ensured in a manner that facilitates single line command and control, based on merit consideration.

Monitoring and Coordination

- 20.3.2.19 With its limited powers and jurisdiction, the NCRPB cannot take up the task of comprehensive management of implementation of the Regional Plan. It, therefore, requires the support not only from the Ministry of Housing and Urban Affairs but also from other concerned Central Ministries/Departments, Niti Aayog and constituent State Governments, their local bodies etc. who are having power under their own jurisdiction.
- 20.3.2.20 In order to have an effective monitoring at the State level, it is suggested that Secretary, Urban Development and In-charge of the NCR Planning and Monitoring Cell be delegated the power to coordinate with all the Departments / agencies at the State level for implementation of the Policies, proposals and Plans and projects as proposed in the Regional Plan-2041.

Central Level

- 20.3.2.21 NCR Planning Board is the Highest-level decision making authority for NCR at Central level wherein Chief Ministries of the NCR States and concerned Union Ministers are the Members. The meeting of the Board shall be held at least once in 06 months.
- 20.3.2.22 Empowered Committee (EC) under the Chairpersonship of Secretary, Ministry of Housing & Urban Affairs is also constituted to resolve various inter-state issues in consultation with the Chief Secretaries of the NCR participating States. The scope of the EC may be expanded to include formulation and monitoring implementation of inter-State projects and such other aspects. Meetings of the Empowered Committee shall take place once in 06 months, so that implementation of the Regional Projects be monitored and their timely completion be ensured.
- 20.3.2.23 On similar lines, a Committee could be constituted at the level of Lieutenant Governor, Delhi, and Chief Secretaries of NCR states, to concentrate and monitor issues and remedial measures specifically related to Delhi and NCR, which may include water, Yamuna rejuvenation, transport etc. Alternatively, constitution of Empowered Committee could be reviewed and revised so that its role is utilized for NCR betterment in a more effective manner.
- 20.3.2.24 Planning Committee (PC) is a statutory committee constituted to assist the NCR Planning Board, as per Section (4) of the NCRPB Act, 1985 under the Chairpersonship of Member Secretary of the Board. The functions of the Planning Committee are stipulated under Section (9) of the said NCRPB Act.1985 Meetings of the Planning Committee shall be convened regularly in every quarter to effectively discharge its functions.

- 20.3.2.25 At NCRPB level Committees shall be constituted on the lines of Committee of Transport Secretaries/Commissioners for other important sectors such as Health, Heritage & Tourism, Water, Skill, IT, Railways & Aviation, Economic growth, Housing & Habitat, and others which may be felt to be taken on priority from time to time. Similar committee can also be constituted to monitor the approvals and implementation of important infrastructure projects across different sectors as outlined in Regional Plan 2041 etc.
- 20.3.2.26 A suitable mechanism may be developed for regular Monitoring and Reporting of the status of implementation of various policies and proposals of RP 2041 to the NCRPB by the NCR participating States and concerned Central Govt. Departments/agencies. A System of submission of monthly reports of Regional Plan implementation status to Chairman, NCRPB, shall be initiated. All implementing agencies shall accordingly have to ensure the implementation of the Regional Plan and enable to offer quality of life & ease of doing business to the people of urban and rural at same levels.
- 20.3.2.27 The polices and proposals of RP 2041 pertaining to Central Ministries/ Departments/ Agencies like Railways, MoRTH, power, Environment etc has to be implemented by the respective Departments and a suitable arrangements like designation of Nodal Officer in each Ministry and Departments and concerned liaison with NCRPB to provide inputs and monitor secretariat could implementation of policies/proposals RP 2041. Hence, for effective monitoring and reporting of the status of implementation of the policies and proposals of RP 2041 pertaining to central Sectors a Senior Officer in each concerned Ministry /Department/Agency may be designated as Nodal Officer. The Nodal Officer may be the special invitee to the Planning Committee of the Board like State Nodal Officers, who will provide both inputs for planning and also provide regular update/report the status of implementation of policies/proposals and projects being executed in NCR to NCRPB.

State Level

- 20.3.2.28 At each NCR sub-region level, State Level Steering Committees (SLSCs) are constituted for effective implementation of the Regional Plan and monitoring under the Chairpersonship of Chief Secretaries of the respective NCR participating State wherein all concerned agencies/ departments/ authorizes shall be the members. The Steering Committees in all participating states shall ensure their regular meetings at least thrice a year and video –participation of members should be encouraged. The SLSCs to co-ordinate the enforcement & implementation of the Regional Plan, Functional Plans, Sub-Regional Plans and Project Plans and Master/development Plans and such other Plans in their respective sub-region and keep updating NCRPB on regular basis. The SLSCs members may include all concerned Principal Secretaries and officers related to Regional Plan elements and SLSCs may accordingly be re-constituted within three months from the date of Notification of final Regional Plan 2041. Responsibility for the same be that of the Nodal Officers in each sub-region.
- 20.3.2.29 SLSCs should ensure that State Laws / bye-laws for their respective Sub-region are in tune with Regional Plan 2041 requirements and perceived goals.

- 20.3.2.30 Divisional Commissioners and District Collectors/ District Magistrates shall be responsible for enforcement & implementation Regional Plan, Functional Plans, Sub-Regional Plans and Project Plans in their respective districts. District Planning Committee (DPCs) shall be constituted as per the provisions of Articles 243ZD of the Constitution of India and District Development Plan for each district in NCR be prepared in a time bound manner, possibly within 09 months from the date of notification of final RP 2041 and 3 months of final notification of SRP, whichever is earlier. DPCs should regularly update the SLSCs regarding enforcement & implementation of the Regional Plan, Functional Plans, Sub-Regional Plans, Project Plans, etc. and compliance of directions of the Board, as issued from time to time. Coordination between various agencies in the district should be improved for better enforcement and implementation of the said Plans.
- 20.3.2.31 For each Metropolitan Area in the sub-regions, **Metropolitan Planning Committee** (MPC) shall be constituted as provisions of Articles 243ZE of the Constitution of India. MPC shall ensure its functions relating to planning and coordination for the Metropolitan area and requisite Development Plan shall be prepared with regard to the plans prepared by the Municipalities and the Panchayats in their respective Metropolitan area.
- 20.3.2.32 Rural Cluster shall be identified/ established at the level of Zila Panchayats (ZPs) for integrated & coordinated rural development and resource allocation.
- 20.3.2.33 Project Sanctioning & Monitoring Groups (PSMG) of the Board have been constituted to identify individual projects against schemes approved by the Board for funding by the Board, to release installments for the same and for carrying out a constant review of the progress of the projects.
- 20.3.2.34 E-governance be introduced in the designing/ preparation, implementation and monitoring of various Plan i.e. Regional Plan/ Sub-Regional Plans/ Functional Plans/ Project Plans, of the region. All building permissions /clearances should be online right from the Gram Panchayat / Zila Panchayat to Master Plans/District Development Plans, etc. along with other departments/ bodies etc.
- 20.3.2.35 An efficient Management System for speedy implementation of the Plan proposals and for proper monitoring of the projects shall be established in order to implement the policies and strategies, at NCRPB level and also at the State level. The Secretary, Urban Development at State Government level and in-charge of the NCR Cell are vested with the responsibility to coordinate among all the agencies at the State level for implementing the schemes as proposed in the Regional Plan.
- 20.3.2.36 As also mentioned in earlier Regional Plans it is reiterated that active participation and collaboration of all Central Ministries and the participating States is necessary to recognize the Regional Plan-2041 as a shared initiative and to implement its policies, projects and proposals through their physical and financial effort, reflecting these in their respective Annual Plans and work programmes.
- 20.3.2.37 A broad framework of reporting the performance and changes in the region is proposed. Indicative Performance Monitoring Parameters are given at **Annexure P20.-1.2** which shall be developed into measurable outcomes by NCR participating states in their SRPs and Master/Development Plans and District Development Plans.

20.3.3 Micro Level- Implementation Strategies

- 20.3.3.1 Governance and monitoring of plans should be ensured to achieve the desired results. Constant and agile monitoring would ensure smooth implementation.
- 20.3.3.2 Create transparency Live reporting of real-time information will allow for an unprecedented level of transparency. Use of emerging technologies, ITs, ICT, 5G, digital payment modes, etc. should be effectively utilised to facilitate the people and towards achieving 'ease of living' throughout the region. NCR participating States should adopt necessary digital initiatives. Various technological options should be leveraged to implement multitude of activities.
- 20.3.3.3 Following inter-regional anchoring actions can be considered to strengthen the economic base of NCR:
 - a) Cross regional policies/plans for interstate economic convergence
 - b) Plan for Common Economic Zone(Fiscal and Legal Framework)
 - c) Integrated Logistics Action Plan for NCR
 - d) Corridor Development /Expressway Follow up
 - e) NCR MSME Facilitation Council-Right to Business Act
 - f) NCR Local Government Forum
 - g) Special/Sub-component Plan for Economic Development
 - h) Investment, interest subvention, retail centres, e-commerce plate-form, VGF
 - i) Farmers/Producers/APMC/Marketing issue resolutions using ENAM
 - j) State Logistic Plan using Wholesale Market Policy of MoC
 - k) Right to Business Act -Ease Regulatory Business Compliance

B. RESOURCE MOBILIZATION

20.3.4 Macro Level – Resource Mobilisation

- 20.3.4.1 A comprehensive view of the fund available from all the sources is required to be taken so as to integrate development activities undertaken by various agencies. Without a mechanism of dedicated fund, it would not be feasible to effectively undertake various activities envisaged in the Regional Plan 2041. This can be achieved to a considerable extent through a 'Special NCR Plan'. The requisite fund allocations specific to NCR under various heads by concerned departments and agencies at Centre and NCR state levels, especially for elements referred /mentioned in RP -2041, could be separately collated under NCR head for better monitoring and efficient utilization of funds allocated for the development of the Region.
- 20.3.4.2 Private Sector, exclusively and jointly with the Central and State agencies, shall have to be involved and encouraged for efficient delivery of variety of infrastructure and services including land development, industries & wholesale trade, social infrastructure, local & trunk services, housing, construction of expressways, mass transport system, power generation, power transmission & distribution, telecom services, so that the Private Sector be invited to participate in the effective implementation of Regional Plan. CSR activities may also be encouraged.
- 20.3.4.3 Non financial instruments like FAR, TDR etc. be used imaginatively and effectively to undertake urban redevelopment and conservation of natural and manmade heritage.
- 20.3.4.4 Some of the methods through which land could be used as a viable resource for

financing various development programmes in the region as also suggested earlier, could include :

- a) Creation of land banks by the public agencies for utilization for future requirements
- b) Land pooling
- c) Permitting the private sector to develop the land and recovering a part of the value added on account of such permitted development
- d) Permitting commercial use of precious land by the private sector and deriving returns in the form of social housing/development for the occupants of that land
- e) Recycling of land for facilitating the shifting/relocation of industries units, markets etc. located thereon.
- 20.3.4.5 A single taxation regime for all kinds of vehicles in NCR is recommended. This tax should be levied digitally at NCR entry points and the proceeds could be shared proportionately by NCR states.
- 20.3.4.6 It is imperative that more innovative mechanism of resource generation are explored in addition to normal budgetary support and IEBR (Internal and Extra Budgetary Resources), so that the envisaged development programmes could be implemented within a reasonable time-frame.
- 20.3.4.7 Market based funds through accessing the capital market and the involvement of the private sector by making the projects commercially viable should be resorted in the financing of urban infrastructure in the NCR.
- 20.3.4.8 Amongst the non-tax sources, the User Charges happens to be the most important mechanism of cost recovery, however, in actual practice the municipal governments are not recovering even the maintenance cost, besides Urban Local Bodies do not levy user charges, therefore, they may be impressed to recover at least the operations and maintenance costs.
- 20.3.4.9 Govt. of India should consider leveraging the funds to NCRPB from the various Schemes/Missions launched by various Ministries for urban and rural areas like Smart Cities, AMRUT, Swachh Bharat Mission, HRIDAY, Urban Transport, Prandhan Mantri Awas Yojana, Deendayal Antyodaya Yojana National Urban Livelihoods Mission, Gram Swaraj Abhiyan, PMAY-G, RURBAN (NRuM), Swachh Gram, etc.
- 20.3.4.10 Access to infrastructure and private finance cannot be sustained on a piecemeal, case to case basis. Internationally, it is being increasingly recognized that the sustainability of infrastructure development is ultimately determined by the overall management and creditworthiness of urban centers. International experience also suggests that the success of Central and State fiscal transfers into the urban and rural sector is dependent on the efficiency of settlements themselves. Reforms in institutional, fiscal and economic systems of settlements will be necessary to achieve the management efficiency and credit-worthiness that will sustain a long-term programme of infrastructure investments. Accordingly, options like municipal bonds should be used to raise funds.

20.3.5 Micro Level – Resource Mobilisation

- 20.3.5.1 For timely project completion incentives could be considered in and urban and rural PMAY projects being and to be implemented in NCR in public good will & welfare.
- 20.3.5.2 There is mismatch between functions and finances of ULBs. Efforts be made to increase funding of ULB and improve revenue resources generation capabilities of ULBs. Alongside, regular skill upgradation of ULBs manpower be ensured. In this

regard following actions, but not limited to, are proposed:

- a. Annual Plan for skill upgrading of ULBs shall be prepared for each district in NCR
- b. Zone Survey for tax base enhancement shall be undertaken every two years by the ULBs
- c. In NCR, funds should be directly transferred to ULBs like being done to Gram Panchayats.
- 20.3.5.3 Inter-state Fiscal Policy can be streamlined based on the following:
 - a. Cognizance of NCR as special entity
 - b. State and Local Taxation policy frame work review
 - c. Removal of uneconomic fee and toll
 - d. Improving Resource Imbalance-Local finance /SFC
- 20.3.5.4 Local skill and local brand of each of the districts of NCR as applicable, needs to be supported, highlighted promoted and benefitted from. The suggested Citizen/ Migration Facilitation Centers, shall have to play key role in collecting, analyzing skill set data and guide the population of the area for skills that have potential, the related skilling and upgradation centres and act as key facilitators for skilled manpower for development activities in the region.

C. BROAD ROLE OF NCR PARTICIPATING STATE GOVERNMENTS/NCR PLANNING AND MONITORING CELL

- 20.3.6 Role of NCR participating State Governments/NCR Planning and Monitoring Cell are currently as follows and shall be reviewed and revised periodically, as necessary. :
- i) Preparation of Sub-regional Plan-2041 and Master/Development Plans and support/ensure/coordinate District Administration and Gram Panchayats for preparation of District Development Plans and Gram Panchayat Development Plan (GPDP).
- ii) Ensure preparation of Master Plans for Water, Sewerage, drainage and Comprehensive Waste Management Plans and for all the towns in the Sub-regions.
- iii) Project Planning and Monitoring of NCRPB funded Projects.
- iv) Ensure implementation of policies related to development of identified economic corridors and local brand power
- v) Ensure implementation of Regional Plan-2041 policies & proposals, Sub-regional Plan and other Plans prepared as per the provisions of Regional Plan-2041.
- vi) Creation of Database and Management Information System (MIS) at Sub-regional Level.
- vii) Creation of Policy and Planning Group and ensure senior level State participation in all committees and discussions of NCRPB.

State Departments and Agencies Level:

The role of State Departments and other implementing agencies will be:

- i). To get the District Development Plans prepared in consonance with the Regional Plan-2041 and the Sub-regional Plan 2041 and in accordance to the 73rd and 74th Constitutional Amendments.
- ii). To ensure preparation of Master Plans for all towns for the perspective of 2041.
- iii). To Prepare Master Plans for water supply, sewerage and Comprehensive Waste Management at town level.
- To prepare SRPs, DP, Master/Development plans for the sub region of NCR as per the policies and proposals outlined for various sectors in different chapters of Regional Plan 2041.

- v). To ensure preparation of Projects and proposals, helping in implementation of Regional Plan-2041 as well as Sub-regional Plans, Master Plans and GPDPs.
- vi). To ensure implementation of the provisions of RP-2041.

Central Ministries/ Departments/Agencies Level

The role of the Central Government will be more of a supportive nature by providing adequate resources of all kinds at all levels. The concerned Ministries/Departments/Agencies e.g. MoHUA, MoRTH/NHAI, Railways, Civil Aviation, , Power, Agriculture, Industry, Commerce Rural Development etc. will be major partners for ensuring implementation of the policies, proposals and projects proposed in the Regional plan 2041. They will also designate Nodal Officer for NCRPB and provide inputs for detail planning and also provide status of implementation of the RP-2041 policies and proposals/projects in NCR.

Glossary of Terms & Definitions

Chapter-2- Demography

- 1. **Natural increase** of urban populations results from an excess of births over deaths in urban areas.
- 2. **Migration** to cities from rural areas or from abroad contributes to urban growth whenever the number of in-migrants exceeds the number of out-migrants. Migrants are often younger, on average, compared to the populations living in areas of origin or destination.
- 3. **Reclassification** contributes to urban growth by enlarging the size of urban areas. When cities grow in area, they incorporate neighbouring settlements and their populations, which were formerly classified as rural. Population growth in rural areas may result in reclassification of settlements from rural to urban, thus accelerating the pace of urbanization.
- 4. Definitions of TOWN as given in the Census of India 2011 is as follows;

1. All places with a municipality, corporation, cantonment board or notified town area committee, etc.

- 2. All other places which satisfied the following criteria:
- i) A minimum population of 5,000;

ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and

iii) A density of population of at least 400 persons per sq. km.

The first category of urban units is known as Statutory Towns. These towns are notified under law by the concerned State/UT Government and have local bodies like municipal corporations, municipalities, municipal committees, etc., irrespective of their demographic characteristics as reckoned on 31st December 2009.

The second category of Towns (as in item 2 above) is known as Census Town.

5. **Regiopolis** is a city outside the core of a metropolitan area that serves as an independent driving force for development within a larger region. The concept is used to develop midsized urban regions within regional, national and global contexts.

Chapter 3: Economic Growth & Income Generation

- 1. **Labour Force** refers to the number of persons actually working or willing to work. However, workforce refers to the number of persons actually working. Thus, workforce does not account for those who are willing to work. The difference between labour force and workforce is the total number of unemployed persons.
- 2. **Workforce** does not take into account the wage rates. On the other hand, labour supply refers to supply of labour corresponding to different wage rates.

Number of Persons unemployed = Labour Force – Workforce

- 3. Labour force participation rate (LFPR) is calculated as the labour force divided by the total working-age population. The working age population refers to people aged 15 to 64. This indicator is broken down by age group and it is measured as a percentage of each age group.¹. LFPR is defined as the number of persons in the labour force per 1000 persons. For example, if population is 1000, and there are 400 people actually working while 300 people willing to work; then, LBPR would be 700. LBPR can also be shown in percentage, whereby the above figure would become 70%.
- 4. Worker Population Ratio (WPR) Worker Population Ratio (WPR) is defined as the number of persons employed per 1000 persons.
- 5. Strategic Industrial Locations $(SILs)^2$ can be designated as a spatial development strategy setting out an economic, environmental, transport and social framework for the development. SILs provides a sufficient number of quality sites, in appropriate locations, to needs industrial and related sectors, such meet the of as logistics, waste management and environmental industries, utilities, wholesale markets, and so on. SIL can be of two types: (a) Preferred Industrial Locations (PILs), which are particularly suitable for industrial. light industrial, waste management, and on general so and (b) Industrial Business Parks (IBPs), which are particularly suitable for research and development and other activities that require a better-quality environment. As per London Plan most SILs are more than 20 hectares in size, although some smaller areas of around 10 hectares can be of strategic importance where there is pressure on industrial land. Generally, SILs are located close to strategic transport infrastructure such as roads, rail, rivers, canals and safeguarded wharf.
- 6. **Industrial Estate³** industrial estate is defined as, a planned clustering of industrial enterprises, offering developed sites, pre-built factory accommodation and provision of services and facilities to the occupants. It can also be referred as a planned clustering of industrial enterprises offering standard factory buildings erected in advance of demand and a variety of services and facilities to the occupants
- 7. **Industrial Parks**⁴ can be referred as "self contained island providing high-quality infrastructural facilities. Integrated industrial parks offer industrial, residential, and commercial areas with developed plots/ pre-built factories, power, telecom, water and other social infrastructure".
- 8. Logistics is defined as the broad range of activities concerned with effective and efficient

¹OECD (2020), Labour force participation rate (indicator). doi: 10.1787/8a801325-en (Accessed on 08 July 2020) <u>https://data.oecd.org/emp/labour-force-participation-rate.htm</u>

² <u>https://www.designingbuildings.co.uk/wiki/Strategic_industrial_locations_(SILs)</u>

³ <u>https://shodhganga.inflibnet.ac.in/bitstream/10603/20029/9/09_chapter%203.pdf</u>

⁴ <u>http://www.gidb.org/industrial-parks-introduction</u>

movement of semi-finished or finished product from one business to another or from manufacturer/distributor/retailer to the end consumer. It relates to freight transportation, warehousing material handling, protective packaging inventory control, order processing, and marketing, forecasting and other value added services.

- 9. **Multi-Modal Logistics Parks**⁵ (MMLP) is the refined form of Logistics Park where various value added services are rendered in addition to rail/road based transportation. It is now-a-days a globally identified supply management and known by different names in different countries.
- 10. **Incubator** can be defined as a process of nurturing early stage startups by providing them infrastructural, management and networking support through incubation centres. Business incubation centres provide support to startup companies in terms of Consultation, Business Plan assistance, growth acceleration, product prototyping, office space, infrastructure, mentorship and seed funding.
- 11. **Co-building industrial parks**⁶ refer to **Incubation** through high tech parks, universities and research institutes started to build incubators in part of the region which is followed by **Duplication** through High-Tech Park, with successful experience and ample resources, take a copy-paste approach to create new parks. Production is further extended through **Enclaves** wherein one area/ city based companies moves to other area/ cities and enjoy the same policy treatment as counterparts incorporated in main city in terms of development support funding, and preferential treatment regarding regulations, etc.
- 12. **"Electronic business (e-business)"** describes efforts a company makes to expand business operations on the Internet. It is an overarching term, refers to any method of utilizing digital information and communication technologies to support or streamline business processes from preparation to implementation.
- 13. "e-commerce" refers to trading products and services online, and so is strictly only speaking of one aspect of e-business.
- 14. **Smart Tourist Destination Sites-** The idea of smart tourism destination is derived from the concept of smart city, where smartness is incorporated in mobility, living, people, governance, economy, and environment (Giffinger et al., 2007).

'Smart tourism destination' can be defined as an innovative tourism destination built on an infrastructure of the state-of-the-art technology, which guarantees the sustainable development of tourist areas, facilitates the visitor's interaction with and integration into his or her surroundings, increases the quality of the experience at the destination, and improves residents' quality of life (Avila, 2015). In a smart destination, government should function as smart hubs that coordinates all relevant information and makes it easily accessible for users to access them in real-time. By digitalisation of core business processes, precise market targeting, service provision, and proactiveness, it cocreates a tourism experience (Hedlund, 2012). It should be the centre of excellence, as well as innovation leader in tourism. The role of local government is to support open data, regulate data privacy and support public private partnership (Buhalis & Amaranggana, 2015; Hedlund, 2012). Smart tourism destinations more emphasizes on the enhancement of tourists' experiences rather than its residents.

Chapter-5 – Power & Energy

⁵ <u>http://www.gidb.org/industrial-park-multi-modal-logistics-park</u>

⁶ As in case of Beijing, China

Perform Achieve and Trade (PAT) scheme is a flagship progamme of Bureau of Energy Efficiency under the National Mission for Enhanced Energy Efficiency (NMEEE). NMEEE is one of the eight national missions under the National Action Plan on Climate Change (NAPCC) launched by the Government of India in the year 2008.

Balancing power is used to quickly restore the supply-demand balance in power systems. Balancing power is used to quickly restore the supply-demand balance in power systems. The need for this tends to be increased by the use of variable renewable energy sources (VRE) such as wind and solar power.

Peaking power plants, also known as peaker plants, and occasionally just "peakers", are power plants that generally run only when there is a high demand, known as peak demand, for electricity

A synchronous condenser or a synchronous compensator is a synchronous motor running without a mechanical load. It can generate or absorb reactive volt-ampere (VAr) by varying the excitation of its field winding. It can be made to take a leading current with over-excitation of its field winding.

Chapter – 6 – Water & Drainage

Water supply in most Indian cities refers to the layout of infrastructure, i.e. piped water supply lines, drainage lines, sewage lines and sewage treatment plants (STPs).

Drainage system is a network of channels, hydraulic control structures or levees that drain land and protect it from potential flooding. They can be man-made or natural. Importantly, they also provide the benefit of harvesting rainfall, allowing water to easily percolate into the aquifers. A drainage system refers to the network of channels, drains, hydraulic control structures, levees, and pumping mechanisms that drain land or protect it from potential flooding.⁷

Green Stormwater Infrastructure (GSI) is a nature-based solution to water quality issues that urban stormwater runoff causes and provides greater benefits than conventional (or "Gray") stormwater solutions. GSI combines economic and environmental sustainability, adaptability, resiliency, and social equity. GSI is defined as soil-water-plant systems that intercept stormwater, infiltrate a portion of it into the ground, evaporate a portion of it into the air, and in some cases release a portion of it slowly back into the sewer system. In addition to better stormwater management practices and improved water quality, GSI provides benefits such as beautified communities, improved public health, creation of ecological habitat, and enhanced local economic vitality.

Unaccounted for water (UfW) represents the difference between "net production" (the volume of water delivered into a network) and "consumption" (the volume of water that can be accounted for by legitimate consumption, whether metered or not).water delivered into a network and billed authorized consumption.

⁷ <u>https://www.news18.com/news/india/what-is-a-drainage-system-and-why-are-drains-vital-to-recharging-groundwater-in-urban-areas-2244789.html</u>

Conservation pricing involves finding the best water rate structure for water utility that reduces consumer demand, is fair and equitable for all users and recovers the costs of water service maintenance, delivery, and infrastructure replacement.

Chapter-7- Sanitation & Waste Management

1. Sanitation refers to the provision of facilities and services for the safe management of human excreta from the toilet to containment and storage and treatment onsite or conveyance, treatment and eventual safe end use or disposal. More broadly sanitation also included the safe

management of solid waste and animal waste as per World Health Organization (WHO)^{8.}.

2. Solid Waste Management may be defined as the discipline associated with the control of generation, collection, storage, transfer and transport, processing and disposal of solid wastes. It is comparatively much easier to maintain solid wastes in rural areas than in urban areas.

3. Decentralized sanitation systems were defined to be limited to single or several households with a maximum capacity of up to 20 persons. The two decentralized sanitation systems selected were household pit latrine and household septic tank. It was assumed that pit latrines can be constructed and maintained by the users and are operated as a dry or pour flush system.

4. **Semi-centralized systems** are defined in various ways in the literature. They generally can be categorized by their number of connections of households, or by the outline of the sewer system relative to the central sewerage system. (e.g., settlements, villages, small towns and suburbs).

5. Centralized systems generally have a wide range and high number of people connected.

Chapter 14: Heritage and Tourism

1. Tourist Circuit

• Tourist Circuit is defined as a route having at least three major tourist destinations which are distinct and apart.

• Circuits should have well defined entry and exit points. A tourist who enters should get motivated to visit most of the places identified in the circuit.

• A Circuit could be confined to a State or could be a regional circuit covering more than one State/Union Territory. These circuits may have one dominant theme and other sub-themes.

• Projects under the scheme shall be under the following identified themes; Ecotourism, Wildlife, Buddhist, Desert, Spiritual, Ramayana, Krishna, Coastal, Northeast, Rural, Himalayan, Tribal and Heritage

2. Monuments⁹ - The Ancient Monuments and Archaeological Sites and Remains Act, 1958 defines an 'Ancient Monument ' as follows:-

Ancient Monument means any structure, erection or monument, or any tumulus or place of interment, or any cave, rock-sculpture, inscription or monolith which is of historical, archaeological or artistic interest and which has been in existence for not less than 100 years and includes—

⁸ <u>https://www.who.int/topics/sanitation/en/</u>

⁹ Source: The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010

- i. Remains of an ancient monument,
- ii. Site of an ancient monument,
- iii. Such portion of land adjoining the site of an ancient monument as may be required for fencing or covering in or otherwise preserving such monument, and
- iv. The means of access to, and convenient inspection of, an ancient monument;

"Archaeological site and remains" means any area which contains or is reasonably believed to contain ruins or relics of historical or archaeological importance which have been in existence for not less than one hundred years, and includes—

- Such portion of land adjoining the area as may be required for fencing or covering in or otherwise preserving it, and
- The means of access to, and convenient inspection of the area;
- 3. **HIBTED AND REGULATED AREAS**¹⁰ (Section 20 A and 20 B)- Every area, beginning at the limit of the protected area or the protected monument, as the case may be, and extending to a distance of one hundred meters in all directions shall be the prohibited area in respect of such protected area or protected monument.

Provided that the central Government may, on the recommendation of the Authority, by notification in the Official Gazette, specify an area more than one hundred meters to be the prohibited area having regard to the classification of any protected area.

- 4. **REGULATED AREA** Every area, beginning at the limit of prohibited area in respect of every ancient monument and archaeological sites and remains, declared as of National importance and extending to a distance of 200 meters in all directions shall be regulated area in respect of every ancient monuments and archaeological sites and remains.
- 5. **HERITAGE BYE-LAWS (Section 20 E(1) -** The competent authority, in consultation with the Indian National Trust for Arts and Cultural Heritage, being a trust registered under the Indian Trusts Acts, 1882, or such other expert heritage bodies as may be notified by the Central Government, shall prepare heritage bye-laws in respect of each protected monument and protected area.

The Heritage bye-laws include matters relating to heritage controls such as elevations, facades, drainage systems, roads and service infrastructure (including electric poles, water and sewer pipelines).

The Central Government shall, by rules specify the manner of preparation of detailed site plans in respect of each protected area or protected monument or prohibited area or regulated area, the time within which such heritage bye-laws shall be prepared and particulars to be included in each such Heritage bye-laws.

- 6. **Agritourism or agrotourism** normally occurs on farms. It gives travelers an opportunity to experience rural life, taste the local genuine food and get familiar with various farming tasks. This type of tourism is also referred to as farm stays in Italy. Some of the types of agritourism are direct market agritourism, experience and education agritourism, and event and recreation agritourism.
- 7. Alternative tourism, also known as specific interest tourism (SIT) involves travel that encourages interaction with local government, people and communities. Many travelers choose alternative tourism because they love nature and want to preserve it. Some of the approaches by alternative tourism involve ecotourism, adventure tourism, rural tourism,

¹⁰ Source: Archaeological Survey of India

sustainable tourism, solidarity tourism, etc.

Chapter-16 – Digital Infrastructure

- 1. **Digital Infrastructure** refers to one of the key enabling technologies for an interconnected and instrumented world which enables what we call 'Internet of Things' (IoT). Digital infrastructure typically consists of an ecosystem of connected devices exchanging information with each other. It includes:
 - a) Hardware components such as sensors, cameras, and microphones to extract and collect data by detecting movements, capturing images, etc
 - b) Semiconductors to analyses and process the information
 - c) Telecom network and information-exchange to connect one device with another, and further bind them to a cloud based network.
 - d) Software applications and platforms to integrate data and create user interface, analytics, automation technology, etc.

It can also be understood as a joint fiber-optic and wireless- based advanced information and communication technology platform with embedded multi-functional application services that facilitate 24/7 online real-time connectivity between nodes in the operational network to allow remote management of production assets¹¹.

- 2. 'Internet of Things' (IoT) is the term used to describe a phenomenon where physical objects such as devices are both smart and connected, with the ability to collect and share data, which can create new interactions that will help unleash a new era of technology.
- 3. **C.O.W.** is a common acronym used in the telecommunications industry to stand for "cell on wheels." The C.O.W is a mobile cell site product that includes a tower and transceiver as well as all other necessary equipment, carefully constructed on a trailer or truck.
- 4. Service-Oriented Architecture (SOA) A service-oriented architecture is essentially a collection of services. These services communicate with each other. The communication can involve either simple data passing or it could involve two or more services coordinating some activity. Some means of connecting services to each other is needed.

Service-oriented architecture (SOA), defines a way to make software components reusable via service interfaces. These interfaces utilize common communication standards in such a way that they can be rapidly incorporated into new applications without having to perform deep integration each time.

5. **Information and Communication Technologies (ICT)**¹² refers to technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies. This includes the Internet, wireless networks, cell phones, and other communication mediums.

¹¹ https://www.igi-global.com/dictionary/smart-assets-through-digital-capabilities/36779

¹² https://techterms.com/definition/ict

ABBREVIATIONS

ACI	Airports Council International
AKIC	Amritsar Kolkata Industrial Corridor
APEDA	The Agricultural and Processed Food Export Development
	Authority
APMC	Agricultural produce market committee
CNCR	Central National Capital Region
CEZ	Common Economic Zone
DMIC	Delhi-Mumbai Industrial Corridor
DFC	Dedicated Freight Corridors
EMC	Electronics manufacturing cluster
ESDM	Electronics System Design and Manufacturing
eNAM	National Agriculture Market
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
MeitY	Ministry of Electronics and Information Technology
MSME	Micro, Small & Medium Enterprises
MUDRA	Micro Units Development & Refinance Agency
MLLP	Multi-Modal Logistics Parks
MT	Metric Tone
NSDC	National Skill Development Corporation
NPE	National Policy on Electronics
PRASHAD	Pilgrimage Rejuvenation and Spiritual Heritage Augmentation
	Drive
SCP	Special Component Plan
SW	Single window
SIL	Strategic Industrial Locations
SEZ	Special Economic Zones
UES	Unified Economic Space
YEIDA	Yamuna Expressway Industrial Development Area/ Authority

Chapter-3 - Economic Growth and Income Generation

Chapter-5 – Power & Energy

AT&C	Aggregate Technical And Commercial
ADSM	Automatic Demand Management System
ARR	Average Revenue Realized
ACS	Actual Cost Of Supply
BES	Battery Energy Storage
BEE	Bureau Of Energy Efficiency
CEA	Central Electricity Authority
CAGR	Compound Annual Growth Rate
CIL	Coal India Limited
CAFE	Corporate Average Fuel Efficiency Standards
СМР	Crisis Management Plan
CI	Critical Infrastructure
Discom	Distribution Company
DSM	Demand Side Management
DDA	Delhi Development Authority
DDUGJY	Deen Dayal Upadhyay Gram Jyoti Yojana
EPS	Electric Power Survey
ER	Eastern Region
EVs	Electric Vehicles
EE	Energy Efficiency
ESCert	Energy Saving Certificate
EMS	Energy Management System
ESCO	Energy Service Companies
FY	Financial Year
FGD	Flue Gas Desulfurization
FSA	Fuel Supply Agreements
GW	Gigawatt
GDP	Gross Domestic Product
GIS	Gas Insulated Substation
GIL	Gas Insulated Lines
HVDC	High-Voltage, Direct Current
ISTS	Inter-State Transmission System
kWh	Kilowatt-Hour
KPI	Key Performance Indicators
LT	Low Tension
LED	Light-Emitting Diode
MW	Megawatt
MU	Million Unit
MNRE	Ministry Of New And Renewable Energy
MSME	Micro, Small & Medium Enterprises

MoP	Ministry Of Power
NDC	Nationally Determined Contributions
NER	North Eastern Region
NR	Northern Region
NGG	National Gas Grid
OMC	Oil Marketing Companies
PFA	Power For All
PAT	Perform, Achieve And Trade
PPA	Power Purchase Agreement
PNG	Piped Natural Gas
ROW	Right Of Way
RPO	Renewable Purchase Obligations
SDG	Sustainable Development Goals
SDA	State Designated Agencies
T&D	Transmission And Distribution
ToD	Time Of Day
UNFCCC	United Nations Framework Convention On Climate Change
UDAY	Ujwal Discoms Assurance Yojana
VSC	Voltage Sourced Converters
WR	Western Region
ZEB	Zero–Energy Building

Chapter-14 – Tourism & Heritage

AMASR	Ancient Monuments and Archaeological Sites and Remains
ASI	Archaeological Survey of India
CSR	Corporate Social Responsibility
CoTS	Committee of Tourism Secretaries
FICCI	Federation of Indian Chambers of Commerce and Industry
FTA	Foreign Tourist Arrival
GDP	Gross Domestic Product
GVA	Gross value added
GST	Goods and Services Tax
HRIDAY	Heritage City Development and Augmentation Yojana
GNCTD	Government of National Capital Territory of Delhi
lICC	India International Convention & Expo Centre
IRCTC	Indian Railway Catering and Tourism Corporation
KPI	Key Performance Indicator
MICE	Meetings, Incentives, Conferences & Exhibitions
MoHUA	Ministry of Housing and Urban Affairs
MoU	Memorandum of understanding
NSSO	National Sample Survey Office
NGO	Non-profit organization
PHDCCI	PHD Chamber of Commerce and Industry
PPP	Public–Private Partnership
PRASAD	Pilgrimage Rejuvenation and Spiritual Augmentation Drive
SII	Social Impact Initiative
SIT	Specific interest tourism
TDR	Transfer of Development Rights
THSC	Tourism & Hospitality Skill council
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UDAN-RCS	Ude Desh ka Aam Naagrik - Regional Connectivity Scheme
3D	Three Dimensional

Chapter-16 – Digital Infrastructure

AI	Artificial Intelligence
ASSOCHOM	Associated Chambers of Commerce and Industry of India
BBNL	Bharat Broadband Network Limited
BOT	Robot
BHIM	Bharat Interface for Money
BTSs	Base Transceiver Station
B2C	Business to Consumer
BHQ	Block Head Quarters
COW	cell on wheels
CCTV	Closed-circuit television
C-DAC	Centre for Development of Advanced Computing, India
DEPA	Data Empowerment and Protection Architecture
DELs	Dedicated Exchange Line
DMIC	Delhi Mumbai Industrial Corridor
DoT	Department of Telecommunications
DPIIT	Department for Promotion of Industry and Internal Trade
E-Nam	Electronic National Agriculture Market
EODB	Ease of doing business
EMF	Electro Magnetic Field
FMCG	Fast-Moving Consumer Goods
FMB	Field measurement books
FTTx	Fiber To The X
GeM	Govt. E-marketplace
GIS	Geographic Information System
GDP	Gross Domestic Product
G2C	Government to Citizen
GLIS	Government Land Information System
IBS	In-Building Solution
IIS	Industrial Information System
ICTs	Information Communications Technologies
IT	Information Technology
IoT	Internet of Things
LSA	Licensed Service Area
LTE	Long Term Evolution
Mbps	Megabits per Second
MHA	Ministry of Home Affairs
Meity	Ministry of Electronics and Information Technology
MSH	Meity's Start-up Hub
MoC	Ministry of Commerce
MSS	Mining Surveillance System
NCR	National Capital Region
NCT	National Capital Territory
NIUA	National Institute of Urban Affairs
NPCI	National Payments Corporation of India
NETC	National Electronic Toll Collection

NERS	National Emergency Response System
NOFN	National Optical Fiber Network
NSDC	National Skill Development Corporation
NASSCOM	National Association of Software and Service Companies
NUIS	National Urban Innovation Stack
OBPAS	Online Building Plan Approval System
PCOs	Public Call office
RoW	Right of Way
SOA	Service Oriented Architecture
SSDG	State e-Governance Service Delivery Gateway
SDGs	Sustainable Development Goals
UIDAI	Unique Identification Authority of India
UPI	Unified Payments Interface
UAV	Unmanned Aerial Vehicle
VPTs	Village Public Telephone
3D	Three Dimensional

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Policy Annexure

Indicative broad role of the lower hierarchy of Settlements to be detailed out in Sub-Regional Plans

- 1 **Sub-regional Centre** these settlements shall generally be medium sized towns or intermediate city performing a variety of roles, particularly in promoting and supporting a more balanced distribution of urban population and in providing functional linkages between the smaller towns and Regional/ Metro Centres. The Sub-regional Centres are proposed to undertake the urban economic and service functions and will have sound infrastructure like transport, power, water, credit banking, marketing, managerial services etc.
- 2 Service Centre/ Nodal Points: These will be settlements with 10,000 to 99,999 population having linkages with immediate rural hinterlands. These centres would cater to the rural hinterland as agro-service centre in collection and distribution of agricultural goods and services with processing, marketing, warehousing and storage facilities. These settlements would be the Nodal Point for the economy in the micro-regions covering an area of about 15-20 km radius.
- 3 **Central Village Cluster/ Bazar Villages**: This will include all Settlements with 5,000 to 9,999 population having central location and potential for development within its catchment area, with relatively better services and facilities in terms of education, health, communication, accessibility and has the capacity to serve a group of settlements. These central villages are proposed to provide basic social facilities for population engaged in agriculture and other primary activities. Such villages will have a weekly phenomenon called "Haat" (weekly markets) where people from around 7-8 kms gather either for sale of their local products or as buyers for the non-local products on a weekly basis as suppliers/shopkeepers converge from outside areas to sell products not available/produced in the local area.
- 4 **Medium Village** These will be the settlements with 2,000 to 4,999 population having well developed networks with Bazar and would be provided with basic facilities to group of other village. Medium villages shall be having common facilities (eg. post office, senior school, agricultural processing units (atta chakki, ghaani) serving other villages around in an area of about 2-3 km called Small villages.
- 5 **Small Village** All other settlements with a population of less than 2,000 have been classified as small villages and would be provided with basic facilities like link roads, water supply and electricity, paved streets and low-cost common sanitary facilities as well as the minimum required social infrastructure as per planning norms.

Annexure-P-3.1

Industry 4.0 – India¹ Gearing Up for Change

- 1. The fourth industrial revolution, Industry 4.0 is poised to happen on a global scale, taking the automation of manufacturing processes to a new level by linking the cyber & physical, incorporating AI and enabling customized and flexible mass production technologies. Industry 4.0 creates a "smart factory" within which the cyber-physical systems monitor physical processes, create a virtual copy of the physical world and make decentralized decisions. Over the Internet of Things, cyber-physical systems communicate and cooperate with each other and with humans in real time.
- 2. Industry 4.0 enables minimising wasteful processes and actions and optimizing use of energy and other inputs. This is achieved based on capturing data, its analysis and using the analysis to improve functioning of machines, factories and systems.
- 3. Germany, France, China, USA etc. have created platforms for pre competitive cooperation in Industry 4.0. These nations are looking towards automation and control as to replace expensive manpower and attain lower cost of conversion thus regain their share in manufacturing economy from emerging economies.
- **4.** However, the focus of Indian programme for Industry 4.0 is on using technology to make products for the global markets at competitive rates and to be embrace I4.0 technology with latest technological advancements.
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Indicative strategies for Redevelopment of Industrial Areas

1. Rationale

- a) Old existing industrial areas/ established in 1960-70's be shifted outside municipal limits.
- b) High growth of pollution in Delhi-NCR in previous 3 decades around such industrial areas -large / medium industries cannot function due to pollution/hazards.
- c) Rapid increase in land prices with urbanization -Profit running industrial units have negative net-worth once land prices are capitalized.
- d) Deteriorating common infrastructure in existing industrial units need for upgrades.

2. Advantages Social & Infrastructure Improvement

- a) Better use of such estates more suited to needs of surrounding catchment.
- b) Slow development on Greenfield areas around Delhi-NCR.
- c) Monetization of land parcels which have been underutilized/shut for a decade or more.
- d) Live-work-play environment and more inclusive development with the surrounding districts.
- e) Increase in employment/entrepreneurship.

3. Commercial Advantage

- a) Higher revenues for government in the form of transfer fee / conversion charges / property taxes / direct and indirect taxes because of economic activity on unutilized land parcel.
- b) Efficient financial planning for land owner by utilizing underutilized land plots for alternate uses.

4. Strategies

- 4.1 Identification of Land Parcels[Only Previously Existing Industrial Land/Estates in Delhi-NCR]
 - a) Large land parcels under non-conforming zones or surplus land within existing industrial units.
 - b) Sick/underutilized land parcels for functional industrial units.
 - c) Large vacant land within jurisdiction of state industrial development corporation/authority.

4.2 Buy-in of Stakeholders [Demand Led for Existing Land Owner]

- a) Incentives to industries moving from above industrial estates to invest in economic generator.
- b) Alignment of authority and government expectations from social and commercial aspects.
- 4.3 Redevelopment Planning [Alignment with Sustainable Principles]
 - a) Conversion of existing industrial land (change of land use/freehold).
 - b) Oversight in implementation to balance concerns of authority and land owner.
 - c) Align with framework of sustainable development principles.

4.4 Fund Management [Incentives through Escrow Account]

a) First stage release in favour of land owner for investing in new industry / shifting to new industrial area.

- b) Partial funds to be released to government / state for redevelopment assistance/conversion.
- c) Balance fund, if any, to be released to land owner after successful establishment of industrial units.

4.5 **Responsibilities** [Balanced Policy with Stringent Oversight]

- a) Government/ state facilitate rehabilitation, identify industrial hubs outside city center areas, oversight in implementation.
- b) Land Owner file relevant applications, identify industrial activity/location for transition, and carry-out redevelopment process.
- c) Acquisition vs Private Sector Partnerships
- Partner with Land Owner for Redevelopment
 - Potential options and partnerships
 - Running units with surplus land ensure only surplus land is put to better use
 - Units under non- conforming zone Rehabilitate to new zone
 - Sick units provide option to provide alternate economic activity
 - Congested areas provide land pooling options

Electronics Systems Design and Manufacturing (ESDM) clusters in NCR

Details of EMC Projects:

Sl. No.	State	Location	Project Name	Area (In acres)	Date of Project C Final Approval (₹)	Project Cost	et Cost Grant In Aid ₹) (₹)	Saleable Area (In acres)	Allotted Land (In acres)	No. of Units Allotted Land	Units Operational	Date of Completion
						(₹)						
1	Rajasthan	Alwar	EMC at Karoli IA,Rajasthan (M/s. Rajasthan State Industrial Development & Investment Corporation Ltd RIICO)	121.51	15-Dec- 2017	789,826,138	316,796,689	84	27	7	1	15-Mar-2020
2	Rajasthan	Bhiwadi	EMC at Salarpur IA, Rajasthan (M/s. ELCINA Electronics Manufacturing Cluster Pvt. Ltd EEMCPL)	50.34	15-Sep- 2015	460,883,789	202,411,772	31	29	21	1	30-Jun-2020
3	Uttar Pradesh	Greater Noida	EMC at Greater Noida, UP (M/s. TEGNA Electronics Pvt. LtdTEPL)	99.41	21-Feb- 2018	1,153,256,047	500,000,000	88	87	7	0	31-Aug-2021
4	Uttar Pradesh	Yamuna Expressway	EMC at Yamuna Expressway, U.P (M/s. U.P. Electronics Corporation Ltd UPLC)	100.00	26-Dec- 2017	1,556,697,100	500,000,000	44	0	0	0	26-Jun-2019

Source: MeitY, GoI http://emcpms.gov.in/site/login

Notification for necessary infrastructure to be development under ESDM https://meity.gov.in/writereaddata/files/Notification-EMC-Gazette.pdf

Annexure-P-3.3 (B)



Map showing EMC location and area/ districts identified under Clusters

Source: http://emcgis.nic.in/

Highlights of Circular Economy in India

As per the Report FICCI², Circular Economy, through its innovative business models, offers a unique window of opportunity to decouple growth from resource requirements. At the core of Circular Economy lays a shift towards complete elimination of waste – i.e. waste not in the traditional sense of junk, but any kind of underutilization of assets and resources. Organizations can adopt five distinct models to introduce circular initiatives in their operations: (i) Circular Supply Chain, (ii) Recovery & Recycling, (iii) Product Life Extension, (iv) Sharing platform, & (v) product as a service

As per FICCI analysis, approximately half-a-trillion dollars' worth of economic value that can be unlocked through Circular Economy business models in India by 2030. The enormous circular opportunity in India will manifest itself in the form of different resources. From prioritization perspective, resources with significant economic impact and environmental footprint are the natural choices for organizations to focus their CE initiatives. FICCI research highlights eight such priority resources for India. These are: (i) petrochemicals, (ii) plastics, (iii) food, (iv) gold, (v) iron & steel, (vi) copper, (vii) Fibers, and (viii) cement. It is noteworthy that there is no standard model that applies across all industries and the opportunities exist in diverse forms. For instance: Urban mining from e-waste: There is \$1bn of value that can be realized from the extraction of gold from e-waste in India. Plastics recycling: Currently, ~40% of plastic waste in India ends up being uncollected for recycling. Proper management of this waste can create ~14 lakhs jobs and could potentially represent a ~\$2bn opportunity. Steel recovery from end of life vehicles: There is over 8mn tons of steel that can be potentially extracted from end of life vehicles in India in 2025, representing a ~\$2.7bn opportunity.

Further, a report on *Circular Economy in India*³: *Rethinking growth for long-term prosperity* shows that a circular economy path to development could bring India annual benefits of ₹40 lakh crore (US\$ 624 billion) in 2050 compared with the current development path – a benefit equivalent to 30% of India's current GDP. This conclusion rests on high-level economic analysis of three focus areas key to the Indian economy and society: cities and construction, food and agriculture, and mobility and vehicle manufacturing. The research shows that realising these benefits fully would require applying circular economy principles in combination with harnessing the unfolding digital and technological transformation, all tailored to the Indian context. It reveals that by launching new circular economy initiatives and reinforcing existing efforts, India could leverage its expected high levels of growth and development to build a more resource-effective system, creating value for businesses, the environment, and the Indian population.

² Accelerating India's Circular Economy Shift, 2018 <<u>http://www.ficcices.in/pdf/FICCI-</u> <u>Accenture Circular%20Economy%20Report OptVer.pdf</u>

³Circular Economy in India - https://smartnet.niua.org/sites/default/files/resources/circular-economy-in-india_5dec_2016_0.pdf

Economic development Projects of NCR

'Growth Corridors and Opportunity Areas'

In terms of Economic Corridor/ Node or Industrial Estate/ clusters, artisans' clusters & services, towns in the rest of NCR have been identified for revival and promotion of economic activities and to operate as a service centre to their rural hinterland.

Matrix of Growth Corridors (GCs) and Opportunity Areas (OAs)

Economic Corridor/ Node or Industrial Estate as GCs & OAs	Remarks
Delhi Mumbai Industrial Corridor (DMIC), DPIIT	, M/o Commerce
 Integrated Industrial Township Project at Greater Noida 	Land 747.5 acresInvestment about 634.40 Cr.
2. Global City Project	 SPV - "DMIC Haryana Global City Project Ltd." Master Plan approved by GoHRY Govt. of Haryana intended to implement the project on its own
3. Mass Rapid Transit System (MRTS) Project	 SPV - "DMIC Haryana MRTS Project Limited" DPR approved by GoHRY
Smart Community Projects:	• Project completed
 Model Solar Project, Neemrana, Rajasthan: 5MW Solar Power Plant commissioned 2015 and 1MW Micro Grid Solar Power Plant Commissioned 2017 	
Amritsar Kolkata Industrial Corridor (AKIC), DP	IIT
5. Integrated Manufacturing Cluster (IMC) - Punjab (Rajpura-Patiala)	
6. Integrated Manufacturing Cluster (IMC) - Haryana (Saha) Ambala	
7. India International Convention & Expo	• Estimated cost of Rs. 25,703 crore
Centre (IICC) at Dwarka by DPIIT - including Exhibition & Convention spaces, arena, trunk-infrastructure, Metro/NHAI connectivity, hotels,	• To be completed by 2025

Economic Corridor/ Node or Industrial Estate as GCs & OAs	Remarks
office and retails spaces, etc.	
Road/ transport based Corridors	
8. Yamuna Expressway Industrial Development Area (YEIDA), by GoUP	 YEIDA notified area covers approx. 2,689 sq. kms. falling in six districts Yamuna Expressway stretching 165 kms. {6 lane (extendable to 8 lane) } connects international tourist destinations of Delhi and Agra.
 9. PANCHGRAM by GoHRY - (Five-city project) proposed to be develop along the KMP/ Expressway 	
10. Eastern& Western Peripheral Express. Corridor	Completed
11. Proposed Orbital Rail Corridor – by GoHRY	
Economic Corridors in NCR under Bharatmala pro	oject by MoRTH
12. North–South Corridor	
13. Delhi - Sirsa - (278 km: Sirsa - Hissar - Rohtak – Delhi)	
14. Delhi - Lucknow - (494 Km: Delhi-Moradabad- Bareily-Shahjahanpur-Hardoi-Lucknow)	
15. Delhi – Kanpur - (424 Km: Delhi - Ghaziabad - Aligarh - Kannauj – Kanpur)	
 16. Bilaspur - New Delhi - (302 Km: Bilaspur - Jagadhri - Yamunanagar - Saharanpur - Roorkhe - Muzzafarnagar - Meerut - Ghaziabad – Delhi) 	
17. Jaipur - Agra - (240 KM: Jaipur - Dausa - Bharatpur – Agra)	
Inter Corridor Routes in NCR under Bharatmala projec	t
18. Gurgaon – Sikar (210 Km)	

19. Jaipur - Agra Branch (Bharatpur - Alwar) (86

Economic Corridor/ Node or Industrial Estate as GCs & OAs

Km)

- 20. Rohtak Rewari (78 km)
- 21. Rohtak Panipat (56 km)

Feeder Routes in NCR under Bharatmala project

- 22. Bhiwani Narnaul (130 km)
- 23. Karnal Meerut (101 km)
- 24. Sikandra Rewari Branch 2 (76 km)
- 25. Bilaspur New Delhi : Branch to Rishikesh and Dehradun (60 km)
- 26. Rohtak Jind (58 km)
- 27. Gurgaon Pataudi Rewari (55 Km)
- 28. Delhi Sirsa (Branch to Bhiwani) (38 KM)
- 29. Gurgaon Jhajjar (38 Km)
- 30. Dharuhera Sohna (28 Km)
- 31. Delhi Sirsa (Branch to Jhajjar) (23 Km)

Greenfield Expressways

32. Delhi-Meerut Expressway (96 Km)	Completed.
33. Delhi - Amritsar - Katra (600 Km) - (135 km in	Upcoming Project
HRY)	Cost 30,000 Cr.
34. Delhi – Jaipur (274 Km)	
35. Delhi- Mumbai Expressway (1261 Km)	Under construction
	Cost 90,000 Cr.
36. Ganga Expressway – Meerut to PrayagRaj (602 Km – first phase) {6 lane (extendable to 8 lane) }	To be completed by 2025
Aviation Hubs by GoUP & GoH	
37. International Airport at Jewar	
38. Integrated Aviation Hub Hisar	Over 4200 acres of land

Remarks

Economic Corridor/ Node or Industrial Estate as GCs & OAs	Remarks
39. Six Lane Controlled access Highway from Delhi to Hisar	
40. Rapid Rail Connectivity is under construction (to be extended up to Airport)	
41. International Airport and Aviation University & Training Centre and Aerospace Manufacturing	
42. IGI Delhi to Chandigarh link (240 Km)	Highway/ Expressway proposed by Govt. of Haryana for reaching Delhi to Chandigarh in 2 hours at 120 kmph speed - to be completed by 2023
	Use under-construction expressways, completed links anf the upcoming Delhi-Katra Expressway
43. 06 Lane Trans-Haryana Highway (304 Km) from Ambala to Kotputli (via Ismailbad)	
Major Warehousing Clusters ⁴	
44. Bahadurgarh	
45. Jhajjar	
46. Badli	
47. Farukh Nagar	
48. Dhankot	
49. Kulana-Luhari	
50. Pataudi-Jamalpur Road	

- 51. Dharuheda Bhiwadi
- 52. Tauru
- 53. Sohna
- 54. Palwal
- 55. Dadri- Gr. Noida-Noida

⁴Knight Frank Research, India Warehousing Market Report 2019

Economic Corridor/ Node or Industrial Estate as GCs & OAs

56. Pilkhuwa

- 57. Ghaziabad-Hapur
- 58. Sonipat

Major Manufacturing Hubs⁵

- 59. Panipat
- 60. Sonipat-Kindli
- 61. Bahadurgarh
- 62. Bawana
- 63. Okhala
- 64. Meerut
- 65. Ghaziabad
- 66. Faridabad Ballabgarh
- 67. Palwal
- 68. Gurugram-Manesar
- 69. Dharuhera & Bhiwadi
- 70. Bawal-Rewari
- 71. Rohtak
- 72. Alwar (Tapukhera)

Electronics System Design and Manufacturing (ESDM) Clusters⁶

73. Bhiwadi

Bhiwadi EMC is a greenfield project spread across 100 acres.

Remarks

- 74. Neemrana
- 75. Noida Greater Noida
- 76. Ghaziabad
- 77. Yamuna Expressway area

⁵Knight Frank Research, NCR WAREHOUSING MARKET REPORT ⁶https://meity.gov.in/writereaddata/files/Notification-EMC-Gazette.pdf

Economic Corridor/ Node or Industrial Estate as GCs & OAs	Remarks
78. Faridabad - Palwal	
79. Gurugram	
80. Bawal	
81. Dharuhera	
82. Sonipat	
83. Jhajjar	
Multimodal logistics parks (MMLP)	
84. Multi Modal Logistics Hub (MMLH) at Dadri Greater Noida (DMIC)	• State Govt. is moving forward with the acquisition of remaining land parcels
85. Multi Modal Transport Hub (MMTH) at Boraki in Greater Noida (DMIC)	• -do-
86. Integrated Multi Modal Logistics Hub (IMLH) at Nangal Chaudhary, District Mahendergarh (DMIC)	 Land approx. 886 acres SPV "DMIC Haryana Multi Modal Logistic Hub Project Ltd." Investment about Rs. 5000 crore (Rs. 1852 crore GoI)
Dry ports	
87. Garhi Harsaru (Gurugram)	Inland Container Depot
88. Ballabhgarg - Faridabad	Inland Container Depot
89. Tughlakabad	Inland Container Depot, Exim Terminal
90. Okhala	Inland Container Depot, Domestic Terminal
91. Rewari	Combined Terminal
92. Kathuwas (Neemrana)	Combined Terminal
93. Babarpur (Panipat)	Exim Terminal
94. Dadri	Combined Terminal
95. Inland Container Depot-Loni, Central Warehousing Corporation	

Eco	nomic Corridor/ Node or Industrial Estate as GCs & OAs	Remarks
SME	Clusters - UNIDO ⁷	
96.	Wazirpur, Badli - North West Delhi	Stainless Steel Utensils & Cutlery
97.	Okhla, Mayapuri - South & West Delhi	Chemicals
98.	Naraina & Okhla - West & South Delhi	Electrical Engineering Equipment &Electronic Goods; Paper Products; Plastic Products
99.	Lawrence Road- North Delhi	Food Products
100.	Okhla, Wazirpur Flatted Factories Complex - South Delhi	Leather Products
101.	Okhla, Mayapuri, Anand Parbat - South, West Delhi	Mechanical Engineering Equipment
102.	Naraina,Okhla, Patparganj - West,South, East Delhi	Packaging Material
103.	Naraina,Okhla,Shivaji Marg,Najafgarh Road - West, South, North West Delhi	Rubber Products
104.	Shahadara & Vishwasnagar - North East Delhi	Wire Drawing
105.	Mayapuri & Wazirpur	Metal Fabrication
106.	Kirtinagar & Tilak Nagar - West & North East	Furniture
107.	Wazirpur- North West Delhi	Electro Plating
108.	Okhla, Mayapuri,Naraina, Wazirpur Badli & G.T. Karnal Road - South,West,North West & North West Delhi	Auto Components
109.	Shahdara,Gandhinagar, Okhla & Maidangari - North East Delhi, East Delhi & South Delhi	Hosiery
110.	Okhla & Shahdara - South & North East	Readymade Garments
111.	Okhla, South Delhi	Sanitary Fittings
112.	Bhiwani	Powerloom & Stone Crushing
113.	Faridabad	Auto Components, Engineering Cluster, Stone Crushing

⁷https://dcmsme.gov.in/clusters/clus/smelist.htm#clus

Eco	nomic Corridor/ Node or Industrial Estate as GCs & OAs	Remarks
114.	Gurgaon	Auto Components, Electronic Goods, Electrical Engineering Equipment, Readymade Garments, Mechanical Engineering Equipment
115.	Karnal	Agricultural Implements; Rice Mills
116.	Panipat- Samalkha	Rice Mills, Powerloom, Shoddy Yarn, Foundry, Cotton Spinning, Nuts/ Bolts
117.	Alwar	Chemicals
118.	Khurja - Bulandshahr	Ceramics
119.	Noida- Gautam Buddha Nagar	Electronic Goods, Toys, Chemicals, Electrical Engineering Equipment, Garments, Mechanical Engineering Equipment, Packaging Material, Plastic Products
120.	Ghaziabad	Chemicals, Mechanical Engineering Equipment, Packaging Material
121.	Meerut	Sports Goods, Scissors,
122.	Muzaffarnagar	Rice Mills

MAJOR MEGA FOOD PARK PROJECTS (AS ON 27.02.2020⁸) in NCR

State/	SPV/IA Name	City Name	Status
Haryana	Haryana State Industrial & Infra Dev. Corp Ltd (HSIIDC)	Sonipat	Under Implementation
	Haryana State Coop. Supply and Marketing Federation Ltd (HAFED)	Rohtak	Under Implementation
Source: MoFPI	, GoI-https://mofpi.nic.in/		

Agro-processing Clusters approved by Ministry of Food Processing Industries under Scheme for Creation of Infrastructure for Agro-processing Clusters

Name	of	the	Project	Location of the Project District &	Status
Executi	ion A	Ageno	ey (PEA)	State	

⁸https://mofpi.nic.in/sites/default/files/contact detail of promoters of mfp projects as on 27.02.2020 0.pdf

M/s K R Food APC	Village Bhiravati, Tehsil &	Mewat, Under
	District Nuh, Mewat, Haryana	Haryana Implementation
M/s Karnal Food Pack	Agro Park, Mugal Majra	Karnal, Under
Cluster Limited	Road, Kunjpura, Distt.	Haryana Implementation
	Karnal, Haryana	

Source: MoFPI, GoI, <u>https://mofpi.nic.in/sites/default/files/list_of_57_approved_apcs.pdf</u>

> International Mandi Project at Ganaur, Sonipat is under consideration

List of Scientific Research Institutions (SRIs) / R&D hubs in NCR

Number of Institutes							
S.No	Areas of Research	Total					
I.	Agricultural Sciences	10					
II.	Biological and Medical Sciences	14					
IV.	Physical Sciences and Mathematics	05					
V.	Earth Sciences	02					
VI.	Engineering Sciences	04					
VIII.	Multi-disciplinary and Other Areas	05					
	Total 40						

No.	Name of Institution	Research Areas
Ι	Agricultural Sciences	
I.1	Indian Agricultural Research Institute (IARI), New Delhi (www.iari.res.in)	Genetics & Plant Breeding; Plant Pathology; Microbiology; Post Harvest Technology
I.2	National Dairy Research Institute, Karnal, Haryana (<u>www.ndri.res.in</u>)	Dairy & Food Technology; Dairy Microbiology; Artificial Animal Breeding; Animal Reproduction; Animal Biotechnology; Animal Genomics; Animal Nutrition
I.3	National Bureau of Plant Genetic Resources (NBPGR), New Delhi (<u>www.nbpgr.ernet.in</u>)	Plant Genetic Resources (PGR) Management and Use, Policy Issues on Exchange of Genetic Resources: Quarantine, IPR; Assessing Economic Value; Conflicts over Ownership Management and Use; National and International Treaties / Legislation; CBD, IT- PGRFA, GPA, PVP&FR Act, Biodiversity Act etc, Genomics and Bioinformatics: Genomic Resources Generation, Use and Conservation, GM Crops; GM DetectionTechniques
I.4	Central Soil Salinity Research Institute, Karnal, Haryana (<u>cssri.nic.in</u>)	Reclamation and Management of Salt Affected Soils; Physics and Chemistry of Saline and Sodic Soils; Assessment of Salt Affected Soils through Remote Sensing and GIS; Conservation Agriculture and Integrated Nutrient Management on Salt Affected Soils; Enhancing Water Productivity through Multi Enterprise Agriculture; Management of Poor Quality Waters in Agriculture and Other Land Uses; Bio-Remediation of Waste Waters; Bio- Drainage for Controlling Water Logging and Soil Salinity; Carbon Sequestration Potential in

No.	Name of Institution	Research Areas
		Saline Environment under Changing Climatic Conditions; Solid Waste Management for Soil Improvement.
I.5	National Centre for Integrated Pest Management (ICAR), Delhi (www.ncipm.org.in/)	Pest Management
I.6	National Research Center on Plant Biotechnology, Pusa Campus, New Delhi (www.nrcpb.org)	Genetic engineering for biotic resistance; exploitation of heterosis for enhancement of crop productivity; molecular breeding to unlock the genetic potential from diverse germplasm and integrate in cultivated crop varieties; various crop and microbe genomesequencing projects.
I.7	Department of Zoology, University of Delhi, Delhi (<u>ww.du.ac.in</u>)	Pesticide toxicology; bioremediation of pesticide molecules and heavy metals; soil microbial ecology; soil microbial taxonomy; soil health and soil fertility; waste watertreatment; food and feed traceability
I.8	National Institute of Plant Genome Research (NIPGR), New Delhi (<u>http://www.nipgr.res.in/</u>)	Structural and Functional Genomics in plants; Computational Biology; Genome Analysis and Molecular Mapping; Molecular Mechanism of Abiotic Stress Responses; Nutritional Genomics; Plant Development and Architecture; Plant Immunity; Molecular Breeding; Transgenics for crop improvement andother emerging areas based on plant genomics
I.9	National Centre for Agricultural Economics and Policy Research (NCAP), New Delhi (http://www.ncap.res.in/)	Agricultural technology policy; Sustainable agricultural systems; Markets and trade; Institutional change; Agricultural growth and modeling
I.10	Sri Venkateswara College, University of Delhi, New Delhi (<u>http://www.svc.ac.in/)</u>	Ecology; Entomology; Animal-Plant interactions; Insect Physiology and Plant vaccination
II	Biological and Medical Sciences	
II.1	International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi (<u>www.icgeb.org</u>)	Mammalian Biology; Plant Biology; Synthetic Biology and Biofuels
II.2	National Brain Research Centre, Manesar, Gurgaon (<u>www.nbrc.ac.in</u>)	Brain Research; Neuroscience Research

No.	Name of Institution	Research Areas
II.3	National Centre for Disease Control, New Delhi (www.ncdc.gov.in/)	Virology, Molecular Diagnostics in CommunicableDiseases
II.4	National Institute of Immunology, New Delhi (<u>www.nii.res.in/</u>)	Infection And Immunity; Molecular Design; Gene Regulation and Reproduction and Development
11.5	Institute of Genomics and Integrative Biology, New Delhi <u>(www.igib.res.in/(</u>	Genomics and Molecular Medicine; Respiratory Disease Biology; Genome Informatics and Structural Biology; Energy and Environmental Biotechnology; Chemical & Systems Biology
П.6	Jamia Hamdard University, New Delhi (<u>www.jamiahamdard.edu</u>)	Heavy metal and environmental stress on plants; air pollution and impact on plant form; function and medicinal properties; genetic characterization of medicinal plants; ethnobotany and plant systematic; meristematic behaviour and secondary plant growth; tissue culture studies for alkaloid production; multiplication and preservation of endangered species; transmission and application of variation in plants; isolation; identification and characterizationof biologically active constituents
II.7	School of Life Sciences, Jawaharlal Nehru University, New Delhi (<u>http://www.jnu.ac.in/sls/</u>)	Cell Biology, Immunology and Developmental Biology; Genetic, Genomics, Gene Regulation and RNA Biology; Molecular Biology and Biochemistry of Pathogens and Diseases; Neurobiology and Behavioral Biology; Plant Molecular Biology, Biotechnology, and Photobiology; Radiation and Cancer Biology; Biophysical Chemistry; Molecular Biophysics, and Structural Biology
II.8	Centre for Chronic Disease Control (CCDC), Gurgaon, Haryana (http://www.ccdcindia.org)	Cardio metabolic surveillance study; Genetic Research; Clinical Trials &Translational Research; epidemiology
11.9	School of Biotechnology, Jawaharlal Nehru University, New Delhi (<u>http://www.jnu.ac.in/SBT</u>)	Molecular biology and Genetic engineering; Molecular biology of infectious diseases; Immunology; Protein Engineering, Protein stability, conformation and folding; Biochemical engineering, optimization of recombinant protein production and Metabolic Engineering; Transcription control and gene regulation in prokaryotic and mammalian systems; Structural biology and bioinformatics;

No.	Name of Institution	Research Areas
		Molecular basis of human viral diseases; Molecular Cell biology;Cancer cell biology: Diagnostics and vaccines
	Special Centre for Molecular Medicine,	Bioinformatics and computer sciences;
II.10	Jawaharlal Nehru University, New Delhi (http://www.jnu.ac.in/SCMM/)	Environmental sciences and physical sciences
II.11	School of Computational and Integrative Sciences (SC&IS), Jawaharlal Nehru University, New Delhi (<u>http://www.jnu.ac.in/)</u>	Computational Genomics; Development of Tools in Bioinformatics; Structure based Bioinformatics and in silico Drug Discovery; Database Management Microarray Analysis and Data mining; Systems Biology
II.12	Microbial Technology Lab, Acharya Narendra Dev College, New Delhi (http://andcollege.du.ac.in)	Molecular Biology
П.13	Department of Pharmaceutical Sciences, Maharshi Dayanand University, Rohtak, Haryana (www.mdurohtak.ac.in)	Anxiety Disorders, Fundamentals of Research in Cognitive Neuroscience, Fundamentals of development of pre clinical models for Cognitive disorders, Pharmacological Evaluation of novel compounds, Hands on training on standardization of these Models, Hands on training in Pre-clinical protocols employedfor Pharmacological Evaluation of novel compounds
II.14	Jawaharlal Nehru University, New	Computational Biology & Bioinformatics,
117	Delhi [www.jnu.ac.in/]	Infectious disease, Annotation of Enzymes
IV.1	Inter-University Accelerator Centre (IUAC Delhi), Aruna Asaf Ali Marg New Delhi 110067 (www.iuac.res.in)	Nuclear Physics; Materials Science; Atomic and Molecular Physics; Radiation Biology
IV.2	National Physical Laboratory, New Delhi (<u>www.nplindia.org</u>)	Materials for Energy Harvesting; Polymeric Materials including Conducting Polymers; Carbon- Based Materials & Their Composites; Light Weight Structural Materials; Nano- Materials & Their Composites; Optical Thin Films; Luminescent Materials and Superconducting Materials as well as Their

No.	Name of Institution	Research Areas
		Related Components & Devices
	National Institute of Madical Statistics	Research in Medical Statistics
IV 3	Delhi	
1	(http://www.icmr.nic.in/000134/irms.htm)	
		Chemical Physics: Inorganic: Organic and
		Physical Chemistry; Computational Physics;
	School of Physical Sciences	Condensed Matter Physics; Disordered
IV.4	Jawaharlal Nehru University.	Systems; Granular Materials; Mathematical
	New Delhi (<u>http://www.jnu.ac.in/SPS/</u>)	Physics; Non-equilibrium Statistical Machanics: NonlinearDynamics: Probability
		Measure: Quantum Chaos: Quantum
		Optics;
		Research and technology development in solar
	National Institute of Solar Energy	thermal and photovoltaic systems and
IV 5	(NISE), Ministry of New and Renewable Energy New	components; reliability testing of solar PV projects: hybridization and technical aspects of
1	Delhi/Gurgaon	emerging areas as solar rooftops and micro-
	(http://www.mnre.gov.in/)	grid; integration of cross-sectoral
		learning's from conventional power generation
V	Earth Sciences	
	Centre For Advanced Study, Department of Geology, University of Delhi, Delhi (<u>www.du.ac.in</u>)	Vertebrate Palaeontology – Evolution of
V 1		biogeographic origins: diversity and evolution
•••		of Mesozoic Mammals of India; and
		Cretaceous Palaeobiogeography of India
	The Energy and Resources Institute	Earth Science & Climate Change;
V.2	(TERI), Navy Dalki (http://www.tariin.ang/ESCC)	Environmental science; Forestry and biodiversity: Global & environmental research
X 7 X	New Deim (<u>nup://www.iemin.org/ESC</u> C)	biodiversity, Global & environmentaliescalen
VI	Engineering Sciences	
		Road User Behaviour in Simulated vs.
VI.1		management of Infrastructure (Roads &
	Control Dood Desservely Institute	Bridges); Durability of Concrete Structures;
	New Delhi (www.crridom gov.in/)	Health Monitoring and Performance
		Evaluation of Civil Infrastructure;
		Designing Structures against Hazards;
		Development of Mechanistic Framework for

No.	Name of Institution	Research Areas
		Use of RAP in Flexible Pavements & Developmentof Semiperpetual Flexible Pavement
VI.2	Indian Institute of Technology, New Delhi (<u>http://www.iitd.ac.in/)</u>	Cyber Security, Cyber Systems and Information Assurance Nanoscale magnetic films; Nanogranular structures; Nanomultilayers and Nanowires; Materials issues in spin-polarized electron and thermal transport; Materials engineering oftransparent conducting oxides. Fibre Science and Technology; Yarnmanufacturing; Fabric Manufacturing; ChemicalProcessing Design Engineering; Thermal Engineering; Production Engineering; Industrial Engineering
VI.3	National Council of Cement and Building Materials, Ballabgarh, Haryana (http://www.nchindia.com)	Continuous research; technology development and transfer; education and industrial services for the cement and building materials industries
VI.4	School of Computer & Systems Sciences, Jawaharlal Nehru University, New Delhi (www.jnu.ac.in/SCSS/default.htm)	Data Warehousing & Mining; Natural Language Processing; Scientific Computing & Optimization; Soft Computing; System Modeling & Simulation; System Software; Communication Networks; Network Security; Artificial Intelligence &Robotics Computer Graphics & Multimedia; Database Systems; Data Mining & Pattern Recognition; Digital Image Processing; Mobile Ad- Hoc Networks; Wireless & Mobile Communication; Parallel & Distributed Systems; Software Engineering; VLSI Design & Testing; Embedded Systems; Computer Vision; Micro- Electro-Mechanical Systems (MEMS)
VIII	Multi-disciplinary and Other Areas	

No.	Name of Institution	Research Areas
VIII. 1	National Institute of Science Technology and Development Studies, New Delhi (www.nistads.res.in)	S&TPolicyand Management: Innovation Policy and Survey & Measurement, Sector Analysis; S&T Indicators / Measurement Studies/ Mapping Knowledge Bases for Development; Technology Foresight, Assessment & Demand & Strategy Mapping; Science and Technology for Rural Development; Industrial Research, Intellectual Property, MSME
VIII. 2	School of International Studies, Jawaharlal Nehru University, New Delhi (<u>http://www.jnu.ac.in/SIS</u>)	American Studies; Latin American Studies; West European Studies; Canadian Studies; Diplomatic Studies; International Legal Studies; International Trade and Development; Chinese Studies; Japanese and Korean Studies; International Politics;
VIII. 3	Centre for Studies in Science Policy, School of Social Sciences, Jawaharlal Nehru University, New Delhi (http://www.jnu.ac.in/SSS/CSSP/)	Science; technology and innovation policies; university – industry relations; intellectual property rights; gender relations in science and technology; globalisation of innovation; internationalisation of R&D technology and environment; scientists in organisationsand technology futures studies
VIII. 4	Centre for International Trade in Technology (C.I.T.T.), Indian Institute of Foreign Trade (IIFT), New Delhi (http://cc.iift.ac.in/docs/iift/ citt.asp)	International Trade and Technology, export organisations and enterprises, Marketing, functional and PolicyResearch
VIII. 5	Institute for Studies in Industrial Development, New Delhi (http://www.isid.org.in/ho me.html)	Industrialization, Trade, Investment and Technology, Regulatory Mechanism, Educational policy and planning, Role of civil societies in development processes, Socio- economic development

Source: DST List-of-Indian-institutions⁹

⁹<u>http://dst.gov.in/sites/default/files/ANNEXURE-I%20-List-of-Indian-institutions.pdf</u>

Ease of Doing Business Suggestive Indicators

To further improve the ranking of India in EODB climate, government of India has taken various initiatives at central level and has came up with State Business Reform Action Plan (BRAP) 2019 to guide the states/UTs in implementing various guidelines. This will help the states to implement the regulatory processes, policies and process spread across 10 reform areas spanning the lifecycle of a typical business and to streamline inspections and set the nation free from 'inspector raj'. The implementation Guide¹⁰ under BRAP provides overview of following 12 major sections:

- 1) Access to information and transparency enablers
- 2) Single window system
- 3) Land administration and transfer of land and property
- 4) Land availability and allotment
- 5) Construction permit enablers
- 6) Environment registration enablers
- 7) Labor Regulation Enablers
- 8) Obtaining Utility Permits
- 9) Paying Taxes
- 10) Inspection Enablers
- 11) Contract enforcement
- 12) Sector specific

Further, the World Bank Group in its report - "Doing Business 2020, Economy Profile India", has listed certain indicators, which can be adopted in NCR and further elaborated by each of the NCR participating States to have a competitive EODB climate in NCR. The EODB indicators are as following:

1.	Starting a business	Procedures, time, cost and paid-in minimum capital to start a limited liability company
2.	Dealing with construction permits	Procedures, time and cost to complete all formalities to build a warehouse and the quality control and safety mechanisms in the construction permitting system
3.	Getting electricity	Procedures, time and cost to get connected to the electrical grid, and the reliability of the electricity supply and the transparency of tariffs
4.	Registering property	Procedures, time and cost to transfer a property and the quality of the land administration system

- 5. Getting credit Movable collateral laws and credit information systems
- 6. Protecting minority Minority shareholders' rights in related-party transactions and in

¹⁰https://dipp.gov.in/sites/default/files/Implementation Guide 2019 dated 04022019.pdf

	investors	corporate governance
7.	Paying taxes	Payments, time, total tax and contribution rate for a firm to comply with all tax regulations as well as post filing processes
8.	Trading acro borders	Time and cost to export the product of comparative advantage and import auto parts
9.	Enforcing Contracts	Time and cost to resolve a commercial dispute and the quality of judicial processes
10.	Resolving insolvency	Time, cost, outcome and recovery rate for a commercial insolvency and the strength of the legal framework for insolvency

11. Employing workers Flexibility in employment regulation and redundancy cost

Source: Doing Business 2020, Economy Profile India, World Bank Group

1. Startinga Business

The cost of starting a business in India is astronomical, and the procedures involved can be daunting without local knowledge. There are 12 procedures to complete in the initial set up of a business costing 49.8% of income per capita. It takes almost a month (27 days) to complete the tasks on average, which is well above the OECD average of 12 days.

2. Dealing with Construction Permits

Construction permits are also a costly pursuit, involving 34 procedures and taking 196 days. Obtaining Intimation of Disapproval from the Building Proposal Office and paying fees takes around a month, and NOCs must be sought from the Tree Authority, the Storm Water and Drain Department, the Sewerage Department, the Electric Department, the Environmental Department, the Traffic & Coordination Department and the CFO.

3. Getting Electricity

The cost of getting electricity is relatively cheap in comparison to the rest of South Asia, but the number of procedures involved can be rather daunting. What's more, each procedure is in itself quite time constraining, taking around eight days to receive an external site inspection and three weeks to get externally connected, have a meter installed and conduct a test installation.

4. Registering Property

Registering a property requires quite a bit of legwork and can also incur substantial charges. Stamp duty of 5% of the property and a 1% charge on the market value of the property incurred at the Sub-Registrar of Assurances are the two fees to look out for, although the lawyer charges and fees at the Land & Survey Office can also pinch.

5. Getting Credit

India performs the best of all South Asian economies for ease of getting credit, ranking 23rd in the world according to the World Bank and International Finance Corporation. The 2013 report this to when a "unified collateral registry, which is centralised geographically, became operational in India strengthening access to credit and the secured transaction regime".

6. Protecting Investors and enforcing contracts

The concept of investor protection is one that has garnered a lot of attention of late, and new bodies such as the Securities and Exchange Board of India (SEBI) have been set up to that effect. Enforcing contracts will also be an area that must be looked at; India ranks as one of the worst countries in the world for the ability to enforce a contract, taking an average of 1,420 days.

7. Paying Taxes

Businesses operating in India are required to make 33 tax payments a year, taking 243 hours' worth of attention. The headline corporation tax rate stands at 30%, but companies can also incur charges in the form of a central sales tax, dividend tax, property tax, fuel tax, vehicle tax, VAT and excise duty.

8. Trading Across Borders

Despite India opening its borders to international trade, there are still several hurdles to overcome when importing and exporting goods. Several layers of bureaucracy make it very challenging to move goods efficiently, and companies must file a long list of documents before moving goods across borders.

9. Resolving Insolvency

It takes 4.3 years to resolve insolvency in India, far longer than the South Asian and OECD average. The laborious court system can often slow business relations.

10. Culture

India is a cultural hotbed, and business is more about building relations than presenting figures and sums. The polychronic culture can be difficult to adapt to for outsiders, and due diligence into the destination is important before travelling.

Annexure-P-3.8

Policies for elaboration in Sub-Regional Plan and Master/ Development Plans

- Proposed Industrial corridors & Economic hubs which are better connected and more competitive should be: (a) Prioritise public transport investments to deliver the 30-minute city objective for strategic centres along the economic corridors, (b) Prioritise transport investments that enhance access to the economic corridors and between centres, & (c) Colocated health, education, social and community facilities in strategic centres along the economic corridors.
- 2) Integration of two elements i.e. economic activities and social activities should be kept in mind while planning at local level in all sub- regions
- 3) Following infrastructure should be developed on priority:
- 3.1 Increase the coverage and quality of roads and highways to enhance connectivity and internal & external trade. Eastern and Western peripheral expressways should be used a growth corridor synchronising CNCR with rest of NCR.
- 3.2 By 2025, NCR should have a rail network that is not only efficient, reliable and safe, but is also cost-effective and accessible, both with respect to the movement of people and goods. Augment the capacity of existing railway infrastructure. All tracks in NCR should be made high speed. Further, develop networks of mass rapid transport system like extension of Delhi Metro to other towns, RRTS and Orbital Rail.
- 3.3 Enhance availability and affordability of International and regional air connectivity. Develop the Jewar International Airport and revive/ upgrade unserved airports and unserved helipads through the Regional Connectivity Scheme Ude Desh Ka Aam Naagrik (RCS-UDAN). Promote "Fly-from-Delhi NCR" through the creation of transhipment hubs. The transhipment hub in Delhi was launched in May 2018. More transhipment hubs should be created in NCR e.g. at Jewar Airport, and NCR-CMAs like Hisar and Jaipur. Improve flight connectivity to tourist destinations through the timely implementation of the Ministry of Civil Aviation's Regional Connectivity Scheme UDAN (RCS-UDAN). Cities and towns across NCR should be well connected with larger cities like Delhi, Mumbai, Kolkata, Bangalore, Ahmadabad and Chennai and such cities should be converted into efficient and seamless transit hubs.
- 3.4 Develop Inland Water Transport (IWT), water sports and water related tourism by Rejuvenating Yamuna, other natural channels & water bodies across NCR.
- 3.5 Physical digital connectivity across all districts, cities/ towns and gram panchayats (GPs) across NCR should be ensured through OFC/ WiFi connectivityby 2025 with delivery of government services digitally by 2022-23. (For more details refer chapter on Digital Infrastructure)
- 3.6 All NCR participating States and their agencies should taken actions for improving business environment for logistics and warehousing sector specifically to stimulate economic activity in urban centres and their rural hinterland should be boosted to promote

'Make in India' program of Govt. of India.

- 4) While planning activities at local level both the elements i.e. economic and social should be kept in mind and inclusive development approach should be adopted. Planning from investment perspective should be done based on the DNA/ character of the city or area. Accordingly, economic and social activities around the economic hubs/ cities should be reinvented and planned in each sub-region. Land-use system and the permission to approve should be automatic/time bounb manner.
- 5) Areas which require razor focus to create and sustain economic growth are as follow:
 - a) **Sustainable Infrastructure** Invest in development of infrastructure capable of adapting to population growth while maintaining high quality of life
 - b) **Sustainable Environment** Use of smart technologies to map areas prone to higher degrees environmental degradation to achieve more sustainable urbanization
 - c) **Social Inclusiveness** Strategy to allow for more community engagement and equitable redevelopment
 - d) **Embrace Technology**-Develop strategy to adapt to and leverage changing digital ecosystem led growth
 - e) **Education** Leverage educational institutions to develop and attract talent for next wave of digital led growth
 - f) **Build Circular Economy**-Develop strategy to achieve circular economy led by reuserecycle-replenish of materials consumed
- 6) For income generation, well synchronized areas which are of Central and State interest should be identified for joint investments and FDIs. Reforms undertaken at the Centre and State level should be implemented in a time bound manner. The reforms undertaken by the centre must be implemented at the states and reforms undertaken by the states should be implemented by the districts.
- 7) Expand the Region's Connections to the Global Economy by: (a) Promoting international trade and increase exports from the region, (b) Attracting additional foreign direct investment, (c) Improving domestic and international mobility connections to the nation and world. Expand production capacity and improve international connections, (d) Enhancing utilization of the region's dry ports and overall leverage of the region's multimodal infrastructure, (e) Enhancing region's desirability to both employers and employees by investing in arts, cultural, and recreational amenities; supporting entrepreneurs and innovative thinkers; improving environmental quality; maintaining affordable housing opportunities; and investing in public infrastructure, & (f) Supporting efforts to make NCR a world-class region.
- 8) Expedite the Development of Modern Service Industries by: (a) Developing NCR as a financial hub develop special financial products & services and promote mutual financial markets access, and (b) Developing a system of modern service industries by (i) promoting

specialization and progression towards high end of value chain for producer services such as business services and distribution services, refine and improve the quality for consumer services such as healthcare services and family services, focus on logistics services, travel services, cultural and creative industries, human resources services, convention and exhibition and other professional services, etc., and develop as system of modern services which promotes coordinated development, complementarity and cooperation, (ii) Promoting cooperative development of logistics services among major Cities, vigorously pursue development of logistics and cold chain logistics, raise the level of supply chain management, and develop NCR as a logistics hub, (iii) Supporting efforts in development of Agro-food processing sector, (iv) leveraging the strengths and expertise of NCR talents in the film and television industries, promote cooperation among the film and television industries, & (v) Consolidating and enhancing NCR status as a high-end convention, exhibition and sourcing centre, globally.

- 9) Industrial estates based on agriculture should be setup on agriculture land which can support food processing units. Also, the non-polluting industries migrating from Delhi should be established in sub-regional areas, which have ample land.
- 10) Identify key sectors and work with academic institutions, business incubators, venture capitalists, and others to attract or create new companies while simultaneously supporting and expanding existing companies in those sectors.
- 11) There are new opportunities like defence production & aerospace sector. Future of mobility has changed and new dimensions such that energy efficient products, green technologies, service skilling, etc., have emerged. Products for women, millennial, finance and health are new age requirements. Fintech, data analysis, artificial intelligence are amongst others. Hence, related business, Institutes and Industries to support this kind of requirement need to be set up in the region.
- 12) Action should be taken for improving business environment for logistics sector specifically to stimulate economic activity in urban centres and their rural hinterland should be boosted to promote 'Make in India' program of Govt. of India. At the same time, agricultural productivity and income should be improved through farmer /producer/ APMC/ marketing nexus using ENAM platform in a regional and pan India context to network and create stakeholders.
- 13) New schemes should be rolled out for promotion of MSME and Employment Generation in NCR- (a) One District One Product., (b) Entrepreneurship Development, (c) New Skill Development Center at regional and sub-regional level, (d) Schemes for Eco-friendly non-polluting industries, (e) Incentive schemes for Food Processing Park &IT Park at sub-regional level.
- 14) In the MSMEs Sector, a serious fall in demand as many micro-industries cannot cope with the changing consumer preference and many units close down as they are unable to repay their debts. In this regard, following Strategies be taken into consideration:

- a) To decrease cost of production in MSMEs, governments should ensure smooth and constant supply of power and water to these units. Constructing plug and play complexes to accommodate MSMEs could ensure an efficient supply chain for inputs.
- b) Ensure the availability and wide disbursal of formal credit to micro enterprises along with credit schemes focused on female entrepreneurs. Loan should be easily available for MSMEs.
- c) Start-ups to be promoted through government Incentives to boost employment
- d) Policies, guidelines, schemes of the Government of India and NCR States related to various sectors should be timely implemented in all NCR districts and benefits should be taken from convergence of different schemes.
- e) New Common Facility Center for MSMEs should be established at regional and subregional levels and previously established CFC Centers should be improved so that SME can be benefitted.
- 15) Following aspects should be considered to improve the industries and MSMEs Sector in NCR:
 - a) GST must be identical for all industries in NCR. An administration should be made for NCR bylaws.
 - b) Bylaws of building must be identical for NCR.
 - c) Proposed Airport of Meerut should be developed fast.
 - d) Micro, Small & Cottage Industries in Villages of NCR should be promoted with provision of rebate, less obligations and statutory requirements.
 - e) As RRTS is going from Delhi to Meerut, it should provide connectivity at regional level as well as at sub-regional level in NCR. If it is laid out with establishment of commercial activity centers / hubs for Small Scale Industries & Residents, this may help growth engine thus generating income & prosperity.
 - f) Air Taxi must be started in NCR.
 - g) Regional Exhibition Center should be established in every sub-region based on local products, with easy commutation and connectivity to Railways, Metro and National Highways.
 - h) Warehouses should be established in every sub-region, based on local products, with easy commutation and connectivity to Railways, Metro and National Highways.
 - i) Sub-Region wise Containerdepot should be established in NCR, along with it, Freight Corridor should relate to the sub-container depot.
- 16) Micro Enterprises play an important role in employment creation and income. In micro enterprise, there are two parts one is livelihood and second is services. Apart from services, it also has manufacturing. Necessary actions should to be taken to improve the condition of Micro Enterprises.

- 17) Publicize, at home and abroad, traditional crafts and agricultural produce harvested in NCR, to promote the NCR brand.
- 18) Railway station of Partapur, Meerut should be fully developed (as per last RP-2021)
- 19) Due attention should be given by all concerns towards development of logistics in line with existing potential, future expectations, wholesale Market policy of Ministry of Commerce, Govt. of India and follow up policies of Haryana, Rajasthan and UP. It should cover start-ups, incentives on investment, fiscal (stamp duty/electricity duty) concessions, and interest subvention, development of e-Market place, Retail Centres, Cross-regional trade, e-Commerce platform and viability gap funding. These initiatives can minimize costs in logistics to the tune of 10% to 12%. Further, the development of suitable logistics (warehousing and transportation etc.) may reduce agricultural waste from current line of 25-30% to 20-25%. It will minimise rural urban divide and imbalance in the regional development¹¹.
- 20) The four things having impact on business are globalisation, technology, sustainability & scalability. Many businesses have extinct, for example Kodak. Changes are happening very fast. In case of automobile sector, now the electric vehicles are becoming the priority. Study says that India has 22 cars per 1000 people. If we compare to the BRIC countries, China has 179, Brazil as 360, Russia has more than 300 cars. If we change the fuel from diesel / petrol to electric, in a normal car there are 2000 parts which would become redundant, in electric vehicle/solar vehicle there are only 18 parts. Balance components would not be required. Lot of other industries which are not related will have to be close down. Therefore, alternatives for such industries need to be planned.
- 21) Support and Promote the Growth of key Economic Sectors, Including Tourism. Substantial concentration is required on the tourism activity. Policies to develop tourism sector for economic growth, parking and other tourism facilities should be addressed at Sub-Regional Plans.

22) Consider the following when preparing plans for tourism and visitation:

- a) encouraging the development of a range of well-designed and located facilities
- b) enhancing the amenity, vibrancy and safety of centres and township precincts
- c) supporting the development of places for artistic and cultural activities
- d) improving public facilities and access
- e) protecting heritage and biodiversity to enhance cultural and eco-tourism
- f) supporting appropriate growth of the night-time economy
- g) developing industry skills critical to growing the visitor economy
- h) incorporating transport planning to serve the transport access needs of tourists.

¹¹ Prof. K.K. Pandey, IIPA, Review Report recommendation

- 23) Local craftspersons, masons, carpenters and labourers should be engaged for heritage conservation and restoration activities to create jobs. Also, Support private sector institutes in tourism regulated by government to create the required talent pool. This can be done by expanding the number of private sector institutes or bodies recognized as implementing agencies for delivering the Ministry of Tourism's Hunar Se Rozgar Tak initiative to create employable skills.
- 24) There is high labour productivity in sectors such as electricity, water and gas, finance, real-estate and communications. However, other sectors witness modest to low productivity, Workforce Participation Rate (WPR) in Delhi has declined continuously through the period 2011-12 to 2015-16, Female WPR in the 15+ years age group is significantly lower than the male WPR, A significant proportion of the work force is employed for long hours but they produce and earn little. Low WPR implies low per capita savings and thus low standards of living. To tackle these major strategies includes (a) Formalization of informal sector activities, to ensure disbursal of benefits to all workers who are eligible for the government's labour welfare programmes, (b) Establishment of Plug and Play manufacturing zones complete with basic infrastructure facilities (power, water, sewage, Effluent treatment, roads, security) for the in-house industries as well as housing, skill development and healthcare for workers, (c) Promotion of females in the workforce by ensuring equal pay for equal work at all levels. Also making work spaces gender sensitive, and including day care centres within these spaces could foster female inclusion.
- 25) In order to enhance the skills of youth necessary training should be imparted and World Class Skill Centres, Schools designed with specific curricula to teach crafts like handloom & handicrafts should be establish at sub-regional/ district level. Vocational training & internship programs should be designed at district level to push for innovation and entrepreneurship right from the school level. Annual roaster can be prepared for such skilling & training programs.
- 26) Create spaces for skilling centres. Make sure new spaces for education are connected from urban space around. NCR should be prepared for the world to upscale and re-skill life.
- 27) Best practices and innovations taken up by local governments in the region, nation and elsewhere should be suitably shared. NCR Local Forum (NCRLF) should be created to involve local government's interaction and sharing of experience & expertise on different aspects of economic development. The forum should have Annual Work Plan activities covering meetings, fairs, workshops, seminars, research and capacity building.

Chapter 4 : Transport and Mobility

Annexure-P-4.1

National Cycle Riding Policy Framework¹²

- 1. International experience indicates that having an National Cycle Policy Framework (NCPF) can be a powerful tool to encourage cycling in urban areas. Such a framework can provide a common, integrated basis for the long term development and implementation of cycling policies among various sectors and levels of government. The preparation, and implementation, of an NCPF is part of the contribution to a sustainable travel vision, and contributes to cultural development.
- 2. The most important factors in ensuring that an NCPF is successful are as follows:
 - a) The participation of many stakeholders across several government departments, many agencies, all local authorities and other non-governmental organizations and institutions.
 - b) Appropriate levels of, and timely, funding for the initiatives.
 - c) The knowledge and human resources available to implement the policies.
 - d) Legislation and Enforcement.
- 3. There is no single action that will prompt people to cycle. There needs to be a wide package of measures to reverse the decline in cycling numbers. These measures need to integrate with wider transportation policies as well as other policy fields such as land-use planning, road safety and health. The efforts of formulating and implementing all of the policies must be maintained over the long-term. Broadly, the interventions can be grouped into:
 - a) Planning and Infrastructure
 - b) Communication and Education
- 4. At the highest level, all planning should consider the needs of cyclists. This should be articulated in all National, Regional, Local and sub-local plans. Cycling friendly urban planning principles may cover the need to keep distances between origin and destination short, through making developments permeable (i.e. easy for pedestrians and cyclists to pass through without making long detours) and well connected.

Transportation infrastructural designs need to be cycling friendly. Cycling-friendly means that routes taken by cyclists are safe, direct, coherent, attractive and comfortable. A new approach is required in which a "hierarchy of measures" is followed. The focus needs to be on:

- a) Reducing volumes of through-traffic, especially HGVs, in city and town centres and especially in the vicinity of schools and colleges.
- b) Calming traffic / enforcing low traffic speeds in urban areas.
- c) Making junctions safe for cyclists and removing the cyclist-unfriendly multi-lane oneway street systems.
- 5. The fiscal benefits of cycling include the value to the health service as a result of not having to treat illnesses which result from physical inactivity. There are also gains in productivity

¹² Ireland's First National Cycle Policy Framework

 $< http://www.smartertravel.ie/sites/default/files/uploads/2013_01_03_0902\%2002\%20EnglishNS1274\%20Dept.\%20of\%20Transport_National_Cycle_Policy_v4\%5B1\%5D\%5B1\%5D.pdf>$

arising from reduced absenteeism and having a fitter and more alert work force. Increased cycling numbers means less urban congestion, thus benefiting businesses. Cost benefit analyses (CBA) attest to the fact that investments in cycling outweigh the costs to a far greater extent than investment in other modes. For example, Benefit / Cost ratios of 7.4 have been shown for cycling training programmes in the UK (SQW, May 2007).

Annexure-P-4.2

Snapshot on design requirements of Water Aerodromes

Asia Pacific Regional Guidance on Requirements for The Design and Operations of Water Aerodromes for Seaplane Operations states the following:

Physical characteristics:

1. Water runway

- i. *Number and orientation of water runways:* The number of water runways at a water aerodrome and their orientation should be such that, for a large percentage of time as practicable but for not less than 95 percent there is at least one water runway for which the surface wind velocity component at right angles to its longitudinal axis will not preclude the landing or taking off of seaplane that the water aerodrome is intended to serve.
- ii. *Length of water runways*: The length of the water runway to be provided should be adequate to meet the operational requirements of the critical seaplane for which the runway is intended and should be not less than the longest length determined by applying the corrections for local conditions to the operations and performance characteristics of the relevant seaplanes.
- iii. *Width of water runways*: The width of the water runway should be not less than 60 m wherever practicable.
- iv. *Water Depth*: The depth of the water measured at low water level in the water runway should not be less than 1.8 m (6 ft.) or less than 0.3 m below the hull or floats when the seaplane is stationary and loaded to maximum takeoff weight.
- v. *Water runway strip*: A protective buffer should extend on each side from the edge of the water runway to a distance of not less than 30 m (100 ft.) and on each end of the water runway to a distance of 60 m wherever practicable.

2. Turning basins

- i. Turning basins should be provided at the end of the water runway, whenever necessary.
- ii. When turning basins are provided it shall have:
 - A diameter measured at low water level of not less than twice the specified minimum width of the corresponding water runway;
 - The depth of turning basins measured at low water level should be at least that of the corresponding water runway; and
 - A horizontal obstruction clearance between the edge of the turning basin and the nearest obstacle of no less than 15 m (50 ft.).

3. Taxi channels

i. Taxi channels should be provided to permit the safe and expeditious handling of aerodrome traffic. Where provided, the taxi channels shall have a width of not less than

45 m (150 ft.), wherever practicable.

- ii. Wingtip to wingtip clearance for passing seaplanes (dual directional taxi channels) should be not less than 15 m (50 ft.).
- iii. The depth of the water measured at low water level in the taxi channel should not be less than 1.8 m (6 ft.) or less than 0.3 m below the hull or floats when the seaplane is stationary and loaded to maximum take-off weight.

4. Mooring areas

- i. Mooring areas should be provided, whenever necessary, for the mooring of seaplane and to permit the embarkation and disembarkation of passengers, loading and unloading of cargo and mail without interfering with the aerodrome traffic.
- ii. When mooring areas are provided:
 - The size of the mooring areas should be adequate to permit expeditious handling of the peak hour traffic.
 - The depth of water at the mooring area measured at low water level should be at least that of the corresponding taxi channel.
 - The mooring area shall be designed in such a manner as to provide a minimum clearance of 15 m (50 ft.) between any part of the seaplane and any object it could come into contact with depending on water level.

5. Shore facilities

- i. A platform (fixed or floating), ramp or beach should be provided to permit the embarking and disembarking of passengers and crew, loading and unloading of cargo and refueling.
- ii. Where a platform is provided it shall:
 - be in a condition that permits constant use without causing injury to persons or damage to aircraft;
 - be attached or anchored in a manner that prevents it from shifting position or becoming detached;
 - have access from the shore that provides for the safe movement of crew and passengers; and
 - have at least two bull rails or provision for appropriate number of tie-down cleats at each seaplane parking position to secure the seaplane.
- iii. When a seaplane is normally secured in a position where any seaplane component overhangs the platform and constitutes a hazard to the movement of crew and passengers, the hazard shall be clearly indicated by means of:
 - cones; and/ or
 - hashed red and white markings; and
 - in a manner easily identifiable to crew and passengers.
- iv. Where a ramp or beach is provided it shall be:

- built 1.5 times the width of floats or landing gear of the largest seaplane intended to use the facility;
- located in such a manner as to provide a minimum clearance of 1.8 m (6 ft.) between a seaplane wing and any object it could come into contact with; and
- constructed with a slope not steeper than 8:1.

Obstacle Restriction and Removal:

1. Obstacle limitation surfaces (OLS):

- i. The following OLS shall be established for non-instrument water aerodromes
 - a take-off climb/approach surface;
 - a transitional surface; and
 - an inner horizontal surface.

Take-off climb /approach Surface:

The take-off climb/approach surface shall be either straight or curved and established at the end/beginning of the water runway strip.

Characteristics – The limit of the take-off climb /approach surface shall be:

- i. The width of the inner edge shall not be less than that of the associated water runway strip
- ii. The inner edge shall start at 60 m from threshold of water runway;
- iii. The elevation of the inner edge shall be the elevation of the water aerodrome;
- iv. The length of the take-off climb /approach surface shall not be less than 2500 m (8200 ft.) from the inner edge;
- v. The slope of the take-off climb/approach surface shall be a minimum of 4 % (1:25);
- vi. The centre line of the take-off climb/approach surface shall define the approach path and be:
 - a straight line; or
 - an arc of constant radius; or
 - a combination of a straight line and an arc of constant radius.

Straight-in take-off climb/Approach Surface:

Where the slope is designed for a straight-in approach the divergence of the take-off climb/approach surface shall be set at 10% starting from the inner edge.

Curved take-off climb/approach Surfaces:

Where established, a curved take-off climb/approach surface shall not contain more than one curved portion.

A curved portion of a take-off climb/approach surface shall not allow a change of direction greater than 90 degrees.

Where a curved portion of take-off climb/approach surface is provided:

- the straight portion originating at the inner edge shall not be less than 1300 m (4265 ft.); and
- the radius of arc defining the centre line of the take-off climb/approach surface shall not in any portion of the take-off climb/approach surface be less than 736 m (2415 ft.)

A take-off climb/approach surface incorporating a curved portion shall be established only where guidance, such as, geographical points or other visual references are available.

Dimensions and slopes of obstacle limitation surfaces - water aerodromes

Approach type -	-Non-instrument		
Take-off climb/approach surface			
Width of inner edge	Width of water runway strip -(120 m minimum)		
Location of inner edge	60 m from the threshold		
Divergence take-off climb/approach surface	10%		
Length (minimum)	2500 m		
Slope of take-off climb/approach surface (maximum)	4%(1:25)		
Transitional Surface:	Vertical to 15 m then 1:5 (20%)		
Slope (maximum)			
Inner Horizontal Surface:			
Height	45 m		
Radius	2500 m		

2. Displaced threshold:

- i. Where the integrity of the approach surface cannot be maintained due to fixed or mobile obstacles, a landing threshold shall be displaced from the normal threshold.
- ii. This displacement shall be established so that the new approach surface, starting at the displacement, will clear all obstacles.
- iii. Where a threshold has been displaced, the inner edge of approach surface shall be located at 60 m from the point of displacement.

Objects and obstacles:

- i. No fixed object shall be permitted on a water runway or on a water runway strip.
- ii. Fixed objects or structures that are located within the water aerodrome boundary shall not penetrate OLS unless:
- those structures are for air navigation purposes; or
- are essential to the safety of aircraft operation;
- are marked, in accordance with ICAO ; and
- are frangible.
iii. A mobile object shall not penetrate take-off climb/approach surfaces, unless procedures are in place to ensure the object is removed during approach and departure operations.

Other objects:

- i. Where an aeronautical study (safety risk assessment) indicates that an object is hazardous to seaplane located on the movement area or in the air in the immediate vicinity of the water aerodrome, it shall be:
- removed; or
- marked; and/or
- lighted in accordance with ICAO
- ii. The water aerodrome operator shall conduct a safety risk assessment to establish the required clearances to be used above waterways, lagoons, or harbor.

The guideline also mentions about Visual Aids for Navigation, Visual Aids for Denoting Obstacles, Wildlife Strike Hazard Reduction, Lighting Of Movement Area, Rescue And Fire Fighting, Water Aerodrome Emergency Planning.

The above guideline may be accessed at:

https://www.icao.int/APAC/Documents/edocs/APAC%20Guidance%20on%20WA%20for%20S eaplane%20Operations.pdf

Civil Aviation Requirements of DGCA for Aerodrome Design and Operations lays down requirements for aerodromes infrastructure including taxiways, Aprons, markings, aeronautical lightings, emergency services and maintenance standards in India. It further mentions that Guidance on all aspects of the planning of aerodromes including security considerations may be according to the ICAO Airport Planning Manual, Part 1. Guidance on land-use planning and environmental control measures may be according to the ICAO Airport Planning Manual, Part 2.

ICAO Airport Planning Manual, Part 1 may be accessed at :

https://www.idrf.de/wp-content/uploads/2015/03/9184_p1_cons_en.pdf

ICAO Airport Planning Manual, Part 2 may be accessed at :

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http://www.icscc.org.cn/upload/file/20190102/Doc.9184-EN%20Airport%20Planning%20Manual%20Part%202%20-%20Land%20Use%20and%20Environmental%20Control.pdf
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The manual on **aerodrome licensing procedures of Director General of Civil Aviation, GOI** describes the rules and procedures used by DGCA to process applications for the issue of aerodrome license. It is designed to ensure that the standards and requirements are applied when an aerodrome license is issued.

Annexure-P-4.1.3



Schematic diagram of a 75 Mtr. road cross section

Source: The Strategic Urban Development Plan of Greater Cairo Region, 2050

Policy to be elaborated in Sub-Regional Plans and Master/ Development Plans

- 1. For Intra NCR connectivity the potential demand within shorter leads need to explore possibilities of making Helicopters as a popular option. Option of considering the versatility, Heli operations can be viable for:
 - i) Heli Emergency Medical Services,
 - ii) Airborne policing
 - iii) Tourism,
 - iv) Higher disposable income customer,
- Improved Air connectivity through Helipads for purpose of normal commute/ air ambulance / policing & security purposes/ Disaster mitigation etc. (provision of which be incorporated by the participating states in the Sub-regional Plan / District Development Plans/ Master Plans / Developments Plans for Towns and cities), also enhancing prospects of tourism.

Multi-Modal Integration

- 3. Basic Design Principles of Multi Modal Integration (MMI) to
 - a. ensure seamless integration of Metro stations with all public transport within 300m radius distance from the metro station.
 - b. create adequate pick up and drop off facilities
 - c. create pedestrian pathway/ plaza, cycle track for safe and easy movement of people
 - d. improve walkability around metro station.
 - e. follow UTTIPEC Street Design Guidelines.
- 4. Interventions required from MMI to be considered at the micro level:
 - a. Road junction improvement & traffic calming measures.
 - b. Creation of Pedestrian Zones with Universal Access.
 - c. Drop off zones & road crossing facilities.
 - d. Improvement of lighting.
 - e. Provision of all public facilities.
 - f. Creation of Cycle Track and dedicated bays for IPT.
 - g. Provision of Signages.
 - h. Provision of Railings.
 - i. Shifting of Bus stops within 150m of metro station entrance.

Traffic management

- 5. For traffic management at ground/ local level efforts that could be explored at city/Town level
 - a) As benefits of Staggered Working Hours could include 10-15% reduction in peak hour traffic, Reduction in commuting time, Improvement in workers" efficiency,

better health and well-being of community, possible increasing participation of women in work force, the suggested different starting and closing times for different establishments that could be explored/considered may include:

- b) Flexi work hours in offices (as in UK, all employees have the legal right to request flexible working hours; more than one third of employees in US work on flexischedule; Flexible Work Arrangements (FWA), Singapore- the employers offering flexi work hours are entitled to receive financial incentives). The flexibility in working schedule is attributed to improvement in well-being of the employees, their productivity, level of satisfaction, attracting and retaining the talent.
- c) Work from home- once or more in a week as in Singapore and Hong Kong
- d) Tele-meeting/Video conferencing
- e) Compressed Work hours- 10-11 hrs for 4 days a week
- f) Shared Mobility

Transport System

- 6. Develop an integrated digital supply chain or e-cargo gateway based on the National Air Cargo Community System (NACCS) platform¹³. The modular development may include the following digital business enablers as plug-ins (as suggested by NITI Aayog):
 - a) e-contracting/ booking of cargo with access to financial payment gateways.
 - b) e-transportation multimodality (road-air first/ last mile connectivity).
 - c) e-compliances (initially online clearances by six participating governmental agencies; rest to follow).
 - d) Cargo Sewa a grievance redressal module linked to Air Sewa.

¹³ <u>https://www.civilaviation.gov.in/sites/default/files/Final%20ACS%20Report-compressed.pdf</u>

Annexure-P-4.5

S. No.	Amenities / Facilities						
1	Drinking water & Hand Pumps						
2	Lighting & passenger sheds & station						
3	Fans in passenger sheds						
4	Benches & chairs						
5	Display of time table and fare list						
6	Toilets and urinals						
7	Suggestions/complaint box						
8	Booking and enquiry counter						
9	Canteen/book stalls/general merchant shops						
10	Boarding platform						
11	Stalls						
12	PCO						
13	Passenger lounge						
14	Mini tube well and moulded tank						
15	Idle parking						
16	Public address systems						
17	Water cooler						
18	In-out enquiry						
19	Generator						
20	Administrative office						
21	Driver/ conductors rest room						
22	Private car, scooter rickshaw parking						
23	Television						
24	AC canteen						
25	AC waiting room						
26	Dormitory						
27	Computerized arrival/ departure						
28	Computerized booking/reservation						
29	Tube well & RCC overhead tank						
30	Cloak room						
31	Tourist information centre						
32	Washing machine						
33	Security room						
34	Passenger Information system						
35	Real Time Information System						

Set of Art Amenities and Facilities for Bus Terminal

Source: Functional Plan on Transport for NCR-2032

Chapter 5 : Power and Energy

Annexure-P-1.1

District wise proposal for electrical networks (new sub-stations & Infrastructure required to be added) in U.P. sub-region

District wise proposal for electrical networks (new sub-stations and infrastructure required to be added) includes the following:

- a) 33/11 KV sub-stations (total no. 926 & total cost Rs. 5986 Cr.)
- b) 33 KV line (total length 8480 km & total cost Rs. 6546 Cr.)
- c) 11 KV feeder (total length 13462 km & total cost Rs. 9933 Cr.)
- d) Underground Cable (total length 13000 km & total cost Rs. 14550 Cr.)
- e) AB Cable (total length 36500 km & total cost Rs. 5850 Cr.)
- f) Distribution T/F (total No. 87280 & total cost Rs. 15355 Cr.)
- g) Auto Re-closer / RMU with SCADA work (total No. 7035 & total cost Rs. 10500 Cr.)

District wise details provided at Annexure-P-.5.1.1

DISCOM Name: PVVNL Rs. in Crore																		
S. No.	Name of Districts	132/220 KV Substation		33/11 KV Substation		33 KV Line		11 KV Feeder		Underground Cable		AB Cable		Distribution T/F		Auto- Reclosure / RMU with Scada Work		Total Amount
		No.	Amt.	No.	Amt.	Km.	Amt.	Km.	Amt.	Km.	Amt.	Km.	Amt.	No.	Amt.	No.	Amt.	
1	G.B. Nagar			146	792	980	1245	1650	5640	2400	2400	3000	450	6480	2440	1200	2700	15667.00
2	Ghaziabad			150	1080	1800	2700	2400	2400	3100	4650	7500	1500	21600	7800	2600	5000	25130.00
3	Shamli			90	630	720	1575	1260	270	1200	1200	3000	450	7500	675	250	350	5150.00
4	Muzaffarnagar			160	1120	1280	280	2240	480	1600	1600	4000	600	9000	850	500	350	5280.00
5	Baghpat			75	480	690	150	1500	315	900	900	3000	450	8400	660	135	350	3305.00
6	Meerut			100	700	1200	228	2100	450	1400	1400	3000	450	13500	1275	1300	650	5153.00
7	Hapur			60	420	480	90	840	138	1000	1000	6000	900	7500	675	400	450	3673.00
8	Buland-shahr			145	764	1330	278	1472	240	1400	1400	7000	1050	13300	980	650	650	5362.00
Total				926	5986	8480	6546	13462	<u>99</u> 33	13000	14550	36500	5850	87280	15355	7035	10500	68720.00
	(Rs. Sixty Eight Thousand Seven Hundred Twenty Cr. Only)																	

Proposal for UP sub-region of NCR - 2041 Electrical Networks (New Substation & Infra required to be added)

Load Required for:

(i) Primary Substation: @ 1.0 Acre per substation

(ii) Secondary Substation: Total 11 Acre at different location.

(iii) Charging Station along Star Highway & National Highway @ 1.0 Acre per Charging Station

(iv) Load Growth @ 3 to 4 percentage per year including proposed works of Metro Rail, Vehicle Electric Charging Stations, Industrial, Domestic and Commercial Load.

(v) Load Growth due to constrictions of Tower International Airport is also included.

(vi) Primary Substation (400 KV, 200 KV and 132 KV) are also required to be constructed. Cost of Primary S/S is not included in this.

Suggestive Demand Side Management (DSM) Solution

- 1. Mandatory use of ISI marked motor pump sets, power capacitors, and foot-reflex valves in the agricultural sector.
- 2. Prepare Detailed Project Reports (DPRs) for municipal DSM programmes.
- 3. Adoption of the mandatory Energy Conservation Building Code (ECBC) in all government buildings and in all new building projects. Effective implementation of ECBC with the help of architects and BEE empanelled consultants. Changes in the building bye-laws to incorporate ECBC.
- 4. Energy efficiency of existing government buildings through retrofitting to be carried out so as to achieve at least a rating of one-star from BEE under their building labelling programme.
- 5. Promotion of energy efficient building design
- 6. Mandatory use of CFLs and electronic chokes in government buildings / government aided institution / boards and corporations. Mandatory use of T-5, 28 Watt tube-lights in government buildings and government-aided institutions/corporation.
- 7. Mandatory use of solar water heaters in NCR in different categories of buildings like industries, hotels, hospitals, canteens, corporate and residential building having an area of 500 sq.m. or above, government buildings, etc.
- 8. Promotion of CFLs/LEDs in all buildings, as well as for street lightings, hoardings, and advertisements.
- 9. Effective utilisation of SECF for energy conservation in small and medium enterprises (SMEs), energy audits, capacity building, etc.
- 10. Subsidy for promoting battery operated vehicles.
- 11. Implement scheme on an interest free loan for energy conservation measures.
- 12. Energy audits of government buildings, industries and commercial establishments
- 13. Time of Day tariffs¹⁴
- 14. Power Factor Surcharge/Incentive
- 15. Awareness programmes
- 16. Pre-paid Meters
- 17. Efficient lighting programmes
- 18. Load Research

¹⁴ Source: https://www.prayaspune.org/peg/publications/item/281-demand-side-management-in-india-an-overview-of-state-level-initiatives.html

Annexure-P-1.3

Indicative Suggestions for Reducing Losses in Distribution & Transmission Lines

It is fact that the unit of electric energy generated by power station does not match with the units distributed to the consumers. Some percentage of the units is lost in the distribution network. This difference in the generated & distributed units is known as transmission and distribution loss.

Distribution Sector considered as the weakest link in the entire power sector. Transmission losses are approximately 17% while distribution losses are approximately 50%. There are two types of transmission and distribution losses i.e. Technical losses and Non-Technical (Commercial Losses) losses¹⁵. Various methods & steps to reduce these losses are suggested as follow:

Reducing Technical Losses

- Converting LV Line to HV Line- Many distribution pockets of low voltage (430V) in town are surrounded by higher voltage feeders. At this lower voltage, more conductor current flows for the same power delivered, resulting in higher I2R losses. Converting old LV (430V) feeders to higher voltage the investment cost is high and often not economically justifiable but if parts of the LV (430V) primary feeders are in relatively good condition, installing multiple step-down power transformers at the periphery of the 430 volt area will reduce copper losses by injecting load current at more points (i.e., reducing overall conductor current and the distance travelled by the current to serve the load).
- 2) Large Commercial / Industrial Consumer get direct Line from Feeder Design the distribution network system in such a way that if it is possible than large consumer gets direct power line from feeder.
- 3) Adopting High Voltage Distribution Service (HVDS) for Agricultural Customer In High Voltage Direct Service (HVDS), 11KV line direct given to cluster of 2 to 3 Agricultural Customer for Agricultural Pump set and employed small distribution Transformer (15KVA) for given these 2 to 3 customer through smallest (almost negligible) LT distribution lines. In HVDS, there is less distribution losses due to minimum length of distribution line, high quality of power supply with no voltage drop, less burn out of motor due to less voltage fluctuation and Good quality of Power, to avoid overloading of transformer.
- 4) Adopting Arial Bundle Conductor (ABC) Where LT Lines are not totally avoidable use Arial Bundle Conductor to minimize faults in lines to avoid direct theft from line (tampering of line)
- 5) **Reduce Number of Transformer**
- a) Reduce the number of transformation steps.
- b) Transformers are responsible for almost half of network losses.
- c) High efficiency distribution transformers can make a large impact on reduction of distribution losses.
- 6) Utilize Feeder on its Average Capacity- By overloading of distribution feeder, distribution losses will be increased. The higher the load on a power line, the higher its variable losses. It has been suggested that the optimal average utilizations rate of distribution network cables should be as low as 30% if the cost of losses is taken into account.
- 7) **Replacements of Old Conductor or Cables** By using the higher the cross-section area of conductor / cables, the losses will be lower but the same time cost will be high. So, by forecasting the future load, an optimum balance between investment cost and network losses should be maintained.
- 8) Feeder Renovation / Improvement Program

¹⁵<u>https://www.electricalindia.in/losses-in-distribution-transmission-lines/</u>

- a) Reconductoring of Transmission and Distribution Line according to Load.
- b) Identification of the weakest areas in the distribution system and strengthening or improving them.
- c) Reducing the length of LT lines by relocation of distribution sub stations or installations of additional new distribution transformers.
- d) Installation of lower capacity distribution transformers at each consumer premises instead of cluster formation and substitution of distribution transformers with those having lower no load losses such as amorphous core transformers.
- e) Installation of shunt capacitors for improvement of power factor.
- f) Installation of single-phase transformers to feed domestic and nondomestic load in rural areas.
- g) Providing of small 25kVA distribution transformers with a distribution box attached to its body, having provision for installation of meters, MCCB and capacitor.
- h) Lying of direct insulated service line to each agriculture consumer from distribution transformers.
- i) Due to Feeder Renovation Program T&D loss may be reduced from 60-70% to 15-20%. Industrial / Urban Focus Program
- j) Separations of rural feeders from industrial feeders
- k) Instantly release of New Industrial or HT connections
- 1) Identify and replacement of slow and sluggish meters by electronics type meters.
- m) In industrial and agricultural consumer adopt one consumer, one transformer scheme with meter should be Introduced.
- n) Change of old service line by armoured cable.
- o) Due to Feeder Renovation Program, T&D loss may be reduced from 60-70% to 15-20%.
- p) Strictly Follow Preventive Maintenance Program
- q) Required to adopt Preventive Maintenance Program of Line to reduce Losses due to Faulty /Leakage Line Parts.
- r) Required to tights of Joints, Wire to reduce leakage current.

Reducing Non-Technical Losses

9) Making mapping / Data of Distribution Line

- a) Mapping of complete primary and secondary distribution system with all parameters such as conductor size, line lengths etc.
- b) Compilation of data regarding existing loads, operating conditions, forecast of expected loads etc.
- c) Preparation of long-term plans for phased strengthening and improvement of the distribution systems along with transmission system.
- 10) **Implementation of Energy Audits Schemes** It should be obligatory for all big industries and utilities to carry out energy audits of their system. Further, time bound action for initiating studies for realistic assessment of the total T&D losses into technical and non-technical losses has also to be drawn by utilities for identifying high loss areas to initiate remedial measures to reduce the same.

The realistic assessment of T&D loss of a utility greatly depends on the chosen sample size which in turn has a bearing on the level of confidence desired and the tolerance limit of variation in results. In view of this, it is very essential to fix a limit of the sample size for realistic quick estimates of losses.

11) Mitigating power theft by Power theft checking Drives

- a) Theft of electric power is a major problem faced by all electric utilities. It is necessary to make strict rule by state government regarding power theft. Indian Electricity Act has been amended to make theft of energy and its abetment as a cognizable offence with deterrent punishment of up to 3 years imprisonment. The impact of theft is not limited to loss of revenue, it also affects power quality resulting in low voltage and voltage dips.
- b) Required to install proper seal management at meter terminal box, at CT/PT terminal to prevent power theft. Identify power theft area and required to expedite power theft checking drives.
- c) Installation of medium voltage distribution (MVD) networks in theft-prone areas, with direct connection of each consumer to the low voltage terminal of the supply transformer.
- d) All existing unmetered services should be immediately stopped. Replacement of Faulty/Sluggish Energy Meter
- e) It is necessary to replace faulty or sluggish meter by distribution agency to reduce unmetered electrical energy.
- f) Required to test meter periodically for testing of accuracy of meter. Replacement of old erroneous electromechanical meters with accurate electro static meter (Micro presser base) for accurate measurement of energy consumption.
- g) Use of meter boxes and seals them properly to ensure that the meters are properly sealed and cannot be tampered.

Bill Collection Facility

- h) Increase bill's payment cells, increasing drop box facility in all area for payment collection.
- i) E-payment facility gives more relief to customer for bill payment and supply agency will get payment regularly and speedily from customer.
- j) Effectively disconnect the connection of defaulter customer who does not pay the bill rather than give them chance to pay the bill.

12) Reduce Debit areas of Sub-Division

- a) Recovery of old debts in selected cases through legal, communication and judicial actions.
- b) Ensuring police action when required to disconnect connection of defaulter Consumer. Watchdog Effect on Users
- c) Users must aware that the distribution Agency can monitor consumption at its convenience. This allows the company fast detection of any abnormal consumption due to tampering or by-passing of a meter and enables the company to take corrective action.
- d) The result is consumer discipline. This has been shown to be extremely effective with all categories of large and medium consumers having a history of stealing electricity. They stop stealing once they become aware that the utility has the means to detect and record it.
- e) These measures can significantly increase the revenues of utilities with high non-technical losses.

13) Loss Reduction Programmed

• The increased hours of supply to agriculture and rural domestic consumers have resulted in higher loss levels.

Brief facts about Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises, Government of India FAME-I & FAME-II, National Electric Mobility Mission Plan 2020 and Ministry of Power charging infrastructure guidelines

1. FAME-I & FAME-II

- 1.1. The FAME(Faster Adoption and Manufacture of (Hybrid and) Electric Vehicles)¹⁶ was launched by the Ministry of Heavy Industries and Public Enterprises in 2015 to incentivize the production and promotion of eco-friendly vehicles including electric vehicles and hybrid vehicles.
- 1.2. Implementing agency: Department of Heavy Industry, Ministry of Heavy Industries & Public Enterprises
- 1.3. Phases of the scheme
 - a) Phase I: started in 2015 and was completed on March 31st, 2019
 - b) Phase II¹⁷: started from April 1st, 2019, will be completed by March 31st, 2022
- 1.4. Salient features of the scheme
 - a) The scheme provides the incentive in the form of subsidies to manufacturers of electric vehicles and infrastructure providers of electric vehicles.
 - b) It is a part of the National Electric Mobility Plan
 - c) Encouraging electric vehicles by providing subsidies is the main thrust of the scheme.
 - d) The vehicles such as two wheelers, three wheelers, electric and hybrid cars and electric buses obtained the subsidy benefit of the scheme. It also covers electric and Hybrid technologies like Mild Hybrid, Strong Hybrid, Plug in Hybrid & Battery Electric Vehicles
- 1.5. The focus areas under the FAME
 - a) Technology development
 - b) Demand creation
 - c) Pilot projects
 - d) Charging infrastructure
- 1.6. FAME II This second phase of FAME is an expanded version of the first phase with following Key Features¹⁸:
 - a) The Phase-II of the Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME-India) Scheme proposes to give a push to electric vehicles (EVs) in public transport and seeks to encourage adoption of EVs by way of market creation and demand aggregation.
 - b) The scheme envisages the holistic growth of EV industry, including providing for charging infrastructure, research and development of EV technologies and push towards greater indigenization.
 - c) The outlay of ₹10,000 crore has been made for three years till 2022 for FAME 2 scheme. There is also provision for setting up of charging stations for electric vehicles in India.

¹⁶Source: PIB, Mint

¹⁷<u>https://dhi.nic.in/writereaddata/fame/famedepository/2-notification.pdf</u>and <u>https://dhi.nic.in/UserView?mid=1378</u>
¹⁸<u>https://www.manifestias.com/2019/07/31/fame-india-scheme-2/</u>

- d) Under the scheme the government will offer incentives for electric buses, three-wheelers and four-wheelers to be used for commercial purposes.
- e) It is mentioned that the plug-in hybrid vehicles and those with a sizeable lithium-ion battery and electric motor will also be included in the scheme and fiscal support offered depending on the size of the battery.
- f) FAME 2 will offer incentives to manufacturers, who invest in developing electric vehicles and its components, including lithium-ion batteries and electric motors.
- g) The centre has asked states to frame their EV policy and provide additional fiscal and non-fiscal incentives to manufacturers and buyers
- h) Eligibility to get incentive: Only buses priced up to ₹2 crore, strong and plug-in hybrids under₹15 lakh, three-wheelers under ₹5 lakh and two-wheelers under ₹1.5 lakh will be eligible for incentives.
- 1.7. Incentive and a committee to review the incentives:
 - a) The centre plans to roll out an incentive of ₹10,000 per kilowatt (kW) for two-, three- and four-wheelers, based on the size of their batteries.
 - b) To encourage state transport units (STUs) to buy more electric buses, ₹20,000 per kW will be offered as an incentive.
 - c) The incentives may further be subject to bidding by original equipment manufacturers.
 - d) A committee will review the incentives after a certain period.
 - e) Electric buses will be offered incentives on the basis of the operational expenditure model adopted by STUs
- 1.8. Significance of the FAME II with respect to charging infrastructure
 - a) Under the scheme the centre will invest in setting up charging stations, with the active participation of public sector units and private players.
 - b) It has also been proposed to provide one slow-charging unit for every electric bus and one fast-charging station for 10 electric buses.
 - c) Projects for charging infrastructure will include those needed to extend electrification for running vehicles such as pantograph charging and flash charging.
 - d) FAME 2 will also encourage interlinking of renewable energy sources with charging infrastructure
- 1.9. Battery Electric Vehicles (BEVs)
 - a) India has a scarcity of lithium and will have to rely on expensive imports to sustain a growing BEV industry as the lithium is the best battery technology and delivers high energy and high power.
 - b) Current battery technology is not mature enough to allow BEVs to compete with fossil fuel-based vehicles. As the energy efficiency capacity of BEVs is 100 times less than petrol and diesel vehicle, it provides low range per charge.
 - c) Another technical deficiency of BEVs is that their speed and acceleration is lower than conventional fuel-based vehicles because of the low power capacity of batteries.
- 1.10.Hybrid Electric Vehicles (HEVs): An HEV has a conventional internal combustion engine propulsion system plus an electric propulsion system consisting of a battery and a motor. This makes HEVs heavy and expensive. Therefore as per the current technology it can only be used in light commercial vehicle.

2. National Electric Mobility Mission Plan 2020

- a) It is a National Mission document providing the vision and the roadmap for the faster adoption of electric vehicles and their manufacturing in the country.
- b) This plan has been designed to enhance national fuel security, to provide affordable and environmentally friendly transportation and to enable the Indian automotive industry to achieve global manufacturing leadership.
- c) As part of the NEMMP 2020, Department of Heavy Industry formulated a Scheme viz. Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme in the year 2015 to promote manufacturing of electric and hybrid vehicle technology and to ensure sustainable growth of the same.
- d) Under the NEMMP 2020, there is an ambitious target to achieve 6-7 million sales of hybrid and electric vehicles by the year 2020.
- e) Based on the experience gained in the Phase-I of FAME India Scheme, it has been observed that sufficient number of charging infrastructure is required to achieve the expected outcome of the plan, which is being addressed presently in Phase-II of FAME Scheme

3. Charging infrastructure guidelines of Ministry of Power

- i). The Guidelines and Standards for Charging Infrastructure for Electric Vehicles (EVs) were issued by the Ministry of Power on 14.12.2018 which were revised on 01.10.2019¹⁹.
- ii). Key features in the guideline are as follows:
 - a) Private charging at residences / offices shall be permitted. Distribution Companies (DISCOMs) may facilitate the same.
 - b) Setting up of Public Charging Stations (PCS) shall be a de-licensed activity and any individual/entity is free to set up public charging stations provided that, such stations meet the technical, safety as well as performance standards and protocols laid down below as well as any further norms/standards/specifications laid down by Ministry of Power and Central Electricity Authority (CEA) from time to time.
 - c) The tariff for supply of electricity to EV Public Charging Station should not be more than 15% of the average cost of supply.
 - d) For all practical purposes, Battery Charging Station (BCS) shall be treated at par with Public Charging Station (PCS), and the applicable tariff for electricity supply shall also be the same as for PCS. In this regard, Public Charging Station (PCS) means an EV charging station where any electric vehicle can get its battery recharged and Electric Vehicle Supply Equipment (EVSE) means an element in electric vehicle (EV) charging infrastructure that supplies electric energy for recharging the battery of electric vehicles.
 - e) Captive Charging Station (CCS) for 100% internal use will be owned or will be under the control of the owner of the charging station and it will not be used for commercial purposes.
 - f) The highlight of the amendment is recognition of 'Battery Swapping Stations' which means a station where any electric vehicle can get its discharged battery or partially charged battery replaced by a charged battery."
 - g) Charging Station may also be installed by Housing societies, Malls, Office Complexes, Restaurants, Hotels, etc. with a provision to allow charging of visitor's vehicles which are permitted to come in its premises.
- iii). Detail guidelines are available at following link:

¹⁹<u>https://emobilityplus.com/2020/06/10/mop-issues-revised-guidelines-and-standards-for-ev-charging-infrastructure/</u>

<<u>https://powermin.nic.in/sites/default/files/webform/notices/Charging_Infrastructure_for_Electric_Vehicles%20_Revised_Guidelines_Standards.pdf</u>>

4. Further, **amendments in Model Building Bye-Laws (MBBL -2016) for Electric Vehicle Charging Infrastructure** are issued by the Town and Country Planning Organization (TCPO),MoHUA, Government of India in February, 2019 which are available at following link:

<http://mohua.gov.in/upload/whatsnew/5c6e472b20d0aGuidelines%20(EVCI).pdf>

Brief about Electric Vehicle (EV) Policy of GNCT Delhi

The Government of NCT Delhi has launched the Delhi Electric Vehicle Policy 2020²⁰ with an objective to establish it as the EV capital of India and accelerate the pace of adoption across vehicle segments, especially in the mass category of two-wheelers, public/shared transport vehicles and good carriers.

The policy which will remain valid for a period of three years seeks to drive the rapid adoption of Battery Electric Vehicles (BEVs) so that they contribute to 25 percent of all new vehicle registrations by 2020. The fiscal incentives being offered would be in addition to the demand incentives available in the central government's FAME II scheme.

It comes as huge blow Internal Combustion Engine (ICE) vehicles as additional taxation has been implemented for fund promotion of EVs.

A cess on the sale of diesel is already applicable in the NCT of Delhi at 25 paise per litre. Additional road tax will be levied on diesel and petrol vehicles, especially luxury cars. The notice further added that an appropriate congestion fee will be levied on all trips taken using cab aggregator and ride-hailing services.

Provisions for Different Segments:

To drive a large scale adoption of electric vehicles, the policy focuses attention on incentivising different segments. Here is a look at incentives offered in different vehicle segments.

Electric Cars:

A purchase incentive of Rs 10,000 per kWh of battery capacity will be provided per electric four-wheeler (subject to a maximum incentive of Rs 1.5 lakh per vehicle) to the registered owner of the first 1000 e-cars to be registered in Delhi after issuance of the policy.

Electric Two-Wheelers:

The demand generation incentives offered for two-wheelers will be based on battery capacity. It will be available only for electric two-wheelers with advanced batteries.

A purchase incentive of Rs 5000 per kWh of battery capacity will be provided per vehicle to the registered owner and subject to a maximum incentive of Rs 30,000 per vehicle.

The registered owner of electric two-wheelers will also be eligible for a scrapping incentive for scrapping and de-registering old ICE two-wheelers registered in Delhi.

Electric Auto Rickshaws/ E-Rickshaws/E-carts:

An open permit will be applicable for e-autos wherein permits will be given on the first-comefirst-serve basis. Individuals with a valid light motor driving license (DL) and a PSV badge will be eligible for e-auto permit.

A purchase incentive of Rs 30,000 per vehicle will be provided to the registered owner of the electric auto, electric rickshaws and electric carts.

The incentive will apply to all e-rickshaws and e-carts including the models with lead-acid batteries and swappable models, where the battery is not sold with the vehicle.

²⁰https://transport.delhi.gov.in/sites/default/files/All-PDF/Delhi_Electric_Vehicles_Policy_2020.pdf

Additionally, Interest subvention of 5 percent on loans and hire purchase scheme will be given for the purchase of an e-auto, e-rickshaw and e-carts only if the loan is availed from Delhi Finance Corporation (DFC).

Electric Buses:

The state government will be looking at the substantial addition of buses to the public transport fleet in the period 2019-2022.

The policy seeks pure electric buses to constitute at least 50 percent of all new stage carriage buses procured for the city fleet, starting with the induction of 1000 pure electric buses by 2020. **Goods Carriers:**

Light Commercial Vehicles used as goods carriers will get a purchase incentive of Rs 30,000 to the first 10,000 e-carriers to be registered in Delhi after issuance of policy in addition to interest subvention of 5 percent on loans availed from DFC.

The purchase of e-carriers will also be eligible for a scrapping incentive for scrapping and deregistering of old ICE goods carriers.

Additional Provisions and Policy Implementation:

Road tax and registration fees will be waived for all battery electric vehicles during the period of the policy.

If the battery is not sold with the vehicle, 50 percent of the purchase incentive will be provided to the vehicle owner and the remaining 50 percent would be provided to energy operators for defraying the cost of any deposit that may be required from end-users for a swappable battery.

Delhi Transport department will be the nodal department for the implementation of the policy. A dedicated EV cell and a State Electric Vehicle Board will also be constituted for the effective implementation of EV policy.

Chapter 6 : Water and Drainage

3.0 Water reuse categories and typical applications

- a) Agricultural land Crop Irrigation, Commercial Nurseries
- b) Landscape Irrigation Parks, Schoolyards, expressway median, Golf courses, Cemeteries, Green Belts, Residential
- c) Industries recycling and reuse Cooling Water, Boiler Feed, Process water, Heavy Construction
- d) Ground Water Recharge Groundwater Replenishment
- e) Recreational/ Environmental uses Lakes and ponds, Marsh enhancement, stream water augmentation, fisheries, Snowmaking
- f) Non-potable urban uses Fire- Protection, Toilet Flushing

6.0 Proposed Dam for Delhi NCR water facilitation

The union Ministry Jal Shakti has fixed new deadlines and revised budgets of three suspended multi-storage projects like Lakhwar, Kishau and Renukaji in Uttarakhand and Himachal Pradesh. With revised budgets and deadlines, the three will now cost approximately Rs 22,000 crore. The budget of each of the projects could be revised, but the 90:10 cost-sharing ratio between the centre and the states will remain.

The projects were suspended at different stages since 1992 due to concerns over financial viability and environmental clearances from the basin states. Project wise detail is given as below:

- 1. **Renukaji project:** The project, being constructed by Himachal Pradesh Power Corporation Limited (HPPCL) at an approximate cost of Rs 5,000 crore, has been declared a Project of National Importance. In the deep freeze since 1994 over cost-sharing issues, the project is now expected to be completed by 2029. Refer more details as given at **Annexure-P-1.6.1**
- 2. Lakhwar project: The project was initially approved by the Planning Commission on 9 January 1976. Construction started 11 years later but was suspended in 1992 due to a shortage of funds. The cost of the project was about Rs 1,400 crore, according to estimates as on March 1996, but the beneficiary states fell short of adequate funds even when their share was 10 per cent. The project now has a four-year target completion date of December 2022. Another run-of-the-river scheme project on the Yamuna Vyasi is under construction in Dehradun by UJVN. The construction of the Lakhwar dam will begin after Vyasi dam is built. Both Lakhwar and Vyasi were initially planned together, but the two projects were split later. Once completed, the two dams will together supply 135 MGD of water to the national capital. Refer more details as given at Annexure-P-1.6.2
- **3. Kishau project:** Construction of the dam was originally expected to begin in 2015 by UJVN. However, the approval was granted only last year. The project is now due for completion in 2023 at an approximate cost of Rs 12,000 crore, said the ministry. Refer more details as given at **Annexure-P-1.6.3**
- 4. Sutlej Yamuna Link (SYL) Canal running about 121 km in Punjab and 90 km in Haryana envisages conveying 3.45 MAF out of 3.5 MAF of Haryana's average annual share of surplus Ravi-Beas waters as per 1981 agreement between Punjab, Haryana and Rajasthan. Haryana portion of the canal stands complete. Punjab portion of the canal was targeted for completion by March 1991. By July, 1990 when a major portion of the works in Punjab had been completed, the works came to a standstill following the killing of the Chief Engineer and a Superintending Engineer of the project on 23.7.1990. As the works were not resumed, Government of Haryana filed a Suit in 1996 in the Supreme Court of India with a prayer for immediately restarting the work and completing the SYL Canal. Supreme Court delivered its judgment on 15.1.02 directing the State of Punjab to complete the canal within one year failing which, the Government of India to complete the canal as expeditiously as possible through its own agencies. Refer more details as given at Annexure-P-1.6.4
- 5. Eastern Rajasthan canal project PHED Rajasthan has projected and proposed 727 mld for the coming years and the water will be coming from Chambal River basin. This river is passing through Dholpur. Water is to be collected from Dholpur and supplied at Bharatpur and Alwar. Rajasthan has proposed Eastern Rajasthan canal project to divert the water available in the surplus basin to the deficit basin. It proposes transfer of water of Kalisind and Parbati sub basin of Chambal basin to the water deficit sub basins of Banganga, Ruparail, Gambir and Banas sub basin. This project is expected to meet the demand of drinking water for 13 districts of Rajasthan which includes Bharatpur and Alwar districts also. The Eastern Rajasthan canal project will also rejuvenate the command area of 0.8 lakh hectare in this

region and will also create 2 lakh hectare command area in the new region. This project will also fulfill the industrial demand which also includes Delhi Mumbai Industrial Corridor. It will also augment supply in 26 existing dams which will include Jaisamand Dam of Alwar District and Baretha Dam of Bharatpur District. The Govt. of Rajasthan has submitted DPR for 'Eastern Rajasthan canal project' to Central Water Commission which is under examination.

Brief Note on the Eastern Rajasthan Canal Project (ERCP)

The Eastern Rajasthan Canal Project (ERCP) has been proposed by Govt. of Rajasthan. As per the information available with NWDA, the ERCP aims to utilize about 3510 MCM of water at 50% dependability to meet drinking water requirement of 13 districts viz., Jhalawar, Bara, Kota, Bundli, Sawai Madhopur, Ajmer, Tonk, Jaipur, Dausa, Karauli, Alwar, Bharatpur and Dholpur of Rajasthan as well as providing irrigation to new command area of about 2 lakh ha and stabilization of about 0.80 lakh ha of existing command area.

Further, in order to optimize the utilization of waters of the Chambal River System, the Task Force for interlinking of Rivers (TF-ILR) decided to integtrate the ERCP with Parbati-Kalisindh-Chambal (PKC) link project of National Perspective Plan (NPP). As per the Pre-Feasibility Report (PFR), the link project will provide annual irrigation of 1.67 lakh ha under the Kumbhraj and Shrimant Madhav Rao Scindia (SMRS) dam projects besides providing drinking water supply of 36 MCM in Madhya Pradesh State. About 131 MCM of waters would be available on substitution basis for Rajasthan State for augmenting the ERCP.

1.0 Revival and Rejuvenation of River Yamuna

- 1.1 An integrated approach be taken for revival or rejuvenation of river Yamuna. Revival/ or rejuvenation of River Yamuna in the stretch upstream of Wazirabad Barrage can be taken up as a priority project. The Environmental Flows requirements, particularly for the lean season, should be re-assessed and be ensured by all the concerned agencies. Additional water at Wazirabad Barrage be released downstream to improve quality of river water between the stretch from Wazirabad Barrage to Okhla Barrage and increase availability of water at Okhla Barrage for its distribution. The neighbouring states of Uttar Pradesh & Haryana can utilize treated effluent from Delhi for their irrigation needs and in lieu can provide river raw water to Delhi for its drinking water needs.
- 1.2 Delhi Jal Board may ensure discharge treated effluent of high quality standards from its upcoming Coronation STP in the River Yamuna at Palla which can be lifted with river water at Wazirabad for use as raw water source for further treatment to augment its limited water resources. Delhi may even consider providing the same to Haryana directly for its irrigation needs. Haryana can provide river raw water from its share to Delhi for its drinking water needs. Delhi Jal Board has also taken up matter with the State of Uttar Pradesh for providing river raw water from its share in lieu of treated effluent of adequate quality by Delhi for irrigation needs of Uttar Pradesh²¹.

Box 1.1: In July 2018, Delhi government announced that, taking a cue from Singapore's NEWater policy, it would use treated sewage water to augment 15-20% of overall supply within two years, increasing to 50% in the following five years. Under the plan, treated water was to be pumped from a new water treatment plant at Coronation Park into the Yamuna near Palla inside the Delhi border. Treated water would mix with the river water and travel 11km downstream, in the process undergoing natural purification. This water would be re-drawn at the Wazirabad treatment plant (WTP) and put through further purification as raw water²².

River Rejuvenation Committee, Govt. of NCT Delhi prepared an Action Plan for River Yamuna in compliance to directions of the Hon'ble NGT orders dt. 20.09.2018 and 19.12.2018 (OA No. 673/2018 in the matter of news item published in 'The Hindu' authored by Shri. Jacob Koshy titled "More river stretches are now critically polluted: CPCB"). In the Action Plan, it is proposed under "Utilization of Treated Wastewater" that for irrigation in UP. in next 4 years subject to consent of UP. Irrigation Department, UP. can use Delhi's treated effluent of adequate quality for irrigation in lieu of raw water supply for proposed 140 MGD WTP at Sonia Vihar. However, cost sharing not mentioned²³.

1.3 Revival or rejuvenation of River Yamuna in the stretch between Wazirabad & Okhla Barrages (Delhi Segment): There is a flow of about 105 MGD from Haryana through

²¹Source-views of CEO, DJB in the workshop

²²Source:<u>http://timesofindia.indiatimes.com/articleshow/70952395.cms?utm_source=contentofinterest&utm_medium=text&</u> <u>utm_campaign=cppst</u>

²³Source:http://environment.delhigovt.nic.in/wps/wcm/connect/da19c1804a3947108be99f15ffe59382/RRC+revised+action+plan. pdf?MOD=AJPERES&Imod=-1756106827&CACHEID=da19c1804a3947108be99f15ffe59382

Badshahpur and Dharampuri Drains (90 MGD) & Diversion Drain-6 (15 MGD), which contribute flows to Delhi Segment. Out of this, about 80 MGD is un-treated. Concerned Departments/ agencies of the Govt. of Haryana should to take suitable measures for it.

- 1.4 Delhi is taking multifarious measures to improve the quality of river water in Delhi Segment. Focal areas include;
 - a) Increasing the sewage treatment capacities,
 - b) Increased collection and conveyance of sewage to existing and proposed sewage treatment plants.
 - c) Extending sewerage system including in un-planned development in Delhi which is more than 50%.
 - d) Motivating people to take sewer connections. In December 2019 the Delhi government had launched the Mukhya Mantri Free Sewer Yojana under which people were entitled to get free sewer connections by March 2020.
 - e) Delhi Jal Board has identified around 600 locations under phase-I of the project, where sewage treatment plants (STP) decentralized could be set up. All these locations are in unauthorized colonies and village areas where the majority of population has no access to a sewerage network. Delhi government is further considering making it compulsory for group housing societies, schools, apartment buildings, etc., to have decentralized STPS onsite. A rule already exists that makes it compulsory for new buildings to have in-situ waste treatment and there a 15% rebate if such a project exists²⁴. Detail of 09 decentralized STPs and location of STPs is given at **Annexure-P-1.1.1**.
- 1.5 Increased flow in the river Yamuna will reduce river water pollution. The matter of e-flow in the River Yamuna has been dealt in detail by the NGT in OA No. 06 of 2012 pertaining to Clean and Rejuvenated Yamuna River. Order dated 11.06.2015 include the observation of the Principal Committee with respect to minimum e-flow required in the River Yamuna for its rejuvenation and suggested that lower limit (minimum e-flow) at Hathnikund Barrage may not be less than 2500 cusec. However, in terms of Hon'ble NGT Order of 2015, 10 cumec or 352 cusecs is being released from Hathnikund Barrage. However, till the time, the three upstream storages (Renukaji, Lakhwar & Kishau) are constructed on the River Yamuna and its tributaries, about 1500 cusec may be released from the Hathnikund Barrage in the River Yamuna. These releases in the River Yamuna will revive it to large extent between the stretch from Hathnikund Barrage to Wazirabad Barrage and will make available enough water for keeping Wazirabad pond full in terms of the Hon'ble Supreme Court Orders dated 29.02.1996 to meet present drinking water needs of Delhi.
- 1.6 As regard water requirement at Yamuna, during the monsoon 50 percent of the free flow is needed to avoid silting of the riverbed and during the non-monsoon period, 60 percent is needed to avoid algal choking. Thus for a genuine ecological flow for a river to be healthy and maintain all its associated functions, the free flow must be close to 50-60 percent of the total flow, all year round. As per a Memorandum of Understanding (MOU) between the basin states of the Yamuna, a minimum flow of 10 m³/s is required throughout the year for ecological purposes²⁵.
- 1.7 A High Powered Committee for Yamuna River Development chaired by the Lt. Governor, Delhi had been constituted by the Government of India in August, 2007. It is suggested that this committee be expanded to include the Chief Secretary, UP as well as five expert members in the field of science and engineering and its mandate to also include integrated

²⁴ <u>https://timesofindia.indiatimes.com/city/delhi/kejriwal-reviews-plan-for-decentralised-stps/articleshow/60835396.cms</u>

²⁵ Source: <u>https://www.indiawaterportal.org/articles/how-much-water-should-flow-yamuna</u>

management and coordination among various planning, execution, funding and regulatory agencies of the two states to be involved in the restoration and management of the river in the Delhi stretch. The HPC should also closely liaise with the NGRBA for better integration of their activities, since Yamuna is a sub-basin of the Ganga Basin.

Box 1.2: Case Brief

Case: Delhi water supply and sewerage disposal undertaking vs. State of Haryana Order Date: 29.02.1996

Deciding Court: In the Supreme Court of India Articles/ Acts referred: Article 32 and Article 262

Judgment: The case related to the insufficient release of water into the river Yamuna from the Tajewala headworks. This was leading to insufficient drinking water for people of Delhi. The court opined that the primary use of water is for drinking. This need cannot remain unfulfilled at the cost of irrigation water. Under Article 32 of the Constitution, the case was brought to court under a writ petition. Also, the Court under Article 262 under which interstate water disputes are resolved entertained the grievance of the petitioner. The court ordered that the Hyderpur and Wazirabad reservoirs should remain filled with water through river Yamuna. The court also opined that this order of the court was to be also observed by upper Yamuna Board, the management body for implementing the MOU, which was non-functional by this time.

(Source: Discussion Paper "Towards Understanding the Right to Water and Sanitation" published by WaterAid India Liaison Office in Dec. 2009)

- 1.8 Regarding River rejuvenation, the responsibilities assigned by Hon'ble NGT which include following, may be followed by the stakeholders that include Delhi Jal Board, MCD, Upper River Yamuna Board, DDA, DSIIDC, UP and Haryana, Irrigation and Flood Control Department.
 - i. To provide universal access to sewerage system.
 - ii. To capture entire sewage and convey it to STPs, treat and dispose it safely.
 - iii. To prevent dumping of garbage in the drains and river.
 - iv. Desilting and Fencing of Drains: The process of desilting is started in the month of March-April and completed by the end of June-July every year.
 - v. Closing illegal industries, slaughtering and dhobi ghat in residential areas.
 - vi. Desilting and channelizing of drains preventing solid waste, idols and plastic waste from being thrown in the river or falling back into river.
 - vii. To prevent discharge of untreated industrial effluent and sewage into water coming into Delhi.
 - viii. Ensure all Industrial effluent is treated through CETPs before discharge. During COVID-19 lock-down improvement in quality of Yamuna in Delhi was observed because industries upstream were closed, and there were no floating population or squatters on Yamuna floodplains.
 - ix. Removal of squatters from the banks of the river and flood plain.
 - x. To release adequate water for dilution.
 - xi. Flood Plain rejuvenation.
 - a) All solid waste dumps within the active floodplain should be removed forthwith.
 - b) Recycling units, farmhouses, cattle farms and nurseries to be relocated. Report on Restoration and Conservation of River Yamuna submitted to the National Green Tribunal with reference to Main Application no. 06 of 2012 (Tribunal's order dated 24 September 2013) recommended it. Nurseries located within the active floodplain to be relocated.

- c) Construction of new bunds, roads etc. within the active floodplains should be stopped and banned. It is recommended in the Report on Restoration and Conservation of River Yamuna.
- d) No filling of the floodplains or riverbed be allowed for $ghats^{26}$.
- e) The floodplain under built up areas be recovered.
- f) All recreational facilities for ghats be created close to the embankments or roads, by diverting channel for this purpose.
- g) Construction of new barrages and roads, railway and metro bridges, and embankments and bunds only in most exceptional cases.
- h) Identify additional landfill sites catering to the next 25 years of requirement.
- i) Protect riverbed from dumping of debris, MSW and Biomedical Waste.
- xii. Regarding River Zone:
 - a) The 'O' zone as defined in MPD 2021, be designated as the river zone.
 - b) The River Zone so designated should be preserved and protected for the conservation and restoration of the river.
 - c) No development activity should be permitted within the river zone that encroaches upon the active floodplain, obstructs the flow or pollutes the river (solid waste or wastewater).
 - d) The existing constructions, facilities or within the river zone allowed as an exception, be treated as a Special Zone a regulatory regime to ensure that these areas do not impact water quality or flow of the river.
 - e) Barbed wire fencing in highly vulnerable areas for preventing encroachments and waste dumping in future. The polluter-pays principle should be enforced for defaulters. Restoration cost should be recovered from the defaulters.
 - f) No to Riverfront: Yamuna Riverfront Development is untenable and should be stopped as the area of the proposed YRFD is within the active floodplain²⁷.

The Riverfront Development Scheme should be replaced by a plan for restoration of the river and its floodplain as suggested below:

- a) Controlled dredging of riverbed, barrage, wetlands and floodplain water bodies.
- b) River training works (spurs etc.) to be relooked -extension and development be stopped, length of spurs should be restricted to allow a wider space for the river channel.
- c) Culverts be constructed under the existing guide bunds of roads and flyovers, for flood discharges, aquatic biota (e.g., fish) and enhanced the groundwater recharge.
- d) A mosaic of wetlands and floodplain vegetation having native biodiversity be developed, along the banks. Outfall from all the major drains (after treatment in STPs) to be routed through them.
- e) A greenbelt or greenway be developed on both sides of the embankment, for controlling erosion, reducing sediment, reduce pollution, and beautification. Nature trails.
- f) Nature trails be provided across riparian areas for recreation to the public without losing the ecological functions of the floodplains.

²⁶ Proposed in the Report that "the floodplain under built up areas at Sur Ghat and Quidesia Ghat should be recovered. All recreational facilities for people visiting ghats should be created close to the embankments/roads where a channel taken out from the water course of the river can be brought for the purpose.

²⁷ Views of CWC. Further, In the Report on Restoration and Conservation of River Yamuna it is recommended that the Yamuna Riverfront Development is untenable and should be stopped. It is noteworthy that the DDA itself admits on their proposed redelineation of 'O'-zone (as per the Public Notice issued by DDA on 28 September 2013) that the riverfront refers to the area that lies outside the embankments. But the area of the proposed YRFD is within the active floodplain.

- g) Control of sewage pollution must be given highest priority: interceptor sewer, capacity augmentation of STPs, enhanced efficiency, extension to un-sewered areas, and the present sewerage systems be rehabilitated.
- h) Adoption of new technologies to reduce BOD levels.
- i) Ensure the provision of environmental flows. Treated sewage and stormwater, if within acceptable quality norms, be counted for e-flows.
- j) A comprehensive master plan for sewerage for complete city.
- k) Agricultural activity on the floodplain be regulated to totally prohibit the use of agrochemicals (fertilisers and pesticides), & restricted to areas beyond 100 m.
- 1) Access to the river channel for social/cultural/religious functions and recreation be allowed provided it avoids construction of paved (pucca) paths and does not cause any kind of pollution.
- xiii. Institutional arrangement:
 - i. The river stretch in Delhi should be declared as a Conservation Zone under section 3 of the Environmental Protection Act 1986 (29 of 1986) and appropriate rules be framed for the human activities to be permitted or prohibited.
 - High Power Committee for integrated management and coordination among various planning, execution, funding and regulatory agencies.²⁸
 Responsible Organizations: Ministry of Environment and Forests, Government of India.

²⁸ In the said report, under institutional Arrangement, it is mentioned that the River Zone of the river Yamuna within the NCT-Delhi (together with the corresponding areas of U.P.), as identified in this report, is highly vulnerable to several anthropogenic pressures in the absence of regulatory measures and legal protection. The ecological integrity of the river, particularly the functioning of floodplain ecosystems, cannot be sustained even after restoration unless adequate measures are taken for its protection. The Committee therefore recommends that the 52 km stretch of the river Yamuna in the NCT of Delhi and UP should be declared as a Conservation Zone under section 3 of the Environmental Protection Act 1986 (29 of 1986) and appropriate rules be framed for the human activities to be permitted or prohibited.

5.0 Digital Support for Water and Drainage Planning

- 1 It is highly desirable to change the strategy of planning, development and management by introducing the appropriate tools of integration such as GIS and databases, if the basic requirement of integrated development of NCR has to be fulfilled. Otherwise, this shall remain business as usual and conditions shall keep on deteriorating further.
- 2 Ample stress has been given on the capacity building of various departments engaged in various aspects of water, wastewater, storm water and many allied areas. The capacity building shall be meaningful if a GIS framework is formulated that has the capability of integrating all the sub-components that interact with each other. NCT of Delhi already has such GIS framework in place with GSD Ltd. and possibility of the same to be explored by the other NCR sub-region with some effort. Subsequently all sub-regions GIS portals be merged on NCR Geo-Portal. The GSDL and other concerned agencies staffs in all sub-regions need to be trained.
- 3 Surface water from the Yamuna basin, groundwater as well as transported water from other basins in spatio-temporal manner be depicted using the GIS environment as a water resource layer.
- 4 Mapping of Water Demands: various demand layers such as domestic, industrial, irrigation, etc., should be depicted in a spatial and temporal manner at each subregional level. Such a depiction shall provide a very easy understanding of the status of water use for each area of the sub-regions or districts and overall, at NCR level and reveal the extent of water deficit created in the respective areas.
- 5 Mapping of Water Quality: It is observed that many areas in NCR are having poor water quality due to varied reasons. It is important to map the water quality status along with the reasons for each sub-regions or district and accordingly required actions be planned in detail in the Sub-Regional Plans and necessary actions should be taken and evaluated for effectiveness.
- 6 Non-revenue water: Firstly, map all the areas that are implemented with the water distribution systems or are in the process of implementation. Secondly, these distribution networks should be evaluated for non-revenue water and losses of various other kinds. SCADA systems should be put in place for the purpose of evaluating the distribution system with respect to the pressures and discharges at various strategic locations. This should be done by all ULBs and rural agencies in the NCR. NCR participating State governments should provide necessary supports in this regard.
- 7 Impacts of implemented projects: Another level of information that needs to be implemented in the framework is about the range of projects that are being implemented and planned. It is important to bring all the projects that have been completed and are being taken up in the GIS framework so as to get a proper assessment about the most up-to-date status. These may range from water supply projects to rainwater harvesting projects to sewage treatment projects. All these projects are part of the integrated planning and management and are having lot of interaction that needs to be kept track of. It may also be emphasized here that it is because of such interaction not been captured properly that it has not been so far possible to accomplish the integrated planning and management so far though it has been invariably claimed. E.g., if rainwater recharge structures have been recommended and implemented, then the location of such implementation as well as

the targeted recharge is very essential so as to do the requisite evaluation for the effectiveness of the action taken and the investment made.

8 Demand management: It is observed that in NCR net demand is much more than the water availability in the NCR and the deficit is increasing constantly. It has been seen that the first priority has invariably been to target more water to become available from various sources, be it through rainwater harvesting or through some proposed structures such as dams. All such options equivalent to moving the water from one use to the other and is not termed to be highly beneficial in terms of bringing about the water security. Moreover, these options also have some externalities that are not always straightforward and need to be understood through proper analysis. For example, over-extraction of water from river or groundwater has environmental implications. Other options that have been recommended and need implementation for demand management are through enhancement of water use efficiency and by reuse of wastewater. These aspects of water management are also required to be mapped and quantified on the GIS framework for proper evaluation.

2.0 Indicative suggestions of water saving for Masses²⁹

2.2 Water Saving Ideas for Outdoor Areas

- a) Use a broom instead of a hose to clean sidewalks, driveways and patios. Do not let the water run while washing your car. Install an adjustable spray nozzle on your hose. Clean your car using a bucket and sponge, then spray the car down to rinse it. A better alternative to washing car is to take it to a commercial car wash that recycles its water. A commercial car wash can use water more efficiently, and will be reducing dirty, soapy water that would have gone down the storm drain in street.
- b) Using a pool cover can save up to 90 percent of water lost to evaporation. Check pool for leaks. Look for leaks or geysers in the campus sprinkler system. If any leak in campus housing/ building or open space area on campus is noticed it should be fixed immediately or should be reported to the concerned agencies for repair.

2.3 Water Saving Ideas for the Lawn and Garden

- c) Water the lawn only when it needs it. To check, step on the grass. If it springs back up after you move, it does not need water. If it stays flat, then it's time to water.
- d) Implement a cycle and soak approach for watering the lawn to prevent runoff while giving lawn a deep watering. Schedule short runtimes followed by rest periods where the water can soak in. If needed, do a second short watering.
- e) Set irrigation system to run in the early morning or late evening, when the water is less likely to be lost due to evaporation or wind.
- f) Do not water the gutter, sidewalks and driveways. Position sprinklers so water lands on the lawn or garden, not on paved areas.
- g) Inspect landscaping often for leaks in pipes, hoses, faucets, sprinklers and couplings. Small leaks can add up to large water loss.
- h) Get rid of weeds, which compete with your ornamental plants for water.
- i) Put down a layer of mulch around trees and plants. Mulch will slow evaporation of moisture and discourage weed growth.
- j) Utilize native and drought-tolerant plants in garden.
- k) Convert to water-wise landscaping, upgrade irrigation equipment, or switch to drip irrigation.

2.4 Water Saving Ideas for the Bathroom

- 1) Do not use toilets as a trash can. Each time flush trash down, the toilet waste up to seven gallons of water.
- m) Take shorter showers. Long, showers use between two and ten gallons of water every minute.
- n) Install water-saving shower heads or flow restrictors. Anyone can purchase inexpensive, easy to install devices from local hardware or plumbing stores.
- o) Turn off the water while brushing teeth. Run as much as you need, then turn off the tap until you need some more.
- p) Rinse razor in the sink. Fill the bottom of the sink with a few inches of warm water. You can rinse your blade just as easily as with running water and a lot less wastefully.
- q) Check toilets for leaks. Listen for water running or hissing when the toilet is not in use or drop a little food colouring or leak tablet into toilet tank. Wait a few minutes. If colour shows

²⁹ <u>https://suwater.stanford.edu/conservation-tips#header</u>

up in your bowl (without flushing the toilet), you have a leak. A leaking toilet can waste over 60 gallons of water per day.

- r) Install a low flow toilet. High Efficiency toilet models use 1.28 gallons per flush, considerably less than older models which use up to 6 gallons per flush.
- s) Look for leaks in faucets, pipes, toilets, etc. and repair immediately.

2.5 Water Saving Ideas for the Kitchen and Laundry

- t) When using dishwasher, run only full loads. Use water and energy efficient dishwashers.
- u) If washing by hand, use a sink full of water instead of continuously running the faucet.
- v) Collect clean water from kitchen faucet by keeping a small bucket or bowl in/near the sink. Use the collected water on your houseplants or outdoor container plants.
- w) Use water efficient washing machines. Wash only full loads of laundry or adjust the setting on the machine for small, medium and large laundry loads.

4.0 Importance of Water Auditing

4.1 Water use audits, like their energy counterparts, are an important first step toward understanding both a facility's water use and what can be done to reduce it. They trace water use from its point of entry into the facility through its discharge into the sewer. They identify each point of water use within and around the facility and estimate the quantity of water used at each of these points. They identify and quantify unaccountable water losses and possible leaks. They provide facility executives with a road map of potential savings, as well as implementation costs.

In addition to water quantity, water use audits should also take into consideration water quality. Some of the largest potential savings that can be achieved is through the recycling of water or the use of rain water. Water audits can help identify potential uses for alternative sources of water.

A comprehensive water use audit will examine all of the major areas in which a facility uses water, including sanitation, maintenance, mechanical systems, building processes and irrigation. For each of those areas the water use audit will provide a breakdown of the how, when and where of water use.



Fig 4.1: Water Conservation from the Demand Side

Source: CSE, 2016

11.0 GIS framework for Storm Water Management

GIS framework is one of the best solutions for drainage system in NCR. A GIS framework loaded with Storm Water Management Model can be used for:

- a) Analyzing the flooding situation in NCR corresponding to any rain, as well as relation between the local flood and flood in Yamuna
- b) Capability of drain's capability to stimulate the flow and its vulnerability assessment has to be known. It needs to understand whether it is a natural drain or manmade drain
- c) Effective design of various interventions
- d) Analyzing impacts of various interventions through simulation
- e) Mechanism for effective deployment of desilting process
- f) Can become a segment of the Integrated Framework for Planning and Management of NCR having many other segments
- g) Help Delineate the NCR area into catchment area.

12.0 Micro level policies which are to be detailed out in Sub Regional and Lower level plans

- 1. Segregation of sewage should be looked into in a scientific manner in all areas of NCR.
- 2. Each settlement should have effective and efficient de-silting plans as lot of pollutants get into drains which creates large amount of slit in the drains and back flows.
- 3. Options regarding treatment of storm water be explored to ensure the quality of water that is being used or reused or is being utilised to recharge ground water.
- 4. Drain designs across NCR should cover requirements of high intensity rainfalls now being experienced possibly due to climate change. To accommodate the climate change, the return period rain values obtained from the past data should be increased by 10%³⁰ and existing drainage in built up areas be revamped and remodelled accordingly.
- 5. Drainage related agencies and departments in NCR should completely avoid activities like puncturing sewer lines and draining sewage into storm drain in the event of blockage. Such punctures are invariably never mended and sewage is allowed to flow into drain forever. Agencies should resort to using latest mechanisms such as super suckers for de-clogging the sewer lines, and dedicated funds be allocated for regular upgradations³¹. Hon'ble NGT order of January 2015, regarding Sewerage Master Plan of Delhi, already specifies that no sewage should be allowed to enter the storm drains even from unauthorized colonies; interceptor sewers should be set-up wherever required to trap the sewage coming out of such colonies and take it to the nearest sewer line or STP. It is important that such measures shall be taken across NCR and its implementation should be monitored for effectiveness.
- 6. No construction should be allowed inside any storm drains. There are two specific violations that are usually observed; utilities are laid inside the storm drains and pillars of elevated roads/metro are built inside the storm drains. All identified encroachments in drains be removed and no further encroachment along and in the drains, be ensured, throughout NCR.
- 7. Design of new storm drains should not be done in isolation. Overall impact of any new drain on the existing storm drainage system should be studied. Data collected and modelling system deployed as part of the IIT Delhi study should be used for checking design feasibility of any new drains, in Delhi and its adjoining areas. Similar action should be taken for other cities of NCR and districts of Haryana & Uttar Pradesh, adjoining Delhi may initiate the action with integration with Delhi model, in the first phase to start with.
- 8. Identify and rejuvenate the lost and ignored water bodies. Water bodies act as detention and recharge basins. They should be continuously monitored and maintained in order to reduce runoff into storm drains at local level.
- 9. Conserve water bodies as sources of aesthetics and recreation
- 10. Local administration should plan and identify places which can be used under circumstances of flooding. Manage the wider drains or nalas with drain flow in the middle portion and use the banks for gardening. Flood Management Plans should be prepared for all flood prone areas. Integrate Storm-water Management Plans in the development of municipal plans.
- 11. MoHUA manual on urban drainage be referred and help and assistance of IMD be taken for the data of respective sub-regions/ districts.

³⁰ For construction of sewers system "the design infiltration value shall be limited to a maximum of 10% of the design value of sewage flow". <u>http://cpheeo.gov.in/upload/uploadfiles/files/engineering_chapter3.pdf</u>

³¹ IIT Delhi in the drainage Master Plan for Delhi quoted that "The current practice of DJB of puncturing sewer lines and draining sewage into storm drain in case of blockage should be stopped and suggested that DJB should use latest mechanisms such as supper suckers for de-clogging sewer lines.

- 12. Review the municipal plans for integrated environmental sanitation. Guidelines for water supply systems, sewage, urban cleaning, integrated solid waste management and urban drainage, formulated by the Government of India, should be thoroughly implemented.
- 13. Reduce or mitigate storm water impacts of surface transportation.
- 14. Porous and Permeable Pavements be promoted for Storm water harvesting
- 15. Implement land use policies and development control strategies which support integrated storm water management and water conservation objectives. Introduce Loop Closing System for Water Management.

12.1 Watershed related action

16. Incase watershed is water deficit following steps could be considered

- a. Importing water from a nearby water surplus watershed (river linking on a small scale).
- b. Making efficient use of water -both in irrigation and industrial sector- thus resulting in net saving of water.
- c. Arresting water leakages in the piped water supply
- d. Taking up artificial recharge to Ground water and rainwater harvesting- based on proper plans prepared by state govt./CGWB
- e. Treating wastewater and using it for various purpose as per its level of treatment-Horticulture, building, industry, etc.
- 17. In case watershed is water-surplus, best ways to for efficient use of water such as following may be adopted:
- a. One can still make the watershed more water efficient and save even more and recharge it so that the downstream watersheds are benefitted.
- b. Have more area under crops- for increasing food requirement
- c. Have more industries.
- d. Assess the feasibility of transferring surplus water to nearby watersheds.
- 18. Re-allocation of water should be done source-wise and activity wise as per the management plan developed for each watershed.

Annexure-P-1.6.1

Name of Project	Renuka Dam Project
Location	• River : Giri River
	• Tehsil : Renuka
	• District : Sirmour (HP)
Project Components	• Drinking : 23 Cumec
(Irrigation/Hydropower/	(9 months from October to June – 498 MCM to NCT of Delhi)
	• Power : 40 MW (Incidental)
Main works	• 148 m high rock fill dam $(2, 20)$ (W)
Branch Canal/Distributaries	• Dam Toe Powernouse (2x20MW)
/ etc.)	
	• Revised estimated cost : Rs. 4596.76 crore (PL 2015)
	• Water Component Rs. 4325.43 Cr.
Financial Aspects	• Power Component Rs. 271.33 Cr.
	• Revised cost Estimate (RCE) of Rs 7360.34 Crore submitted by Project Authority based on SOR of October 2018
	• Revised cost finalised as Rs. 6946.99 Cr. at PL October, 2018.
	[Water Component Rs. 6647.46 Cr (95.69%) and Power Component
	299.53 Cr (4.31%)]
Project Authority (PA)	• HPPCL
Appraisal Status	 Revised Cost Estimate of Renukaji Dam Project at October 2018 price Level for Rs. 6946.99 crore was accepted by the Advisory Committee in its 143rd meeting held on 09.12.2019.
Status of Investment Clearance (IC) proposal	• PA has submitted the IC proposal vide letter dated 20.09.2017. The comments on IC proposal was sent to PA vide letter dated 26.09.2017 for compliance. Reminders have been issued from time to time for
	submission of compliance.
	• Latest reminder for compliance issued on 20.04.2018
	• Now, vide email dated 05.06.2018 it has been informed by Project Authority that, compliance to the CWC observations shall be furnished as soon as the State Finance Concurrence is received from GoHP, which is under consideration of GoHP.
Status of Statutory	• R&R clearance obtained from Ministry of Tribal Affairs.
Clearance	• Environment clearance was accorded by MoEF in October 2009 up to 10 year, same has been extended up to 10/2022 in 06 November 2019.
	• I st Stage Forest Clearance accorded in Feb 2015.
	• Final (II nd) Stage Forest Clearance awaited
	• Out of 695 Ha of forest land, Nil quantity of the forest land has
	been acquired so far and balance 695 Ha of forest land is yet to be acquired.
Miscellaneous	 A court case SLP (C) No. 19409/2015 (State of HP & others vs Shri Prempal Singh & others) was heard on 12.08.2016 under the bench of Chief justice of India for the matter related to compensation for R&R. Keeping in view of committed liability for payments towards acquisition of remaining private land for construction of the Project, a proposal was sent on 28.07.2016 by this Ministry to the Ministry of Finance for releasing a grant of Rs. 450 crore for this project pending

 Table 7.1: Renukaji Dam National Project at Himachal Pradesh (Status as on 09.06.2020)
	•	investment clearance as a special case. In view of the directions of the Hon'ble Supreme Court in order dated 14.10.2015, the Ministry of Finance advised MoWR, RD & GR to release the said amount from available budgetary allocations for 2016-17. Subsequently, Rs. 446.96 Crores has been released to the Govt of Himachal Pradesh. Vide letter dated 16.8.19 PA informed that Rs. 446.96 Cr. has been totally consumed.
Issues & action taken to resolve issues	•	To sort out the issue meeting on Signing on "Inter State Agreements for the construction of three projects in Upper Yamuna Basin" was held on 21.03.2017 under the Chairmanship of Secretary, MoWR, RD&GR, GoI. Decision taken in the above meeting was circulated by Hon'ble Minister, MoWR, RD&GR, GoI vide letter dated 27.03.2017 to the Hon'ble Chief Ministers of Uttarakhand, UP, HP, NCT of Delhi & Haryana and the same was sent by the Secretary, MoWR, RD&GR, GoI to Chief Secretary, Govt. of Rajasthan vide letter dated 29.03.2017 for their concurrence.
	•	In response, comments of Himachal Pradesh was received from Principal Secretary (IPH), Govt. of HP vide letter dated 08.05.2017 with requisition of 90% funding of power components of Renuka & Kishau MPPs. Comment(s) from Haryana has also been received vide letter dated 18.07.2017. Ratification on the modified draft agreements and decision taken in the 50 th meeting of UYRB held on 21.03.2017 was received from Hon'ble CM, GNCT of Delhi vide letter dated 24.10.2017 with the requisition to expedite the process of construction of all three storage projects.
	•	In this regard, reminders were sent to the Principal Secretaries of Basin States for their concurrence on the above decision vide letters dated 26.05.2017 & 12.10.2017 by UYRB. Except Rajasthan, all other States have agreed to the draft of agreement
	•	A separate meeting was held in Ministry of Power chaired by Joint Secretary (Power) on 02.11.2017 attended by officials of MoWR, RD&GR and UYRB along with representatives from States of Rajasthan, Himachal Pradesh, Haryana and Punjab. It was clarified by MoP that decision on sharing of power generated from Kishau and Renuka Dam could be taken only after decision is taken on sharing of water from these. The issue of sharing water from these projects has been made part of agreement, to be separately entered for each State, and circulated amongst all basin States. Except Rajasthan, all other States have agreed to the draft of agreement.
	•	A meeting with Secretary (Power), GoI and Principal Secretaries of basin States under the Chairmanship of Secretary(WR, RD &GR) was held on 15.01.2018 to sort out the issue. The minutes of the meeting are equaled
	•	Also, 7 th meeting of UYRC chaired by Hon'ble Minister (WR, RD &GR), was held on 15.02.2018. During the meeting, Chairman concluded that as all the states have agreed to the signing of agreement (draft agreement for construction of storage dated 2.03.2017), Consent /NOC may be sent by them at the earliest and the agreement be signed by all the concerned Chief Ministers. Thereafter the process for approval of Cabinet may be initiated.

I	th
•	The project was discussed during the 11 th meeting of High Powered Steering Committee held on 11.06.2018 under the Chairmanship of Secretary, MoWR RD&GR. Member Secretary, Upper Yamuna River Board (UYRB) stated that till date, no State except Delhi Govt. has submitted consent for further progress which was agreed in 7 th meeting of UYRC on 15.02.2018. Further it was informed that the project authority is yet to submit the compliance on observations raised by CWC on Investment Clearance proposal till date.
•	The Chairman asked the Member-Secretary, UYRB to pursue with the State Authorities for submission of consent and advised the Project Authority to submit the compliance on observations raised by CWC
•	A meeting has been held under the chairmanship of Hon'ble Minister, WR, RD & GR on dated 12.09.2018 with the Chief Secretaries of States of Himachal Pradesh, Haryana & NCT of Delhi. As per the minutes of the meeting dated 29.09.2018, circulated by UYRB, Govt. of NCT of Delhi agreed to fund 90% of the cost of Power Component along with the share of cost of Irrigation / Water / Industrial water component. Further it was decided to execute bilateral agreement among the states under information to MoWR, RD & GR.
•	 A meeting through video conferencing has been taken by Commissioner (SPR), MoWR, RD & GR with respective States on 05.11.2018 and following points were discussed: > Latest Utilization Certificate for Rs. 446.96 Cr to be sent to MoWR, RD & GR. > CWC to send Investment Clearance Proposal to MoWR, RD & GR by 20.11.2018. Same has been forwarded on 12.11.2018 to MoWR, RD & GR. > RCE at Price level (2018) may be prepared by PA and submitted to CWC by 30.11.2018. > Year wise physical and financial phasing of works and establishment to be submitted by 07.12.2018.
•	 A review meeting through video conferencing has again been taken by Commissioner (SPR), MoWR, RD & GR with respective States on 05.12.2018 and following points were discussed: ➢ HPPCL informed that Revised cost Estimate (RCE) of Rs 7360.34 Crore has been prepared by Project Authority based on SOR of November 2018. Commissioner SPR suggested Project Authorities to submit RCE to PPO, CWC and PAO, CWC for appraisal by 6/12/2018 and depute concerned officials to PAO, CWC for discussion and submission of required inputs on RCE so that it is appraised and approved at the earliest. HPPCL will submit 5 copies of RCE to PPO and PAO and hold preliminary discussion in the next fortnight. Copy of RCE having estimated cost as Rs 7360.34 Crore (November 2018 PL) received from Project Authority on 07.12.2018 has been circulated among Specialized Directorates of CWC / CEA vide dated 11.12.2018.
	 Project Authorities informed that further 25 Crore has been disbursed for land acquisition after last video conference meeting of 5.11.2018. The total compensation paid till date is 337.51

 Crore out of 446.96 Crore. Chief Engineer, IBO, CWC informed that Director, M&A, CWC, Shimla is coordinating with HPPCL and Project Authority can take help if required from M&A, Directorate, CWC, Shimla in this regard. UYRB informed that they are pursing with Delhi Govt. for concurrence for the project. Commissioner, SPR requested UYRB to pursue with Haryana Govt, also and do the needful to get the MOA signed amongst the party States at the earliest. A review meeting through video conferencing has again been taken by Commissioner (SPR), MoWR, RD & GR with respective States on 03.01.2019 and following points were discussed: HPPCL informed that Revised Cost Estimate (RCE) has been prepared by Project Authority based on SOR of November 2018 and it was submitted to CWC on 10.12.2018. Further, CWC vide letter 19.12.2018 has issued some comments/observation and these observations were attended by HPPCL and submitted vide letter dated 27.12.2018. PAO, CWC informed that hard copy of revised cost estimate after incorporation of comments/observation was not received and breakup /justification on rate analysis was also not provided. Commissioner, SPR requested HPPCL to depute concerned official to meet CE (PAO) and submit hard copy of revised DPR with required inputs urgently. It was also decided that HPPCL team would meet with officials of PAO, CWC on 14.11.2019 along with the related documents to support Rate analysis and to sort out the issues on RCE. Commissioner, SPR requested Director, M&A, CWC, Shimla to examine the changes in the cost and then accordingly coordinate with HPPCL for finalizing the RCE proposal along with variation statement in proper formats. It was informed by HPPCL that the increase of Rs 2734 Crore in cost is mainly because of land acquisition based on decision of Hon'ble High court for higher rates of land acquisition. Commissioner SPR advised Project Authorities to get the policy on above lines approved from Govt.
implementation of Renukaji Dam Project has been signed by Hon'ble Chief Ministers of Uttarakhand, Himachal Pradesh, Haryana, Uttar Pradesh Rajasthan and NCT of Delhi and Hon'ble Minister (WR RD
 & GR). Proposal for Investment Clearance submitted by project authority was
examined and forwarded on 11.03.2020 to MoWR, RD&GR for consideration by the Committee.

Table 8.1: Lakhwar Multipurpose National Project Uttarakhand, Appraisal completed(Status as on 09.06.2020)

Name of Project	Lakhwar Multi-Purpose Project
Location	• River : Yamuna
	• Village/Tehsil: Lohari
	• District : Dehradun (Uttarakhand)
Type of Dam:	Concrete Dam
Project Benefits:	The benefits from the project include generation of 300 Megawatt
	/ 572.54 Million Unit of power, additional irrigation potential of
	33,780 hectare and 78.83 MCM of water for domestic and
	industrial purposes.
Total Length of Dam :	• 481.5 M (top)
Height of Dam :	• 204 M
Estimated Cost	• Rs. 3966.51 crore (PL May 2012) (Cost of Power
	Component Rs. 1388.28 Cr. + Cost of Irrigation, Drinking
	Rs. 2578.23 Cr.)
	• RCE approved as Rs. 5747.17 Cr. (PL July 2018)
	• Cost of irrigation component Rs. 4673.01 Cr. (81.30%)
	• Cost of power component Rs. 1074.16 Cr. (18.70%)
	• BC Ratio 1.016
Project Authority	• UJVNL
Status of Clearances / Appraisal	• Lakhwar as standalone project (300 MW) accepted in 116 th
	TAC meeting held on 14.12.2012 at Rev. cost of Rs. 3966.51
	Cr (May 2012 PL).
	• The project was considered acceptable for investment for an
	amount of Rs. 3966.51 Cr by Investment Clearance Committee
	of Mow R, RD & GR in its meeting field on 24.02.2010.
	• Proposal for approval of Cabinet Commutee was submitted to MoWR RD & GR in June 2016 The modified proposal for
	approval of Cabinet Committee, received from the project
	authority in February 2017. has been submitted to MoWR.
	RD & GR.
Status of Statutory Clearance	• Environment Clearance obtained from MoEF & CC on
	10.01.2011
	• Forest Clearance obtained from MoEF & CC on 31.10.1986
	• R&R Clearance obtained from MoTA on 09.11.2012
	• Out of 768.15 Ha of forest land for Lakhwar project, Nil
	quantity of the land has been acquired so far and balance
	768.15 Ha of forest land is yet to be acquired.

Issues & action taken to resolve	•	To sort out the issue meeting on Signing on "Inter State
issues		Agreements for the construction of three projects in Upper
		Yamuna Basin" was held on 21.03.2017 under the
		Chairmanship of Secretary MoWR RD&GR Gol Decision
		taken in the above meeting was circulated by Hen'ble Minister
		Mawp DD CD Cal with latter dated 27.02.2017 to the
		MOWR, RD&GR, GOI vide letter dated 27.03.2017 to the
		Hon'ble Chief Ministers of Uttarakhand, UP, HP, NCT of
		Delhi & Haryana and the same was sent by the Secretary,
		MoWR, RD&GR, GoI to Chief Secretary, Govt. of Rajasthan
		vide letter dated 29.03.2017 for their concurrence.
	٠	In response, comments of Himachal Pradesh was received from
		Principal Secretary (IPH), Govt. of HP vide letter dated
		08.05.2017 with requisition of 90% funding of power
		components of Renuka & Kishau MPPs. Comment(s) from
		Harvana has also been received vide letter dated 18.07.2017.
		Ratification on the modified draft agreements and decision
		taken in the 50 th meeting of UVRB held on 21 03 2017 was
		received from Hon'ble CM GNCT of Delhi vide letter dated
		24 10 2017 with the requisition to expedite the process of
		construction of all three storage projects
	•	In this regard reminders were sent to the Dringinal Secretarias
	•	of Pasin States for their concurrence on the above decision
		vide letters deted 26.05.2017 & 12.10.2017 by UVDD
		Vide letters dated $20.03.2017 \approx 12.10.2017$ by U FKB.
	•	Except Rajastnan, all other States have agreed to the draft of
		agreement.
	•	A meeting with Secretary (Power), Gol and Principal
		Secretaries of basin States under the Chairmanship of
		Secretary(WR, RD &GR) was held on 15.01.2018 to sort out
		the issue.
	•	7 th meeting of UYRC chaired by Hon'ble Minister (WR, RD
		&GR), was held on 15.02.2018. During the meeting, Chairman
		concluded that as all the states have agreed to the signing of
		agreement (draft agreement for construction of storage dated
		2.03.2017), Consent /NOC may be sent by them at the earliest
		and the agreement be signed by all the concerned Chief
		Ministers. Thereafter the process for approval of Cabinet may
		be initiated. Since, Investment Clearance of Lakhwar
		Project is already available, immediate action as above may
		be completed.
	•	During the 11 th meeting of HPSC held on 11.06.2018, the
		Chairman of the Committee expressed concern in respect of the
		delay in submission of consent and signing of agreement
		among beneficiary States. He asked the Member-Secretary,
		UYRB to pursue with the State Authorities for submission of
		consent and apprise the latest status at the earliest.
	•	In this regard on 28.08.2018 an agreement amongst the Basin
		States for implementation of Lakhwar MPP has been signed
		by Hon'ble Chief Ministers of Uttarakhand. Himachal
		Pradesh, Haryana, Uttar Pradesh, Rajasthan and NCT of
		Delhi and Hon'ble Minister (WR. RD & GR).
	•	RCE has been submitted in CWC for examination based on

escalation PL-July 2018 on 1.10.2018 (Rs.5978.67 Crores)
• During the second meeting to review the progress of Lakhwar
Multipurpose Project held on 09.10.2018, MoWR, RD & GR,
requested Project Authority to submit the RCE based upon the
current schedule of rates so as to arrive at the realistic cost of
Computations of cost apportionment has been furnished by
• Computations of cost apportionment has been furnished by
(Water 80.33% Power-10.67%)
• Agreement between basin states has been signed and Cabinet
Note has been sent by UVRB to MoWR RD & GR for
approval of the Cabinet
• A meeting through video conferencing has been taken by
Commissioner (SPR). MoWR, RD & GR with respective
States on 05.11.2018 and following points were discussed:
▶ Project Authority vide letter dated 01.11.2018 has
submitted the Revised Cost Estimate of the Project based
on July 2018 Price Level for Rs. 6795.25 Cr. which has
been circulated among the specialized directorates of CWC
/ CEA vide letter dated 05.11.2018 for appraisal.
➢ As per request made by Commissioner (SPR) during last
meeting the implementation period has been reviewed
critically and the same has been revised to 69 months from
89 months as proposed earlier.
Commissioner (SPR) requested the State to submit year- wise physical and financial phasing of works for both
irrightion and power components of the project
 CE (PAO) agreed that RCE would be appraised by 30-11-
2018. However, tentative bifurcation of RCE into irrigation
/ water and power component would be informed by 15-
11-2018.
Commissioner (SPR) suggested PA to start preparation of
proposal for Investment Clearance of the revised cost.
• A review meeting through video conferencing has again been
taken by Commissioner (SPR), MoWR, RD & GR with
respective States on 05.12.2018 and following points were
discussed:
▶ It was informed by Chief Engineer, PAO, CWC that
directorate and certain basic datails on Pate analysis and
information on details of bridge and Road under head R_{-}
communication are required from Project Authorities. He
further informed that certain basic details are also required
from Project Authorities by HPA directorate of CEA.
Commissioner SPR requested UJVNL to depute concerned
officials to meet CE (PAO), CWC and HPA, CEA and
submit the required inputs at the earliest. He further
requested UJVNL and PAO, PPO, CWC to take following
actions urgently.
✤ Project Authorities will submit all the required inputs to DAO_CWC and HDA_CEA by 10/12/2019 and DAO
rAO , CWC all ΠrA , CEA by $10/12/2010$ all PAO ,

 CWC will approve the RCE by 14.12.2018 After approval of RCE, Project Authorities will submit proper year wise physical and financial phasing of works for both irrigation and power component by 17/12/2018. Project Authority will also submit detail expenditure on works and establishment. State Govt. may sort out and finalise all the issues such as type of contract (EPC or item rate), tender documents, zero date of start of construction etc. PPO, CWC will prepare TAC note by 21/12/2018. A review meeting through video conferencing has again been taken by Commissioner (SPR), MoWR, RD & GR with respective States on 03.01.2018 and following points were discussed: Cost of Chilling Plant – Project Authority informed that 12 Crores is capital cost of chilling plant for Vyasi project which is in same locality and was part of this scheme earlier. In Vyasi project 800cum to 900 cum concrete was poured per day. In Lakhwar project approximately 3500 to 4000 cum concrete is proposed to be poured daily. Project authority requested to keep lump sum provision on pro rata basis as a capital cost of clilling plant for lakhwar project on the basis of capital cost of Vyasi project. Keeping in view of per day requirement of concrete, chilling plant capacity for lakhwar project would be about 4 times. Cost of land acquisition- It was informed by project authority that for LA & RR, 4 times to the cost of land is considered in the RCE on the basis of RR act of Govt. of India 2013. However, as per existing circular of Uttarakhand Govt. 2.5 times the cost of land is to be provided for. Further it was informed by PA that as per verdiet of Hon'ble High court regarding LA and RR of Vyasi project remaining land of the project has to be acquired on the basis of RR act of Govt. of India 2013. It was decided that LA proposal based on 4 times to the cost of land as proposed by State Govt. may be considered PAO, CWC with a condition that PA would do needful for conveying State Govt. approval on
Memorandum of change recently on 2.01.19 and cost shall
be appraised after design wing approve the changes in
design parameters.
Commissioner SPR advised PA to submit the following at

the earliest after approval of RCE
Year wise financial phasing of works for both irrigation
and power component, milestones of the physical progress
of the project, benefits of the project.
Commissioner, SPR suggested that preparation of tenders
and land acquisition has to be done simultaneously and
well in advance. PA was also advised to carry out
regulation studies, hydrological simulation studies at
Hathinikund Barrage simultaneously.
• CEA has approved Cost of E&M works Rs. 483.43 Crores (PL
July b2018) vide letter dated 08.01.2019 subject to approval of
design changes in E&M works. O miscellaneous sub-head cost
from CEA is under examination.
• Vide letter dated 11.01.2019 Coat Appraisal (HWF) Dte.,
CWC approved the total cost of the project as Rs. 5747.17 Cr.
PL-July 2018.
• In the 141 th Advisory Committee meeting the RCE of the
project Rs. 5747.17 at PL 07/2018 has been considered and
accepted on dated 11.02.2019.
• Meanwhile NGT in the matter of Manoj Kumar Mishra Vs.
UoI & UJVNL (Application No. 431/2015) has passed the
judgment on 10.01.2019 directing Expert Appraisal Committee
(EAC) of MoE&CC to appraise the project afresh in terms of
EIA notification 2006 and impose additional general and
specific conditions as may be considered necessary. EAC has
been directed to complete the appraisal by 15.4.2019. The NGT
has directed to maintain the status quo till the project is
reappraised.
• The project authority has informed that, in compliance to 21^{st}
& 23 rd EAC minutes dated 28.1.2019 & 23.04.2019, Collection
of the pre monsoon data work is completed and monsoon data
collection work is in progress. Further, EAC in its 23 rd meeting
held on 23.04.2019 recommended for grant of fresh TOR for
preparation of EIA/EMP report.
• As per the direction of EAC, Online application has been
submitted to State wildlife board on 26.08.2019. State wildlife
board has forwarded to central wildlife board on 26.11.2019.
• Draft report of EIA/ EMP is under updating for Socio-
Economic data and complete report will be submitted to
Uttarakhand State Pollution Control Board for conducting
Public Hearing. After incorporating the views and suggestions
of the Public (Observed during Public Hearing) in the final
EIA/EMP report, the EIA/EMP report will finally be submitted
to MoEF & CC /NGT for granting Environmental Clearance.

Table 9.1 Kishau Multipurpose National Pro	oject (Himachal Pradesh & Uttarakhand),
Under Appraisal – Status as on 09.06.2020	

Name of Project	Kishau Multipurpose Project
Location	• River : Tons / Yamuna
	• District : Dehradun (Uttarakhand) and Sirmour (HP)
Project Components	Irrigation : 0.97 Lakh Ha
(Irrigation/Hydro	• Power : 660 MW
Power/ Drinking)	• Drinking water : 617 MCM
	• Gross Storage : 1824 MCM
Main Works	• 680 m length concrete gravity dam
(Dam)	
Financial Aspects	Estimated cost as per DPR (PL 2010)
	Irrigation component : Rs. 1169.62 Crore
	Power component : Rs. 4508.51 Crore
	Water supply component : Rs. 1515.10 Crore
	Total : Rs. 7193.23 Crore
	Vide letter dated 11.10.2018, Cost Appraisal (Irrigation)-1 Dte. CWC has
	Worked out the cost apportionment as under:
	• Unapproved DPR cost @ March 2018 PL i.e. 11550.00 Cr.
	• Power Component Bs 1536 04 Cr is 12 2004
	• Fower Component - KS. 1550.04 Cl. I.e. 15.5070 • Water (Irrigation & Drinking) Component Ps. 10012.06 Cr. i.e.
	• Water (Infigation & Diffiking) Component Ks. 10015.90 Cl. I.e. 86 70%
Project Authority	• UIVNI prepared DPR Project is to be executed through loint
1 Tojoot Mathomy	Venture between Govt of HP and Govt of Uttarakhand
Appraisal Status	• Revised DPR, estimated to cost Rs, 7193.23 Crore, submitted to CWC
11	in 2010 by UJVNL, is under appraisal.
	• Observations / Comments (2011) on DPR were communicated to
	UJVNL. Compliances to most of the observations of CWC/CEA are
	awaited since 2011.
	• Special Purpose vehicle (SPV) as Joint Venture between Uttarakhand
	& Himachal Pradesh has been constituted for project execution and
	the first meeting of SPV has been held in February 2017. As intimated
	by project authority, compliances to comments of CWC/CEA will be
	submitted after deployment of adequate staff in SPV.
	• In 51 st meeting of UYRB held on 14.09.2017, representative of
	UJVNL deputed for Kishau MPP, apprised that replies to observations
	of 3/5 Directorates of CWC had been submitted.
Statutory Clearance	• Environmental and Forest Clearances are yet to be obtained.
Issues & action	• To sort out the issue meeting on Signing on "Inter State Agreements
taken to resolve	for the construction of three projects in Upper Yamuna Basin" was
issues	held on 21.03.2017 under the Chairmanship of Secretary, MoWR,
	RD&GR, GoI. Decision taken in the above meeting was circulated by
	Hon'ble Minister, MoWR, RD&GR, GoI vide letter dated 27.03.2017
	to the Hon'ble Chief Ministers of Uttarakhand, UP, HP, NCT of Delhi
	& Haryana and the same was sent by the Secretary, MoWR, RD&GR,
	Gol to Chief Secretary, Govt. of Rajasthan vide letter dated
	29.03.201 / for their concurrence.

 In response, comments of Himachal Pradesh was received from Principal Secretary (IPH), Govt. of HP vide letter dated 08.05.2017 with requisition of 90% funding of power components of Renuka & Kishau MPPs. Comment(s) from Haryana has also been received vide letter dated 18.07.2017. Ratification on the modified draft agreements and decision taken in the 50th meeting of UYRB held on 21.03.2017 was received from Hon'ble CM, GNCT of Delhi vide letter dated 24.10.2017 with the requisition to expedite the process of construction of all three storage projects. A separate meeting was held in Ministry of Power chaired by Joint Secretary (Power) on 02.11.2017 attended by officials of MoWR, RD&GR and UYRB along with representatives from States of Rajasthan, Himachal Pradesh, Haryana and Punjab. It was clarified by MoP that decision on sharing of power generated from Kishau and Renuka Dam could be taken only after decision is taken on sharing of water from these. The issue of sharing water from these projects has been made part of agreement, to be separately entered for each State, and circulated amongst all basin States. Except Rajasthan, all other States have agreed to the draft of agreement. A meeting with Secretary (Power), GoI and Principal Secretaries of basin States under the Chairmanship of Secretary (WR, RD &GR) was held on 15.01.2018 to sort out the issue. The minutes of the meeting are awaited.
• 7th meeting of UYRC chaired by Hon'ble Minister (WR, RD &GR), was held on 15.02.2018. During the meeting, Chairman concluded that as all the states have agreed to the signing of agreement (draft agreement for construction of storage dated 2.03.2017), Consent /NOC may be sent by them at the earliest and the agreement be signed by all the concerned Chief Ministers. Thereafter the process for approval of Cabinet may be initiated.
 Pursuant to the decision taken in 11th HPSC, a meeting was convened by UYRB on 13.07.2018, where issue related to cost apportionment was discussed in detail. After detailed deliberations, UYRB concluded that, "CWC may revisit the decision taken in the 50th meeting of UYRB taking into consideration national priority or urgency of any purpose over others that was adopted at the time of formulation of the Kishau Project or subsequent review as laid down in IS-7560-1974. Further it may also be taken into consideration that power to be generated from Kishau MPP is incidental. Thus, the cost apportionment of Kishau may also be considered on the principles similar to those adopted in Lakhwar Project".
• A meeting through video conferencing has been taken by Commissioner (SPR), MoWR, RD & GR with respective States on 05.11.2018. The State Authorities informed that DPR would take one more year for preparation. UJVNL officials agreed to hold the next meeting of Kishau Corporation Ltd. within 15 days.
• A review meeting through video conferencing has again been taken by Commissioner (SPR), MoWR, RD & GR with respective States on

05.12.2018. It was informed that Kishau Corporation limited is not fully functional and HPPCL is looking after civil works and UJVNL is looking after power component. UJVNL officials stated that request for board meeting of Kishau Project Corporation has been sent to Chief Secretary Uttarakhand. Commissioner, SPR suggested that till board meeting is convened, UJVNL and HPPCL may conduct internal meetings so that work for preparation of DPR may not suffer.
• A review meeting through video conferencing has again been taken by Commissioner (SPR), MoWR, RD & GR with respective States on 03.01.2019. It was noted that status of Kishau Project is same and no progress could be made after the meeting of 05.12.2018. Commissioner, SPR requested UJVNL to make efforts for conducting board meeting of Kishau project Corporation. Commissioner, SPR also suggested that till board meeting is convened, UJVNL and HPPCL may conduct internal meetings so that work for preparation of DPR may not suffer.
• A Reminder regarding providing updated status of Upgradation of DPR of Kishau Multipurpose Project was sent to Project authority on dated 29.10.2019.
• Vide CWC letter dated 20.05.2020 Project Authority was requested to submit the upgraded DPR of Kishau Multipurpose Project

10.0 Brief Note on the status of the construction of SYL Canal

Govt. of Punjab filed an Original Suit No.1/2003 in the Supreme Court on 13.01.03 citing certain changed circumstances and praying for dissolution/discharge of the obligation to construct the canal.

The Supreme Court in its judgment dated 4.6.2004, dismissed the suit filed by Punjab and directed the UoI to carry out its action plan for completion of the SYL canal within the specified time frame. In compliance, UoI nominated CPWD as the construction agency and also set up an empowered committee within the time frame specified. Govt. of Punjab was also requested to get in touch with CPWD to finalise the details of handing over or taking over of the canal works. After some initial response, the State of Punjab on 12.7.2004 enacted the Punjab Termination of Agreements Act, 2004 terminating the Agreement dated 31.12.1981 and all other agreements related to Ravi Beas waters and protecting all existing and actual utilization through the existing systems. Govt. of Punjab on 13.07.04 also informed Ministry of Water Resources that any step taken in furtherance of the 31.12.1981 agreement would be against the legislative mandate of the Act.

Central Govt. on 15.7.2004 filed an application before the Hon'ble Supreme Court for taking on record the developments subsequent to 4.6.2004 and seeking such other and further orders as deemed fit in the interest of justice. A Presidential Reference in the matter was filed by Union of India on 22.07.2004 in the matter related to constitutional validity of PTAA, 2004. Hon'ble Supreme Court has opined on 10.11.2016 that the PTAA 2004 cannot be said to be in accordance with the provisions of the Constitution of India. After the opinion was delivered by the Hon'ble Court, Punjab denotified the land acquired for SYL Canal handed back to the farmers.

Government of Haryana has filed an IA No. 6/2016 in Original Suit No. 6/1996 in the matter regarding the construction of Sutlej Yamuna Link Canal. During the hearing on 30 November 2016 on Haryana's plea to resume construction, Supreme Court further clarified, nobody in possession of the lands etc. in question as on today would be dispossessed.

In April 2017, UoI conveyed its intention to mediate for an amicable settlement of the dispute. Subsequently, a series of meetings have been held at administrative and political level with the states to reach an amicable solution is continued but all states continue to stick to their position.

The matter was last heard by the Hon'ble Supreme Court on 9th July,2019 wherein Hon'ble Court requested the Chief Ministers of both the States "to form a committee of officers and also to ensure that both of them deliberate with the intervention of the Central Government at the highest level and if possible, to work out a solution".

In pursuance of the order of the Hon'ble Supreme Court, three meeting were held under the Chairmanship of Secretary (D/o WR, RD &GR) on 16.08.2019, 21.08.2019 and 06.12.2019 to narrow down the differences between the states and to arrive at a solution of this long pending dispute.

In the meetings held so far both the States brought out their views and issues in the matter. Except for consensus on smaller issues, no significant headway could be reached as both the states struck to their respective positions.

Chapter 7 : Sanitation and Waste Management

Annexure-P-7.1

Other policy guidelines which are to be followed and elaborated or detailed out in Subregional Plan and local level plan like Master Plans or Development Plans, etc. with respect to sanitation.

- 1 **Land availability:** Land for construction of new STPs is a major constraint in all subregions and therefore it is imperative to earmark land for STPs in the Master Plans. MoHUA has published the Manual on "Sewerage and Sewage Treatment Systems" (2013). This manual can be followed.
- 2 **STPs and Decentralized Sanitation Systems:** Provision for land use change, for setting up STPs and waste or sewage treatment and processing facilities should be delegated to Revenue Authorities at the local level; this is necessary since they have the pulse of the popular sentiments and can address issues from the NIMBY (not in my back yard) syndrome, if any, from the site selection stage itself.
- 3 Emphasis should be on developing a decentralized sanitation system³². Then a semi decentralized system may be developed followed by the large system. It should be mandated in small clusters and gated community. NCR State Governments should subsidies the decentralized facilities, from expected savings by not construction of large, centralized facilities.
- 4 **Decentralized sanitation systems** are defined to be limited to single or several households with a maximum capacity of up to 20 persons. The two decentralized sanitation systems selected were household pit latrine and household septic tank. It was assumed that pit latrines can be constructed and maintained by the users and are operated as a dry or pour flush system.
- 5 **Semi-centralized systems** are defined in various ways in the literature. They generally can be categorized by their number of connections of households, or by the outline of the sewer system relative to the central sewerage system. (e.g., settlements, villages, small towns and suburbs)
- 6 **Centralized systems** generally have a wide range and high number of people connected³³. Think of saturation of all habitations of all sizes with STPs or FSTPs, DSTPs of different sizes in a phased manner
- 7 **Design and Planning:** Locations or space be identified and specified for community toilets during planning for the area. Hence, while planning, street infrastructures (toilet, water and sitting facilities) need to be provided and space should be allocated accordingly. Specifications for community toilets be of higher category and access controlled in different kinds of shopping areas, etc. They should of same level as in Malls in the shopping areas, can be paid to ensure maintenance and careful usage.
- 8 Data pertaining to network service area, inflow in STPs, treated quantity, influent and effluent characteristics of sewage reuse quantity, expenditures, revenues, cost recovery,

³² Shri Arun Baroka, Additional Secretary, M/o. Jal Shakti

³³ https://www.witpress.com/Secure/elibrary/papers/ISUD13/ISUD13019FU1.pdf

collection efficiency, sewer connections etc. at project level has to be responsibility of the projects.

- 9 Planning for areas and regions, always need to consider the population density of the areas in focus. Approach for Delhi (population density 12,500 persons per sq.km.) cannot be same as that for whole of NCR (population density with Delhi 788 persons per sq.km. and excluding Delhi is 452 persons per sq.km.)
- 10 **Technology:** Bioprocessing and biotechnology-based waste and wastewater treatment produce better results at substantial lower energy input and also provides more scope for production of energy (renewable). Bioprocessing fully recognizes interdependence among water resource, drainage, wastewater treatment and SWM and highly suited in tropical zone. The agencies need to engage more expertise (with work culture) to deliver this benefit.³⁴As per a case study for wastewater treatment toenergy, located near Innsbruck, Austria, the Strass im Ziller tal facility is one of the best performing wastewater treatment plants in Europe. Through successive optimization efforts, Strass engineers were able to transform this facility into one that produces more energy than it requires for operations, thus making it energy independent.
- 11 Self-purification potential in a river orrivulet or surface water body receiving pollution load, depends on quantity of pollution load discharged and dilution available in receiving water body. Therefore, options for boosting self-purification potential in a natural body are be explored. These may include either finding large quantity of fresh water to effect appropriate dilution or substantially improve quality of discharged treated effluent (by lowering multiple criteria BOD, COD, TSS, turbidity, total Coliform, SAR etc.). As large quantity of fresh water required for dilution may be available only from trans-boundary water projects which are entangled with consent of the neighboring countries, and it may be prudent to improve the quality of discharged effluent.
 - a. Phased targets for each criteria and differential for differential regions based on area type, capacity, downstream impact etc
 - b. Expert bodies like TERI to make/suggest such lower/better criteria/protocols
- 12 Explore possibilities and promotion of technology intervention for sewer cleaning to discourage manual scavenging. Robot, named Bandicoot, takes 15 minutes to clean small sewers and around 45 minutes to unclog bigger ones. It can travel up to a depth of 20 meters. Municipal bodies in Kerala, Tamil Nadu and Andhra Pradesh have already commissioned Bandicoot. They have also trained manual scavengers to operate the bots from a safe distance. Estimates indicate that 80 kg, 1.5-metre-tall robot costs around Rs 4 lakh.
- 13 The designs of STP like that in Chennai which has a sewage treatment renewable energy recycle of treated sewage³⁵ under a profitable model, be adopted. Such STPs have two-fold benefits and about 50-60% of cost of operations is reduced with green returns. The raw sewage from cities passes through various screens through treatment and the energy is produced to make the plants self-sustained and eco-friendly. Traditional sources of power only used in case of fluctuations. Primarily, these STPs are running on self-generated power. NCR states may adopt similar approaches for their SRPs as well.

³⁴Subir Paul

³⁵Shri Abhey Yadav, Va Tech Wabag

- 14 To handle the sludge from septic tanks, septage management could be considered. In terms of capital expenditure FSSM system involves approximately 20 times less per capita cost than centralized sewerage systems³⁶. Few best practices in Fecal Sludge Treatment Plants³⁷:
 - a) Faecal Sludge Treatment Plant Odisha of capacity 75KLD³⁸
 - b) Faecal Sludge Treatment Plant Dhenkanal³⁹ of capacity 27 KLD with solar pasteurization unit, UVdisinfection, solar panels used for running pumps, easy operations and completely closed system, gravity-based system.
 - c) Faecal Sludge Treatment Plant Leh⁴⁰, ⁴¹, Jammu and Kashmir of capacity 12 KLD with planted drying bed technology implemented for the first time in India. It has DEWATS module which is used for treating the water which in turn keeps O&M costs low.
- 15 The treated wastewater of STP in urban and rural can be channelized and treated and further can be reused through suitable natural systems like Phytorid technology for treatment of sewage. Phytorid working in the field. There are about more than 35 Phytorid system with varying capacities form 2000 L/day to 1 MLD are working in the field successfully for treatment of sewage. The first ever plant was installed at Mumbai University, Kalina campus in 2006.⁴²

Sr.	Place	Capacity
No.		(m³/day)
1.	Primer Auto Ltd, Pune	150
2.	Siemens Ltd Kalwa	500
3.	Bharat Forge, Baramati	100
4.	MJP, Nabi Lake Lonar, Maharashtra	500
5.	Mahindra Vehicle Manufactures, Chakan	750
6.	Swapnalok Builders, Pune (under construction)	250
7.	Clover, Vascon Builder, Pune (under construction)	550
8.	Municipal Council, Chandur Railway	100
9.	Municipal Council, Dhamangao	100
10.	Municipal Council, Daryapur	100
11.	Dr. Panjab Rao Deshmukh Krishi Vidyapeeth, Nagpur	100

Table 1: Select list of Phytorid Systems installed.

16 **Mapping:** Highlight the effectiveness of the sewerage system of every locality by identifying and demarcating all those storm water drains that are carrying sewage or industrial effluent. Attempt should also be made to identify the sources of such pollution. This is one of the major reasons that the River Yamuna despite all efforts has remained polluted because the pollution has not been tackled at the starting point when it enters the storm water drains, and it becomes almost impossible to tackle the pollution when it reaches the major drains like Najafgarh or Barapullah in NCT. The DJB had revised their Sewerage Master Plan on direction from the NGT to ensure that no sewage from any area should be allowed to get into any storm water drain.GIS mapping of sewerage system of every locality by identifying and demarcating all those storm water drains that are carrying sewage or industrial effluent is critical. This should be done all concerned agencies or department in

³⁶ Views of Shri Saket Kumar & Sh. Sameer Jain from KPMG

³⁷http://swachhbharaturban.gov.in/writereaddata/Day%201-Session%203-All%20PPTs.pdf

³⁸https://scbp.niua.org/sites/default/files/FSTP%20Bhubaneswar.pdf

³⁹https://www.cseindia.org/faecal-sludge-treatment-plant-at-dhenkanal-odisha-9722

⁴⁰https://smartnet.niua.org/sites/default/files/resources/fstp.pdf

⁴¹https://www.borda-sa.org/collaboration-is-everything-high-altitude-fstp-in-leh-india/

⁴²https://www.cseindia.org/static/mount/recommended_readings_mount/19-Phytorid-Wastewater-Treatment-Technology.pdf

each district and town and further be integrated in the NCR Geo-Portal. Geo-tagging of wastewateror effluent generation be undertaken on priority (in Mission mode).

- 17 **Monitoring:** Every household should have water quality and quantity monitoring at both entry into the house and at exit from the house. This may also be Geo-tagged. This alone can help to lay the foundation of a clean NCR.
- 18 **Reuse of wastewater:** As more than 50% of treated water is consumed in toilet flushing, which is a total waste and misuse of potable water. Safe reuse of treated wastewater for toilet flushing can be considered as priority. Dual mode of flush discharging smaller quantity of water for flushing after urination be also promoted to help in water conservation.
- 19 For safe use in flushing, the processed wastewater needs to be completely odorless and free from suspended matters to leave no stain in WC pan. Further, the quality of processed water needs to prevent no slime formation in flushing device. In smaller campus this may economically delivered by on site polishing of processed water through DEWAT system of wastewater treatment. The experience in Namibia, Israel and Singapore is help full as they have valuable experience.
- 20 Chennai has achieved around 15 percent of the city's water demand through water recycling. Around 8 percent of the treated wastewater is sold to industries and up to 40.7 percent of domestic water needs in newly built houses are secured from in-situ wastewater reuse. In-situ wastewater reuse in residential areas and rainwater harvesting has reduced nearly 60% of water reaching the sewer system that has contributed to improved operation of sewer networks. The utilization of biogas for energy production reduces the GHG emissions and also electricity consumption from the city grid. As demand for onsite wastewater treatment systems increased, new markets for wastewater treatment manufacturers and businesses were created⁴³.
- 21 Sanitary waste, generated at the household level be wrapped in paper and handed over separately to waste collector, daily in areas where segregation is already happening.

⁴³<u>https://www.iwa-network.org/wp-content/uploads/2018/02/OFID-Wastewater-report-2018.pdf</u>

Other policy guidelines which are to be followed and elaborated or detailed out in Subregional plans and local level plans like Master or Development Plans, etc. with respect to Comprehensive Waste Management.

- 1 **Landfill Sites:** Landfill is also the most expensive option when land cost is taken into consideration. Also when land requirement for SWM is worked out for two alternatives processing based on i) existing practice of transportation of mixed wastes to garbage dumps, and ii) decentralized SWM based on biodegradation of organic waste, both land requirement as well as operational cost reduces significantly besides elimination of pollution risk.
- 2 Infrastructure: Waste-to-energy plants be planned cause lesser air pollution than coal plants, but more than natural gas plants. At the same time, it is carbonnegative, processing waste into biofuel releases considerably less carbon and methane into the air than having waste decay away in landfills or the lake⁴⁴. Waste-to-energy plants are designed to reduce the emission of air pollutants in the flue gases exhausted to the atmosphere, such as nitrogen oxides, sulfur oxidesand particulates, and to destroy pollutants already present in the waste, using pollution control measures such as baghouses, scrubbers, and electrostatic precipitators. High temperature, efficient combustion, and effective scrubbing and controls can significantly reduce air pollution outputs.
- 3 When the waste management is deficient (evident from low interception of waste, lack of waste reduction, processing, reuse and safe disposal) then substantial quantity of wastes are bound to find its way (through drainage channels) to natural water bodies (lake, river or sea) and further add to pollution load already created by discharge of deficient sewage or effluent treatment. NCR states and its related agencies need to take up incubation models⁴⁵ for 50 and 100 TPD SWM modules based on biodegradation of organic waste. Some such examples include, Panaji, 100 TPD SWM Project and Ghazipur, Delhi 100 TPD SWM project (funded by NCRPB).
- 4 Waste segregation and disposal practices: No C&D waste should go to the land fill sites. This construction and demolition waste could be put to this use as construction material. As per Indian Road Congress⁴⁶ the C&D waste needs to be processed and tested to be used as road construction material and for this a large-scale plant and small plants for which technologies are available.
- 5 All cities practice 100 percent door to door collection and segregation of waste at source into minimum three categories that of dry, wet, domestic hazardous other than sanitary waste. No garbage or leaves should be burnt in the open. Home and community composting is to be encouraged and reuse, recycling of dry recyclable waste through sorting at Material Recovery Facilities is a must. Ragpickers or erstwhile waste workers should be integrated

⁴⁵ Prof. (Retd.) Subir Paul

⁴⁴<u>https://www.powermag.com/energy-waste-greenhouse-gas-winner-pollution-loser/</u> and

https://www.prescouter.com/2017/10/waste-to-energy-technologies-available/

⁴⁶ Shri Ajay Mathur, DG, TERI

into sustainable solid waste management system with proper personal protective equipment and proper working conditions.

- 6 Waste producer responsibilities: Adopting the strategy of Extended Producer Responsibility (EPR) wherein producers are given a significant responsibility financial and/or physical for the treatment or disposal of post-consumer products, steps like EPR Cess going into escrow account of ULBs to cater to budgetary requirements for waste management and sanitation be adopted by states as per feasibility and thus take steps towards formalizing EPR.
- 7 According to the E-waste (Management) Rules, 2016 every producer of electrical and electronic equipment listed in Schedule-I, can apply for Extended Producer Responsibility (EPR) in Form-I and obtain authorization from CPCB. As well as maintain records in Form-2 and shall file returns of previous year in Form-3 to CPCB on or before 30th day of June every year⁴⁷.
- 8 All bulk generators must have facilities for separation, collection, processing of wet biodegradable waste within their premises and hand over the non-biodegradable, non-recyclable including hazardous waste to municipalities and corporations and pay for their collection and processing. All cities in the NCR for aim for Zero Landfills and if there is a small percentage only for non-degradable items which should be placed in secured or sanitary landfills and Not Garbage Dumps. It would be a good idea to incorporate the Service Level processing parameters that have been formulated for Swachh Survekshan and Garbage star rating as monitoring parameters, which also has a high component of citizens and Resident Welfare Association and Trade association participation besides IEC in educational institutions, public places and using ICT applications. Thereafter for decentralized and centralized or semi-centralized processing and recycling of maximum waste and least amount going to secured landfills.
- 9 **Others:** It is imperative that an approach of creating the information about the implementation of procedures/infrastructure is highly desirable so that the loopholes can be identified and plugged. Following initiatives should be taken in this direction:
 - i. All entities relevant with respect to the SWM in NCR be mapped for both, the present infrastructure as well as the proposed infrastructure for the RP-41. For such mapping, each town should be covered and the fate of solid waste along with location (with capacity) should be indicated. For big cities it shall be more appropriate to show connection of the locality with the disposal/landfill site. It is important to understand as to what is the SWM policy of the city and is it adequate with respect to the projected growth. Most of the road sweeping and the Construction & Demolition (C&D) waste lands up either in storm water drains and water bodies which in turn shall result in the flooding of the areas because of poor disposal of storm water.

⁴⁷<u>https://dpccocmms.nic.in/userMaster/consentPolicy.gsp</u>

Amount of waste likely to be generated from a construction or demolition site should be assessed by the municipality and its proper disposal ascertained. Public involvement is very important in this segment and procedures should be developed to engage public by using social media and other IT based applications. The framework itself can be very conducive in identifying the problem locations and thus shall help in creating focus and eventual arriving at the solution.

- ii. Each public utility shall have a social media account for complaints only and where identity of complainant shall be protected. A common complaint forum for all civic services in a sub-region should be created, where calls are recorded, documented and followed up/ tracked till satisfactory resolution of the problem along with photographs of problematic site for records.
- iii. Such handling shall also be able to demonstrate the crux of the integration approach. Adequacy of the solid waste management has a huge reflection on the effectiveness of the sewage and storm water handling of a city. Some of the major problems of the sewerage and the storm drainage systems are on account of the solid waste mismanagement. Therefore, it is required to handle these three together along with their interaction.
- iv. To make waste collection sustainable, a mechanism be created to manage the system by monetizing it. e.g., a *Kabadiwala* who collects newspapers from consumers, sells it in the recycling plants at a higher rate, hence creating a supply chain. In this process, jobs are created, making it a financially viable model.
- v. As all Compost cannot be absorbed in parks only and local administration my look for other aspects as well.
- vi. Generally, operation of STP and SWM are dealt by staff trained in Civil, electrical & mechanical engineering fields who are trained to deal with construction and operation of electro-mechanical equipment only. This prevents utilizing specialists from biosciences who can deliver better operation and monitoring of STPS &Biodegradation of solid wastes. Trained Bio-scientists are better equipped in generating and sharing data on operation and performance monitoring of these components and the problem of data generation/ sharing shall get addressed. Necessary editions and updating be done accordingly, in staffing.
- vii. Opportunity for employment generation through creation of livelihood (income generation) with hand-holding support which shall generate employment in the knowledge based (organizing, technical knowledge and supervision) personnel:
 - a. Watershed Management
 - b. Constructed Wetland Treatment
 - c. Decentralized Bioprocessing (composting) of Domestic Solid Waste
 - d. Production of organic fruit, vegetable as well as livestock and pisciculture, supported by wastewater irrigation and organic compost.
- viii. All bulk waste generators to have facilities for separation, collection, processing of wet biodegradable waste within their premises and hand over the non-biodegradable, non-recyclable including hazardous waste to municipalities and corporations and pay for their collection and processing.

ix. The issue of availability of land where composting can be done, be addressed by the states at both district and habitation cluster level. An institutional mechanism be set up to manage it so that the certified manures can be sold to various consumers (e.g., gardening in public parks), at district level. Agencies themselves can appoint private contractors to handle the task or can give it given to the department of Horticulture or the department Agriculture in the respective sub-regions NCR. This will help creating a supply chain and jobs. Appropriate certification mechanism shall however be put in place before recommending its usage.





Adapted from original work by Emily D. Garner and Amy Pruden, Virginia Tech.



* Refers to animals as mechanical vectors. Transmission of animal excreta-related pathogens to human hosts is not represented in this diagram.

Source: WHO Guidelines on Sanitation and Health, <u>https://apps.who.int/iris/bitstream/handle/10665/274939/9789241514705-eng.pdf</u>?ua=1





Source: https://www.downtoearth.org.in/coverage/waste/urban-shit-53422

Chapter 8: Agriculture and Allied Activities

Suggestive Way forward for Incubation Models

Efforts need to be made to minimise need for irrigation water from either canal or tube wells water by meeting the requirement through processed waste water and this shall also minimise discharge of waste water in river. At working and detailing level this means Significant Operational Changes which shall require Hand Holding Support by academicians & experts, for which interactive Incubation Models need to be formed at appropriate operational level. A suggestive Way forward for 'Incubation Models' is asunder:

- 1. Create INCUBATION MODULES in each sub-region within National Capital Region.
- 2. To identify and initiate appropriate Incubation Centre for dealing with the following in an integrated manner:
 - i). **Rainwater Harvesting projects** (at community scale as it accentuates gains) in an urban settlement to recharge rainwater to aquifer good potential for both runoff in excess of drainage capacity as well as reduced natural percolation significant protection from water logging/ minor flooding.
 - ii). Watershed Management project in rural area to meet rural (in agriculture, cattle &pisciculture) water requirement & reduce demand for irrigation water from canal or deep tube wells significantly improves water efficiency in agriculture reduced power for tube well irrigation. A part of saved in water (whether from surface or tube well) can be allocated for domestic, industrial, and environment/ recreational needs but only after substantially reducing withdrawal of water from aquifers and helping aquifers come under safe zone through aquifer recharge by experts only.
 - iii). Revitalization of degraded surface water bodies (ponds, lakes, canals) and wetlands a step complementary to watershed management serve as detention or holding tanks for protection against water logging/ minor flood.
 - iv). Small Wastewater Treatment (DEWAD based) for a small urban settlement or sub-city for safe reuse in farming, fodder production, animal farms &pisciculture safe reuse of sludge in farming reduces fertilizer input.
 - v). Retrofit existing deficient STP for safe reuse in farming, fodder production, animal farms &pisciculture canal-based solution (small pockets of adjoining land) is possible.
 - vi). Environment friendly mode of Solid Waste Management for production of compost from bio-degradable wastes from smaller collection zones served by smaller CNG driven vehicles no garbage dumping.
 - vii). Organic/ Natural Farming ie. without chemical fertilizers and chemical pesticides supported by watershed management/ safe wastewater irrigation and organic manure from all forms of bio-wastes.

3. Location of Incubation Modules need to be decided based on soil characteristics, precipitation rate, topography, cropping pattern, ground water data, decentralized and environment friendly mode of waste and wastewater processing etc. An expert team comprising of external experts, BDO, state/ district level PHED engineer (who need extensive new exposure) etc. External experts shall devote an identified period in each month, conduct training, design various components as well as specifications. External experts engaged in design shall also supervise regularly, extend hand holding support, shall assist in testing, operationalization and conduct post implementation performance evaluation. The detailed design shall conform to evolved Protocols, relevant BIS standards (with justifications for deviations) and CPCB/ MoEF stipulations.

Policy Provisions to be detailed out in Sub Regional and lower level Plans

Apart from Recommendations in main Volume, other aspects that could be focussed on in Sub Regional and Lower level plans are as under:

Water Efficiency

- **1.1.1** Water applied by the irrigation system and not being made available to be taken up by plant roots is wasted and reduces irrigation efficiency. The major causes for reduced irrigation efficiency include storage losses, conveyance losses and field application losses, which needs to be addressed.
- **1.1.2** Automation in water management can save irrigation water in vegetables (bottle gourd and potato) in tune of 40% by applying water at appropriate scheduling. It involves real-time monitoring and less human labor, which adds to its benefits.
- 1.1.3 For increased water productivity, Drip Irrigation system be preferred over Flood irrigation methods. Drip and sprinkler irrigation system would enhance the efficiency of water usage. The cost of such systems range from Rs. 20,000 to Rs. 1, 00,000. Govt. is providing a subsidy of upto 55%. Benefits of drip irrigation-water saving, less energy cost, reduced labour cost, marginals soils and water, improved crop quality, Higher yields, Higher profits, reduced soil loss.Drip irrigation system be considered for homestead
- **1.1.4** Economic analysis of kharif onion-wheat-mungbean cropping system under dripfertigation technology has shown following benefits as per IARI and should be considered in NCR:
 - a. Irrigation water requirement for all three crops under drip was estimated as 1015 mm.
 - b. Kharif onion (August to October) wheat (November to April)-mungbean (April to June) cropping system was found most appropriate from water productivity point of view.
- **1.1.5** For Balancing in reservoirs / Farm ponds, use of Solar pumps has been found suitable in irrigation methods, and may be adopted:
 - i) Flood irrigation method -efficiency is 40%-50%. Its suitability to use with solar pumps depends on local conditions.
 - ii) Sprinkle irrigation method -Efficiency is 70% to 80%. It can be used with Solar Pumps.
 - iii) Drip irrigation method efficiency is 90%. It can be used with Solar Pumps.

Farmer Empowerment

- 1.1.6 Organic Farming be taken up as it helps in bringing down cost of cultivation. Farmers be encouraged to develop biological insecticides or botanical insecticides, themselves instead of procuring it from the market. Through ParamParagatKrishiVikasYojana, 25 clusters in the Alwar district were taken up in 2018-19, and another 150 clusters are taken in 2019-20, where farmers are advised for developing biological insecticides or botanical insecticides.
- **1.1.7** Warehouses be developed and declared as market to facilitate city dwellers to buy the produce directly without middlemen, especially along the Expressways.

(eg.expressways passing through NOIDA and NH-2)

- **1.1.8** FPOs through development of value chain and linking to consumers to play critical role in empowering farmers. In case FPOs appear too small to handle the dairy sector, Milk Producer Companies need to come up and be promoted in an integrated manner. Anand, Gujrat has been promoting the milk producer companies across the country. It is also promoting Bio Gas units for Dung management. In Jakharia village, the entire village is provided with a gas line connected to the bio gas plants. The slurry is also being procured by the agency, for which the farmers are being paid. Further, the slurry is being converted to fertilizer and is being sold.
- 1.1.9 Under the scheme of Soil Health Card, all villages of the Alwar district has been covered with an objective of doubling farmer income by 2022. The scheme, emphasizes on efficient utilization of fertilizers though which farmers got benefitted. Hence, the recommendations Of Soil Health Card Scheme may be taken adopted by all Farmers in NCR.
- 1.1.10 Concerned departments should encourage farmers to benefit from the National Agriculture Market (eNAM), a pan-India electronic trading portal which networks the existing APMC mandis to create a unified national market for agricultural commodities. Small Farmers Agribusiness Consortium (SFAC) is the lead agency for implementing eNAM under the aegis of Ministry of Agriculture and Farmers' Welfare, Government of India. Farmers's Produce Organisation (FPO) concept need to be followed as FPOs are to play critical role in empowering farmers through development of value chain and linking to consumers.

Cropping

- 1.1.11 Intensive cultivation leading to maximisation of production from the same landmass be promoted. introduction For example, of hybrid varieties of paddy, specific variety of mustard which produces around 40-42% of oil, hybrid variety of mustard. Productivity led growth should be promoted and area led growth should be discouraged.
- 1.1.12 In Peri Urban areas, Horticulture activities need to be promoted. To increase the productivity area per unit may be increased, Protected Cultivation, be practiced. With

Protected cultivation technology:

- a. Require less land (500-1000 m2 area)
- b. Increases 3 to 4 times crop productivity
- c. Employment opportunities at village level
- d. Improving economic situation (Benefit Cost ratio more than 2)
- e. Maintaining controlled environment
- f. Round the year cultivation

The major crops grown under protected structures include: floriculture crops like rose, gerbera, carnation, anthurium, lilium, orchids, chrysanthemum, etc., and the vegetable crops like tomato, yellow and red bell peppers (from the capsicum family), cucumber, leafy and exotic vegetables, etc.

protected cultivation, unseasoned crops/ vegetables and fruits for the population of this region may be produced. This shall help the region to be self-sustainable which would further lead to a decrease in carbon footprint because it would further lead to a decrease in transportation activities required to carry vegetables or fruits from other areas. Currently, Sonipat, Panipat and Karnal area have one of the largest density of protected cultivation ⁴⁸in the country supported through central Govt. programs. Comparison between open cultivation and protected cultivation indicates that production in protected cultivation is much higher than the open cultivation. E.g. It shows 336 % increase in cultivation of capsicum.

- **1.1.13** Adopt Plug-tray nursery raising technology as applicable: (The plug tray nursery raising technology is suitable for Melons, gourds and squashes for their off season cultivation in Northern India. This kind of technology is good option for the agri. entrepreneur by the progressive farmers or unemployed educated youths in major vegetable growing parts of the country.)
 - a. Production cost per seedling: Rs. 0.6 to 0.7 without seed cost
 - b. 1.5 to 2.0 lakhs seedling in 500 m2 area under semi climate-controlled poly house (10 to 16 lakhs in year, 6-8 batch per year)
 - c. Benefits: Selling price Rs. 1.5 to 2.0 / seedlings, Income: 4-8 lakhs per year, Employment generation: 2-3 persons per structure
 - d. Developing seedlings 15 days earlier with minimal mortality also helps in earning extra benefit of Rs 37,500-50,000 per ha

1.1.14 Adopt High Quality vegetables production technology, as applicable:

- a. Cucumber :80-100 tons/acres; 3-4 crops cycle; BC ratio 3.8
- b. Tomato :60-70 tons/acre, 10-11 months crop duration; BC ratio 2.5
- c. Capsicum :30-40 tons/acre; 9-10 months crop duration; BC ratio 3

1.1.15 Crop diversification option from low value crops to flowers (IARI)⁴⁹ :

- a. Rose :4-5 lakhs/ha; perennial crops 5-7 years; profit of Rs. 2.5 to 3.0 lakhs per year from 1000 m2 area with BC ratio of 3.0
- b. Chrysanthemum :5-7 lakhs/ha; crop duration 3-4 months; BC ratio of 4.0
- c. Gerbera: 10-12 lakhs/ha; perennial crop 4-5 years; BC ratio of 3.5
- d. Carnation: 6-9 lakhs per ha; perennial crops 3-4 years; BC ratio of 2.5)

Planning norms

- **1.1.16** Protect agricultural and natural land through local planning processes as valuable agricultural and natural resources continue to face development pressure, particularly in locations within or adjacent to municipal boundaries.
- 1.1.17 States may device a strategy to protect and support agricultural production and mineral resources by preventing inappropriately dispersed urban activities in rural areas. Planning for areas outside controlled/regulated/development areas need to be looked into bythe respective NCR constituent states through their Town& Country Planning /Urban Development Department. Reference of initiatives taken in Cuba and Sikkim regarding urban agriculture and agriculture production promotion, could be considered.
- 1.1.18 Haryana has identified an 25 acre area for Dairy Cluster. The idea is to shift the dairies from the city core. Such initiative may be taken by other states, preferably in peri urban areas. The value of land varies according to its use.

⁴⁸Shri PawaneshKohli, Chief Advisor and CEO, National Centre for Cold-chain Development (NCCD)

⁴⁹Ms. Neelam Patel, Water Technology Centre, Indian Agricultural Research Institute, New Delhi

residential/commercial land value is higher than agricultural land. Hence, the areas where the dairies are to be shifted, zoning should be done such that they are considered under agriculture land use. Discounted land prices to dairy farmers may also be planned to incentivize them.

Food Processing & Logistics

- **1.1.19** Avoid unnecessary Planning for Cold chain. If a fruit/vegetable is harvested and its selling cycle is within 48 hours, faster movement of the goods so that it reaches to the consumers should be focused upon.
- **1.1.20** Cold chain may be preferred upon only if harvesting and selling cycle is beyond 48 hours, as in cases where fruits/vegetable are brought in from other regions.

Livestock & Fodder

- **1.1.21** 4 pillars in livestock sector to be focussed upon:
 - a. Disease Control vaccination program to be done. Tagging of animals to be done, this unique identity will be there throughout the lifetime. Through this, presently govt. has initiated the task on traceability of products.
 - b. Breed Improvement
 - c. Nutrition and cost of fodder- Awareness in ration balancing.
 - d. Processing and marketing of products.
- **1.1.22** Aspect of Dry Dairy and Dry Dairy Farming be introduced as it mainly deals with how economic viability once the cow stops giving milk. The concept of dry dairy farming uses traditional methodologies for composting cow dung into manure, creation of biogas, preparation of biopesticides from cow urine and other innovative ecological initiatives. It benefits society via skill development, employment, the availability of organic manure and green energy.
- **1.1.23** Initiatives of Haryana like 'DudhkiChakki' be replicated. It is a project ongoing, where a milk processing van with experts goes to the village and trains youth to process milk and prepare 8 milk products like khoya, paneer etc. This is initially to motivate the youths. Then the youths are being trained in the training centers. The idea is that the milk produced in the region, is being utilized in the same region itself. This may be done to reduce the adulteration aspect.
- 1.1.24 Disposal of Cow Dung: Often, milch cattle owners do not have arable land where they could use the cow-dung. Hence, cow dung disposal units, usage of cow dung in bio gas plants, should be thought off. In Punjab, a machine has been developed which compresses the cow dung which is mixed with a little amount of straw. This forms a shape of a wooden structure which can be used for burning instead of firewood. The machine costs around Rs. 52,000.

Research and Development, Technology & Skill Up gradation

- **1.1.25** IIT Delhi has come up with technologies where wastelands could be developed using locally available micro-organisms in the soil. Some major steps for the same are:
 - i) Isolation and identification of the desired micro-organism from the local soil.
 - ii) Multiplication of the micro-organism isolated and identified to develop a culture for the same.

- iii) Combining the culture with a carrier to produce a bulk product easy for transportation and application at a decentralized level.
- iv) Development of nurseries based on the above technologies and training of farmers.
- v) Transportation and application of the saplings in the farmer's field.
- **1.1.26** State Agricultural Departments need to work in close coordination with Agricultural universities and research institutions in the sector. Joint efforts should be not only to increase farmer incomes in NCR but also provide agricultures produce/products at reasonable prices to end consumer.
- **1.1.27** NCR states may explore possibility of having Center of Excellences in the region for the purpose.
- 1.1.28 NCR has Strong possibilities to enhance the production & availability of green fodder through various technological interventions from the existing land under fodder cultivation & pastures, which need to be exploited. Hydroponic fodder unit is available with National Institute of Animal Nutrition, the design is available with the institute. Just for Rs. 30,000, it gives 30 kg of fodder every day with just 35 kg of water. It feeds about 3 cows a day. Where land is scarce fodder can be grown, at home itself through Hydroponics. Soft loans of NABARD may be directed in this direction also. This unit is also available in solar version. There is another unit which produces 100 kg per day of fodder, and it costs Rs. 90,000. Hence, NCR states may explore possibilities to introduce Hydroponics, as well.
- 1.1.29 Courses on dairy farmer and entrepreneur, veterinary health assistant, animal health worker, fish farmer related to animal husbandry and fishery sector may be imparted to people in this region. PashuGyan Ganga program, as initiate in Haryana to educate children about animals, could be taken up by other states as well. In addition, promotion of PashuKishan Credit Card could be undertaken.
- **1.1.30** Biogas slurry linked micro irrigation system, as already being applied for wheat in certain areas of District Bulandsaher, could also be adopted based on the following benefits:
 - a. For 12 ha of irrigated land having wheat, paddy, soybean, mung, gram & pulses
 - b. For Horticultural crops like guava, mausambi, jamun, jackfruit, mango,
 - c. 15 animals and selling milk and ghee.
 - d. Maximum seed production in pulses like pea (i.e., 43 q/ha)
 - e. Gobar gas slurry spray system with sprinkler.
 - f. Motivates other farmers to opt organic farming.
- 1.1.31 To deal with Dead Animals, Central Institute of Fishery Research has come up with a model which is costs about Rs. 90 lakh, where 10 dead cows can be disposed off every day by feeding it to those fishes which eat the dead animals. Such facilities should be benefitted from.
- 1.1.32 Adoption of Artificial lights applications could be attempted as applicable: Flower induction along with desired stem length (>65cm) can be achieved in 39-42 days through PAR @110-120 µmol m-2sec-1 from a combined 80% red 20% blue LEDsin Chrysanthemum.

1.1.33 Strategies for R&D on Sugarcane⁵⁰

- a. Developing high sugar, high biomass, disease resistant and pest tolerant, good ratooning, input responsive sugarcane varieties.
- b. Precision agriculture with improved planting methods, stress management modules and integrated nutrient supply system in plant and ratoon crops.
- c. Carbon sequestration to balance nutrient requirement.
- d. Quality seed production with timely seed replacement.
- e. Developing integrated pest and disease management modules, specifically for red rot disease and sugarcane borers.
- f. Increasing physiological efficiency of sugarcane varieties for biomass and sugar.
- g. Design and development of machinery sugarcane cultivation, esp. for small farmers.
- h. Minimizing post-harvest sucrose losses.
- i. Quantifying and mitigating the effect of climate on yield and quality of sugarcane.
- j. Harnessing the power of emerging and frontier areas of science like biotechnology, bioinformatics, product diversification, etc., in sugarcane.
- k. Developing sugar beet agro-technologies.
- 1. Outreach Programmes viz., training, consultancy and advisory services to farmers, industries and other stakeholders.

Pisciculture

- 1.1.34 A Re-Circulatory Aqua Culture System is available at 2019 cost of Rs. 50 lakhs. In 1000 gauge area, in every 8 months, Rs. 18 lakhs of fishcan be cultivated. Re-Circulatory Aqua Culture System, Bio Flock and Back Yard RAS will play an important role in the near future and may be developed in the NCR area.
- 1.1.35 Efforts may be made such that water may be taken from the canal and stored in a small area (pond) which can be used for fisheries, and then later on through drip irrigation, the nearby areas may be cultivated through it. Azola fodder with 28-35% protein may be cultivated on the same pond that has been developed. Azolais fodder for by cow, buffalo, pigs, hen etc. can be harvested after every 21 days. Efforts should be made to communicate such initiatives and encourage the farmers for adoption.

Strategies to Deal with Parali Burning

- 1.1.36 States may adopt better harvesting techniques. Problem of stubble increased only after combine harvesters were introduced during the green revolution. Earlier, the paddy was manually harvested and stubble was simultaneously ploughed back into the fields. Combine harvesters can harvest, thrash and clean the separated grains all at once but leave about a foot-high stubble. Options being offered be tied with an appropriate financial or institutional mechanisms.
 - The most prominent solution is the in-situ management which involves ploughing back the stubble in the ground. This has to be made economically feasible for farmers as it involves high cost of both manual labour and mechanised options.

⁵⁰Shri. M. R. Singh, Head, Crop Protection Division, ICAR-Indian Institute of Sugarcane Research, Lucknow

• The happy seeder machine which adopts a low tillage system to cut the straw and distribute as mulch on the field is priced at Rs 1.5 lakh. Even after a government subsidy of 33%, it is economically unfeasible for most farmers. Each Gram Sabha should buy one or two happy seeder machines and leasing to farmers via roaster should be increased as an income generation activity. Another solution is to cut, bail and transport the straw to cardboard factories or bio-mass based power plants. The Farmer's cooperatives and unions be utilised to house such equipment in clusters, and accordingly, an Institutional mechanism be worked out.

Strategies to reduce food wastage

- **1.1.37** To address the issue of food wastage, while additional /required storage spaces/facilities are to be in place at macro level, certain important steps can be taken at micro level as well, which may include:
 - a) Large grocery stores to donate all unused but still edible food to charitable organisations. All the large market chains, malls and stores may plan in advance by concluding formal agreements with various charities regarding the deemed donation and use of unused, but safe-to-eat food.
 - b) Food that is not packaged properly or is damaged or is past the expiry date but is still safe to consume must be donated.
 - c) Specific penalties could be prescribed for stores that fail to follow the government directives and deliberately spoil unsold food, thereby pre-empting their consumption by the needy
 - d) To eliminate commercial food waste steps of banning retailers from wasting edible food could be considered as in France. All edible food be donated to food banks or animal feeds.
 - e) Administrations need to put in place a strong mechanism against intentional or incidental food wastage.
- 1.1.38 Roof top vegetable production/ Terrace Gardening or kitchen gardening or Vertical farming should be focused upon. Usage of Urban Space like the terraces, building colonies, for producing the vegetables required would further lead to enough quantity of vegetables for exporting. Getting soil for terrace cultivation has been an issue in urban areas. Hence, alternate media for crop growth like coco peat may be looked at.

Policy initiatives that may further be detailed out at sub-regional and lowerlevel plans

1. Design and Planning

- 1.1 The preparation of Village Development Plan and the Integrated District Development Plans be carried out as per the 73rd Constitutional Amendment Act. These will necessarily cover the spatial, sectoral and economic aspects. Preparation of District Development Plan encompassing urban and rural areas shall be systematised. The timeline be fixed for consolidation of plan. It shall be done once in every 5 years. The stakeholder consultation shall be made an integral part of plan preparation. The local people shall be involved in preparation of village development plan. Various schemes related to rural development which need to be dovetailed in the above NBMSstructure for the rural areas and accordingly the respective Village Development Plan be prepared in line with the District Development Plans. Participating State Governments may identify 2 or 3 Tehsil towns/ Big (Bazaar) Villages for development in their respective sub-region and also prepare Development Plans and formulate projects on pilot basis. Assistance of Town & Country Planning Departments (centre.)be taken and some model District Development Plans (DDP) and Village Development Plan (VDP) should be made prepared to start with. Adhoc programme implementation be changed to planned implementation of the Village Development Plan.
- 1.2 DDP and VDPs to be developed on the basis of PRA techniques mandatorily, with village land use indicating both existing and planned, being integral part of Village Development Plan along with other details of districts and envisaged development proposals. NCR participating State Governments should prepare Detailed Rural Development Programs & incorporate the same in related District Plans and Village Development Plan. These programs should be prepared keeping in view the objective that migration from villages to neighbouring towns & industrial areas should be minimized to the extent possible.
- 1.3 Cluster of villages may be identified for planned development by provisioning economic, social and physical infrastructure on line of "Rurban Cluster" as envisaged in the NRuM under SPMRM. Subregional plans may identify such Rurban Clusters in the respective Sub-regions for planned development of rural settlements. This will help in development of rural NCR, stimulate local economic development, attract investments and create ample employment opportunities in settlements.
- 1.4 Prevailing Acts and Policies of the NCR participating States of Haryana, Uttar Pradesh and Rajasthan have provisions for declaration or notification of Controlled or Regulated Areas for planned development andland use control and preparation of Master Plan or Development Plans for such notified areas. However, there no control urban activities in rural areas outside notified areas. This has resulted in large scale haphazard development of urban activities or constructions outside these notified. In order to manage conversion of rural land use and to control the large scale urban activities in the rural areas, it is essential to notify the entire sub-region of each NCR constituent States and enforce. This calls for review of existing Legislations of the NCR participating states and the same may be looked into by the States.
- 1.5 Existing town Planning Acts of NCR participating States are not comprehensive enough to enable effective land use control in rural areas. Vast part of NCR is outside notified controlled /development areas and is essential to bring them under control through modification in the existing legislations to designate the entire Sub-region as controlled /development areas in each NCR participating States and set up appropriate sub-regional level planning and development mechanism to exercise land use and development control.

1.6 The transitional areas where transition is taking place from Rural to Urban in NCR need to be identified. Growth dynamics of transitional areas need to be looked into, at micro level. Districts may identify how and why the changes are occurring, the outcome of this transition. Approach for rural area should be different than the approach for the transitional area. These, along with the other aspects, should be considered while proposing land use in the respective lower hierarchy plans.

2. Migrant Facilities

- 2.1 Regular medical check-ups and requisite counselling for migrants be organised every fortnight /weekly at these Migrant Facilitation Centres
- 2.2 Mandate these Registration/Facilitation centres in each town, city, metro etc. in a phased manner
- 3. Technical and Infrastructural Support PURA
- 3.1 The concept of PURA (Providing Urban amenities in Rural Areas) advocated by Dr.APJ Abdul Kalam, the former Hon'ble President of India was also meant to tackle problem of migration of people from rural to urban areas for employment by making rural areas as attractive as cities. PURA proposed that urban infrastructure and services be provided in rural hubs to create economic opportunities outside of cities. Physical connectivity by providing roads, electronic connectivity by providing communication networks, and knowledge connectivity by establishing professional and technical institutions was to be done in an integrated way so that economic connectivity will emanate. The Shyama Prasad Mukherjee Rurban Mission is a successor to this mission. States may investigate obstacles to its successful implementation and make necessary efforts to achieve the envisaged objectives. Some of major objectives of PURA are given below:
 - a) Providing high-cost advanced technology to villages.
 - b) Linking a loop of villages by a ring road about 30 km in circumference with frequent bus services, thus integrating population of all connected village into one market. These villages could become a virtual city with potential to expand & accommodate 3-5 lakhs people.
 - c) Treating rural development as corporate social responsibility.
 - d) Replacing agriculture by connectivity as the Driving Force of rural development.
 - e) Rural fund is for investment not for consumption.
 - f) Industry and services should be given priority in job creation and employment in farm sector should decrease.
 - g) Compensation to farmers should be given for the land acquired by an annual fee equal to twice the price of the produce they grow, not by a lump sum amount.
 - h) Land to employers sub-leased for both, business and for residences for employee within walking distance, thus also solving the problem of daily commute to work.
 - i) Providing same per capita investment to rural areas as cities do.
 - j) PURA is meant for reverse migration of all the facilities like water, sewer, drainage etc.
 - k) PURA prioritizes rural development, because ³/₄ of our population lives in rural areas, by neglecting them India cannot be a developed nation.
- 3.2 Providing urban amenities or facilities in rural areas such as housing, better sanitation, water supply, communication system, social infrastructure etc., to improve the quality of life in rurban or semiurban (*Mofussil areas*) and also provide better connectivity among various types of settlements in the rural areas. The road map for effective implementation needs to be spelt out in the Sub-Regional Plans.
- 3.3 Rural Urbanism (Rurban) to attract people & investments should have following aspects:
 - i. Spiritof Villages:

- a. Community institutions (SHGs, Producer Groups)
- b. Participatory governance & planning (Gram Sabha, GPDP, Social Audit)
- c. Livelihoods based on local resource/culture/tourism
- d. Focus on Natural Resources
- ii. Facilities of Cities
 - a. Access to Basic Services'Ease of Living"
 - b. Choice of Economic Opportunities, Skill Upgradation, Access to Markets & Growth
 - c. Leveraging Information and communications technology (ICT) & Geographic Information System (GIS)
 - d. Land-use regulations and service benchmarks
- 3.4 Necessary steps be taken in the direction of environmental conservation and Communitypreservation
- 3.5 Efforts be made at the ground level to support betterment of the non-farm sector services to agriculture (including input supply, marketing, transport, finance, agricultural processing), rural manufacturing, mining, and other rural services.

4. Institutional Arrangements

- 4.1 For populations moving in to Urban areas, following three verticals are required to planned at district or city level:
 - i. Infrastructure and Access to Services.
 - ii. Social Development and Protection For need of migrants from rural areas, there is a need for Migration Support/ Facility Centers (MFC). This needs to be planned in each of the satellite centers of Delhi on priority and followed by district headquarters and then all urban areas and. These MFC could provide
 - a. Skilling: Counselling at Source and Training at Destination
 - b. Could provide information on work options as per the Urban Pull
 - c. Legal assistance, Social Security Linkages
 - iii. Livelihood Opportunities –migration support centers and development authorities should connect with each other and become a repository for information related to possible opportunities for livelihood.
- 4.2 All NCR districts to have the District Planning Committees (DPCs) in place as also mandated under Article 243 ZD of the Constitution of India. The District Planning Committees (DPCs) are required to consolidate the plans prepared by the panchayats and municipalities in the district and to prepare the draft development plan for the entire district.
- 4.3 To address the aspect of people moving from rural to urban or vis a versa, as was observed during the 2019-20 lockdown period, both intra NCR and from or to outside NCR, each district to maintain the information with reasons and take necessary action as beneficial to the population at large. A licensing or pass facility for a person moving into urban areas could also be explored⁵¹.

⁵¹ suggested by Ministry of Rural Development in workshop

Micro level strategies and policy provisions for villages and districts

Village level

- 1.1 As villages are directly affected because of quarrying sites, the kind of changes occurring in this zones need to be identified.
- 1.2 In Quarrying areas, instead of single village approach, a cluster of villages may be looked at. After the cluster is identified, a hierarchy of facilities related to health, education, transportation etc. to be provided, may be identified accordingly. In addition to this, the activities related to quarrying need to be identified. For example, in case of stone quarry there can be intermediate processing process, storage, sale system etc. While planning land use in such areas, such aspects also needs to be taken into consideration.
- 1.3 Dissemination of relevant information on regular basis on on-going programs, sources of microcredit, market potentials, etc. is required.
- 1.4 New businesses in the community/rural clusters should be promoted.
- 1.5 Gram sachiv be allocated reasonable number of villages based on terrain, area and population, for improvised monitoring. which s/he can visit in a week time. Gram Sachiv shall submit monthly progress report regarding the status of implementation of the programmes, projects including schemes to BDO on the status of programmes implementation.
- 1.6 Large villages may be provided with low cost sewage treatment facilities with appropriate sewerage system. Other rural settlements should be provided with low cost sanitation measures such as sanitary latrines, septic tanks and soak pits.
- 1.7 Conventional STP/ ETP (activated sludge process) and Bio-filtration technology which generates waste into resources should be adopted.
- 1.8 All villages in NCR to strive towards being the 'Adarsh Grams' and benefit from schemes such as PMAGY &SAGY, etc.
- 1.9 In addition, NCR villages may move towards being
- Digital Village (Village having facilities like Free Limited Internet Access, Interactive Educational Tools, Medical Services makes it a digital village)
- Cashless Village (All Adults having Bank Account, SMS-based Banking, Swipe Machine for Cashless Transactions & Digital Transactions)
- 1.10 Segregation of plastic waste and further usage of it in construction of rural roads may be explored.

District level

- 1.11 NRLM is also looking at commercial ventures, and districts should benefit from the same. Local area plans should be able to project the requirement of future jobs, in respective districts. Further, the possibility of these future jobs may be taken into account while planning for the training process. Apprenticeship Model may be promoted.
- 1.12 Necessary requirements to promote tourism activities around and near National Parks and Heritage Sites, be assessed and infrastructure provided for, within the prescribed / regulations.
- 1.13 Corridor Zone because of accessibility, lot of activities are concentrating. These activities need to be considered, analysed and accordingly allocation may be done.
- 1.14 Linkage between urban ecosystems should be established through activities like market gardening, mixed farming and renewable energies, etc.
- 1.15 District administration may ensure that
 - a) Use of e-Governance at all levels for planning and monitoring.
 - b) Use of tendering mechanism of works at all levels.
 - c) Gram Panchayat performance based ranking using IT Tools.
 - d) Use of Panchayats lands for various Government industrial or commercial projects with mutual agreement.
- e) Bring about more transparency in auction of panchayat land, village pond for fishing to give boost to income of panchayat.
- f) In-situ village re-development plans.
- g) Empowering Panchayats for various regulatory activities (e.g.in Haryana., as per section 25 of Haryana Panchayat Raj Act 1994).
- h) Access to primary and secondary healthcare services in vicinity supported by technology and improved infrastructure.

Chapter 10 – Health

Annexure-P-10.1

Ancillary Health Services

Ancillary Health Services may include following amongst others:

1. Diagnostic

- a) Laboratory services
- b) Genetic Testing
- c) Audiology services
- d) Cardiac monitoring
- e) Dialysis services
- f) Mobile diagnostic services
- g) Radiology/diagnostic imaging

2. Therapeutic

- a) Acupuncture
- b) Behavioral Health and Cognitive Therapy
- c) Interventional Pain Management
- d) Massage Therapy
- e) Nutrition Services
- f) Physical Therapy
- g) Substance-abuse services (inpatient and outpatient)
- h) Wellness and Complementary Medicine

3. Custodial

- a) Home health care services
- b) Home infusion therapy services
- c) Hospice care services
- d) Personal care assistant services
- e) Private duty nursing
- f) Skilled nursing services
- g) Medical day care (adult and pediatric)
- h) Rehabilitation services (inpatient and outpatient)
- i) Sleep laboratory services

4. Others

- a) Ambulance services
- b) Ambulatory surgery center (ASC) services
- c) Durable medical equipment (DME)
- d) Hearing services

- e) Orthotics and prosthetics
- f) Speech services
- g) Ventilator services
- h) Wound-care services

Chapter 11 – Education & Skill Development

Annexure P-11.1

EdTech⁵² (a portmanteau of "education" and "technology") refers to hardware and software designed to enhance teacher-led learning in classrooms and improve students' education outcomes

Edtech is the practice of introducing IT tools into the classroom to create a more engaging, inclusive and individualized learning experience.

Today's classrooms have moved beyond the clunky desktop computers that were once the norm and are now tech-infused with tablets, interactive online courses and even robots that can take notes and record lectures for students who are ill.

This influx of edtech tools are changing classrooms in a variety of ways: <u>edtech robots</u> are making it easy for students to stay engaged through fun forms of learning; IoT devices are being hailed for their ability to create digital classrooms for students, whether they're physically in school, on the bus or at home; even machine learning and <u>blockchain tools</u> are assisting teachers with grading tests and holding students accountable for homework

The potential for scaleable individualized learning has played an important role in edtech's ascendance. The way we learn, how we interact with classmates and teachers, and our overall enthusiasm for the same subjects is not a one-size-fits-all situation. Everyone learns at their own pace and in their own style. Edtech tools make it easier for teachers to create individualized lesson plans and learning experiences that foster a sense of inclusivity and boost the learning capabilities of all students, no matter their age or learning abilities.

And it looks like technology in the classroom is here to stay -92% of teachers believe tech is going to have a major impact on the way they educate in the near future. For that reason, it's vital to understand the benefits edtech brings in the form of increased communication, collaboration and overall quality of education

A successful **EdTech implementation** is the result of a carefully planned approach that comprises of developing a tech integration vision, a tech integration plan and roadmap and supporting the integration plan

⁵² <u>https://builtin.com/edtech</u>

Policy Provisions be elaborated in the Sub-regional Plans, Master /Development Plans and other lower level Plans

1 Technology⁵³

- 1.1 Technology for Student
 - Use of Internet of Things (IoT) to enhance quick response service for student safety
 - Student safety in schools and transport vehicles leading use case for IoT in student safety
 - Convert all classes into the Smart class
- 1.2 Higher education
 - Technology could provide high quality courses to democratize higher education through digital platforms such as DIKSHA
- 1.3 Skilling
 - **Open and Distance Learning (ODL)** of courses in higher education has the potential to significantly increase skilled human resource in workforce
 - **Platforms such as DIKSHA** could enable life long learning for a vast number of students in higher education
- 1.4 Digital Integration of schools
 - schools through internet and IoT
 - Making teaching data driven through enabling sharing of learning data and digital resources across schools
 - Globally, EdTech is being used to tackle multiple challenges and with different cases:
 - In-Classroom case Challenges include Large backlog in learning leading to huge diversity in learning levels within the classroom leading to Multi-grade Teaching and Multi-level (MGML) Teaching
 - Role of Edtech: Personalized Adaptive Learning (PAL) solutions identify student misconceptions and can remediate at the right level
 - For Teachers case Challenge is Teacher incentives in public-school system not aligned to outcomes; 20% of teachers are absent from classrooms; 15% of teaching positions vacant
 - Role of Edtech-Technology driven need-based teacher training and support
 - Tech-enabled delivery of curriculum-aligned teaching content vis DCR, VCR
 - At Home the Challenge is Low parental education levels & awareness of tech for education in low income communities and First-generation learners do not have access to quality school education
 - Role of Edtech-Students can access free high-quality content after school in multiple languages using smartphones connected to the internet
 - Many of these solutions are self-learning, requiring minimal (if any) parental support
 - Via Data the Challenge is Limited knowledge on teacher knowledge gaps and student learning levels and Current curriculum design not data-driven based on student learning pathways

⁵³ Dr Biswajit Saha, Director (Training & Skill Education), Central Board Secondary Education

- Role of Edtech-Data-driven interventions to solve for critical challenges and gaps for students and teachers
- Science of Learning Library (SLL) is an open source encyclopaedia of assessments, learning data, gaps etc.

2 Infrastructure

- 2.1 The gap between Government and Private Institution with regard to infrastructure, fees, quality of teaching etc. need to be minimized.
- 2.2 Foreign language institutions should be established in the region.

3 Evaluation & Monitoring

- 3.1 Ensure sufficient supply of quality education and even childcare facilities to meet demand and offer educational choice. Districts/Departments should:
 - a) Identify and address local needs and any shortages in supply, both locally and subregionally, including cross-boundary issues
 - b) identify sites for future provision through the Local Plan process, particularly in areas with significant planned growth and/or need

4 Design and Planning

- 4.1 Development proposals for education and childcare facilities should:
 - a) locate facilities in areas of identified need
 - b) locate facilities in accessible locations, with good public transport accessibility and access by walking and cycling
 - c) locate entrances and playgrounds away from busy roads, with traffic calming at entrances
 - d) link to existing footpath and cycle networks to create healthy routes to schools, and other education and childcare facilities, to encourage walking and cycling
 - e) maximise the extended or multiple use of educational facilities for community or recreational use, through appropriate design measures
 - f) ensure that new developments are accessible and inclusive for a range of users, including disabled people, by adopting an inclusive design approach
- 4.2 Social and public services, including hospitals, education and training centres, be developed in the less developed areas of NCR

5 Skill Development and Trainings

- 5.1 Along with basic education, Skill trainings provide the right framework for best use of people to enhance productivity.
- 5.2 While MSDE is working on availability of resources, Gram Panchayats should prepare Gram Panchayat Development Plan which should be integrated in the District Skill Development Plan.
- 5.3 For Convergence and decentralization, possibilities should be explored at district level for to dovetailing various skill trainings. For decentralisation District Skill Committee to prepare District Skill Development Plan. District skill Development plan is complicated exercise. The functionaries of districts should be aware fully about all aspects that is not

now happening. Migration is an important factor to be included and District Skill Committee may set up a Sub-committee for this aspect.

- 5.4 State departments may encourage the prospective people to benefit from various apps (applications) prepared by different Skill Councils ,and enable them to stay updated about the sectors and related required skills.
- 5.5 Domestic work sector presents vulnerability for Migrants, women (which are under the risks of being trafficked or physical and sexual exploitation) as nature of work is limited to the private space of household. Hence the domestic work sector in India which is currently operating in absence of a legal framework protecting the welfare and rights of the workers, needs a Legal Framework in this regard. Frequent and regular State-wise Awareness Events and Workshops should be organised by State missions/ departments in coordination with DWSSC to sensitize the stakeholders on the need for skill development of domestic workers and the opportunities open for them to get dignity of their services to the society.
- 5.6 NCR state departments and concerned skill mission to take benefit of the SAAMARTHA scheme which envisaged re-skilling of 1 Million workforce in the rubber sector over the next 5 Year as approved by Ministry for Skill development & Entrepreneurship (MSDE). In the first phase SSC has been allocated 32000 numbers to be trained under RPL. These aspects be detailed out in the Sub-regional Plans
- 5.7 All Gig workers needs police verification. Migrants do not have any local credentials, hence, States should have a State level portal for Police verification. Further States should assist Delhi police in converging their States Portals with Delhi police's verification portal and States should also insist on a National Portal for Police Verification, through contribution of respective states regarding verification information. The request for police verification can simply be routed to concerned police stations through this portal. Applicant shall provide the local address and permanent address. This aspect be detailed out in the Sub-regional Plans

6 Other Macro Level recommendations

- 6.1 Department of Higher Education to formulate policies for the following :
 - a) Consider hiring of retired distinguished teachers/researchers, without any age limit as mentors in Universities (shall help young faculty being groomed as currently superannuated faculty are not eligible to submit research proposals.
 - b) Initiate employment track for university staff including faculty to help in identification of talents right from the early stages of educational ladder, who are visualizing their career and livelihood through teaching and research. ECR (Early Career Researchers) program at UG level in all the disciplines.
 - c) Ratio of academician vs practitioner be well defined in advance, especially in professional programmes
 - d) Clarity be provided regarding permissions to practitioners regarding teaching & research

- 6.2 Strengthening the existing institutions of learning in the Sub-region. Universities should focus on sector specialists.
- 6.3 Creation of an environment that students from abroad are attracted in the Sub-regions of NCR and get trained here and help in the betterment of world.
- 6.4 All classrooms in the existing universities and colleges should be smart and equipped with latest pedagogical tools.

Chapter 13 – Safety, Security & Disaster Management

Annexure-P-13.1

Safe city services may include policing services, traffic management and mass transportation systems, incident response, community policing, emergency and disaster management, surveillance and monitoring, safety and security of critical infrastructure and security of public places, amongst others.

All city services needs to be integrated to increase collaboration among various public safety and security agencies to provide integrated response for any incident. This is illustrated in schematic diagram below:





Note: Case registration and investigation often runs in parallel with recovery and rehabilitation and must not be considered exclusive choices

Source: https://economictimes.indiatimes.com/news/politics-and-nation/how-to-transform-public-safety-inindia/articleshow/48235446.cms?from=mdr

Some of the key Smart City technologies relevant for Safe City include:

1. **Panic buttons in public places and SoS mobile application:** To trigger alert to police in case of emergency situation. Panic buttons can be provided as physical buttons at key public places. SoS mobile application can trigger alerts and incident reporting with geo location to provide effective response during an emergency situation. The alerts could not just be routed to the Police Control Room but also to certain selected numbers from the phone book.

2. Video analytics-enabled integrated city command and operations centre: Video surveillance cameras are used to monitor the city. But it become practically difficult for public safety agencies to 24X7 monitor these thousands of cameras in a command center for any incidents. So most of the time, video surveillance is used only for post investigation purpose only.

Video analytics runs on live camera feeds and automatically detects and raise alerts for public safety issues like left object, suspicious behavior etc which makes it easier for public safety agencies to proactively detect public safety issues and take action to avoid incidents. Video analytics enabled Integrated city command and operations centre can monitor emergencies and disasters to provide effective collaborative response in case of emergency.

3. **Helpline:** 24x7 emergency helpline number to raise any events/issues/concerns to a centralised/localised call centre which is integrated with police stations, hospitals, etc.

4. **Remote FIR centres:** Many times First Information Report (FIR)/Police complaint is not registered due to various reasons. Kiosks/systems to help citizens file a First Information Report (FIR) remotely, irrespective of the location of the jurisdiction where the offence has occurred in the city. The complainant can sign, print and scan documents virtually as part of the experience.

5. **Community volunteer networks platform:** Social media and mobile enabled platform for community/community groups to collaborate with police for local safety and security issues.

6. Policies to improve road engineering, install technology based traffic regulatory system, promote lane driving campaign, provide for well-equipped ambulances and trauma centres, develop cycle tracks throughout NCR, spread car pool lanes to encourage car-pooling for improvement of traffic system and security be detailed out in the Sub-Regional Plans.

ZIPNet Project⁵⁴

ZIPNet (Zonal Integrated Police Network) was introduced in the year 2004 under the guidance and supervision of **Shri. Sudhir Yadav, IPS,** Additional Commissioner of Police, Crime, Delhi, INDIA. The main objective of the Project is to share Crime and Criminal Information in realtime. Project is approved by the MHA, INDIA. The information published on it, relates to Public Interest. Prior to ZIPNET, the information use to circulate through offline modes like Papers, TPM, Wireless Communication. It provides Search Engines to match information from Central repository in Online environment. Initially, it was brought forward with the collaborative efforts of Delhi, Haryana, Uttar Pradesh, Rajasthan Police. Subsequently, in the year 2008, Punjab and Chandigarh Police also joined it. Uttrakhand Police has also joined it in the month of October, 2008. Himachal Pradesh Police joined the project on 25.1.2012. It contains following modules for public/police domain:

- 1. FIR(Heinous Cases : Murder, Dacoity, Robbery & Snatching)
- 2. Arrested Persons(Heinous Cases : Murder, Dacoity, Robbery & Snatching)
- 3. Most Wanted Criminals
- 4. Proclaimed Offenders
- 5. Missing Children
- 6. Children Found
- 7. Missing Person (including action taken module for authenticated Users Only)
- 8. Un-identified Dead Bodies
- 9. Un-identified Person Found(Unconscious, Minor, Abandoned, Mentally Disturbed)
- 10. Stolen Vehicles
- 11. Unclaimed/Seized Vehicles
- 12. Missing/Stolen Mobiles
- 13. Police Alerts
- 14. Daily Police Bulletin(Authenticated Users Only)
- 15. Jail Releases(Authenticated Users Only)
- 16. Bail Out(Authenticated Users Only)
- 17. Press Releases(Authenticated Users Only)
- 18. Messaging(Authenticated Users Only)

⁵⁴https://zipnet.delhipolice.gov.in/

District and Local level policy guidelines/provisions

District level:

- There should be preparedness, planning and capacity development initiatives related to disaster management at district level.
- Preparation of Hazard Risk Profile and multi hazard Zonation Maps, Hazard Risk and Vulnerability Assessment (HRVA) and Hazard-wise Responsibility Matrices for Disaster Risk Mitigation with consideration to be given to the Seasonality of hazards.
- Integrated planning to be done at Block, Urban, Rurban Clusters and Village level
- Proper land use planning and Regulation and Enforcement of building codes through Robust Building Permit System are to be ensured at district and local level to reduce impacts of natural disasters.
- Both structural and non-structural measures need to be emphasized upon.
- Fund allocation needs to be based on spatial vulnerabilities of the region i.e. spatial context of investments must be considered.
- Early, Mid and Long-term Recovery measures should be considered.

2.1 Local Level (urban and rural):

- Empowerment of local authorities, as appropriate, through regulatory and financial mechanism to work and coordinate with civil society, communities and indigenous people and migrants in disaster risk management at the local level
- Formulation of Development Control Regulations for Hazard zones
- Regarding the manmade disasters, there are certain spatial areas which lead to proliferation of diseases and these need to be identified. Areas that are affected by toxic ground water need to be identified and planned for, accordingly. At such areas, rain water harvesting or artificial water recharging techniques may be implemented at a much higher pace, so that stronger pollutants are diluted. Areas with high communicable diseases (if any) need to be identified and action may be taken accordingly in order to ensure that it does not get spread spatially.
- Areas having industrial hazards need to be planned properly for risk of Fires.
- Updated classification of land (example Degraded Land) need to be mentioned in the plan.
- Developing risk assessment models with the help of geospatial technologies to understand the existing ground conditions for quantification of risk and assessing needs &gaps with regard to residential, commercial and industrial buildings in terms of micro identification of

exposure to hazards, vulnerability and risk analyses, capacity assessments and identification of risk mitigation measures.

- At least four times in a year in every school disaster management mock drills should take place. This may be included in the plan and the same may be replicated across NCR region.
- Response time for Ambulance, Fire Fighting machines are increasing day by day. This is mainly because of congestion taking place due to traffic. Hence, there is need to develop transportation policy for the entire zone. The peri urban areas also need to be taken into consideration while planning.
- Concerned authorities in states need to get a socio economic study of an area, before giving any recommendations related to fire. In addition, the following recommendations also may be looked at:
 - Shortage of firemen and fire equipment and even fire station be looked into and taken care of , in timely manner.
 - A Centralized command and control center room for monitoring purpose, be set up in all States as in Uttar Pradesh. The information related to the hazardous buildings should be linked directly to the control room
 - As despite National Building Code in place for hotels, hospitals etc., they are not being followed, a specific ward wise plan should be in place and monitored regularly.
 - At local level, a limit to the total number of footfalls in Malls, Hotels to be looked at.
- Major development proposals should be submitted with a Fire Statement, which is an independent fire strategy.
- Enhancing community disaster preparedness
 - Have a maximum residents participate in disaster drills
 - Raise community's disaster management capabilities to prepare for a major earthquake directly hitting the capital and other disasters.
 - Increase volunteer fire corps members and develop a system for collaboration between fire corps groups.
 - Send disaster management consultants to independent disaster preparedness organizations to provide advice on the neighborhood's challenges.
 - Prepare a disaster preparedness manual and promote the fostering of disaster preparedness leaders that considers female perspective too.
- Areas for environmental protection Sub-regional plans/District and master/Development Plans should place defined regions of the city that must be protected for providing important environmental services such as: Biodiversity Preservation; Flood Control; Water Production; Erosion Control& Mitigation of Heat Islands.
- Strategies to encourage land use and transportation infrastructure that improve the ability to withstand climate change impacts and natural hazard risks, may be undertaken. The probable actions that may be taken:
- a) Incorporate climate change and natural hazard risk assessments into the planning and location of utilities, assets and operations

- b) Work with the concerned agencies and municipalities to:
- consider climate change impacts and natural hazard risks (e.g. earthquake, flooding, erosion, subsidence, interface fires) when extending utilities and transportation infrastructure that encourages land use development;
- research and promote best practices in adaptation to climate change as it relates to land use planning.
- c) encourage land use, transportation and utility infrastructure which improve ability to withstand climate change impacts and natural hazard risks.
- d) Municipalities to:
- include policies to encourage settlement patterns that minimize risks associated with climate change and natural hazards (e.g. earthquake, flooding, erosion, subsidence, mudslides, interface fires).
- incorporating climate change and natural hazard risk assessments into the planning and location of municipal utilities, assets and operations.
- \circ in collaboration with the concerned agencies:
- identify areas that are vulnerable from climate change and natural hazard risks,
- coordinate priority actions to address vulnerabilities identified, including implementation and funding strategies.
- e) Central and State agencies, in collaboration with the other agencies:
- provide financial assistance and timely data and information, such as flood hazard mapping, shoreline mapping, hydrological and hydraulic studies, to better enable local governments to fulfill their flood hazard management roles and responsibilities;
- o provide a coordination role to address flood hazard issues and management decisions;
- review and improve the effectiveness of existing provincial legislation and guidelines regarding flood hazard management by municipalities.
- Development Plans should use the Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Surface Water Management Plan, where necessary, to identify areas where particular flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Administrative units should co-operate and jointly address cross-boundary flood risk issues.
- Create a greener energy system with more capacity through scaling up of renewable resources, manage demand with energy-efficient buildings and variable pricing and through electrification of vehicles etc.
- Development outside the Urban Development Boundary (UDB) to be considered in terms of compliance for Conservation Areas and Nature Reserves.
- Address flood vulnerability of critical transportation assets.

Chapter 14 – Tourism & Heritage

Annexure-P-14.1

Tourist Destination in NCR which may be developed as 'Smart Tourist Destination Sites'

1. Most Visited Tourist Destinations in NCT Delhi, 2019

S. No.	Major Tourist Destinations				
1	Qutub Minar				
2	Red Fort				
3	Delhi Zoo				
4	Pragati Maidan				
5	Dilli Haat – INA				
6	Jama Masjid				
7	Akshardham Mandir				
8	The Bahai Temple (Lotus Temple)				
9	Hazrat Nizam-ud-din Shrine				
10	National Science Centre Museum				
11	Purana Qila				
12	National Rail Museum				
13	Gurudwara Bangla Shahib				
14	Gurudwara Sis Ganj				
15	Raj Ghat				
16	ISKCON Temple				
17	Humayun's Tomb				
18	Chhatarpur Temple				
19	India Gate				
20	The Garden of Five Senses				
21	National Museum				
22	Palika Bazaar				
23	Jantar Mantar				
24	Laxmi Narain Temple (Birla Mandir)				
25	Indira Gandhi Smriti				
26	Lodhi Tomb				
27	Mughal Garden				
28	Gandhi Smriti				
29	Nehru Museum				
30	Gurudwara Rakab Ganj				
31	National Museum of Natural History				
32	Nehru Planetarium				
33	Shankar's International Dolls Museum				
34	Craft Museum				

S. No.	Major Tourist Destinations		
35	Yog Maya Mandir		
36	Buddha Memorial		
37	Ahimsa Sthal		
38	Air Force Museum		
39	Safdarjung Tomb		
40	Sanskriti Museum		
41	Dilli Haat - Pitampura		
42	National Gallery of Modern Art		
43	Kotla Feroz Shah		
44	Tughlaqabad Fort		
45	Rahim- Khan- I-Khana		
46	Sultan Ghari's Tomb		
47	Asola Wild Life Sanctuary		
48	Agrasen ki Baoli		

2. Tourist destinations of Haryana in NCR

S. No.	District	Major Tourist Destinations		
1		Ancient Site of Naurangabad		
2		Fort of Loharu		
3	Phiwoni	Palace of Dadri		
4	Diliwalii	Prithviraj Ki Kutcheri		
5		Star Monument, Bhiwani		
6		Tombs of Loharu		
7		Anandpur Bandh (Dam)		
8		Aravalli Golf Course		
9		Gymkhana Club		
10		Mughal Bridge		
11	Foundabad	Nahar Singh Cricket Stadium		
12	Fandadad	Nahar Singh Palace		
13		Rajhans Convention Centre		
14		Rose Garden		
15		Surajkund		
16		Surajkund (a masonry tank)		
17		Aranya Greens Farm		
18		Ariisse Farm		
19		Badshahpur Fort and Baoli		
20		Baoli Ghaus Ali Shah		
21	Gurugram	Begum Samru Palace		
22		Cawn Sarai		
23		DLF Golf and Country Club		
24		Golden Greens Golf and Resorts		
25		Golden Turtle Farm Village		

S. No.	District	Major Tourist Destinations		
26		ITC Classic Golf Resort		
27		John Hall		
28		Karma Lakelands Golf Course		
29		Kingdom of Dreams		
30		Manesar Golf Course		
31		Mosque and Sarai of Ala Vardi Khan		
32		Sheetala Devi Temple		
33		Shish Mahal		
34		Sultanpur Bird Sanctuary		
35		Tarudhan Golf Course		
36		TERI Golf Course		
37		The Golf Retreat Farm		
38		Bua Wala Talab		
39		Group of Tombs and Mosques		
40	Jhajjar	Gurukul, Jhajjar Museum		
41	55	Rattan Garh Farm		
42		The Ancient Temple of Pandvas Bhimeshwari Goddess		
43		Ancient Fort at Safidon		
44		Bodh Stupa		
45		Dhamtan Sahib		
46		Fort of Jind		
47	~	Hansdehar		
48	Jind	Narwana		
49		Pindara		
50		Oilla Jafargarh		
51		Ramrai		
52		Rani Talab		
53		Cantonment Church Tower		
54		Dargah Nuri		
55		European Soldiers Grave		
56		Gateway of Old Mughal Sarai		
57		Kalander Shah Tomb		
58		Karna Tank		
59	Karnal	Kushan Stupa		
60		Miran Sahib Tomb		
61		Naraina		
62		Old Badshahi Bridge		
63		Old Fort		
64		Sita Mai Temple		
65		Taraori Sarai		
66		Birbal Ka Chhatta		
67	Mahendergarh	Chor Gumbad		

S. No.	District	Major Tourist Destinations		
68		Fortress of Islampur		
69		Jal Mahal		
70		Mirza Alijan's Takhat and Baoli		
71		Pir Turkman Tomb Complex		
72		Shah Quli Khan's Tomb		
73		Shobha Sarowar		
74		Tomb of Ibrahim Khan Suri		
75		Tomb of Shah Nizam		
76		Tomb of Shah Wilayat		
77		Tripolia Gateway		
78		Baba Udasnath Mandir Mandir		
79		Dauji Mandir		
80		Panchvati Temple		
81		Panday Van		
82	Palwal	Raja Nahar SinghFort, Ballabgarh		
83		Roshan Chirag Tomb		
84		Sati ka Talab		
85		Saveed Sharif ki dargah		
86		Bab-i-Faiz Gate		
87		Devi Temple		
88		Hemus Samadhi Sthal		
89		Ibrahim Lodhi's Tomb		
90		Kabuli Bagh Mosque, Panipat		
	~ .			
91	Panipat	Obelisk Commemorated to the Third Battle of Panipat		
92		Panipat Museum		
93		Salar Gunj Gate		
94		The Kala Amb Park		
95		The Original Babri Masjid		
96		Tomb of Bu-Ali-Shah Qalandar		
97		Baag Wala Talab		
98		Bada Talab		
99		Bhagwati Bhakti Ashram		
100	Rewari	Fort of Bawal		
101		The Ghanteshwar Mandir		
102		The Red Mosque		
103		Tombs of Turkiawas		
104		Ancient Site of Farmana		
105		Ancient Site of Khokhrakot		
106	Rohtak	Asthal Bohar		
107		Meham		
108		Shahjahan ki Baoli		

S. No.	District	Major Tourist Destinations
109		Tilyar Convention Centre
110		Ancient Pandav Place
111		Ancient temple of Guru Gorakhnath
112		Baba Dham
113	Sonopat	Baba Meer Mukand Sainipura
114		Buddhist site of worship
115	Soliepat	Dada Shambhunath, village Nahri
116		Historical memorial site in village Badkhalsa
117		School of Sports, Rai
118		Tirath Satkumbha temple
119		Tomb of Khwaja Khizr

Source: http://haryanatourism.gov.in/hub-destinations

3. Tourist destinations of Uttar Pradesh in the NCR, 2019

S. No.	District	Major Tourist Destinations	
1		Laakshagrah :- (Barnava)	
2		Pura Mahadev Temple :-(Baloni)	
	Bagnat	Badagaon Jain Temple (Near Khekhra),	
3	Dugput	Chandraprabhu Digamber Jain Atishya Kshetra,	
		Barnawa; Chhaprauli Jain Temple, Baraut	
4		Valmiki Ashram (Balani)	
5		Balai Kot or Upper Court	
6		Exhibition site	
7		Moti Bagh Palace	
8		Ahmadgarh Fort near Sikarpur (Ruins)	
9		Narora Ganga Barrage	
10		Belon-Wali Mata Mandir	
11	Bulandshahr	Raj Ghat	
12	Durandsham	Anoopshahar Ganga Ghats (Known as Mini -	
12		kashi)	
13		Ahar (Ganga Ghat)	
14		Aankeshwar Mahadev Temple	
15		Avantika Devi Temple	
16		Unchagaon Fort	
17		Mud Fort and Rao Raj Vilas	
18		Surajpur Bird Sanctuary	
19		Iskon Temple	
20	C D Nagar	Botanical Garden	
21	G B Nagar	City Park, Greater Noida	
22		Stellar Children's Museum	
23		Okhla Bird Sanctuary	

S. No.	District	Major Tourist Destinations
24		Dankaur (Dronacharya Village)
25		Bisrakh
26		Buddha International Circuit
27		India Expo Mart & expo Center
28		Murseedpur Reserved Forest
29		Gulistanpur Reserved Forest
30		Surajpur Jheel: Migratory Birds-Saras.
31		Dudeheshwar Nath Mandir
32	Ghaziabad	Mahamaya Temple
33		Swarn Jayanti park
34		Nacha Kuan
35	Hapur	Ganga Temple
36		Brijghat
37		Shahpeer Dargah
38		Vilveshvarnath Mahadev Temple
39		Pracheen Balaji Mandir
40		Haji Kabristaan
41		British cemetery
42		Dargah of Hazrat Bale Miya
43		St. John's Church
44		Jali kothi
45		Ghantaghar
46		Mustafa Palace
47		Shaheed Smarak and Freedom Struggle Museum
48		Historical Jail
49		Augharhnath Mandir
50	Meerut	Suraj Kund
51		Chandi Devi Temple
52		Jama Masjid
53		Ghandhari Talab
54		Gopeswar Temple
55		Sharang Rishi Ashram
56		Bahsuma
57		Draupdeswar Mahadev Temple
58		Draupdi Ghaat
59		Archaelogical sites of Hastinapur
60		Jamboo Dweep & Jain Temples
61		Hastinapur Wild Life Sanctuary
62		Begum Place and Begum Samru Church
63		Sardhana Church
64	Muzaffarnagar	Shukratal town - A 72 ft high idol of Hanumanii

S. No.	District	Major Tourist Destinations
65		Akshay vat Shuktirth
66		Government Educational museum
67		Ganeshdham Shuktirth
68		Vehelna Shuktirth
69		Sambhalheda Panchmukhi Shivling
70		Shuktirth Ganges Holy Bath
71		Nakshatra vatika, Shukartal
72		Shukateerth Shukartal
73	Shamli	Mosque and Tomb of Shah Abdul Razak and his four sons

Source: NCR Planning and Monitoring Cell, UP

4. Tourist destinations of Rajasthan in NCR

Tourist	District	Nature of tourism	Description
destination			
1. Alwar	Alwar	Cultural	Alwar fort (1550 A.D), Alwar Palaces Complex (Palace, Centotaphs, tanks), Rani Moosi Cenotaph of prominence, Vijay Mandir Palace, Hope circus (architectural monument), Jaisamand lake,
2. Sariska		Cultural / Natural	Sariska Palace, Tal Vrakhsha temples, Sariska wildlife sanctuary and Tiger reserve, Kankwari, Tehla and Kushalgarh forts.
3. Siliserh		Cultural	Siliserh lake Palace
4. Tijara		Cultural	Religious place. Ancient Jain temple.
5. Neemrana		Cultural	Fort, Rani ki Baoli.
6. Tatarpur		Cultural	Fort.
7. Bansur		Cultural	Fort.
8. Taalvriksh		Cultural / Natural	Religious place and sanctuary
9. Kesroli		Cultural	Fort.
10. Kushalgarh		Cultural	Fort.
11. Viratnagar		Cultural	Religious place.
12. Bhartrihari		Cultural	Religious place.
13. Pandupol		Cultural	Religious place.
14. Kankwari		Cultural	Fort.
15. Tehla		Cultural	Fort.
16. Pratapgarh	Alwar	Cultural	Fort.
17. Rajgarh		Cultural	Fort.
18. Ajabgarh		Cultural	Fort.
19. Bhangarh		Cultural	Fort, religious place.
20. Naraini Matha		Cultural	Religious place
21. Keoladeo Ghana National Park,	Bharatpur	Natural	Sanctuary/ National Park

22. Museum	Cultural	Lohargarh Fort
23. Bharatpur Palace	Cultural	Fort
24. Bankey Bihari temple	Cultural	Religious place
25. Deeg	Cultural	Fort
26. Dholpur Palace	Cultural	Fort
27. Band Baretha	Cultural / Natural	Dam on the Kakund River/Fort

Indicative Tourist circuits which may be developed as globally competitive and world-class Tourism circuits

1. Circuits in trans-NCR, of various categories like:-

1.1. Religious circuit

1.1.1. Mahabharat circuit - Sinauli, Hastinapur, Kila Parikshitgarh, Baranwa, Garhmukteshwar, Shukratal – covering Meerut & Saharanpur Regions (Cover Most of Western UP Viz. Meerut, Baghpat, Ghaziabad, Gautam Budhnagar, Bulandshehar, Saharanpur And Muzaffarnagar) - Mahabharata sites of Hastinapur, and the five villages proposed by Lord Krishna to be given to Pandavas, for the sake of peace and to avert a disastrous war, which included Indraprastha (Delhi), Swarnprastha (Sonipat), Panprastha (Panipat), Vyaghrprastha (Baghpat) and Tilprastha (Tilpat),

1.1.2. Braj Bhoomi Relegious Circuit, Bharatpur Rajasthan⁵⁵

Bharatpur which is also called eastern gate way of Rajasthan is today known world over for its Keoladeo Ghana National Park. The other places of tourist interests in Bharatpur city are Ganga Mandir, Laxman Mandir, Bharatpur Palace, Government Museum and Lohagarh Fort. Famous Deeg Palaces are 30 Kms from Bharatpur. The famous Braj 84 Kos Parikrama passes mostly through UP but in some parts, it passes through Rajasthan vis "Deeg and Kama". Similarly, the smaller 7 Kosi Parikrama of Goverdhan mostly passes through Utter Pradesh but the fag end, it reaches Poochari Ka Lotha in Rajasthan, where pilgrimist is dead tired and feels strong urge of shelter. But whole of the Bharatpur represent Braj language and culture in Rajasthan.

The famous temples of the area invariably attract many lacs of people during their annual fairs. Apart from covering the districts of Alwar and Bharatpur in Rajasthan, the circuit covers Mathura district Government of Rajasthan has it own land at Vridawan and Barsana. The region being close to Delhi offers easy escapade to the domestic and foreign tourists and pilgrimists for a quick brush with nature and god to rejuvenate them. Apart from temple sites which are described in details in the later part of the report, the places have other tourist attractions as well. Details of Braj 84 Kos Parikrama is provided on links given at footnote.

- 1.2. Circuit for natural sites within NCR like Sariska, KeolaDev, Okhla, Sultanpur National Park, etc.
- 1.3. A network of greens and waterways be developed around Delhi and also other major cities as far as possible

⁵⁵ Source: <u>https://devasthan.rajasthan.gov.in/Braj/braj84parikrama.pdf</u> & <u>https://devasthan.rajasthan.gov.in/Braj/braj.htm</u>

2. Some variegated circuits in each sub-region:-

- 2.1. NCT Delhi, the following two circuits have been identified for integrated development.
 - a) **Circuit 1:** Heritage circuit covering the heritage monuments and structure in the NCR
 - b) **Circuit 2:** Religious circuit, covering the important places of worship such as Akshardham, Bahai Temple, Jama Masjid, Nizamuddin Dargah, Gurdwara Bangla Sahab, etc.
- 2.2. **Rajasthan sub-region**, a Bharatpur Tourist Circuit covering the bird sanctuary as well, the Siliser lake of Alwar, should be developed.
 - a) Sanctuary and wetlands circuit: Sariska Siliser-KeolaDev-Baretha

2.3. U.P. sub-region

- a) Hastinapur sanctuary and Surajpur wetlands circuit
- b) Garhmukteshwar & Brii Ghat circuit

2.4. Haryana sub-region

- a) Badkhal Lake Surajkund-Basai Wetland Damdama Lake circuit
- b) Sultanpur National Park Masani barrage Khaparwas Wildlife Sanctuary circuit
- c) Karna Lake Rohtak Tilyar lake Bhindawas Wildlife Sanctuary circuit

3. Circuits of various categories including complementary sites outside NCR, to leverage the synergies

- 3.1. Golden triangle tourist circuit connecting national capital Delhi, Agra and Jaipur.
- 3.2. Circuits including wetlands and nearby sanctuaries outside but closer to NCR
- 4. Other circuits may be in line with circuits like Textiles, handicraft, etc.
- 5. Circuits plan where Tourism sector service provider agencies like IRCTC can play major role:
 - (a) Bishrakh Circuit Greater Noida;
 - (b) Faridabad-Gurgaon-Mewat Circuit;
 - (c) Sonipat-Panipat-Rohtak Circuit;
 - (d) Jhajhar-Rewari Circuit;
 - (e) Bulandshehar-Gautam Buddh Circuit;
 - (f) Gaziabad-Bagpat circuit; and
 - (g) Alwar circuit

Table 14.2.1- Tourism Circuits in UP Sub Region

4		Tourism Circuit (Existing & Proposed)			
S. No.	District	City or Town	Name	Site Connected	Existing / Proposed

~	District	City or Town	Tourism Circuit (Existing & Proposed)		
S. No.			Name	Site Connected	Existing / Proposed
1	Baghpat	Baghpat	Mahabharath Circuit	Delhi, Baghpat, Barnawa, Hastinapur, Parikshitgarh, Meerut	
			MICE circuit	Delhi, Baghpat, Meerut, Hapur , Ghaziabad, Delhi	Proposed
		Barnawa	Heritage circuit	Delhi, Meerut, Sardhana, Barnawa, Delhi	Proposed
		Khurja	Handicraft Circuit		
2	Bulandshahr	Bulandshahr	Heritage circuit	Delhi, Bulandshahr, Unchagaon Fort, Kucheshar Fort Mud fort, Delhi	Proposed
3	GB Nagar	Dankaur, Bisrakh	Mahabharath Circuit	Delhi, Dankaur, Bisrakh, Delhi	
			Ganga Dham Circuit	Ghaziabad , Brijghat, Garhmukteshwar, Delhi	Proposed
4	Ghaziabad	Ghaziabad	MICE circuit	Delhi, Ghaziabad, Meerut Sardhana, Hastinapur, Parikshitgarh, Garhmukteshwar, Delhi	Proposed
		Hapur	MICE circuit	Delhi, Baghpat, Meerut, Hapur, Ghaziabad, Delhi	Proposed
5	Hapur		Ganga Dham Circuit	Ghaziabad , Brijghat, Garhmukteshwar, Delhi	Proposed
5		Garhmukteshwar	MICE circuit	Delhi, Ghaziabad, Meerut Sardhana, Hastinapur, Parikshitgarh, Garhmukteshwar, Delhi	Proposed
		Gammakesnwa	Mahabharat Circuit	Delhi, Baghpat, Barnawa, Hastinapur, Parikshitgarh, Meerut	
	Meerut	Hastinapur	Adventure Eco- tourist circuit	Meerut- Hastinapur- Parikshitgarh, New Delhi	Proposed
6			MICE circuit	Delhi, Ghaziabad, Meerut Sardhana, Hastinapur, Parikshitgarh, Garhmukteshwar, Delhi	Proposed
		Parikshitgarh	Adventure Eco- tourist circuit	Meerut- Hastinapur- Parikshitgarh, New Delhi	Proposed
			Mahabharath Circuit	Delhi, Baghpat, Barnawa, Hastinapur, Parikshitgarh, Meerut	
			MICE circuit	Delhi, Ghaziabad, Meerut Sardhana, Hastinapur, Parikshitgarh, Garhmukteshwar, Delhi	Proposed
		Sardhana	Christian Circuit	Meerut Sardhana etc.	
			MICE circuit	Delhi, Ghaziabad, Meerut Sardhana, Hastinapur, Parikshitgarh, Garhmukteshwar, Delhi	Proposed

~	District	City or Town	Tourism Circuit (Existing & Proposed)		
S. No.			Name	Site Connected	Existing / Proposed
		Meerut	Handicraft Circuit (Sports)	Meerut, Khurja, Bagpat etc.	
			Adventure Eco- tourist circuit	Meerut- Hastinapur- Parikshitgarh, New Delhi	Proposed
			Heritage circuit	Delhi, Meerut, Sardhana, Barnawa, Delhi	Proposed
			Mahabharat Circuit	Delhi, Baghpat, Barnawa, Hastinapur, Parikshitgarh, Meerut	
			MICE circuit	Delhi, Ghaziabad, Meerut Sardhana, Hastinapur, Parikshitgarh, Garhmukteshwar, Delhi	Proposed

Source: http://awas.up.nic.in/pdf/FinalReport.pdf, UP Sub Regional Plan 2021

Table 14.2.2- Tourism Circuits in Rajasthan Sub Region

S.	District	City or Town	Tourism Circuit (Existing & Proposed)			
No.			Name	Site Connected	Existing / Proposed	
1	Alwar		Brij Mewat Circuit	Alwar and Sariska	Existing	
			Golden Triangle Circuit	Delhi -Jaipur- Agra , passing through Alwar district	Existing	
2	Bharatpur		Brij Mewat Circuit	Dee and Bayana	Existing	
			Golden Triangle Circuit	Delhi -Jaipur- Agra , passing through Bharatpur district	Existing	
			84 Kos Parikrama Marg	Out of 21 km., a patch of 1.2 km is located in Bharapur district (Kaman,Deeg, Badli, Alipur, Giriraj Ji, Radha Kund, Charan Pahari and Vimal Kund)	Existing	

Source: SRPs of Alwar and Bharatpur districts

Checklist of important aspects to make the tourist/ historic/cultural spots more visible and inviting

- 1) Special focus be given to hygiene
- 2) Clean, paid public restrooms with minimum amenities like in the malls (soap dispensers, rolls, tissues, bins, mirrors, faucets, room freshener, 30 minute cleaning, etc.)
- 3) Aesthetics of the site, surroundings and also very importantly, the route to the site from the nearest arrival points (rail/airport/bus terminal etc.) and also from important hotel.
- 4) Safe, certified food with variety of cuisines for different palates
- 5) Reasonable and reliable pricing policies of all things at tourist sites
- 6) Safety and security of tourists, CCTV surveillance & Helpdesks
- 7) Access to Health facilities
- 8) Money exchange, ATMs, e-booths, supply of safe bottled water,
- 9) Signages in major global and Indian languages
- 10) Good signages and info plaques at monuments sites
- 11) Disabled friendly spaces
- 12) City should be welcoming
- 13) Connectivity information of the tourist/ historic/cultural spots
- 14) Historical Information sharing
- 15) Right kind of accommodation availability in proximity.
- 16) Experiences sharing of visitors (e.g Jaipur literature festival & Delhi Haat visit experience)
- 17) Tourist cannot be the focus of a tourist spot its the local people who are living around.
- 18) Tourist should not treated as an outsider or novelty
- 19) Souvenir shops with wide range of souvenirs fairly priced and quality certifies by may be a leading all India Tourism and Hospitality Body, e.g. THSC, etc.
- 20) Local bistros and open air cafes especially in evenings
- 21) Local plazas be created where tourists can walk around, mingle with each other and also with locals (as in all major European tourist destinations)
- 22) Local plazas can have an year round event/activity calendar like crafts, local dances, music, acrobats (not just snake dance from Rajasthan), theatre, open -air performances, cuisine, embroidery, textiles, toys, which will generate lot of local employment and make the local communities a major stakeholder in conservation and development of local monuments and tourist attractions.
- 23) At least one such iconic space/plaza be mandated at all major tourist places in a phased manner, starting with all ASI and World Heritage monuments being done in first 3-5 years and other tourist/heritage places in the next 3-5 years.
- 24) Lighting, flood lighting
- 25) Light and sound shows in English and local languages
- 26) Visible security arrangements

Annexure-P-14.4

Cultural Resources of a Place

Database on Cultural Resources of a Place could include:

- 1. Community Cultural Organizations-Ethno-cultural Organizations (Government agencies, NGOs, Zonal Cultural Centres, University research groups), Educational Institutions
- 2. Natural Heritage-Regional/National Park Botanical/Zoological Garden, Lakes, Wetlands, Water bodies River, Forests, Sacred Groves, Farms & Orchards
- 3. Intangible Elements-Stories, Folklore Customs Oral Traditions Religious Ceremonies Cultural Practices Cuisine Local Healing Practices Traditional, Knowledge
- 4. Festivals, Fairs and Events- Seasonal Festivals Fairs Religio-cultural events
- 5. Built Heritage-Built Heritage Properties Archaeological Sites Local Monuments, Tanks, Baolis or Stepwells
- 6. Creative Cultural Occupations-Classical & Folk: Musicians Dancers Actors Singers Folk and Tribal artists Craftsmen, Artisans
- 7. Creative Cultural Industries-Art & Craft Initiatives Cottage Industries Agriproducts Self Help Groups (SHGs) Theatre companies or Dance troupes
- 8. Spaces & Facilities-Theatres Libraries/Archives Art/Craft Centres Museums Village Chaupals Other Cultural Spaces Community Centres

Brief of Champaner- Pavagadh World Heritage Site/Archaeological park - Management⁵⁶ - *best practice/ experience*

- 1) The definition of the site is an Archaeological Park and is a quantum jump from individual monuments. The aim of the management seeks to protect the entire Champaner- Pavagadh area with its natural, cultural and human resources in a Cultural Park situation.
- 2) This area encompasses 6,350 hectares, which include the Pavagadh Hill with its subsidiary outcrops; the Rajput Fortress City; the walled Islamic 15th century capital of Mahmud Begharha, the living settlement; living temple with intense pilgrimage, cultural resource contents underground and standing structures, heritage components, knowledge systems, open spaces that have cultural value, such as trade routes (cultural corridors) street net works; pilgrim's path and the cantonment space. The most appropriate term of this type of designation is "Archaeological Park". The designated Park boundary includes the above plus another 300 metres around the entire perimeter to comply with the existing Monuments Act, forming the core area.
- 3) A buffer zone or Champaner Pavagadh Heritage Zone beyond the boundary of the Archaeological Park designated and managed under the Gujarat Town and Country Planning Act as a Special Area but with the addition of a comprehensive protection and management system. The extent of the Buffer Zone is determined entirely on visual criteria because since time immemorial it has inspired the people and culture of the region by its sheer size and magnificence. Therefore the buffer zone will be managed under the Planning regulations control of landuse, density and special guidelines. The Gujarat Government has already agreed to a new Legislation "Archaeological Park Legislation" for the Archaeological Park and Champaner– Pavagadh Archaeological Park and Heritage Zone, which will ensure the comprehensive protection and management. Both the Archaeological Park Plan and the Buffer Zone Regional Plan are documents that are mandatory in the new Archaeological Park Legislation.
- 4) The last 15-20 years' effort for Champaner- Pavagadh has tried to find new ways of protecting and managing the site through a multi- pronged approach. (Refer to Khajuraho Matrix, which conceptualizes a complete protection and management system). The solution of Archaeological Park addresses the issues and problems that emerge to evolve a participatory, decentralized and integrated answer that is required. This is a paradigm shift from existing notions of managing cultural resources. The Archaeolgical Park tries to address the reality of complex ownership. In short a great deal of "change" is required from attitude to action regarding heritage resource. Heritage protection and management cannot solely survive on the enthusiasm and efforts of groups of citizens and persons. It has to be recognized as an irreplaceable resource that is essential for long term human development because of its vast educational and knowledge systems that are embodied. Management also

⁵⁶ Source: <u>https://whc.unesco.org/uploads/nominations/1101.pdf</u>

has to ensure that the "truth" authenticity and other messages are maintained. Champaner-Pavagadh Management plan attempts the challenge of bringing the site into a sustainable development process with local participation – a new paradigm for cultural resource protection and management which can be seen as a pilot project/ experiment that has relevance at all levels of Indian Governance and resource management.

Facts:

- 5) The Champaner-Pavagadh Archaeological Park with its ancient Hindu architecture, temples and special water retaining installations together with its religious, military and agricultural structures, dating back to the regional Capital City built by Mehmud Begda in the 16th century, represents cultures which have disappeared.
- 6) The structures represent a perfect blend of Hindu-Moslem architecture, mainly in the Great Mosque (Jami Masjid), which was a model for later mosque architecture in India. This special style comes from the significant period of regional sultanates.
- 7) The Champaner-Pavagadh Archaeological Park is an outstanding example of a very short living Capital, making the best use of its setting, topography and natural features. It is quite vulnerable due to abandonment, forest takeover and modern life. This Archaeological Park is a place of worship and continuous pilgrimage for Hindu believers.
- 8) The complete document of Champaner- Pavagadh World Heritage Site can be refered from the given link <<u>https://whc.unesco.org/uploads/nominations/1101.pdf</u>>.

Indicative Tourism KPIs for NCR

KPI⁵⁷

Satisfaction Indicators

- 1. % of visitors who rate the overall visitor experience as good or excellent
- 2. % of customers who consider the overall impression of the TIC (Tourist Information Centre) service to be good or excellent
- 3. % of stakeholders who consider the general promotion of the destination to be good
- 4. % of stakeholders who consider the tourist information service to be good or excellent
- 5. % of stakeholders who consider the destination website overall to be good or excellent
- 6. % of users who consider the destination website overall to be good or excellent

Economic Indicators

- 7. Number of day visitors [or trips] (+ % increase/decrease)
- 8. Number of overnight visitors [or trips] (+ % increase/decrease)
- 9. Value of staying visitor spend (+ % increase/decrease)
- 10. Value of day visitor spend (+ % increase/decrease)
- 11. Staying visitor spend per head (+ % increase/decrease)
- 12. Day visitor spend per head (+ % increase/decrease) Net Local Authority spend on tourism per staying visitor
- 13. Net Local Authority (LA) spend on tourism per day visitor
- 14. Net LA spend on tourism per head of population
- 15. Net cost per user of stand-alone TIC (through-the-door, phone, email)
- 16. Number of unique weekly visitors to the main destination website
- 17. Number of bookings generated by the local Destination Management System (DMS)
- 18. % of DMS bookings made online
- 19. Value of bookings generated by the local Destination Management System
- 20. Value of the online bookings
- 21. Return on investment for marketing campaigns (as a ratio)
- 22. Annual average % bed space and bedroom occupancy of accommodation

23. No of FTE (Full Time Equivalent Employee) tourism related jobs

Sustainability Indicators

24. Existence of an agreed and monitored sustainable tourism and action plan

⁵⁷ <u>https://www.visitbritain.org/sites/default/files/vb-corporate/Documents-Library/documents/England-</u> documents/4 p i.pdf

KPI ⁵⁷
25. % of residents indicating that they are satisfied with the local impact of tourism
26. Number of bed spaces per 1000 population
27. Ratio of number of visitors in one year to local population
28. Ratio of number of visitors in each quarter to local population
29. % of visitors arriving by means of train, coach or bus
30. % of tourism enterprises (accommodation, attractions, activities) participating in quality accreditation schemes
31. % of tourism enterprises (accommodation, attractions, activities) participating in green tourism accreditation schemes
32. % of tourism enterprises (accommodation, attractions, activities) with a recognised environmental certification
33. % of tourism enterprises (accommodation, attractions, activities) that have commissioned an accessibility audit from an accredited assessor with a view to enhancing provision for disabled visitors
34. FTE Tourism related jobs as a percentage of total local FTE jobs
Organizational Indicator
35. % of local businesses that belong to a local tourism association/partnership

Guidelines for Tour Guides & Operator

The following can be adopted as essential elements for the policy on Tour Guides & Operators as part of RP/ SRP-2041 mandate:

- Guides: Following Ten qualities⁵⁸ checklist should be followed as essential elements for tour guides before issuing license:
 - 1. Need to be charismatic
 - 2. Need to be knowledgeable
 - 3. Should be a good communicator
 - 4. Need to be a good storyteller
 - 5. Must have good organization skills
 - 6. Need a good sense of humor
 - 7. Must be empathetic
 - 8. To be able to think on feet to be flexible, prepared, and a master at improvisation One way to be prepared is to have items available. This could be a handy first aid kit, rain ponchos, a back-up tour route if one need to change. Having a plan in place to ensure that customers to have a great experience.
 - 9. Should have a good sense of direction
 - 10. Passionate about being a tour guide

The above qualities can be further enhanced & developed through guide training programs. Access to guidelines for the selection and grant of guide licence to Regional Level Tourist Guides (RLG) by Ministry of Tourism is given. Information about objectives of guidelines, scope, eligibility for tourist guide, eligibility for State Level Guides, age limit, domicile proof, etc. is provided. Users can get details related to process of selection for tourist guides, entrance test, merit list, counselling, training courses, etc. Code of ethics for Regional Level Tourist Guides is also available.

The prevalent guidelines of the Govt. of India, as applicable, should be followed regarding training & registration of the tour guides.

http://tourism.gov.in/sites/default/files/120620121101707.pdf & http://tourism.gov.in/sites/default/files/guideline/Guidelines%20of%20Heritage%20Tour% 20Guide.pdf

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https://www.trekksoft.com/hubfs/Checklists/EN%20Checklist%2010%20qualities%20every%20good%20tour%20should%20hav e.pdf?hsCtaTracking=e5bd4cee-9e60-4775-9e03-b9e66b5a1406%7C9dcb4b72-1ff2-4e19-b602-59d5663ecafd

> **Operators:** Guidelines for domestic tour operators are given at following link.

http://tourism.gov.in/sites/default/files/guideline/4._Domextic_Tour_OPERATOR.PDF

Annexure-P-14.8

Policies to be elaboration in Sub-Regional Plan and Master/ Development Plans

- 1. Detailed framework of policies regarding the protection, conservation and management of heritage sites and the mechanism for social safeguard should be provided in the Sub-Regional Plans.
- 2. State and District departments should work towards identifying and converting their places/sites of local attraction as Iconic places of the town or village or the area in general.
- 3. Detailed mapping & verification of following should be done as part of each Sub-Regional Plan-2041:- (a) Existing areas of heritage, cultural, natural and tourism importance, (b) Ranges of cultural resources, tourism activities and planning projects which will be a great base for including Heritage and Tourism in the mainstream development, (c) Newly upgraded area of heritage, cultural and tourism importance, (d) Verification of heritage monuments/ site of all types i.e. man-made & natural or tangible & intangible heritage, & (e) Prepare a detailed digital catalog of such sites to check whether they still exist and if they can be recovered or resorted. This digital catalogue should be used to attract travellers and researchers to disseminate knowledge.
 - a) Regional Database and Documentation Archaeological Database should be made on GIS Database for monuments and sites to be authenticated and validated with ISRO.
 - b) Use of Technologies for National Heritage New technology like Photogrammetry & 3D Laser scanning should be used for documentation, surveys, excavation and conservation works. LIDAR (Light Detection and Ranging) and Drone Surveys to document monuments and sites
- 4. Make a list of important sites other than world heritage and Govt. of India, ASI/ State Archaeology Departments and provide phasing for their development. Further, a checklist of development needed in each of such site be also prepared along with the baseline information.
- 5. State, ASI, Tourism and TCP departments must ensure that a conservation policy is reflected in their legislation. For heritage contents, a method has to be formulated and followed.
- 6. The 'systems approach' be adopted to look at the cultural resources carefully and all information/ data has to be mapped accordingly. The collected data must be constantly upgraded. An interdisciplinary Technical Committee can be formed at sub-regional level with the participation of stakeholders to operate and monitor the process of collection and management of the Cultural Resource database.
- 7. The natural heritage components should be identified and inventoried for example through the identification of natural resources such as rivers, streams, hilly areas and national parks.
Such specific places in each sub-region should be identified & earmarked through corresponding Sub-Regional Plans in addition to few which are provided in the Regional Plan. Sub-Regional Plan / States should identify such natural streams/rivers/water bodies/ other natural formations which are well entrenched in the public psyche, and declare them as natural heritage sites. Such sites shall be protected and conserved as per the conservation policy framed for this purpose by the MoEF&CC, ASI and other concerned central or State Authorities. Where such sites are already specifically not declared as protected under any Central/ State law, in such cases the District Magistrate shall form and chair a committee to oversee the conservation and management of such sites and where central/state laws already exist, with regard to any specific natural heritage site selected as above by the state govt., these laws shall be followed.

- 8. Culture should be an inherent part of the concept of 'quality of life'. The cultural needs of a society thus need to be considered along with economic and social aspirations, especially in the context of tourism, tourists and local communities. Important aspects to be considered to ensure efficient and effective promotion and facilitation of Cultural and Heritage Site would include focus on:
 - a) How is promotion of the cultural and heritage value of heritage site/monument happening?
 - b) How are livelihoods for local communities of these sites being generated?
 - c) How is employment being created through active involvement of local communities?
 - d) Is tourism being harnessed enough to address local economic imperatives?
 - e) Is local cultural heritage being integrated in this scheme?
 - f) Are local governments and local communities being involved effectively?
 - g) Is expert knowledge and public opinion reflected in the projects?
- 9. To overcome issues Checklist on following aspects to Promote and Facilitate cultural and heritage site should be prepared to enhance the value of heritage sites:
 - a) Skill development initiatives should ideally factor in development of local creative, cultural skills and occupations around crafts, performance and oral traditions, and be tailored to local needs and context
 - b) Interpretation Centers: comprehensive information on cultural heritage, history, arts, crafts, and available resources
 - c) Maps, Brochures and Publications
 - d) Cultural events in sync with the local heritage and available cultural spaces
 - e) Certification for heritage hotels, arts and crafts, Yoga and Ayurveda centers
 - f) Heritage Volunteering training programs for local guides, university students
 - g) Theme-based Heritage walks by locals
 - h) Arts, crafts and food workshops for locals and visitors

- i) Temporary exhibitions showcasing different aspects of local heritage
- j) Temporary *Haats* for crafts
- k) Food festivals
- 1) Chance for locals (skilled or non-skilled categories) to be involved in conservation activities
- m) Website with all the above information
- n) Use of Technology in Museums
- 10. Local administration should work towards:
 - a) Resolving issues of limited hours of experiences and limited seasons to experience: may not be same for all sites, and should be responsive to demand e.g. Delhi is a diverse city with multiple visiting experiences, but visitor is provided with less time to explore.
 - b) Working out and promoting Fly –drive vacation options
 - c) Offering platforms like Delhi Walks/ Jaipur Walks, built around core values (and not infrastructure) involving community participation and being Neighborhood driven alongwith being Age and gender sensitive
 - d) Delhi acting as a mere touchdown city : Singapore which less than half the size of Delhi, keeps on reinventing its tourist facilities for attracting repeat visits of international tourists as well as its local citizens
 - e) Efforts should be made that visitors who are coming to a city should stay and spend some time, and not just visit a site and return back. Infrastructure be such that each site could provide as option to stay and visit the neighbouring sites of importance for not just foreign tourists and but domestic tourists as well.
- 11. Technology should be used for e-governance and one-window for permissions and clearances as well. Advanced Technology for Promotion and Marketing of sites needs to be actively used to cater to all visitor kinds school children, families, researchers and other segments of society.
- 12. Efforts should be made to capitalize on city/ area's unique Culture, Iconic Places and heritage, and establish a 'hook of attraction' that will attract the target market.
- 13. Focus of Governments should be to involve private sector to boost emerging themes like, Sports & Adventure, Religious, Medical & Wellness, Amusement & Theme parks and MICE Tourism. In addition to this there is tremendous opportunity to engage competent private investors to run and maintain different Heritage Site, Old buildings, Forts etc. through PPP mode which will finally enhance the overall economy and employment at local level.
- 14. Check styles of point-of-sale materials in market, e.g., online operators, travel publications, retailers, souvenirs, etc. Modes of stay like bed and breakfast (B&B) in small lodging establishments to offer overnight economic & affordable accommodation and home-stay, etc. should be promoted, especially in small and medium towns and rural areas across NCR.

- 15. Efforts like the Udaan scheme of GoI where small cities are being integrated and private airlines being offered international licenses should be promoted and continued to improve Air connectivity hurdle, which is key in the tourism sector for international tourist attraction. Cities and towns across NCR should be well connected with larger cities like Delhi, Mumbai, Kolkata, Bangalore, Ahmadabad and Chennai.
- 16. In collaboration with IRCTC for Delhi Mega Darshan project plan and develop the following circuits across NCR (a) Bishrakh Circuit Greater Noida; (b) Faridabad-Gurgaon-Mewat Circuit; (c) Sonipat-Panipat-Rohtak Circuit; (d) Jhajhar-Rewari Circuit; (e) Bulandshehar-Gautam Buddh Circuit; (f) Gaziabad-Bagpat circuit; and (g) Alwar circuit
- 17. The basic requirements for the development of Tourism Infrastructure, but not limited to, to be addressed across NCR includes: (a) Accommodation Hotels, lodges, tented accommodation, tourist complexes/ dormitories, wayside amenities, restaurants, tourist reception centers, etc. & (b) Tourist transport Mini-buses, jeeps, etc. for wild life viewing; powerboat/ boats, for water transport; tourist coaches in selected circuits; special tourist trains, flights/ helicopter/ helitaxii, etc. Such infrastructures & facilities should be developed across NCR for accelerating tourism growth, as per local requirement.
- 18. Make the area /city / region easy for sale by informing customers of where and how they can experience. Concerned agencies & stakeholders should upload consumer testimonials from within international, national & local markets, and actively seek them out with visitors to NCR or product.
- 19. States and concerned department to come up with clear policy for Tour Guides & Operators (refer Annexure-P-V). Selection process of guides should be transparent and also continuous. Technology be used to do the selection online through remote interviews by experienced team and Categories of guides can be created. Young interns for guide profession can also be thought of. Nearby schools and colleges can be scouted especially for young persons who are looking for alternative and interesting professions. Summer training as guide interns can also be introduced; this will have a win-win effect fresh enthusiastic guides from local community will improve tourist experience, plus this will strengthen the community bonds with the local heritage & cultural strengthening the economic rationale for tourism.
- 20. Tour Guides & Operators and Local Authorities as well as the Tourism, Cultural and Heritage departments in NCR should work in collaboration.
- 21. The profession of Guides is not much respected and due to background of guide profession & reasons like reasons no fixed pay, no smart turnout, etc., many fresh young guides & educated outsiders do not join this profession. Therefore, for making the guide a professional, smart, well provided for, occupation, with not only all labour benefits but also treating them as knowledge workers (with a decent minimum salary plus bonuses based on tourist feedbacks). This will bring about a paradigm shift in the sight-seeing experiences around monuments. This will have a cascading effect on all aspects of tourism industry. Further, the tips system for guides could be remodelled on the lines of other hotels and hospitality

practices, for instance tips could be part of service charges; and /or tips could be pooled at one place and shared as per set policy, with guests having a choice to make special mention of a particular guide who would be entitled to a higher share from this pool.

- 22. While infrastructure is one part of the puzzle, training people and communities at the same time is the other essential aspect, especially in soft skills of communication, knowledge of local culture, and creative and innovative approaches to building an appealing 'story' of the heritage site or monument
- 23. Strategy for NCR to continue to attract visitors from around the world as a popular tourist destination should be brimmed with the spirit of 'Atithi Devo Bhyava'. Anticipating needs is at the heart of the concept and it is certainly fair to say that in NCR utmost care is being given to its visitors. Action involving spread of volunteerism, creating a welcoming environment, increasing communities support and promoting the Delhi NCR brand should be supported in each sub-region by the authorities, local governments and stakeholders. NCR brand's message to be disseminated around the world through steps like creating a logo and catch phrase, sharing the concept of NCR with residents and private sector companies, and airing TV commercials abroad.
- 24. Way Forward after Containment of COVID 19 India's travel and tourism industry has huge growth potential. The tourism industry is also looking forward to the expansion of E-visa scheme which is expected to double the tourist inflow to India. India's travel and tourism industry has the potential to expand by 2.5 per cent on the back of higher budgetary allocation and low-cost healthcare facility. The next step is where all the action is:
 - a) Once the outbreak of the virus is contained and the world is set to travel again, any plan of re-opening must be done keeping long-term benefits and safety compliances in mind.
 - b) It is imperative that hospitality companies reach out to deferred and cancelled bookings and give due attention to domestic travellers.
 - c) Hotels and airlines must slowly roll out their services rather than starting everything instantly and to not get caught up in spending.

Chapter 15 – Environment

Annexure-P-15.1

A. Major Recommendations of the 2014 report of Principal Committee under the Chairmanship of the Secretary Water Resources GOI, also considered by National Green Tribunal, in 2015 while giving directions for maintenance of requisite environmental flow in river Yamuna downstream of the barrage at Hathni kund in Haryana and at Okhla in Delhi so that there is enough fresh water flowing in the river till Agra for restoration of the river's ecological functions and can help in Preservation & Rejuvenation of the Yamuna Flood Plains59 in NCT Delhi along with adjoining tracts in UP and Haryana:

1. Guiding Principles advised by Expert Committees

- 1.1. Any further reduction or land use change in the current Zone O (river zone) in the city is fraught with danger according to the experts. Any development that has already taken place within theactive flood plain will have to be reviewed with a sense of responsibility and restoration (to the extent possible) undertaken.
- 1.2. The Zone O (river zone) must however become a place of attraction and occasional river related pastimes by visitors without compromising the river's ecological functions.

2. Removal of encroachments from the active flood plain

- 2.1. All structures (residential, commercial, religious, nurseries, farm houses etc) lying in active flood plain of the river in the southern zone (Okhla Barrage Jaitpur Village) on either bank, and in Haryana side across Aali drain to be removed. This is necessary to safeguard the interest of the river as well as the people who have raised these structures. DDA, Govt of NCT of Delhi, Govt of UP and Haryana to collaborate and take action.
- 2.2. DMRC dumping in active flood plain, south of the Okhla barrage in land with the UP Irrigation department to be restored to its original river bed level. Govt of UP to take action.
- 2.3. Police force to camp for a fortnight to enable DDA to fence its land downstream of DND flyway in Central Zone (Wazirabad Barrage Okhla barrage) to prevent further encroachment. DDA and Govt of NCT of Delhi to take action.
- 2.4. Violations by the PWD contractor (L&T) in the river bed for the Barapula III elevated corridor to be investigated and corrective measures taken. DDA, UP Irrigation Department and Govt of NCT of Delhi to take action.
- 2.5. Manner in which land has been given by Delhi Transco to M/s AFCONS for batching plant in the river bed to be investigated and corrective actions taken. DDA and Govt of NCT of Delhi to take action.

⁵⁹**Refer Detail reports on Yamuna on**: <u>https://yamuna-revival.nic.in/wp-content/uploads/2019/02/Flood-Plain-Survey-Report-Oct-2015.pdf</u> and <u>https://yamuna-revival.nic.in/wp-content/uploads/2019/02/Flood-Plain-Rejuvenation-Environmental-Flow.pdf</u> and <u>https://yamuna-revival.nic.in/wp-content/uploads/2020/07/Final-Report-of-YMC-29.06.2020.pdf</u>

- 2.6. The CRPF camp, the CNG filling station, the old fly ash Brick plant as well as the Millennium Bus depot opposite the Indraprastha / Millennium Park, standing over previous fly ash ponds to be removed, detoxified and converted into a forest cum public park, where public could experience the river at close distance. The Bus depot is already under High Court directed relocation. DDA and Govt. of NCT of Delhi to take action.
- 2.7. No construction that hinders environmental flow of the river in and around Signature Bridge be permitted. DDA and Govt. of NCT of Delhi to take action.
- 2.8. All existing constructions in the active flood plain on both banks in Northern Zone (Palla Village Wazirabad barrage) to be removed. Flood plain not to be used for river deleterious activities like dumping of solid waste and parking of vehicles etc. DDA, Govt. of NCT of Delhi and Govt of UP to take action.
- 2.9. Relocate the temporary police camps near Sonia Vihar of CRPF and Delhi police away from the flood prone stretch of the river zone (Zone O). DDA and Govt. of NCT of Delhi to take action.
- 2.10. Actions to be taken to provide statutory protection to flood plain under either the Indian Forest Act (Protected forest) or the Environment Protection Act (Eco-sensitive Zone). Ministry of Environment & Forests, Govt. of India and Govt. of NCT of Delhi to take action.

3. Development of wetlands and water bodies

- 3.1. All the identified (in the main report) low lying sites (old river channel & flood plain water bodies) in the flood plain in the Northern and Central zones to be developed as flood plain wetlands. DDA, Govt of NCT of Delhi and Govt of UP to take action.
- 3.2. An off channel reservoir spread over some 300 ha north east of the Palla village in Zone P II in the north Delhi to be developed to capture flood waters from the river. DDA and Govt of NCT of Delhi to take action.
- 3.3. In the northern Zone, along the main embankment on both banks, 10-15 metre wide belt of plantation with two to three rows of native trees (fruit trees) should be maintained. This should be followed by an earthen trench 2-5 m wide and 2-3 m deep between the various spurs (shanks) towards the River. This shall ensure rain water and flood water trapping and also moisture retention. DDA, Govt of NCT of Delhi and Govt of UP to take action.
- 3.4. Farmers in the river flood plain to be encouraged to opt for farm ponds for fisheries and flood retention sites. Chemical agricultural or any farming within 100 m of the river channel to be prohibited. DDA, Govt of NCT of Delhi, Govt of UP to take action.

4. Restoration Plan For The Zone O (River Zone) in Delhi & Adjoining Uttar Pradesh

- 4.1. According to records the Zone O (River zone) within the NCT of Delhi is spread in a north-south direction over some 9700 ha as a winding strip measuring 52 km in length and width that ranges from 800 m 3.5 km.
- 4.2. While the river Yamuna in the past had a much larger flood plain spread both on its east (left) and the west (right) bank, today it is bound by an almost continuous embankments

called the Eastern Marginal Bund (Popularly known as the Shahdara Bund and the NOIDA link road) on the east and the Western Marginal Bund (Popularly known as the Ring Road) on the west bank.

- 4.3. Three distinct stretches in the river zone can be considered. The 'Northern stretch' running over 26 km from the Palla village till the Wazirabad barrage cum road. The 'Central stretch' running over 22 km from the Wazirabad barrage till the Okhla Barrage and the 'Southern stretch' running over some 4 km from the Okhla barrage till the Jaitpur Village. It is notable that both in the northern and the southern stretches, the river forms inter-state border between NCT of Delhi and the state of Uttar Pradesh (UP).
- 4.4. The river zone carries important mythological, historical, environmental and social values which any restoration plan needs to keep in mind with care and sensitivity.
- 5. Environmental Flow Study to determine environmental flow from Hathanikund to Okhla
- 5.1. The Hon'ble NGT in its judgment dated 13 January 2015 and through subsequent directions in OA No 6of 2012 and 300 of 2013 had given directions for the maintenance of requisite environmental flow inriver Yamuna downstream of the barrage at Hathnikund in Haryana and at Okhla in Delhi so that there isenough fresh water flowing in the river till Agra for restoration of the river's ecological functions.
- 5.2. The Hon'ble Supreme Court had in W.P. (C) 537 of 1992 directed on 14 May 1999, that "a minimum flowof 10 cumecs (353 cusec) must be allowed to flow throughout the river Yamuna".
- 5.3. On the suggestion of the Monitoring Committee, an E flow Study for the river Yamuna has since been awarded by the MoWR, RD&GR to the National Institute of Hydrology (NIH)
- 6. Some of the measures that can help augment the flow in the river, have been suggested by the Principal Committee in its report of 1-8-2014 such as increasing fresh water flow in the river during the lean period, feasibility of creating constructed wetlands on the floodplains, Harvesting of Rain water and utilization of Treated water to accelerate ground water recharge etc.
- 7. The Irrigation & Flood Control Department has proposed creation of a shallow reservoir which would be filled by diverting excess water from the River Channel during the monsoons and allowed to percolate.
- 8. As per DJB in many of the unsewered colonies in the command of Barapullah drain, i.e. Malviya Nagar, Sangam Vihar Phase-I & II, Maidangari & Saidullajab Group of Colonies, the work of laying of sewerage system is in progress, which will divert the wastewater from these unauthorized colonies to the sewerage network and finally to Okhla STP.
- 9. The planning of the area between the Samadhi complex and Rajghat Bye pass Road adjoining the DTC Bus depot which is covered with fly ash is under process according to the December 2018 report given by DDA to the Monitoring Committee. The measures would

include detoxification of fly ash after extensive soil and water testing for the present quality and pH.

- 10. There is a DTC bus depot as well as Fly ash dumps in this area followed by an abandoned electric crematorium. According to DDA this was a temporary allotment for Commonwealth Games however the bus depot continues to be there. Policy decision has be taken for its removal.
- 11. DDA has stated that the restoration of the 32 ghats along the River between Qudsia Ghat and Old Railway Bridge will be taken up in consultation with INTACH, Aga Khan Trust etc. Few patches in this area have been developed as parks by DDA. There is a crematorium at Nigambodh Ghat.

12. Other Recommendations:

- 12.1. Surghat which is a concrete structure needs to be made more natural.
- 12.2. Impact of the Tibetan refugee colony; the Monastery and the Gurudwara on the river needs to be re-assessed.
- 12.3. The forested patch requires to be protected against ingress and encroachments.
- 12.4. Area around the Signature Bridge offers recreational opportunities. No development that hinders environmental flow of the river should be permitted. This area is presently under the jurisdiction of DTTDC. (Delhi Travel and Tourism Development Corporation of GNCT.
- 12.5. The two villages (Garhi Mandu and Usmanpur) in the flood plain go under water every time there is a high flood. People in these villages need to be convinced that it is in their interest to shift out of the river zone and the DDA needs to offer them suitable alternate sites for relocation. The matter is reported to be with the Revenue Department of GNCTD.
- 12.6. Relocation of the power distribution station out of the flood plain is explored.
- 12.7. Unused land (15 ha) in possession of the DMRC in the river bed was recommended to be dredged back to the river bed level and returned to the river so that the flood waters have sufficient space to spread and the avoidable pressure onto the Old railway Bridge during high floods is reduced. DDA has reported that the land is still being utilized by DMRC.
- 12.8. Qudsiaghat needs careful restoration to its original and traditional state. DDA has reported that the restoration of Ghats will be taken up in consultation with INTACH, Aga Khan Trust etc.
- 12.9. The area around Nigambodh Ghat between the River and the Ring Road needs to be redeveloped keeping in mind the social, religious and mythological significance of the site. Institutions like INTACH, Aga Khan Foundation etc are going to be involved according to DDA.
- 13. It will be seen that there are several agencies involved in pursuing the restoration measures. Fresh encroachments are reported to have surfaced. The Monitoring Committee is reviewing each location and an updated picture will be added as and when there are further

developments. Meanwhile the continuing mistreatment of the flood plain is being reported to NGT.

B. UP SPCB Action Plan for Restoration of Polluted Stretch of River Yamuna and Hindon

1. Action Points for Slaughter Houses - The Slaughter House unit shall take time bound steps as detailed below for fulfilling the existing gaps with reference to discharge of effluent, effluent treatment infrastructure, solid waste management as per the norms laid down in CPCB document:

Animal	Specific w	Timeline		
	Large Category	Medium Category	Small Category	
	(Morethan200Largeanimali.e.bovinesperday, ormorethan1000smallanimali.e.goatandsheep per day)	(50 to 200 Large animal i.e. bovines per day, or 300 to 1000 small animal i.e. goat and sheep per day)	(Less than 50 Large animal i.e. bovines per day, or less than 300 small animal i.e. goat and sheep per day)	
Buffalo	0.30 - 0.50	0.1-0.25	0.05 - 0.25	06 Months
Goat/ Sheep	1.2 - 2.1	1.3 - 2.5	0.8 - 1.7	06 Months

2. Action Points with timeline for upgrading the Effluent Treatment Plant and its monitoring:

- a) ETP must be provided with tertiary treatment units like Pressure Sand Filter, Activated Carbon Filter, Ultra Filtration
- b) Calibration of Online Continuous Effluent Monitoring System as per CPCB protocol and ensure continuous linkage with server of CPCB
- c) Installation of High Definition Open to Network Web Camera ón ETP, final outlet point, final discharge point and its connectivity with UPPCB.
- d) Ensuring Zero Liquid Discharge by way of recycling of treated effluent in process or utilization of effluent treated as per norms for irrigation on land.
- e) Installation of sealed flow metering system along with running hours at the inlet water source (Borewell or other sources) and outlet and at inlet pipeline of different process operation and outlet of ETP.
- f) Colour Coding of Pipelines carrying recycled process water and fresh process water within 06 Months.

g) Segregation of salt bearing stream and installation of salt recovery/evaporation system within 06 months.

3. Action Points for Textile industries

- a) Reduce Water consumption by 20 % per kg of product by completing upgradation of ETP.
- b) Reduce Water consumption by 15 % in addition to last years 20 % per kg of product by completing up gradation of ETP by adding tertiary treatment units by 31-12-2020.
- c) Confirmation of 30 % Water Recycle against total input (in other words water consumption per kg should be reduced by 30 % minimum) beyond 31- 12-2020.
- d) Installation of sealed flow meter and running hours meter on bore wells and inlet pipeline of different process section by 01 Month.
- e) Colour coding of pipe lines carrying recycled process water and fresh process water within 06 Months.
- f) Preparation of ETP adequacy assessment report.
- g) Installation of sealed flow metering system along with running hours at the inlet water source (Borewell or other sources) and outlet and at inlet pipeline of different process operation and outlet of ETP.
- h) Setting up of Online Effluent Monitoring System to monitor final outlet discharge, units connected to CETPs can have Common System Installed at CETP discharge.

4. Action Points for Electroplating Industries

- a) Usage of cyanide in electroplating should be phased out. Non-Cyanide Plating Processes should be adopted.
- b) Different metal bearing streams shall be segregated by way of dedicated marked lines, to segregate waste water according to its characteristics.
- c) Unit shall achieve the target of 50% reduction in water consumption by adopting cleaner technologies such as: Introduction of rinse water recirculation, Using of countercurrent rinsing systems; recycling rinse waters to the process after treatment. Regenerate and recycle process baths and rinse water after treatment.
- d) Unit shall reduce the waste water discharge upto 50% by adopting cleaner technologies such as: Controlling spillages by using troughs between tanks and avoiding haphazard rinsing and washing Recycling of treated effluent for rinsing.
- e) ETP must be provided with tertiary treatment units like Reverse Osmosis Plant, Ultra Filtration, Ion Exchange etc, to enable recycling of treated effluent in the process.
- f) Preparation of ETP adequacy assessment report.
- g) Installation of sealed flow metering system along with running hours at the inlet water source (Borewell or other sources) and outlet and at inlet pipeline of different process operation and outlet of ETP.
- h) Setting up of Online Effluent Monitoring System to Monitor final outlet discharge.
- i) Colour Coding of Pipelines carrying recycled process water and fresh process water.
- j) Installation of High Definition Open to Network Web Camera on ETP, final outlet point, final discharge point and its connectivity with UPPCB.
- 5. Action Plan for Distillery & Fermentation Sector for Mitigation of Pollution to ensure ZLD

- a) MEE condensate management through CPU within 12 Months.
- b) Installation of online mass flow meter at inlet & outlet of MEE & its connectivity to CPCB/UPPCB server.
- c) Restriction on Spentwash storage capacity
 - I. 01 Month in case of Biocompost
 - II. 01 Week in case of incineration
- d) Installation of PTZ cameras and connectivity.
- e) Setting up of adequate no. of bore well and pizometers around the bio compost area for Ground water monitoring.
- f) Installation of OCEMS on boilers.
- g) Registration from Agriculture Department as per notification of compost & sale of biocompost in bag packing immediate.
- 1. Safe storage of Molasses as per CPCB guidelines immediate.

6. Action Points for Tannery Sectors

- a) Adoption of proven cleaner technology.
- b) Arrangement to be made for salt recovery.
- c) Arrangement to be made for segregation and proper treatment. Soak liquor should be 100% thermal evaporated.
- d) Upgradation of ETP.
- e) Installation of OCEMS and PTZ web camera with web connectivity to UPPCB.
- 7. MSW improvement action plan time-line for the ULBs of Department of Urban Development, UP

MSW disposal facility to be developed in Saharanpur, Meerut, Baghpat&Ghaziabad along with similar facilities in Nagar Palika Parishad, Nagar Panchayat etc. situated in Catchment area of river Hindon and its tributaries river Kali west, Krishni so that Pollution arising out of dumping of MSW can be effectively controlled.

Broad Strategies for Residue Management

- 1. Implements that could be used in residue management:
 - 1.1. Combine harvester
 - 1.2. Super Straw Management System (Super SMS)
 - 1.3. Baler: to compress raked residues of rice, wheat, fodders, sugarcane, legumes etc into compact bales that are easy to handle, transport, and store. Bales can be used for animal feeding as well as bio fuels. They also creates alternative business for farmers to sell bales to power plants besides saving the environment from air pollution.
 - 1.4. Paddy Straw Chopper/ mulcher
 - 1.5. Zero-till sowing/ farming, which is a way of growing wheat / other crops without tillage or disturbing the soil in paddy/other crop harvested fields.
 - 1.6. Happy Seeder-Happy Seeder is one of the unique techniques which is used for sowing seed without any burning of Crop residue.
- 2. Suggested Methods of Composting of crop residues:
 - 2.1. In situ Decomposition : In fields (Incorporation as mulch)
 - 2.2. Ex-situ Decomposition : In pits (Pusa rapid Decomposer liquid; Pusa rapid Decomposer capsules; Preparation of N-enriched phosphor compost from agro waste/ crop residue; Minimal Alternate usage of paddy usage- Livestock fodder, Livestock bedding, in field incorporation, composting, electricity generation, mushroom cultivation, roof thatching, bio-gas; Paddy straw be used as fodder after mixing with other sources or through value addition.; Use of Paddy Straw for Mushroom Production; Biochar production High carbon material as a fertilizer, Stabilize and reduce emissions of harmful gases, increases the fertility, water retention and increases nutrient mineralization; Briquetting (Briquette is compressed bio-mass in nearly 6:1 ratio.
 - 2.3. Other methods: Liquid fuels from biomass, Bio-ethanol from Paddy-straw, Bio-power from paddy-straw, Rice bio-park, Compressed Bio Methane (Bio CNG)
- 3. Broad Recommendations for promotion of residue management included:
 - 3.1. Create value of crop residue and make farmers aware about its uses
 - 3.2. Coordinated efforts by Centre & State Governments and more assistance for promotion through awareness by way of demonstration, training and capacity building
 - 3.3. Revisiting the subsidy system for procurement of machinery by farmers
 - 3.4. More Custom hiring centres may be promoted for easy reach of costly equipment for small and marginal farmers at village level
 - 3.5. Incentivize farmers for adoption of various residue management operations
 - 3.6. Support for funding R&D/technological up-gradation
 - 3.7. Promotion of short duration varieties of rice
 - 3.8. Better coordination between Research-Extension-Engineering-Policy makers
 - 3.9. Farm mechanization components in different schemes like NFSM, NMOOP, MIDH etc. be brought under single umbrella for effective implementation and uniformity of assistance
 - 3.10. Revisiting MGNREGA- linking with agriculture

4. Bio-Organism of Crop Residue

- 4.1. Paddy straw composes of high silica content that animals are not able to digest, while the farmers properly manage the wheat straw as that is widely used as animal fodder. Since sufficient wheat straw is available, there is limited demand for paddy straw. So, the farmer under the pressure of clearing fields quickly for the next season burns the stubble.
- 4.2. IIT Delhi Alumni have developed a process to segregate the silica and lignin (organic polymer) of the rice straw from the usable cellulose (pulp). The process to create pulp uses natural biodegradable chemicals. The pulp is dried and moulded into various shapes (cups, plates etc) with the help of machines. The process can be performed economically at lower scales of processing 1-2 tonnes of straw per day also, sufficient for at least 200 acres of crop residue. From one tonne of stubble, 500 kg of pulp can be produced, which can then be sold for Rs. 40-45 per kg, even by the most conservative estimate. This helps the farmers generate revenue of Rs. 2-3 against a kilogram of straw.

Crop Residue Management for Better Environment and Soil Health (ICAR-Indian Agricultural Research Institute)

1) Crop residue burning problem

In late September to early November each year, farmers mainly in Punjab, Haryana and west UP burn an estimated 35 million tons of crop residue from their fields after rice harvesting, as a low-cost straw-disposal practice to reduce the turnaround time between harvesting and sowing for the second (winter) crop.

As per NITI Aayog (2018), Biomass burning is one of the major sources of air quality deterioration in Delhi in the months of October and November is burning of agricultural biomass residue, or Crop Residue Burning (CRB) in the neighboring states of NCR.



NASA satellite images showing intensity of rice residue burning (shown in red dots) in North-West India

S.N.	States	Residue generation	Residue surplus	Residue burned
1	Andhra Pradesh	43.89	6.96	2.73
2	Bihar	25.29	5.08	3.19
3	Chhattisgarh	11.25	2.12	0.83
4	Gujarat	28.73	8.90	3.81
5	Haryana	27.83	11.22	9.08
6	Karnataka	33.94	8.98	5.66
7	Madhya Pradesh	33.18	10.22	6.91
8	Maharashtra	46.45	14.67	7.42
9	Orissa	20.07	3.68	1.34
10	Punjab	50.75	24.83	19.65
11	Rajasthan	29.32	8.52	1.78
12	Tamil Nadu	19.93	7.05	4.08
13	Uttar Pradesh	59.97	13.53	11.92
14	West Bengal	35.93	4.29	4.96

 Table 1.1: Residue generated, residue surplus and burned in Major States
 (Million tons)

Source: National Policy for Management of Crop Residues

Table 1.2: Generation and Surplus of Crop -residues in Major States of India

States	Crop residues	Crop residues surplus	Crop residues burnt
	generation (Mt/yr)	(Mt/yr)	(Mt/yr)
Uttar Pradesh	59.97	13.53	21.92
Punjab	50.75	24.83	19.62
Haryana	27.83	11.22	9.06
Maharashtra	46.45	14.67	7.41
West bangal	35.93	4.29	4.96
Bihar	25.29	5.08	3.19
Gujrat	28.73	8.9	3.18
Andhra Pradesh	43.89	6.96	2.73
Rajasthan	29.32	8.58	1.78



Contribution of different crops in residue burning

- 2) Loss of Nutrients Due to Paddy Straw Burning (per ton basis)
 - Nitrogen 5.5 kg
 - Sulphur
 - Phosphorus (~40%) 2.3 kg
 - Potash (~10%) 25.0 kg
 - Organic Carbon 400 kg
- 3) Other harmful effects of residue Burning

1.2 kg

- a) Release of soot particles and smoke causing human health problems.
- b) Emission of greenhouse gases (GHGs) such as carbon dioxide, methane and nitrous oxide causing global warming.
- c) Loss of plant nutrients such as N, P, K and S;
- d) Adverse impacts on soil properties and
- e) Wastage of valuable C and energy rich residues.
- 4) Emissions of air pollutants from crop residue burning



5) Reasons for Crop residue burning

- a) There is very little turn-around time between rice harvesting and wheat sowing
- b) Lack of proper technology for recycling.
- c) Other management options costlier and labour intensive.
- d) Labour availability constraints
- e) Rice straw is considered poor feed for animals.

6) Crop Residue Management Alternatives/ Options



6.1 Implements Use in Residue Management

Combine harvester Price Rs 16-20 lakh - Super Straw Management System (Super SMS) - The Super SMS cuts the straw in small pieces and scatters it around behind the tail of the combine. An additional straw management system could be fitted to Self Propelled combine harvesters. Few advantages of this method are:

- a) Easy direct sowing of wheat with happy seeder
- b) The scattered straw helps in conserving the soil moisture
- c) Avoid burning straw or removal of straw.

6.1.1 Baler - Cost: Rs 2,25,000 to 18,00000(Approx.)

It is used to compress raked residues of rice, wheat, fodders, sugarcane, legumes,etc into compact bales that are easy to handle, transport, and store. Two different type of bale–rectangular or cylindrical, of various sizes, bound with twine, strapping, netting or wire. Advantages of this method are:

- Crop residues are turned into bales which are used for animal feeding as well as bio fuels.
- Creates alternative business for farmers to sell bales to power plants.
- Save the environment from air pollution.

6.1.2 Paddy Straw Chopper/ mulcher - Cost: Rs 2,00,000 (Approx)

It is a perfect machine for chopping all types of crop residue / straw such as wheat, Paddy, Maize, Sorghum, and Sunflower etc.In a single operation, it chops the left behind straw/ stubbles and spread it on the ground. The chopped and spreaded stubbles are easily buried in the soil by the use of single operation of Rotavator or disc harrow. Subsequently, wheat sowing is done as usual by the use of, no-till drill or traditional drill/other equipment. Machine consists of a rotary shaft mounted with blades named as flail to harvest the straw and chopping unit consisting of knives.Advantages of this method include:

- Reduction in air pollution
- Reduction in fuel and labour costs.

6.1.3 Zero-till sowing/farming - Cost: Rs 35000-40000 (Approx)

Zero-till farming is a way of growing wheat / other crops without tillage or disturbing the soil in paddy/other crop harvested fields. Advantages of this method are:

- Reduces labor, saves time
- Saves fuel
- Reduces machinery wear
- Improves soil tilth
- Increases organic matter
- Traps soil moisture
- Reduces soil erosion
- Improves water quality
- Improves air quality

6.1.4 Happy Seeder

Happy Seeder is one of the unique techniques which is used for sowing seed without any burning of Crop residue. In this machine a Rotor unit is attached at front of seeding unit that cuts & spread straw in between the rows, as mulch. Majority of the residue is not disturbed and seed is sown in a single pass. This technology is eco-friendly with environment for the health of soil as well as it also saves water. It removes the need to burn rice stubble before planting wheat, therefore reducing air pollution. Further, direct sowing also reduces soil disturbance, enabling it to retain more nutrients, moisture and organic content.

6.2 Composting of crop residues

- \checkmark In situ Decomposition : In fields, incorporation as mulch
- ✓ Ex-situ Decomposition : In pits

6.3 Paddy straw can be used as fodder after mixing with other sources or through value addition

6.4 Use of Paddy Straw for Mushroom Production

- **6.5 Biochar production which has h**igh carbon material as a fertilizer, stabilize and reduce emissions of harmful gases. It release of energy-rich gases for liquid fuels or directly for power/heat generation. Plays major role in the long-term storage of carbon and increases the fertility, water retention and increases nutrient mineralization.
- **6.6 Briquetting -** Briquette is compressed bio-mass in nearly 6:1 ratio. Compression is done through mechanical or hydraulic pressing machines. The loose biomass is converted to

compressed briquettes which are 3-4 inch long cylinders. Various shapes can be produced by changing the dye. The combustion of briquette in a controlled environment in presence of ample oxygen at high temperature generates low emissions. About 13 T of biomass is able to produce 10 T of briquettes daily, assuming the unit will operate for approx. 10 hours per day.

6.7 Other methods

- a) Liquid fuels from biomass
- b) Bio-ethanol from Paddy-straw
- c) Bio-power from paddy-straw
- d) Rice bio-park
- e) Compressed Bio Methane (BioCNG)

7) Recommendations for Promotion of Residue Management

- a) Create value of crop residue and make farmers aware about its uses
- b) Coordinated efforts by Centre & State Governments and more assistance for promotion through awareness by way of demonstration, training and capacity building
- c) Revisiting the subsidy system for procurement of machinery by farmers
- d) More Custom hiring centres may be promoted for easy reach of costly equipment for small and marginal farmers at village level
- e) Incentivize farmers for adoption of various residue management operations
- f) Support for funding R&D/technological up-gradation
- g) Promotion of short duration varieties of rice
- h) Better coordination between Research-Extension-Engineering-Policy makers
- i) Farm mechanization components in different schemes like NFSM, NMOOP, MIDH etc. be brought under single umbrella for effective implementation and uniformity of assistance
- j) Revisiting MANREGA- linking with agriculture

Mechanical Harvesting

- 1. Harvesting is a process of gathering ripe produce from the farms. Reaping and cutting of grain or pulses from harvest, used to typically done by a scythe, sickle, or reaper in traditional farming. The process was time taking and sometimes days of hard work was needed to be done by farmers. Even today, generally on smaller farms with least mechanization, harvesting is still the most laborious and intensive activity in the growing season.
- 2. Sometimes the ripen harvest have the risk of damaging by the bad weather conditions. And due to the unavailability of a harvesting machine, it can be a big loss for a farmer in bad weather conditions. On bigger or large farms that are mechanized properly, the harvesting process utilizes the most expensive and urbane farm machinery, called combine harvester.
- 3. Process of Harvesting done by a combine harvester includes multiple activities performed step by step such as — Cutting, Hauling or moving the cut crop to the threshing location; threshing that is separating the paddy grain from the rest of the cut crops: cleaning or removing unripe, empty and non-grain materials.
- 4. The combine harvester could harvest 2.4 to 3.0 acres in one hour. Cutting height during combine harvesting is often higher than with other harvesting methods. The time interval for harvest by combine harvester is often narrow, too early harvesting will result in a high percentage of chaffy kernels, and too late harvesting will result in high shattering losses. Fine tuning forward speed and header height is especially important to minimize field loss. This indicated that combiner is an economical and less labour and time consuming machine, in addition 2 to 3 weeks of saving in harvesting time.
- 5. Combine harvester also lets the crop in the field exposed to the sun for drying, storing the harvested crop in stacks or piles. The machine is specially used for the crops to collect seeds or edible part placed at the top of the grains and the discarding or leaving the below or inedible or chaff part in the field. A combine is used for crops like Paddy, oats, wheat, barley, rye, corn, sorghum, sunflower, linseed, canola and soybean.

Mechanized harvesting in Brazil

Mechanization of sugarcane harvesting in Brazil has shown decrease in environmental impacts and waste, while also increasing efficiency, energy cogeneration and thus sector profits and national energy security. Learning from Brazil's years of trial-and-error, other countries could build an ethanol production system with these benefits from the outset.Electricity generated from sugarcane biomass can also be sold to the grid, increasing both producers' income and the national energy supply.

Broad Recommendations of the Comprehensive Study on Air Pollution and Green House Gases (GHGs) in Delhi⁶⁰

The study recommends that the following control options for improving the air quality, these must be implemented in a progressive manner.

- 1) Stop use of Coal in hotels/restaurants
- 2) LPG to all
- 3) Stop MSW burning: Improve collection and disposal (landfill and waste to energy plants)
- 4) Construction and demolition: Vertically cover the construction area with fine screens, Handling and Storage of Raw Material (completely cover the material), Water spray and wind breaker and store the waste inside premises with proper cover. At the time of on-road movement of construction material, it should be fully covered.
- 5) Concrete batching: water spray, wind breaker, bag filter at silos, enclosures, hoods, curtains, telescopic chutes, cover transfer points and conveyer belts.
- 6) Road Dust : Vacuum Sweeping of major roads (Four Times a Month), Carpeting of shoulders, Mechanical sweeping with water wash
- 7) Soil Dust: plant small shrubs, perennial forages, grass covers
- 8) Vehicles:
 - a) Retro Fitment of Diesel Particulate Filter
 - b) Implementation of BS VI for all diesel vehicles including heavy duty vehicles (non-CNG buses and trucks) and LCVs (non-CNG)
 - c) Inspection/ Maintenance of Vehicles
 - d) Ultra Low Sulphur Fuel (<10 PPM)); BS-VI compliant
 - e) 2-Ws with Multi Point Fuel Injection (MPFI) system or equivalent
 - f) Electric/Hybrid Vehicles: 2% of 2-Ws, 10% of 3-Ws and 2% 4Ws: New residential and commercial buildings to have charging facilities
- 9) Industry and DG Sets:
 - a) Reduce sulphur content in Industrial Fuel (LDO, HSD) to less than 500 PPM
 - b) Minimize uses, uninterrupted power supply, banning 2-KVA or smaller DG sets
- 10) De-SOx-ing at Power Plants within 300 km radius of Delhi
- 11) De-NOx-ing at Power Plants within 300 km radius of Delhi
- 12) Controlling Evaporative Loss during fuel unloading and re-fueling through Vapour Recovery System at petrol pumps
- 13) Managing crop residue burning in Haryana, Punjab and other local biomass burning, Potential alternatives: energy production, Biogas generation,
- 14) commercial feedstock for cattle, composting, conversion in biochar, Raw material for industry
- 15) Wind Breaker, Water Spraying, plantation, reclamation

Global Norms of Clean Water Supply

Table 1.1: Guidelines of parameters for interpretations of water quality for irrigation

Potential Irrigation Problem	m Units Degree of Restriction on Use			
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Slight to	
		None	Moderate	Severe
Salinity (affects crop water availabilit	<b>y</b> )			
$\mathbf{EC}_{\mathbf{w}}$	dS/m	<0.7	0.7-3.0	>3.0
[or]				
TDS	mg/l	<450	400-2000	> 2000
Infiltration affects infiltration rate of	water into	the soil. Eval	uate using ECw and	SAR
together) ³			-	
$SAR = 0 - 3$ and $EC_w =$		>0.7	0.7 - 0.2	< 0.2
= 3 - 6 =		> 1.2	1.2 - 0.3	< 0.3
= 6 - 12 =		>1.9	1.9-0.5	< 0.5
= 12 - 20 =		>2.9	2.9-1.3	< 1.3
= 20 - 40 =		>5.0	5.0-2.9	<2.9
Specific Ion Toxicity (affects sensitive	crops)	•		
Sodium (Na) ⁴				
surface irrigation	SAR	< 3	3-0	>9
sprinkler irrigation	me/l	< 3	> 3	
Chloride (Cl) ⁴				
surface irrigation	me/l	<4	4-10	>10
sprinkler irrigation	me/l	<3	>3	
Boron (B) ⁵	mg/l	<0.7	0.7 - 3.0	>3.0
<b>Trace Elements</b> (see Table 21)				
Miscellaneous Effects (affects suscept	ible crops)			
Nitrogen (N0 ₃ - N) ⁶	Mg/l	<5	5-30	>30
Bicarbonate (HCO ₃ )	-			
(overhead sprinkling only)	Me/l	< 1.5	1.5 - 8.5	>8.5
H		No	ormal Range 6.5 – 6.4	

Source: Developing a Global Compendium on Water Quality Guidelines & modified from Ayers & Westcot, 1985.

Table 1.2: Some of the quality parameters of concern for listed industries and purposes (cooling water and boiler influent are common to many industries) according to data presented by Rommelmann et al. (2003) and Manivasakam (2011).

Industry/Purpose	Chemical	Physical/Biological
Pulp & Paper	Phosphates, iron, manganese, sulphides,	Suspended solids, organic
	silica, hardness	matter, colour, microbes
Chemicals	Silica, hardness, pH, iron, manganese	Suspended solids, microbes
Textiles	Iron, manganese, nitrate, nitrite	Colour, turbidity, organic
		matter

Ceramics	Hardness, sulphate, TDS	Colour, microbes
Electroplating	Iron, hardness, chlorides, bicarbonate	Turbidity, colour
Food Processing	Iron, manganese, hardness	Turbidity, odour, microbes
Laundry	Iron, manganese, bicarbonate, pH	Turbidity, colour
Tannery	Iron, manganese, bicarbonate	Turbidity, colour, organic
		matter
Cooling Water*	Corrosive conditions, pH, hardness	Scale & biofilm residues,
		turbidity
Boiler Influent*	Hardness, sulphate, silica, pH, oils, TDS	Scale & biofilm residues,
		turbidity

<b>Table 1.3:</b>	Summary	of t	the r	ules,	regulations	or	guidelines	for	water	reuse	for	specific
categories of	of use.											

Catego	ry of reuse	Description		
Urban Reuse	Unrestricted	The use of reclaimed water for non-potable applications		
		in municipal settings where public access is not restricted		
	Restricted	The use of reclaimed water for non-potable applications		
		in municipal settings where public access is controlled or		
		restricted by physical or institutional barriers, such as		
		fencing, advisory signage, or temporal access restriction		
Agricultural	Food Crops	The use of reclaimed water to irrigate food crops that are		
Reuse		intended for human consumption		
	Processed Food	The use of reclaimed water to irrigate crops that are either		
	Crops and	processed before human consumption or not consumed by		
	Nonfood Crops	humans		
Impoundments	Unrestricted	The use of reclaimed water in an impoundment in which		
		no limitations are imposed an body-contact water		
		recreation activities (some slates categorize snowmaking		
		in this category)		
	Restricted	The use of reclaimed water in an impoundment where		
		body contact is restricted (some states include fishing and		
	-	boating in this category)		
Environmental I	Reuse	The use of reclaimed water to create, enhance, sustain, or		
		augment water bodies, including wetlands, aquatic		
		habitats, or stream low		
Industrial Reuse		The use of reclaimed water in industrial applications and		
		facilities, power production and extraction of fossil fuels		
Groundwater	Recharge —	The use of reclaimed water to recharge aquifers that are		
Nonpotable Reu	se	not used as a potable water source		
Potable Reuse	Indirect Potable	Augmentation of a drinking water source (surface or		
	Reuse (IPR)	groundwater) with reclaimed water followed by an		
		environmental buffer that precedes normal drinking water		
	<b>D</b> ' <b>D</b> 11	treatment		
	Direct Potable	The introduction of reclaimed water (with or without		
	Reuse (PPR)	retention in an engineered storage buffer) directly into a		
		water treatment plant, either collocated or remote from		

the advanced wastewater treatment system

Source: Developing a Global Compendium on Water Quality Guidelines & US EPA, 2012.

<b>Table 1.4:</b>	Water	sources	available	for	power	plant	needs,	with	a	description	of	past
experiences	5.											

Sources of water supply	Extent of utilization by fossil plants					
Surface water	Rivers and streams	Widely used, especially in older plants.				
	Lakes and ponds	Widely used — natural and man-made lakes.				
	High-salinity waters	Limited usage at this time				
Groundwater	Shallow wells	Used mainly where surface supplies are unavailable.				
	Deep wells	Used mainly where surface supplies are unavailable.				
Municipal water	Treated surface water	Widely used, mainly at plants within a municipal distribution area.				
	Treated groundwater	Widely used, mainly at plants within a municipal distribution area.				
Wastewater	Internally generated	Practiced in some zero liquid discharge designs. (This approach requires an outside water supply for use elsewhere in the plant.)				
	Externally generated	Minimal usage, but an important potential source for future plants				
Underground water	Mine pool water	Used in the area of coal field such as Pennsylvania or West Virginia				

Source: Developing a Global Compendium on Water Quality Guidelines & US EPA, 2012.

Table 1.5: A portion of chemical summary tables under the CWQG-PAL, showing the recommended short and long term concentration levels in both freshwater and marine environments for a range of chemicals

Water Quality Guidelines for the Protection of Aquatic Life						
Chemical name	Chemical groups	Freshwater Long Term				
1,1,1-Trichloroethane	Organic	Insufficient data				
CASRN 71556	Halogenated aliphatic					
	coumpounds					
	Chlorinated ethanes					
1,1,2,2-	Organic	110				
Tetrachloroethene	Halogenated aliphatic					
PCE	compounds					
(Tetrachoroethylene)	Chlorinated ethenes					
CASRN 127184						
1,1,2,2-	Organic	Insufficient data				
Tetrachlorethane	Halogenated aliphatic					
CASRN 79345	coumpounds					
	Chlorinated ethanes					
1,1,2-Trichloroethene	Organic	21				
TCE (Tricloroethylene)	Halogenated aliphatic					

CASRN 79-01-6	compounds	
	Chlorinated ethenes	
1,2,3,4-	Organic	1.8
Tetrachlorobenzene	Halogenated aliphatic	
CASRN 634662	compounds Chlorinated	
	benzenes	
1,2,3,5-	Organic	Insufficient data
Tetrachlorobenzene	Halogenated aliphatic	
	compounds Chlorinated	
	benzenes	
1,2,3-	Organic	8
Trichchlorobenzene	Halogenated aliphatic	
CASRN 87616	compounds Chlorinated	
	benzenes	
~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~		

*Source: CCME, 1999.* 

Table	1.6:	Comp	parison	of dr	inking	wate	r qu	ality	guideline	es across s	selected	pai	rame	eters
from	guide	elines	provide	ed by	WHO	, the	EU	and	national	ministries	s from	the	US	and
Austr	alia. S	Source	e: UNEF	<b>P &amp; G</b>	EMS, 2	007								

Parameter	WHO	EU ^T	USEPA	Australia
Ammonia	$1.5 \text{ mgL}^{-1}$	0.50 mg L ⁻¹	No GL	0.50 mg L ⁻¹
pН	6.5-8	No G L ⁻¹	6.5-8.5	6.5-8.5
Chloride	250 mg L ⁻¹	250 mg L ⁻¹	250 mg L ⁻¹	250 mg L ⁻¹
Iron	$0.3 \text{ mgL}^{-1}$	$0.2 \text{ mg L}^{-1}$	0.3 mg L ⁻¹	0.3 mg L ⁻¹
Lead	0.01 mgL ⁻¹	0.01 mgL ⁻¹	0.015 mg L ⁻¹	0.01 mg L ⁻¹
Arsenic	0.01 mgL ⁻¹	0.01 mgL ⁻¹	0.01 mg L ⁻¹	0.007 mg L ⁻¹
Copper	$2.0 \text{ mgL}^{-1}$	$2.0 \text{ mgL}^{-1}$	1.3 mg L ⁻¹	2.0 mg L ⁻¹
Faecal Coliform bacteria	0 counts / 100 mL	0 counts / 100 mL	0 counts / 100 mL	No GL

# Annexure-P-15.1.6

Designated Best Use	Class	Criteria		
Drinking Water		1.Total Coliforms Organism MPN/100ml shall be 50 or less		
Source without	٨	2. pH between 6.5 and 8.5		
conventional treatment	A	3. Dissolved Oxygen 6mg/l or more		
but after disinfection		4. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less		
	В	1.Total Coliforms Organism MPN/100ml shall be 500 or less		
Outdoor bathing		2. pH between 6.5 and 8.5		
(Organised)		3. Dissolved Oxygen 5mg/l or more		
		4. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less		
Drinking water source	С	1. Total Coliforms Organism MPN/100ml shall be 5000 or less		
after conventional		2. pH between 6 and 9		
treatment and		3. Dissolved Oxygen 4mg/l or more		
disinfection		4. Biochemical Oxygen Demand 5 days 20 °C, 3mg/l or less		
	D	1. pH between 6.5 and 8.5		
Propagation of Wild		2. Dissolved Oxygen 4mg/l or more		
life and Fisheries		3. Free Ammonia (as N)		
		4. Biochemical Oxygen Demand 5 days 20 °C, 2mg/l or less		
<b>T T T T T T T T T T</b>		1. pH between 6.0 and 8.5		
Irrigation, Industrial	F	2. Electrical Conductivity at 25 °C micro mhos/cm, maximum 2250		
Waste disposal	Ľ	3. Sodium absorption Ratio Max. 26		
tt uste uisposui		4. Boron Max. 2mg/l		
	Below-E	Not meeting any of the A, B, C, D & E criteria		

Table : Designated Best Uses of Water

Source: Central Pollution Control Board (CPCB).

# **Indicative Ambient Noise Standards**

#### Area Category of Area / Zone Limits in dB(A) Leg* code Day Time Night Time 75 70 (A)Industrial area (B) Commercial area 65 55 (C)Residential area 55 45 (D) Silence Zone 50 40

#### Ambient Air Quality Standards in respect of Noise

#### Note:-

- 1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
- 2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
- Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
- Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.

Note : The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended by the Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 vide S.O. 1046(E), dated 22.11.2000 and by the Noise Pollution (Regulation and Control) (Amendment) Rules, 2002 vide S.O. 1088(E), dated 11.10.2002, under the Environment (Protection) Act, 1986.

Source: https://tspcb.cgg.gov.in/Environment/Ambient%20Noise%20Standards.pdf

# Annexure-P-16.1

### SUGGESTED LIST OF DIGITAL PLATFORMS FOR NCR IN REGIONAL PLAN-2041

- 1. It is suggested that the Digital Platforms should be created as required to provide Citizen Centric Services with a view to provide Quality of Living and to enable Ease of Living to Citizens of Tomorrow's Greatest Agglomeration on Earth.
- 2. It is also suggested that Digital Platform should not only be web based but shall also be compatible with phones. Further, if these platforms are interactive response based with voice, SMS formats in local languages, then their utility shall increase manifold for the users.
- 3. The suggested list of Digital Platforms which can be considered and implemented in the next five years by 2025 in NCR is indicated below:
- 3.1 NCR Tourism Platform Portal- Online Tourism bookings & ticketing should be feasible for all sites in NCR States including ASI sites and also enable ticketing in foreign currencies and online tourism ticketing of all tours and sites in the NCR Sub-Regions/States. The NCR Sub Regional/States Portals can be further clubbed as NCR Tourism Portal.
- 3.2 Job Portal of NCR The Central Skill Registry at District Level in each NCR Sub-Regions along with Migrant Facilitation Centresat each district of NCR should be online and combined as district-wise job sub-portals with district sector skill councils. These district-wise job portals should be collated at the NCR sub-regions/states level and further at the NCR level to form NCR Skill Portal. On the other hand, the ASEEM Portal (Atamnirbhar Skilled Employees Employer Mapping), Govt. of India should also create its Sub-Portal at NCR Level. The ASEEM NCR Sub-Portal and the NCR Skill Portal should be again merged as coordinating Digital Platforms to provide macroskill-sets mapping with skill-sets requirements, for the benefit of both skill-holders and skill-consumers.
- 3.3 Web portal with GIS mapping of the existing & proposed sewerage systems with Monitoring and Feedback facilities.
- 3.4 Waste Management System: Web portal with GIS mapping of the existing & proposed Waste Management systems with Monitoring and Feedback facilities.
- 3.5 Common cleanliness complaint forum-for all water, sanitation and waste related services.Existing and Proposed Water Supply Management System: Web portal with GIS mapping of the existing & proposed Water Supply systems with Monitoring and Feedback facilities.
- 3.6 CSR Portal for NCR.

- 3.7 EV Charging Infrastructure Portal.
- 3.8 NCR Health Portal: Mapping of all Health facilities in NCR with creation of E-Health Record System and E Hospital Management System with cloud based services on a "pay as you use" software.
- 3.9 District-Wise Portal of Government Schemes may be clubbed at NCR Sub-Region/State Level and further collated at NCR level.
- 3.10 NCR Blood Bank Portal.
- 3.11 Online Traffic Challan Portal for entire NCR is crucial for ease of traffic movement. Existing NIC Software which is free can be used with support from States for Internet gaps or another Vendor created Portal with 100% reliability and 24X7 availability can be created.
- 3.12 NCR Virtual Court Portals: The Portal for Virtual Court can be considered for NCR regions, for each district level and state level in NCR. This will greatly help to reduce the traffic congestion. Only 20% cases may require physical hearing according to an estimate, once Virtual Court Portal is implemented. E-filing of documents may need to be specifically permitted by Law Departments.
- 3.13 NCR Home Buyers Portal: This is proposed for each NCR Sub-Regions clubbed further for entire NCR Region. RERAs, Government Authorities/ Organizations selling the dwelling units as well as the private Real Estate Players along with home buyers can be registered on this Portal where issues which are not being taken up by RERAs currently can be taken up in a transparent, time-bound manner.
- 3.14 E-Right of Way (RoW) Permission Portal for all linear utilities like IT, Telecom, Power, Roads, Rails, Gas etc.at both District/State and NCR Level. E-ROW Portal is needed for online and time-bound RoW permissions for each NCR State /State Level clubbed at NCR level.
- 3.15 E-Land Management System Portal: All the Authorities/Organizations managing the land in each sub-region, each district and state level of NCR should be registered into this Portal for land use allotment, change in land use etc. and these permissions should be facilitated through this Portal for entire sub-regions of NCR.
- 3.16 Online Building Approvals, Construction Permits Portal.
- 3.17 Environmental permissions portal for NCR.
- 3.18 NCR wide Emergency Response System for police, ambulance, fire.
- 3.19 NCR Crime Monitoring Portal.
- 3.20 Portal for Project Monitoring of Implementation including approvals etc. for all Government projects above Rs.10 crores above being implemented or proposed under the earlier Regional

Plans or Regional Plan-2041. This Portal should also have inherent links with NCR subregions/state wise online Portal/ RoW Portal and other Portals as indicated above.

3.21 NCR Common Economic Zone Portal or NCR Mega Portal – This should be prepared specifically for NCR, as an Super App for all the Portals above and also include such existing other Portals as needed.

****

### Annexure-P-16.1.1

**Smart infrastructure**⁶¹ - A smart infrastructure is a lens through which the future is seen. It is about selfdriving cars that recognise one another, bridges that detect their own weaknesses, power grids that exchange data with home appliances, in short, all cyberphysical infrastructure systems that make cities smart (Weiss, 2009).Smart Infrastructures comprise several operators from different domains of activity, such as energy, public transport, public safety. They deploy and operate "cyber-physical systems", that are data-controlled equipment which interact with the physical world. They collaborate and exchange data under several schemes, depending on their level of maturity.Recent trends see Critical Infrastructures migrating toward Smart Infrastructures by deploying IoT. They invest on remote management and big data to improve the quality of service. Some of the sectorial examples of Smart Infrastructures are Smart Cities, Smart Homes, Smart Hospitals, Smart Grids, etc. and further illustrated in Table P-1.1, asfollowing:

### Figure: P 1.1: Smart Infrastructure/ applications to improve some key quality-of-life indicators by 10 to 30 percent

⁶¹Source: <u>https://www.enisa.europa.eu/topics/iot-and-smart-infrastructures/smart-infrastructure</u>



# Government e-Marketplace (GeM ) advantages to buyers & sellers

# Government e-Marketplace (GeM ) should be used across NCR for providing followings key advantages to buyers & sellers:

### 1) Advantages to buyers

- a) End to End System from Registration to Payment
- b) Provides transparency and ease of buying
- c) Provides options for search, compare, select and buy facility
- d) Offers rich listing of products for individual categories of Goods/Services
- e) Up-to-date user-friendly dashboard for buying, monitoring supplies and payments
- f) Order Process redesigned for ease of use
- g) Option to provide multiple consignee locations and quantity after authentication
- h) Bunching for products/services
- i) Price Trend for Products

### 2) Advantages to Sellers

- a) Direct access to all Government departments
- b) One-stop shop for bids / reverse auction on products / services
- c) Dynamic pricing: Price can be changed based on market conditions
- d) Strong vendor rating system
- e) New Product suggestion facility available to Sellers
- f) Seller friendly dashboard for selling, and monitoring of supplies and payments
- g) News and Event Section for Regular Updates
- h) New on GeM Shows list of new product categories added

Annexure- P-16.3

SDGs for information and communication technologies



Ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services [...], appropriate **new technology** and financial services, including microfinance.



Increase investment [...] in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks [ ... ]. ' Adopt measures to ensure the proper functioning of food commodity markets [...] and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.



The use of ICTs in the health sector can result in higher quality health care that is safer and more responsive to patients' needs. E-health can be particularly important in rural and remote areas, facilitating innovative models of care delivery, such as telemedicine and mobile health. (*)

Substantially expand globally the number of scholarships available to developing countries [...] for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes.



CLEAN WATER

AND SANITATION

Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment





ICTs can contribute to improving water and energy access by using mobile solutions, smart grids and meters to advance efficiency, manage demand and develop new ways to expand access. (*) Achieve higher levels of economic



productivity through diversification. technological upgrading and innovation. Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalisation and growth of micro-, small and medium-sized enterprises, including through access to financial services.



information and communications *technology* and strive to provide universal and affordable access to the Internet

Significantly increase access to











Information and communication technologies (ICTs), especially through mobile-based services, can help reduce inequality by drastically expanding access to information, contributing to individual empowerment and social inclusion of individuals who used to fall outside the reach of traditionalservices.

ICTs can be leveraged to organise cities and communities more efficiently. Smart cities use ICTs and big data to improve public service delivery and to advance broad policy outcomes such as energy savings, safety, urban mobility and sustainable development.(*)

ICTs, and especially broadband, have directly connected consumers and producers and given rise to "ondemand" markets of products that can be customised and localised, saving time, reducing transport costs and contributing to more efficient and ustainable consumption.(*)

> Use of the IoT can help make monitoring the environment cheaper, faster and

The use of ICTs in the public sector can improve the range and uptake of digital government services; strengthen the performance of public institutions and enhance transparency and the participation of all citizens. (*)



*Fully operationalise the technology* bank and science, technology and innovation capacity-building mechanism and enhance the use of enabling technology, in particular information and communications technology.

more convenient.(*)

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*Note*:NotallSDGshadanICTcomponentofficiallyincludedinacorrespondingtargetbytheUnitedNations. In those cases, identified in this figure by an asterisk (*), the OECD identified examples to depict how ICT could contribute to that particularGoal.

Source:OECD/IDB(2016_[8]),BroadbandPoliciesforLatinAmericaandtheCaribbean:ADigitalEconomyToolkit, <u>http://dx.doi.org/10.1787/9789264251823-en</u>, based on UN (2015_[13]), Transforming Our World: The 2030 Agenda for Sustainable Development,<u>https://sustainabledevelopment.un.org/post2015/transformingourworld/publication</u>.

# Public Digital Platform (PDP) based approach to Public Service Delivery

- 1. A collaborative & secure approach to Public Service Delivery that enables a community of partners to build innovative solutions for societal benefit, using open digital assets that are anchored by accountable institution(s).
- 2. Collaborative ecosystem, for public & private bodies to build new solutions.
- 3. Secure by design, safeguarding individual agency and privacy, thereby promoting trust.
- 4. Open software, APIs, data, and standards, that is transparently accessible to guard against monopolistic behavior.
- 5. Accountable institution(s) with strong governance mechanisms that ensure sustainable and responsible outcomes.
- 6. Positive economic, social and/or governance impact in the lives of individuals and institutions (both public and private).
- 7. Public digital platforms can be organized on following 04 key dimensions:
  - a) **Nature of citizen-** Government service delivery, Governance outcome e.g. Fiscal deficiencies, Societal e.g. access to content, market
  - b) **Type of platform-** Micro-services (incl. Data Registries), Standards, Protocols, Software (Analytics, Data Exchange, etc.), Stacks, E2E Services/Solutions
  - c) Accountability- Government (direct, SPV/ PPP), Private
  - d) **Role of Government-** Key participant (G2B, G2C), Enabler (provides either Enabling tech architecture, Data, or Funding), No required role
- 8. Public digital platforms should have following tech. and Non tech. layers:

# A). NON-TECH. LAYER

- a) **Community-**Collaborative ecosystem of people engaged in building PDPs from the government, market and civil society.
- b) **Legal and regulatory frameworks-**Law and rules that govern activities in a particular sector, especially the regulatory architecture which informs the digital architecture
- c) **Institutions and Governance**-The institutions that govern PDPs, as well as institutions that build, own, manage, maintain the PDP and are held accountable for it.
- d) **Privacy**-A layer comprising of norms and principles as well as technology and tools that ensures data privacy, security and agency across PDPs

# **B). TECH. LAYER**

- a) **Open Standards/Specifications/APIs**-Open standards and APIs help to break down silos between different service providers, thereby creating a more collaborative & competitive marketplace.
- b) **Registries/ Data Layer**-The 'data organizations' layer of a PDP is typically an electronic registry (of people/organizations/assets etc.)

- c) **Analytics**-Artificial Intelligence and Machine Learning powered data analytics layer to enrich the platform with each use, and support decision making tools.
- d) **Solutions/ Applications/ User interfaces**-The layer that users interact with comprising of various solutions 'unlocked' by the PDP, accessed by the public and by entrepreneurs through appropriate modes.
- 9. Following Key enablers should be unlocked:
  - a) Resourcing/ funding
  - b) Procurement rules
  - c) Talent planning
  - d) Inter-departmental coordination & accountability
  - e) Technology sharing

# Following five principles to build a 'Responsible PDP' (Public Digital Platform) are recommended as paradigm shifts:

- From "Build end-to-end solutions" to "Build partnerships to solve" (a) To achieve agility and efficiency while solving complex problems at scale; (b) Build for collaboration. Use and/or build open source, data, standards, licenses & APIs to promote inter-operability; (c) Make reusable & shareable: Incorporate micro-services architecture to repurpose elements in diverse contexts; prefer multi-tenancy over multi-instances to reduce cost; & (d) Engage with the ecosystem: Share learnings & best practices with the wider community of practitioners; launch & participate in open forums to co-create solutions.
- 2) From "Good enough for today" to "Ready to take on the future" (a) To create a sustainable product/service that continually creates value over the long-term; (b) Ensure the right capabilities: Nurture an ecosystem of partnerships or build in-house capacity to supply the skills required to operate the platform; (c) Develop a viable business model: Instate organization structure, processes, and funding/revenue model that are aligned with platform objectives, for uninterrupted operations; & (d) Be scalable & evolvable: Use elastic & modular design to optimize for scale; be flexible to change in technology and context (social, political, regulatory)
- 3) From "Protect the user" to "Empower the user" (a) To minimize social & economic harm by providing users with agency and privacy; (b) Ensure the right capabilities: Nurture an ecosystem of partnerships or build in-house capacity to supply the skills required to operate the platform; (c) Develop a viable business model: Instate organization structure, processes, and funding/revenue model that are aligned with platform objectives, for uninterrupted operations & (d) Be scalable & evolvable: Use elastic & modular design to optimize for scale; be flexible to change in technology and context (social, political, regulatory).
- 4) From "Command and control" to "Create trust and accountability" (a) To foster trust and reliability; to ensure fair value capture by all stakeholders via transparent governance mechanisms Embedded choice and privacy into design: Apply 'Secure by design' principles such as E2E encryption and user consent framework (Data Empowerment and Protection

Architecture -DEPA) to ensure individual's choice to 'opt out'; (b) Create transparency: Outline data policies & standards on ownership, contribution & consumption of data; ensure that they are easily understood & readily available; (c) Comply with regulations: Abide by all national policies, laws and standards on personal & community data collection, sharing and usage

5) From "Roll-out and deliver" to "Launch, learn and evolve" – (a) To facilitate informed decision-making to develop user-centric products that address a significant pain-point; (b) Learn continuously: Build analytics as central pillar to generate insights to be applied to enhance user-centricity (affordability, accessibility, ease of use) and platform performance; (c) Act on insights: Leverage relevant data & insights to guide policy-making to aid the under-served; (d) Widely share for unlock of innovations: Provide entrepreneurs access to relevant data & insights to drive new solutions identification & design.

# Annexure-P-16.5

# Policies to be elaborated in Sub-Regional Plan and Master/Development Plans

- 1. Enhance access to broadband⁶² Strengthen institutional and regulatory frameworks for connectivity and implement regulatory measures and policies that are based on consistent, clear and transparent principles, to foster competition in both fixed and mobile broadband markets and extend access to affordable and high-quality communication services.
- 2. Common duct/ trenching for communication systems be created along the road and across the road so that roads are not cut/dug (e.g. Dholera and other cities of DMIC corridor).
- 3. **Increase effective use of digital services** Increase effective use of digital services by fostering digital skills for people, Government and Private organizations/ institutions, supporting economic development to overcome challenges in adopting digital tools, and harnessing the potential of digital government to promote relevant digital content.
- 4. Unleash innovation in start-ups and young firms Unleash innovation by re-evaluating regulations that are not fit for a fast-changing digital age, promote digital start-ups and young firms with the support they need at each stage of their life cycle, and foster policy experimentation in support of the digital transformation.
- 5. **Promote an inclusive digital transformation** Promote inclusiveness by increasing access to and use of digital services and applications by vulnerable and rural populations, addressing gender digital divides, and preparing workforce for the changing work environment brought about by the digital transformation.
- 6. **Strengthen trust** Strengthen trust of people & entrepreneurs in digital tools and services by raising awareness about digital security risk management, developing privacy and digital security frameworks with a whole-of-society perspective, and continuing to facilitate cross-border data flows.
- 7. **Foster e-commerce** Foster e-commerce by removing barriers to e-commerce, including those that distinguish between online and offline commerce, and by harmonizing regulatory frameworks in the region.
- 8. Leverage regional integration Leverage regional integration, regional connectivity infrastructures, cross-border data flows and sharing of experiences in the region to minimize frictions and costs for cross-border e-commerce trade and to improve connectivity across the sub-region & State.
- 9. Establish a strategic and coherent policy framework Establish and effectively implement a strategic and coherent policy framework for the digital transformation of through co-ordinating the government institutions and stakeholders dealing with digital policy issues, identifying the main challenges and policy objectives, and build an evidence-

⁶²https://www.oecd.org/going-digital/southeast-asia-connecting-SMEs.pdf

based action plan with clear milestones and allocation of responsibilities.

- 10. Stimulate ecosystems and cultivate a collaborative culture⁶³ Private industry partners such as project developers, utilities companies, service providers, and technology vendors have a key role to play in developing smart soultions (startup ecosystems). Governments should boost innovation and collaboration through initiatives like innovation labs, developer contests, and application playgrounds.
- 11. **Incorporate smart requirements into publicly funded infrastructure programs** in areas such as mobility, healthcare, security, lighting, environment, energy, construction, and communications. Concentrate on key role as a government. Fund or build the "need to have" infrastructure for residents, and make sure that the "nice to have" applications are covered by private initiatives and partnerships.
- 12. E-Governance with core components i.e. IT Infrastructure, Platforms, Common Software, Public Interface for Service delivery, Office Automation, Startup Ecosystem, Jan Soochna Portal, etc. should be established as well as improved in NCR. National Institute of Urban Affairs (NIUA) has created e-Governments Foundation to transform urban governance with the use of scalable and replicable technology solutions that enable efficient and effective municipal operations, better decision making, and contact-less urban service delivery⁶⁴. Further, National Urban Governance Platform enables real-time monitoring of citizen service delivery. MoHUA has taken an initiative to create National Urban Innovation Stack (NUIS) to support development of cities across India and to create a resource-rich ecosystem of learning, sharing and disseminating for city managers and primary stakeholders in the urban transformation of India. Such platforms should be widely used by the NCR States to excel in service delivery digitally.
- 13. Future investment approach should be of Good-tech: 'Technology for good' for Access to aspirational services, Livelihoods, Accountability of governments and 'Responsible tech'-militate against the risk of harms from tech.
- 14. Use of 3D printing in many fields, especially in construction should be adopted in NCR for better execution and accuracy. For delivering good design Design analysis and visualisation where appropriate, visual, environmental and movement modelling / assessments should be undertaken to analyse potential design options for an area, site or development proposal. These models, particularly 3D virtual reality and other interactive digital models, should, where possible, be used to inform and engage locals in the planning process.
- 15. **Reliable and easily accessible digital infrastructure -** Both private individuals and businesses in the region should have a modern, reliable, safe and cost effective basic digital infrastructure at their disposal. Companies, their employees and indeed the entire population benefit from good **digital offerings and from fit-for-purpose regulations on data**

⁶³https://www.nokia.com/blog/10-recommendations-creating-smart-city/

⁶⁴https://smartnet.niua.org/content/e27ddfb3-0d93-4291-95cf-7c16a83dfe7e

**protection and data control.** Protection of peoples private sphere should be ensured and sufficient options for exercising control over their personal data be created.

# 16. Harness Technology to Improve Travel And Anticipate Future Impacts:

- A). Departments of Transport and local agencies should work toward implementing a regional, multi-jurisdictional traffic management centre, either virtual or traditional.
- B). Departments of Transport, Toll companies and Local Bodies/agencies should enhance communication and coordination to improve work zone management.
- C). Highway and transit agencies should continue to share operational information and expand coordination opportunities.
- D). Work with stakeholders to develop a regional communications plan and update the regional ITS architecture. All partner agencies should establish a program to modernize traffic signals, including the provision of safety and centralized communications.
- E). Highway agencies should review traffic signal policies, ensure up-to-date signal timing plans to minimize delay and crashes, and implement adaptive signal timing where appropriate.
- F). Maintain highway traffic signal inventory.
- G). Departments/ Agencies at Sub-Regional level to work with transportation agencies to fund and execute planning activities that work toward implementing active expressway management, active arterial management, and integrated corridor management.



# 3 layers of "smartness" to elevate life in cities of the future⁶⁵

McKinsey&Company | Source: McKinsey Global Institute analysis

# H). Role of Video Surveillance could be used for Safety & security objectives:

⁶⁵<u>https://www.mckinsey.com/industries/capital-projects-and-infrastructure/our-insights/smart-cities-digital-</u> solutions-for-a-more-livable-future#

- a) Video summarization Create a trailer of the captured video depicting relevant movements or objects of interest, traffic survey, etc.
- b) Crowd detection Estimate crowd density, flow, etc. and detect suspects
- c) Intrusion detection Detection of moving objects in restricted areas and detect human v/s non-human entities
- d) Tracking objects of interest in videos Use of Kalman filters, Particle filters, etc.
- I). Integrate Existing and New Modes into an digitally Accessible Multimodal Network
- 17. For promoting Innovation, Technology and Collaboration offer platforms and conditions conducive to promoting innovation, technology and collaboration between economic sectors:
  - a) consolidate and foster a knowledge and technology corridor in NCR and to develop new anchor sites for science park/industrial estate use
  - b) provide suitable land and space to cater for the development needs of universities, higher education and training institutions, science and technology parks, incubation and start-up spaces, and innovation and technology companies
  - c) adopt appropriate planning measures to promote and facilitate a tech-ecosystem, entrepreneurship and business start-ups, and collaboration
- 18. Block Chain for enabling digitalization of contracts as it provides authentication between parties and information encryption of data that gradually increments while it is processed in a decentralized network. The BlockChain technology has the potential to disrupt the world of banking through enabling crypto-currencies global money transfers, payment solution smart contracts, automated banking records and digital assets in addition to providing user anonymity. Decentralized personal data management systems based on Blockchain ensure users the own control of their data and digital content distribution operated by user rights. The decentralization of a consensus method that uses a credibility score is applied to contracts management such as digital rights management. The Blockchain has already been applied in Smart Grids by providing energy transaction security in decentralized trading, Intelligent Transport Systems on a seven layer conceptual model that emulates the OSI model, Smart Devices providing a secure communication platform in a Smart City, control and configure devices for the Internet of Things, Smart Homes and Digital Documentation⁶⁶.

⁶⁶ Smart Cities 2018, 1, 134–154; doi:10.3390/smartcities1010008

# Policies which are to be elaborated in Sub-Regional Plan and Master/ Development Plans

- 1) Housing land requirement should take into account new household growth, existing inadequately households, households affected by redevelopment and miscellaneous demand (e.g. non-local students and buyers).
- 2) Key Aspects to be taken care in lower order Plans (District Plans):
  - a) Capacity
  - b) Viability
  - c) Good design
  - d) Environment
  - e) Mix a mix of housing types that allows people to relocate within their local area and stay connected to community services, friends and family.
  - f) Supply
  - g) Affordable rental housing
  - h) Local character
  - i) Social housing
  - j) Delivery
  - k) Monitoring- homes completed & ready for occupation.

# Urban renewal

- 3) Locational criteria for urban renewal investigation opportunities shall include:
  - a) Alignment with investment in regional and district infrastructure which acknowledges catalytic impacts of infrastructure such as RRTS, MRTS corridors, Orbital rail corridors, major expressways, etc.
  - b) other possible future investments areas such as opportunities created by enhancements to existing infrastructure such as upgrades to schools, open space including sporting facilities and transport
  - c) catchment areas within walking distance (up to 10 minutes) of centres with rail, light rail, RRTS, MRTS corridors or regional bus transport
  - d) efficient interchanges with a comprehensive walking and cycling network
  - e) areas of high social housing concentration where there is good access to services, transport and jobs
  - f) Distance from special land uses such as airports (YEIDA), railway stations, etc.
- 4) Promote urban restoration with an emphasis on the balance between home and work.
- 5) Redevelop underutilized parking lots near rail stations without constructing one new building.

# Liveable neighbourhoods and Quality of life

- 6) Necessary initiatives be taken to improve urban life in neighborhoods through steps which may include:
  - **a**) Encouraging active façades,
  - **b**) Expanding the network of social and urban facilities: education, health, sports, culture, social assistance and food security
  - c) Elaborating the district regional plans and neighborhood plans with participatory planning
  - d) Increase the number of open spaces/ parks in urban areas
  - e) Ending the requirement for a minimum number of parking spaces
- 7) Ensure that shade and shelter are provided with appropriate types and amounts of seating to encourage people to spend time in a place, where appropriate. This should be done in conjunction with the removal of any unnecessary or dysfunctional clutter or street furniture to ensure the function of the space and pedestrian amenity is improved. Applications which seek to introduce unnecessary street furniture should normally be refused.
- 8) Ensure that on-street parking is designed so that it is not dominant or continuous, and that there is space for green infrastructure as well as cycle parking in the carriageway. Pedestrian crossings should be regular, convenient and accessible.
- 9) Provide One-stop hubs allowing residents to go for a swim, shop for groceries and have dinner, all within the same development.
- 10) Ensure the provision and future management of free drinking water at appropriate locations in new or redeveloped public realm.
  - a) accommodate a greater variety and intensity of uses
  - b) connected routes and spaces that help to define the character of a place
  - c) Healthy Streets Approach
  - d) Pedestrian crossings should be accessible and provide tactile paving
  - e) effective management and ongoing maintenance
  - f) lighting
  - g) provision of free drinking water fountains
- 11) CreateCommunity-Centric & Connected Neighbourhoods
  - a) Planned Cycling paths to encourage alternative modes of transportation.
  - b) Well-connected public spaces and amenities to create new housing towns that serve the diverse needs of all residents.
  - c) To create more inclusive environments that encourage walking and cycling, precincts should be designed to be car-lite, prioritising the movement of people over cars whenever possible.
  - d) To safeguard and strengthen key natural habitats in new developments, water sensitive urban design features such as bio-swales and rain gardens should be introduced to manage storm water and cleanse water before it reaches our reservoirs.
  - e) Adopt Innovative strategies to conserve natural heritage, and to expand island-wide network of play corridors, parks, sports facilities and green spaces.
  - f) Allow residents to have more opportunities to connect with nature, enjoy a wide variety of recreational experiences.
- 12) Rather than going for environmental audit, CO₂ audit should also be undertaken at City/ town level. Effect of all actions in terms of impacts on the global warming & climate change

should be evaluated, in order to measure the quality of living. Alongside, green areas should be taken care of. This is the most important thing that each Plan, down in the hierarchy, should address.

# Technology and R&D

- 13) Sixteen new emerging technologies have been identified, evaluated and promoted under PMAY(U). These fall under formwork systems (3), precast sandwich panel systems (6), light gauge steel structural systems (2), steel structural systems (2) and precast concrete construction systems (3). These alternate and sustainable technologies offer safer and disaster resilient affordable housing. These will also improve the quality of construction in a cost effective and environment friendly manner across states/regions and achieve economies of scale in urban areas.
- 14) Smart Homes based on ICT infrastructure and modern technologies shall be regularly incorporated in the operation of home appliances.

# **Design and Planning**

- 15) While creating and developing any area/ town, it should be kept in mind and planned that how area will attract employment as that can help in decongesting the bigger cities.
- 16) Templates for cost and size of dwelling units and quality of housing could be prepared and developed which could help dwelling unit construction in proper manner, especially in *lal dora* areas and areas where no explicit approval provisions exist. Smaller utility accommodation/ rental housing for different income level and housing sizes should be elaborated.
- 17) Housing areas/ complexes developments and landscaping with Green & Blue Features should be done with following mandatory provisions:
  - a) Skyrise greenery to cool the urban environment, clean the air and soften cityscape.
  - b) Landscaping for Urban Spaces and High-Rises (LUSH) programme for providing incentives and greenery replacement requirements to integrate skyrise greenery within buildings.
  - c) Water sensitive design features, which are natural and environmentally-friendly aid sustainable rainwater management, also help to enhance the lushness of urban greenery while slowing down and treating rainwater runoff
- 18) While planning and developing housing projects (affordable and sustainable) explore possibilities for the following:
  - a) Parks Parks and squares covering over 400 sq. Mtr 90% within 5 minutes' walking distance
  - b) Public space 4 sq.mtr. community public space per capita Achieve planning goal of 4 sq. Mtr. per capita, including community parks, small squares, and street-corner green areas
  - c) Public facilities 15 minutes' walking distance 99% public facilities within a 15minute walking distance in communities
  - d) Travel Average travel distance for the daily life needs will be limited to 2.5 km
- 19) Preserve Sanctity of Industrial Areas by adopted followings:
  - a) Residential Activities should be restricted around Industrial Areasdesignated for hazardous industries.

- b) Buffer Zones around hazardous Industrial use Areas should be closely monitored for unauthorized residential activities.
- c) Manufacturing Sector should be given due importance during planning phase which may involve moderately polluting industry or MSME.
- d) Incentives for providing Dormitories/ Residential complexes within Industrial zones (other than Industrial Areasdesignated for hazardous industries) should be given.

# Efficient use of land

- 20) As suggested in the NITI Aayog's Three-Year Action Agenda (2019-22), cities should focus on vertical growth, adopting following measures:
  - a) Launch a mass campaign to sensitize cities and states on the benefits of vertical growth.
  - **b**) Provide capacity building to states and cities willing to undertake measures towards vertical growth.
  - c) Provide considerable rewards to cities that relax their floor space index (FSI) norms.
  - d) One of the key reasons behind India's horizontal sprawl is stringent FSI norms.
  - e) The discussion on changing FSI norms considering trunk infrastructure and other social issues needs to be expedited across India.
  - **f**) Provide additional central government funding to cities that undertake FSI reforms under the Smart Cities Mission.

# Norm and Regulation

- 21) Advantages of Integrated Development with Higher FAR be benefited from. This may include:
  - a) Integrated development of individual dwelling units is conducive for better community interaction, efficient functioning of infrastructure facilities.
  - b) Encourage lower ground coverage and thus large open areas utilizable for water bodies, laygrounds, etc.
  - c) Opportunity of integrating neighborhood units with each other as well as the adjoining commercial belt will also help in reducing the transportation load. High rise buildings could be planned along the MRTS.
- 22) Proposed neighborhood plans should establish the criteria of high FAR, high residential density, improved quality of life with better civic amenities, education and health facilities at walking distances, increased living area.
- 23) Regulations should be well defined and elaborated so as to facilitate the implementation of the same at plot level. All necessary parameter and yardsticks should be well detailed in the Plans.
- 24) Formulate urban management tools aiming at discouraging the maintenance of vacant or underused lands.

# Institutional Mechanism

25) Implementation of RERA should be enforced towards completion of projects and handing over possession.

# Access to Financing

- 26) Investment in housing sector should be scaled up and Urban Local Bodies/ Development Authorities/ Agencies should be supported for developing housing projects and ensure that projects are properly executed and also that built assets are maintained.
- 27) Government projects should focus on the life cycle cost (LCC) approach to the construction of houses rather than the cost per square foot approach to ensure quality of construction and reduce expenditure incurred on the maintenance of houses.

# **Skill Development**

28) It is necessary to ensure convergence of provisions under the National Urban Livelihood Mission, Pradhan Mantri Kaushal Vikas Yojana, Construction Skill Development Council of India and MGNREGS (for rural areas) for large-scale training of masons to meet construction activities.

# Chapter 18 – Policy Zones & Land Use

Annexure-P-18.1

# Indicative elements for a smart city/ town/ township

- 1. The core infrastructure elements in a smart city would include,
  - 1.1. adequate water supply,
  - 1.2. assured electricity,
  - 1.3. sanitation, including solid waste management,
  - 1.4. efficient urban mobility and public transport,
  - 1.5. affordable housing, especially for poor,
  - 1.6. robust IT connectivity and digitalization,
  - 1.7. good governance, especially e-Governance and citizen participation,
  - 1.8. sustainable environment,
  - 1.9. safety and security of citizens, particularly women, children and the elderly,
  - 1.10. health and education.
- 2. Accordingly, the Smart cities/ towns/ townships should least have the following:
  - 2.1. Intelligent Transport System (ITS)
  - 2.2. Control Center Multi-energy Stations
  - 2.3. EV buses
  - 2.4. EV car sharing
  - 2.5. Boimass fuels/
  - 2.6. Waste to energy plants
  - 2.7. Smart houses (Small/ Medium-scale)
  - 2.8. Smart buildings linked with through regional EMS
  - 2.9. Environmental friendly design of buildings
  - 2.10. Solar panels/ Mega Solar projects
  - 2.11. Battery Storage system
- 3. The Smart Cities/ Towns/Townships should drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes.
  - A) **Area-based development** be undertaken to transform existing areas (retrofit and redevelop), including slums, into better planned ones, thereby improving liveability of the whole City.
  - B) **New areas (Greenfield)** should be developed around cities in order to accommodate the expanding population in urban areas.

- C) **Application of Smart Solutions** shall enable cities to use technology, information and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities.
- 4. ICTand Geospatial Technologies (GT) Framework for a Smart City ICT and Geospatial Technology (GT) play an important role in improving quality of life of citizens improving business infrastructure and reducing impact on environment. ICT enabled and stakeholder collaboration with smart and integrated planning/ efficient service delivery/ e-governance/ citizen participation/ new business model and finance mechanisms/ disruptive innovation and technology leapfrog/ social inclusion/job creation.

Important elements considered while planning a 'smart' Greenfield city -DMIC

Greenfield development must include integrated city planning: physical, utilities, social, environmental, operational, and digital are examples of various planning processes that are integrated into DMIC cities. Though each of these planning efforts can't stand alone, their integration in the early phases of the project is most beneficial for the development of a sustainable, smart, and efficient city.

Physical planning defines not only the extent of the city but also development provisions in the form of land use distribution and land use mix. Environment planning takes care of the health and wellbeing of its residents, workers, as well as natural environments through open green spaces, conservation, and preservation. Social planning helps support the growth of existing developments/habitations, and ensures the provision of essential amenities, like health, education, and other basic services for city dwellers. Utilities planning ensures redundancy and reliability of basic services, like water and wastewater, power, gas, information and communication technology (ICT), and stormwater. Operational planning emphasizes on transparency and governance mechanisms.

Detailed land use planning of DMIC cities has been prepared by best-in-class consultants/master planners chosen through a competitive process from across the globe. The implementation and phasing of cities is not only focused on developing required core infrastructure. It also addresses the distribution of social amenities, like schools, health care centers, community centers, and old age homes with the provision of mandatory open spaces, parks, and housing for Economically Weaker Sections (EWS).

# **Dholera Smart City under DMIC**

- 1. Dholera SIR will be developed in phased manner and the first phase of development will cover Town Planning 1 and Town Planning 2 for which the time line set by Government is year 2022. Additionally, under NHAI the work of 250 Meters Expressway connecting Ahmedabad-Dholera-Bhavnagar will get over by 2022.
- 2. Dholera Smart City Components:

✓ Total Area: 920 Sq. km.

✓ Developable Area: 567.39 Sq. Km.

✓ High Access Corridor: City Center, Industrial, Logistic, Knowledge & IT, Recreation & Sports, Entertainment.

### ✓ World-class infrastructure & connectivity: within & outside.

The multi-modal transport system in Dholera Smart City will have International Air connectivity, regional goods corridor, public transport corridor, internal transport, Bus Rapid Transport (BRT), Mass Rapid Transport (MRT) and Light Rail Transit (LRT). Japanese companies are likely to invest in the SIR. Various categories of roads ranging from 18m ROW to 70m ROW will be constructed for the efficient circulation/movement of people and goods for the Activation Area. The design and construction of roads will be benchmarked against international and national standards.

### ✓ Central spine express way & Metro Rail to link the SIR with mega cities.

The Mass Rapid Transit System (MRTS) between Ahmadabad and the DSIR is part of the plan to develop self-sustained rail based transportation system in order to provide connectivity both within the Dholera SIR and between the Dholera SIR and Ahmadabad for the movement of workers.

### ✓ Airport & Sea Port in the vicinity.

The proposed Dholera International Airport project would serve the logistic requirement of upcoming Dholera SIR besides handling the spill over traffic from existing Ahmedabad Airport in future. The proposed airport will propel an airport led economic growth in the entire region in line with other Aerotropolis worldwide.

### ✓ Proximity to mega cities: Ahmedabad, Bhavnagar, Vadodara.

The proposed 250 Meters wide 10 Lane expressway is part of an exclusive transport corridor being planned between Ahmedabad and Bhavnagar by the Government of Gujarat, keeping the development of SIR around Dholera Smart City in centre. This will be the single biggest road sector infrastructure project in the recent past as the 110-km expressway will connect Dholera SIR and the proposed Dholera Airport besides Bhavnagar, Amreli and other coastal areas to Ahmedabad.

### ✓ Physical Infrastructure

Services and utilities running within the road reserves will include storm water drainage, water supply, sewerage, power, telecommunications and gas. A water treatment plant (WTP) has been planned in Dholera SIR Area to receive and treat the raw water. WTP will provide the basic requirement of potable water for the industrial , residential, commercial and other developments in Activation area, and eventually the Phase-I development of the DSIR.

The Activation area also requires the development of sewage collection and treatment systems as essential facilities for the development. Also, there will be recycled water distribution system with the treated water from the STP as the recycled water will reduce the load on the potable water demand.

### ✓ Renewable Sources of Energy

The solar park is a part of the government's plan for establishing India's first world-class Greenfield Dholera smart city project announced in 2009. It also supports the government's aim to produce 175GW of clean energy by 2022.

Dholera solar park is a 5GW solar power project being developed in two phases in Dholera village, approximately 80km from Ahmedabad, Gujarat, India. Gujarat Urja Nigam Limited

(GUVN) has been developing the project through public-private partnership (PPP).

# ✓ E-Governance and Citizen Services

Dholera's Information and Communications Technology (ICT) infrastructure will be a game changer in terms of smart cities function worldwide setting an example for efficient, technology-enabled administration of a city, infrastructure linkages and quality of life for residents.It's ICT network will be a City Integration Operation Centre (CIOC) which will synchronies all functions, including traffic management, safety and security, emergency response, utility services, telecommunications and civic administration.

Further, for better law enforcement and rapid response, the city will have integrated with regional and national data bases including the Crime and Criminal Tracking Network and Systems (CCTNS).

Moreover, a 'Citizens Interaction Center' will be set up to provide one stop service and will have standardized processes to enable civic authorities to follow regulatory framework, manage approvals, budgets and provide host of other citizen services.

**Chapter 19 – Counter Magnet Areas** 

# Chapter 20 – Implementation Strategies & Resource Mobilization

# Annexure-P-20.1

S.				RP 2041
No.	Name of Post	Sanctioned*	On roll	proposal
1	Member Secretary	1	1	1
2	Director (A&F)	1	1	1
3	Chief Regional Planner	1	1	1
4	Addl. Chief Regional Planner			1
5	Joint Director (Tech.)	2	0	4
6	Joint Director (Fin.)			1
7	Joint Director (PMC)			1
8	Joint Director (Admin.)			1
9	Law Officer	1	0	1
10	Dy. Director (Tech.)	2	4	8
11	Dy. Director (Fin.)			1
12	Dy. Director (PMC)			0
13	Finance & Accounts Officer	1	1	1
14	Dy. Director (Admin.)	1	1	2
15	Assistant Director (Tech.)	4	2	16
16	Assistant Director (PMC)			0
17	Assistant Director (FM/ SG)	2	0	2
18	Assistant Director (Legal)			1
19	Pr Private Secretary			1
20	Private Secretary	1	1	2
21	Assistant Director (FinanceAdmin.)	4	3	6
22	Planning Assistant (GIS skilled)	1	0	4*
23	Hindi Translator	1	1	1
24	Assistant Gr.I/Acct. Assistant	2	2	6
25	Legal Asst.			1
26	Stenographer Gr. 'C'	6	6	8
27	Stenographer Gr. 'D'	6	6	9
28	Draftsman (civil)	1	0	2*
29	Assistant Gr.II (UDC)	7	6	7
30	Staff Car Driver	1	1	1
	Jr. Assistant (formerly			
31	Gr. 'D' employee)	7	7	7
	Total	53	44	98

# Details of sanctioned strength, on rolls and proposed total strength of NCRPB Secretariat

* GIS Skilled

### 1.1. Indicative Performance Monitoring Parameters

- 1.1.1. Regional Land Use Designations
  - i). Regional Designations as measured by:
  - a) total and cumulative change in hectares of land in each of the regional land use designations
  - b) total and cumulative change in hectares of land in the Urban Containment Boundary
  - c) total and cumulative change in number of Urban Centres
  - d) total and cumulative change in number of Frequent Transit Development Areas
- 1.1.2. To Create a livable Urban Area
  - i). Growth in Priority Areas as measured by:
    - a) percent of regional dwelling unit growth located in Urban Centres
    - b) percent of regional dwelling unit growth located in Frequent Transit Development Areas

Short-term estimate & medium-term cumulative measure

- 1.1.3. To Support a Sustainable Economy
  - i). Employment in Priority Areas as measured by:
    - a) percent of regional employment growth located in Urban Centres
    - b) percent of regional employment growth located in Frequent Transit Development Areas

Medium-term measure

- ii). Employment Accessibility as measured by:
  - a) average number of kilometres travelled for commute region-wide
  - b) average number of minutes travelled for commute region-wide

Medium-term measure

- iii). Industrial And Mixed Employment Areas as measured by:
  - a) percent of land designated Industrial and Mixed Employment that is developed
- Medium-term measure
- iv). Agricultural Areas, as measured by:

a) percent of land designated Agricultural that is actively farmed *Medium-term measure* 

- 1.1.4. Efforts to Protect the Environment and Respond to Climate Change Impacts
  - i). Ecosystem Health, as measured by:
    - a) hectares of land inventoried as a Sensitive or Modified Ecosystem
    - b) percent of inventoried Sensitive and Modified Ecosystems rated high quality

Medium-term measure

- ii). Climate Change Mitigation as measured by:
  - a) tonnes and percent of regional greenhouse gas emissions produced by building and on-road transportation sources

Medium-term measure

iii). Climate Change Preparedness, as measured by:

- a) climate adaptation planning efforts (proxy measure)
  - Short-term measure
- 1.1.5. To develop Complete Communities
  - i). Housing Affordability, as measured by:
    - a) percent of median household income spent on average housing and transportation cost

Medium-term measure

- ii). Housing Diversity, As measured by:
  - a) share of estimated regional rental housing demand achieved in new supply *Short-term measure*
- iii). Complete Communities and Health, As measured by:
  - a) walkability
    - Medium-term measure
- 1.1.6. Support Sustainable Transportation Choices
  - i). Travel Mode Choice, as measured by:
    - a) percent of total trips that are private vehicle-based
    - b) percent of residents within walking distance of the Frequent Transit Network

Medium-term measure

- ii). Road and Vehicle Use and Safety, As measured by:a) annual per capita vehicle kilometres travelled
  - Medium-term measure
- 1.1.7. Water scenario
  - i). Population covered Piped Water supply coverage
  - ii). % settlements coverage with safe drinking water supply
  - iii). Ground water recharge facilities and related improvement/change in ground water levels
- 1.1.8. Sanitation and Comprehensive Waste Management
  - i). Population covered with sewerage connection
  - ii). % settlements coverage with centralised sewage treatment plants
  - iii). % settlements coverage with de-centralised sewage treatment plants
  - iv). % waste collected in settlements with respect to generated
  - v). % waste reaching the disposal sites
- 1.1.9. Green cover percentage
- 1.1.10. Urban redevelopment policies
- 1.1.11. FAR provisions at par with global best practices
- 1.1.12. Mixed use provisions at par with global best practices
- 1.1.13. Access to playground facilities
- 1.1.14. Access to green open spaces
- 1.1.15. E- access to primary health care
- 1.1.16. Electronic record systems
- 1.1.17. Learning outcomes at primary and middle schools
- 1.1.18. Percentage of decentralized sewage treatment plants

- 1.1.19. Percentage of old and new buildings with dual piping at inlet and outlet
- 1.1.20. Percentage harvesting of rain water
- 1.1.21. Percentage use of recycled water
- 1.1.22. Percentage non manual cleaning of sewerage systems
- 1.1.23. Percentage segregation of drainage & sewerage systems
- 1.1.24. Percentage skill mapping in District Skill Registry
- 1.1.25. Migrant facilitation centers in each district
- 1.1.26. Percentage skill in 10 identified sectors
- 1.1.27. Access to quality water
- 1.1.28. Creation of iconic spaces
- 1.1.29. Creation of blue green infrastructure
- 1.1.30. Ease of approvals for industries
- 1.1.31. Ease of building permissions
- 1.1.32. Air quality index
- 1.1.33. Percentage of Emergency Preparedness and Response (EPR) Coverage
- 1.1.34. Percentage segregation of solid waste
- 1.1.35. Access to 15 minute police help
- 1.1.36. Reduction in road accidents
- 1.1.37. Access to trauma care in golden hour
- 1.1.38. Ease of renting and eviction
- 1.1.39. Fifteen(15) minute neighborhoods
- 1.1.40. Walkability
- 1.1.41. Thirty (30) minute pan NCR connectivity to Delhi
- 1.1.42. Social Housing

# **DATA ANNEXURE**

# **Chapter-1-Introduction; Aims & Objectives**

# **Constitution of the NCR Planning Board**

The constitution of the Board, as per the MoH&UA's Gazette Notification No.K-11019/3/2012-DDVI, dated 22nd November, 2017, is as under:

1.	Union Minister of State (Independent Charge), Housing & Urban Affairs	Chairman
2.	Chief Minister of Haryana	Member
3.	Chief Minister of Rajasthan	Member
4.	Chief Minister of Uttar Pradesh	Member
5.	Lieutenant Governor, National Capital Territory of Delhi	Member
6.	Chief Minister of NCT-Delhi	Member
7.	Minister of Urban Development, Government of Rajasthan	Member
8.	Minister of Urban Development, Government of Uttar Pradesh	Member
9.	Chairman, Railway Board	Member
10.	Secretary, Ministry of Road Transport & Highways	Member
11.	Secretary, Ministry of Housing & Urban Affairs	Member
12.	Chief Secretary, Government of Haryana	Member
13.	Chief Secretary, Government of Rajasthan	Member
14.	Chief Secretary, Government of Uttar Pradesh	Member
15.	Chief Secretary, Government of NCT-Delhi	Member
16.	Principal Secretary, Town & Country Planning Department, Government of Haryana	Member
17.	Member Secretary, National Capital Region Planning Board	Member Secretary

# **Co-Opted Members**

1.	Secretary, Ministry of Environment, Forest & Climate Change
2.	Chief Planner, Town and Country Planning Organization, Govt. of India

### **Constitution of the Planning Committee**

### a) Constitution

Section 4(1) & (2) of the NCRPB Act, 1985 mandates the constitution of a Planning Committee. The Member Secretary of the Board is the ex-officio Chairman of the Planning Committee. The constitution of the Planning Committee is as follows:-

1.	Member Secretary, NCR Planning Board	Chairman
2.	Joint Secretary, Ministry of Urban Development (now Ministry of Housing and Urban Affairs) dealing with Housing and Urban Development	Member
3.	Secretary-in-charge of Urban Development, Haryana	Member
4.	Secretary-in-charge of Urban Development, Rajasthan	Member
5.	Secretary-in-charge of Urban Development Uttar Pradesh	Member
6.	Secretary-in-charge of Urban Development NCT Delhi	Member
7.	Vice-Chairman, Delhi Development Authority	Member
8.	Chief Planner, Town and Country Planning Organization	Member
9.	Director, Town and Country Planning Department, Haryana	Member
10.	Chief Town Planner, Government of Rajasthan	Member
11.	Chief Town and Country Planner, Government of Uttar Pradesh	Member

#### b) Co-opted Members:

- Senior Adviser (HUD), Planning Commission (now NITI Aayog)
- Chairman-cum-Managing Director, Housing & Urban Development Corpn.
- Joint Secretary (UT), Ministry of Urban Development (now Ministry of Housing and Urban Affairs),
- Joint Secretary (IA), Ministry of Environment & Forest, Govt. of India
- Chief Regional Planner, NCRPB

Annexure D-1.3

# NCRPB ACT, 1985

# THE GAZETTE OF INDIA

EXTRAORDINARY

### PUBLISHED BY AUTHORITY

### NEW DELHI, TUESDAY, FEBRUARY 11, 1985/MAGHA 22, 1906

### MINISTRY OF LAW AND JUSTICE

### (Legislative Department)

# New Delhi, the 11th February, 1985\Magha 22, 1906 (Saka)

The following Act of Parliament received the assent of the President on the 9th February 1985, and is hereby published for general information:-

### THE NATIONAL CAPITAL REGION PLANNING BOARD ACT, 1985

No.2 OF 1985

[9th February, 1985]

An Act to provide for the constitution of a Planning Board for the preparation of a plan for the development of the National Capital Region and for co-ordinating and monitoring the implementation of such plan and for evolving harmonized policies for the control of land-uses and development of infrastructure in the National Capital Region so as to avoid any haphazard development of that region and for matters connected therewith or incidental thereto.

WHEREAS it is expedient in the public interest to provide for the constitution of a Planning Board for the preparation of a plan for the development of the National Capital Region and for co-ordinating and monitoring the implementation of such plan and for evolving harmonized policies for the control of landuses and development of infrastructure in the National Capital Region so as to avoid any haphazard development thereof;

AND WHEREAS Parliament has no power to make laws for the States with respect to any of the matters aforesaid, except as provided in articles 249 and 250 of the Constitution;

AND WHEREAS in pursuance of the provisions of clause (1) of article 252 of the Constitution, resolutions have been passed by all the Houses of the Legislatures of the States of Haryana, Rajasthan and Uttar Pradesh to the effect that the matters aforesaid should be regulated in those States by Parliament by law;

BE it enacted by Parliament in the Thirty-fifth Year of the Republic of India as follows:-

### **CHAPTER I**

#### PRELIMINARY

#### Short title and commencement.

- 1. (1) This Act may be called the National Capital Region Planning Board Act, 1985.
  - (2) It shall be deemed to have come into force on the 19th day of October, 1984.

#### **Definitions.**

- 2. In this Act, unless the context otherwise requires -
  - (a) "Board" means the National Capital Region Planning Board constituted under sub-section (1) of section 3;
  - (b) "Committee" means the Planning Committee constituted under sub-section (1) of section 4;
  - (c) "Counter-magnet area" means an urban area selected by the Board under clause (j) of section 8;
  - (d) "Functional Plan" means a plan prepared to elaborate one or more elements of the Regional Plan;
  - (e) "Land" includes benefits to arise out of land and things attached to the earth or permanently fastened to anything attached to the earth;
  - (f) "National Capital Region" means the areas specified in the Schedule:

**Provided that the Central Government with the consent of the** Government of the concerned participating State and in consultation with the Board, may, by notification in the Official Gazette, add any area to the Schedule or exclude any area therefrom;

- (g) "Participating States" means the States of Haryana, Rajasthan and Uttar Pradesh;
  - (h) "**prescribed**" means prescribed by rules made under this Act;
- (i) "Project Plan" means a detailed plan prepared to implement one or more elements of the Regional Plan, Sub-Regional Plan or Functional Plan;

- "Regional Plan" means the plan prepared under this Act for the development of the National Capital Region and for the control of land-uses and the development of infrastructure in the National Capital Region;
- (k) "regulations" means regulations made by the Board under this Act;
- (1) "sub-region" means such part of the National Capital Region as falls entirely within the limits of a participating State or the Union territory ;
- (m) "Sub-Regional Plan" means a plan prepared for a sub region ; and
- (n) "Union territory" means the Union territory of Delhi.

# CHAPTER II

### THE NATIONAL CAPITAL REGION PLANNING BOARD

### Constitution and incorporation of the Board.

- 3. (1) The Central Government shall, by notification in the Official Gazette, constitute for the purposes of this Act, a Board, to be called the National Capital Region Planning Board.
  - (2) The Board shall be a body corporate by the name aforesaid, having perpetual succession and a common seal with power, subject to the provisions of this Act, to contract and shall, by the said name, sue and be sued.
  - (3) The Board shall consist of such number of members, not exceeding twenty-one, as may be prescribed, and unless the rules made in this behalf otherwise provide, the Board shall consist of the following members, namely :-
    - (a) the Union Minister for Works and Housing, who shall be the Chairman of the Board ;
    - (b) the Chief Minister of the State of Haryana ;

- (c) the Chief Minister of the State of Rajasthan ;
- (d) the Chief Minister of the State of Uttar Pradesh;
- (e) the Administrator of the Union territory ;
- (f) eight members, to be nominated by the Central Government on the recommendation of the participating States and the Administrator of the Union territory ;

Provided that not more than two members shall be nominated on the recommendation of a participating State or, as the case may be the Administrator of the Union territory :

- (g) three other members of whom one shall be a person having knowledge and experience in town planning to be nominated by the Central Government.
- (h) a full-time Member-Secretary of the Board, to be nominated by the Central Government from amongst officers of, or above, the rank of a Joint Secretary to the Government of India ;

Provided that no change shall be made in the composition of the Board by rules except with the consent of the Government of each of the participating States and of the Administrator of the Union territory.

(4) The terms and conditions of office of the members nominated under clause (f), clause (g) or clause (h) of sub-section (3) shall be such as may be prescribed.

### **Composition of the Planning Committee.**

- 4. (1) The Board shall, as soon as may be, after the commencement of this Act, constitute a Committee, to be called the Planning Committee, for assisting the Board in the discharge of its functions.
  - (2) The Committee shall consist of such members as may be prescribed and unless the rules made in this behalf otherwise provide, the Committee shall consist of the following members, namely:-
    - (a) the Member Secretary to the Board, who shall be the ex officio Chairman of the Committee ;

- (b) the Joint Secretary to the Government of India in the Ministry of Works and Housing, in-charge of Housing and Urban Development, ex officio ;
- (c) Secretary-in-charge of Urban Development in each participating State and the Union territory, ex officio;
- (d) the Vice Chairman, Delhi Development Authority, ex officio;
- (e) the Chief Planner, Town and Country Planning Organization, New Delhi, ex officio; and
- (f) the Chief Town Planner of each participating State, ex officio ;

### Power to co-opt, etc.

- 5.(1) The Board or the Committee may, at any time and for such period as it thinks fit, co-opt any person or persons as a member or members of the Board or of the Committee.
  - (2) A person co-opted under sub-section (1) shall exercise and discharge all the powers and functions of a member of the Board or of the Committee, as the case may be, but shall not be entitled to vote.

### Vacancies, etc., not to invalidate proceedings of the Board or the Committee

- 6. No act or proceeding of the Board or of the Committee shall be invalid merely by reason of -
  - (a) the existence of any vacancy in, or any defect in the constitution of, the Board or the Committee ; or
  - (b) any irregularity in the procedure of the Board or of the Committee not affecting the merits of the case.

### **CHAPTER III**

### FUNCTIONS AND POWERS OF THE BOARD AND OF THE COMMITTEE

#### Functions of the Board.

- 7. The functions of the Board shall be -
  - (a) to prepare the Regional Plan and the Functional Plans ;
  - (b) to arrange for the preparation of Sub-Regional Plans and Project Plans by each of the participating States and the Union territory ;
  - (c) to co-ordinate the enforcement and implementation of the Regional Plan, Functional Plans, Sub-Regional Plans and Project Plans through the participating States and the Union territory;
  - (d) to ensure proper and systematic programming by the participating States and the Union territory in regard to project formulation, determination of priorities in the National Capital Region or sub-regions and phasing of development of the National Capital Region in accordance with stages indicated in the Regional Plan;
  - (e) to arrange for, and oversee, the financing of selected development projects in the National Capital Region through Central and State Plan funds and other sources of revenue.

### Powers of the Board.

8. The powers of the Board shall include the powers to -
- (a) call for reports and information from the participating States and the Union territory with regard to preparation, enforcement and implementation of Functional Plans and Sub-regional Plans ;
- (b) ensure that the preparation, enforcement and implementation of Functional Plan or Sub-Regional Plan, as the case may be, is in conformity with the Regional Plan ;
- (c) indicate the stages for the implementation of the Regional Plan ;
- (d) review the implementation of the Regional Plan, Functional Plan, Sub-Regional Plan and Project Plan;
- (e) select and approve comprehensive projects, call for priority development and provide such assistance for the implementation of those projects as the Board may deem fit ;
- (f) select, in consultation with the State Government concerned, any urban areas, outside the National Capital Region having regard to its location, population and potential for growth, which may be developed in order to achieve the objectives of the Regional Plan; and
- (g) entrust to the Committee such other functions as it may consider necessary to carry out the provisions of this Act.

# Functions of the Committee.

- 9. (1) The functions of the Committee shall be to assist the Board in -
  - (a) the preparation and co-ordinated implementation of the Regional Plan and the Functional Plans ; and
  - (b) scrutinising the Sub-Regional Plans and all Project Plans to ensure that the same are in conformity with the Regional Plan.

- (2) The Committee may also make such recommendation to the Board as it may think necessary to amend or modify any Sub-Regional Plan or any Project Plan.
- (3) The Committee shall perform such other functions as may be entrusted to it by the Board.

# **CHAPTER IV**

#### THE REGIONAL PLAN

#### **Contents of the Regional Plan.**

- 10. (1) The Regional Plan shall be a written statement and shall be accompanied by such maps, diagrams, illustrations and descriptive matters, as the Board may deem appropriate for the purpose of explaining or illustrating the proposals contained in the Regional Plan and every such man, diagram, illustration and descriptive matter shall be deemed to be a part of the Regional Plan.
  - (2) The Regional Plan shall indicate the manner in which the land in the National Capital Region shall be used, whether by carrying out development thereon or by conservation or otherwise, and such other matters as are likely to have any important influence on the development of the National Capital Region and every such Plan shall include the following elements needed to promote growth and balanced development of the National Capital Region, namely:-
    - (a) the policy in relation to land-use and the allocation of land for different uses ;
    - (b) the proposals for major urban settlement pattern ;
    - (c) the proposals for providing suitable economic base for future growth ;
    - (d) the proposals regarding transport and communications including railways and arterial roads serving the NCR ;

- (e) the proposals for the supply of drinking water and for drainage ;
- (f) indication of the areas which require immediate development as "priority areas"; and
- (g) such other matters as may be included by the Board with the concurrence of the participating States and the Union territory for the proper planning of the growth and balanced development of the National Capital Region.

#### Surveys and studies.

11. For the preparation of the Regional Plan, the Board may cause such surveys and studies, as it may consider necessary, to be made by such persons as it may appoint in this behalf and may also associate such experts or consultants for carrying out studies in relation to such specific matters as may be determined by the Board.

#### Procedure to be followed for the preparation of Regional Plan

- (1) Before preparing any Regional Plan finally, the Board shall prepare with the assistance of the Committee, a Regional Plan in draft and publish it by making a copy thereof available for inspection and publishing a notice in such form and in such manner as may be prescribed, inviting objections and suggestions from any person with respect to the draft Regional Plan before such date as may be specified in the notice.
  - (2) The Board shall also give reasonable opportunities to every local authority, within whose local limits any land touched by the Regional Plan is situate, to make any representation with respect to the draft Regional Plan.
  - (3) After considering all objections, suggestions and representations that may have been received by the Board, the Board shall finally prepare the Regional Plan.

#### Date of coming into operation of the Regional Plan.

- 13. (1) Immediately after the Regional Plan has been finally prepared, the Board shall publish, in such manner as may be prescribed, a notice stating that the Regional Plan has been finally prepared by it and naming the places where a copy of the Regional Plan may be inspected at all reasonable hours and upon the date of first publication of the aforesaid notice, the Regional Plan shall come into operation.
  - (2) The publication of the Regional Plan, after previous publication, as required by section 12, shall be conclusive proof that the Regional Plan has been duly prepared.

# Modifications of the Regional Plan.

- 14. (1) The Board may, subject to the provisions of sub-section (2), make such modifications in the Regional Plan as finally prepared by it, as it may think fit, being modifications which, in its opinion, do not effect important alterations in the character of the Regional Plan and which do not relate to the extent of land-uses or the standards of population density.
  - (2) Before making any modifications in the finally prepared Regional Plan, the Board shall publish a notice, in such form and in such manner as may be prescribed, indicating therein the modifications which are proposed to be made in the finally prepared Regional Plan, and inviting objections and suggestions from any person with respect to the proposed modifications before such date as may be specified in the notice and shall consider all objections and suggestions that may be received by it on or before the date so specified.
  - (3) Every modification made under this section shall be published in such manner as the Board may specify and the modifications shall come into operation either on the date of such publication or on such later date as the Board may fix.
  - (4) If any question arises whether the modifications proposed to be made are modifications which effect important alterations in the character of the Regional Plan or whether they relate to the extent of land-uses or the standards of population density, it shall be decided by the Board whose decision thereon shall be final.

#### **Review and revision of the Regional Plan**

15. (1) After every five years from the date of coming into operation of the finally prepared Regional Plan, the Board shall review such Regional Plan in its entirely and may, after

such review, substitute it by a fresh Regional Plan or may make such modifications or alterations therein as may be found by it to be necessary.

(2) Where it is proposed to substitute a fresh Regional Plan in place of the Regional Plan which was previously finally prepared or where it is proposed to make any modifications or alterations in the finally prepared Regional Plan, such fresh Plan or, as the case may be, modifications or alterations, shall be published and dealt with in the same manner as if it were the Regional Plan referred to in sections 12 & 13 or as if they were the modifications or alterations in the Regional Plan made under section 14.

# **CHAPTER V**

#### FUNCTIONAL PLANS, SUB-REGIONAL PLANS AND PROJECT PLANS

#### **Preparation of Functional Plans.**

16. After the Regional Plan has come into operation, the Board may prepare with the assistance of the Committee, as many Functional Plans as may be necessary for the proper guidance of the participating States and of the Union territory.

#### **Preparation of Sub-Regional Plans.**

- 17. (1) Each participating State shall prepare a Sub-Regional Plan for the sub-region within that State and the Union territory shall prepare a Sub-Regional Plan for the sub-region within the Union territory.
  - (2) Each Sub-Regional Plan shall be a written statement and shall be accompanied by such maps, diagrams, illustrations and descriptive matters as the participating State or the Union territory may deem appropriate for the purpose of explaining or illustrating the proposals contained in such Sub-Regional Plan and every such map, document, illustration and descriptive matter shall be deemed to be a part of the Sub-Regional Plan.
  - (3) A Sub-Regional Plan may indicate the following elements to elaborate the Regional Plan at the sub-regional level namely:-

- (a) reservation of areas for specific land-uses which are of the regional or subregional importance ;
- (b) future urban and major rural settlements indicating their area, projected population, predominant economic functions, approximate site and location ;
  - (c) road net-work to the district roads and roads connecting major rural settlements ;
- (d) proposals for the co-ordination of traffic and transportation, including terminal facilities ;
- (e) priority areas at sub-regional level for which immediate plans are necessary ;
- (f) proposals for the supply of drinking water and for drainage ; and
- (g) any other matter which is necessary for the proper development of the subregion.

# **Preparation of Project Plans.**

18. A participating State, or the Union territory, may, by itself or in collaboration with one or more of the participating States or the Union territory, as the case may be, prepare Project Plans for one or more elements of the Regional Plan, Functional Plan or Sub-Regional Plan.

#### Submission of Sub-Regional Plans to the Board

19. (1) Before publishing any Sub-Regional Plan, each participating State or, as the case may be the Union territory, shall, refer such Plan to the Board to enable the Board to ensure that such Plan is in conformity with the Regional Plan.

- (2) The Board shall, after examining a Sub-Regional Plan, communicate, within sixty days from the date of receipt of such Plan, its observations with regard to the Sub-Regional Plan to the participating State or the Union territory by which such Plan was referred to it.
- (3) The participating State, or, as the case may be, the Union territory, shall, after due consideration of the observations made by the Board, finalise the Sub-Regional Plan after ensuring that it is in conformity with the Regional Plan.

#### Implementation of Sub-Regional Plans, etc.

20. Each participating State, or, as the case may be, the Union territory shall be responsible for the implementation of the Sub-Regional Plan, as finalised by it under sub-section (3) of section 19, and Project Plans prepared by it.

#### a) CHAPTER VI

# FINANCE, ACCOUNTS AND AUDIT

#### b) Grants and loans by the Central Government

- 21. (1) The Central Government may, after due appropriation made by Parliament by law in this behalf, make to the Board grants and loans of such sums of money as that Government may consider necessary to enable the Board to carry out its functions under this Act.
  - (2) The Central Government shall also, after due appropriation made by Parliament by law in this behalf, pay to the Board such other sums as may be necessary for meeting the salaries, allowances and other remuneration of the Member-Secretary, officers and other employees of the Board and such amounts as may be necessary to meet the other administrative expenses of the Board.

#### Constitution of the Fund

22. (1) there shall be constituted a Fund to be called the National Capital Regional Planning Board Fund and there shall be credited thereto –

- c) any grants and loans made to the Board by the Central Government under section 21;
- d) all sums paid to the Board by the participating States and the Union territory; and
- e) all sums received by the Board from such other sources as may be decided upon by the Central Government in consultation with the participating States and the Union territory.
- (2) The sums credited to the said Fund referred to in sub-section (1) shall be applied for
  - a) meeting the salaries, allowances and other remuneration of the Member-Secretary, officers and other employees of the Board and for meeting other administrative expenses of the Board, so, however, that the total expenses shall not exceed the amount appropriated for this purpose under sub-section (2) of section 21;
  - b) conducting surveys, preliminary studies and drawing up of plans for the National Capital Region;
  - c) providing financial assistance to the participating States and the Union territory for the implementation of Sub-regional Plans and Project Plans; and
  - d) providing financial assistance to the State concerned for the development of the counter-magnet area subject to such terms and conditions as may be agreed upon between such State and the Board.
- 23. The Board shall, in each financial year, prepare in such form and at such time as may be prescribed its budget for the next financial year and forward the same to the Central Government at least three months prior to the commencement of the next financial year.

# **Annual Report**

24. The Board shall prepare in each financial year its annual report in such form and at such time as may be prescribed, giving a full account of its activities during the financial year immediately preceding the financial year in which such report is prepared and forward, before such date as may be prescribed, copies thereof to the Central Government, the participating States and the Union territory.

#### Accounts and audit

25. The accounts of the Board shall be maintained and audited in such manner as may be prescribed in consultation with the Comptroller and Auditor-General of India and the Board shall furnish, to the Central Government, before such date as may be prescribed, a copy of its audited accounts together with the auditors' report thereon.

#### Annual auditors' report and report to be laid before Parliament

26. The Central Government shall cause the annual report and the auditors' report to be laid as soon as may be after their receipt, on the Table of each House of Parliament while it is in session, for a total period of thirty days, which may be comprised in one session or in two or more successive sessions.

# **CHAPTER VII**

# MISCELLANEOUS

#### Act to have overriding effect.

27. The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force or in any instrument having effect by virtue of any law other than this Act; or in any decree or order of any court, tribunal or other authority.

#### Power of the Central Government to give directions

28. The Central Government may, from time to time, give such directions to the Board as it may think fit for the efficient administration of this Act and when any such direction is given, the Board shall carry out such directions.

#### Violation of Regional Plan

29. (1) On and from the coming into operation of the finally published Regional Plan, no development shall be made in the region which is inconsistent with the Regional Plan as finally published.

(2) Where the Board is satisfied that any participating State or the Union territory has carried out, any activity which amounts to a violation of the Regional Plan, it may, by a notice in writing, direct the concerned participating State or the Union territory, as the case may be, to stop such violation of the Regional Plan within such time as may be specified in the said notice and in case of any omission or refusal on the part of the concerned participating State or the Union territory, withhold such financial assistance to the concerned participating State or the Union territory, as the Board may consider necessary.

#### Technical assistance to the Board

- 30. (1) The Central Government may direct its Town and Country Planning Organisation to provide, on such terms and conditions as may be mutually agreed upon, such technical assistance to the Board as that Government may consider necessary and the Government of a participating State may direct the Town Planning Department of that Government to make such technical assistance to the Board as that Government may consider necessary.
  - (2) With a view to enabling the Committee to discharge its functions, the Board shall, out of the technical assistance received by it under sub-section (1) make available to the Committee such technical assistance as the Committee may require.

#### Officers and employees of the Board

- 31. (1) The Board may appoint such other officers and employees as it considers necessary for the efficient discharge of its function under this Act.
  - (2) The terms and conditions of the officers and employees of the Board shall be such as may be determined by regulations.

#### Officers and employees of the Board

32. The Board may, by notification in the official Gazette, direct that any function or power (other than the power to approve the Regional Plan and to make regulations), or duty which the Board may perform, exercise or discharge under this Act shall subject to such conditions, if any, as may be specified in the notification, be performed, exercised or discharged also by such person or persons as may be specified in the notification and where any such delegation of power is made

the person or persons to whom such power is delegated shall perform, exercise or discharge those powers in the same manner and to the same extent as if they were conferred on him or them directly by this Act and not by way of delegation.

#### Power to delegate

33. Subject to any rules made in this behalf, any person generally or specially authorised by the Board in this behalf, may, at all reasonable times, enter upon any land or premises and do such things thereon as may be necessary for the purpose of lawfully carrying out any works or for making any survey, examination or investigation, preliminary or incidental to the exercise of any power or performance of any function by the Board under this Act:

Provided that no such person shall enter any building or any enclosed courtyard or garden attached to a dwelling-house without previously giving the occupier thereof at least three days' notice in writing of his intention to do so.

#### Member-Secretary, officers and other employees of the Board to be public servants

34. The Member-Secretary, officers and other employees of the Board shall be deemed, when acting or purporting to act in pursuance of any of the provisions of this Act, to be public servants within the meaning of section 21 of the Indian Penal Code.

# Protection of action taken in good faith

35. No suit, prosecution or other legal proceeding shall lie against the Board or any member or any officer or any other employee of the Board including any other person authorised by the Board to exercise any power or to discharge any function under this act, or for anything which is in good faith done or intended to be done under this Act.

#### Power to make rules

36. (1) The Central Government may, by notification in the Official Gazette, make rules to carry out the provisions of this Act.

- (2) Without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:-
- (a) the composition and number of the members of the Board and of the Committee, as required by sub-section (3) of section 3 and sub-section (2) of section 4, respectively, to be prescribed;
- (b) the terms and conditions of the office of the member as required by sub-section (4) of section 3, to be prescribed;
- (c) the form and manner in which notice under sub-section (1) of section 12 and sub-section (2) of section 14 shall be published;
- (d) the manner in which notice under sub-section (1) of section 13 shall be published;
- (e) the form in which and the time at which the Board shall prepare its budget under section 23 and its annual report under section 24 and the manner in which the accounts of the Board shall be maintained and audited under section 25;
- (f) the conditions and restrictions with respect to the exercise of the power to enter under section 33 and other matters relating thereto; and
- (g) any other matter which is to be, or my be prescribed or in respect of which provision is to be, or may be made by rules.

# Power to make regulations

- 37. (1) The Board may, with the previous approval of the Central Government, by notification in the Official Gazette make regulations not inconsistent with this Act and the rules made there under to carry out the provisions of this Act.
  - (2) In particular and without prejudice to the generality of the foregoing power, such regulations may provide for all or any of the following matters, namely:-
    - (a) the manner in which and the purposes for which the Board may associate with itself any person under section 11;
    - (b) the terms and conditions of service of the officers and employees of the Board under sub-section (2) of section 31; and

(c) any other matter in respect of which provision is to be, or may be made by regulations.

#### **Rules and Regulations to Laid Before Parliament Houses rule**

38. Every rule and every regulation made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or regulation, as the case may be, or both agree that the rule or regulation, as the case may be, should not be made, the rule or regulation shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule or regulation.

#### **Dissolution of the Board**

- 39. (1) Where the Central Government is satisfied that the purposes for which the Board was established under this Act have been substantially achieved or the Board has failed in its objectives, so as to render the continued existence of the Board in the opinion of the Central Government unnecessary, that the Government may, by notification in the Official Gazette, declare that the Board shall be dissolved with effect from such date as may be specified in the notification; and the Board shall be deemed to be dissolved accordingly.
  - (2) From the said date -
    - (a) all properties, funds and dues which are vested in or realizable by the Board shall vest in, or be realizable by, the Central Government;

(b) all liabilities which are enforcement against the Board shall be enforceable against the Central Government;

(c) for the purpose of carrying out any development which has not been fully carried out by the Board and for the purpose of ealising properties, funds and dues

referred to in clause (a) the functions of the Board shall be discharged by the Central Government.

(3) Nothing in this section shall be construed as preventing the Central Government from reconstituting the Board in accordance with the provisions of this Act.

# Acquisition of land and determination of rights in relation to land to be made by the Government of the participating State or Union territory11 of 1984.

40. For the removal of doubts, it is hereby declared that the acquisition of land or the determination of any right or interest in, or in relation to, any land or other property, where necessary to give effect to any Regional Plan, Functional Plan, Sub-Regional Plan or Project Plan, shall be made by the Government of the concerned participating State, or, as the case may be, the Union territory, in accordance with the law for the time being in force in that State or Union Territory.

# **Repeal and Saving.**

- 41. (1) The National Capital Region Planning Board Ordinance, 1984, is hereby repealed.
  - (2) Notwithstanding such repeal, anything done or any action taken under the said Ordinance shall be deemed to have been done or taken under the corresponding provisions of this Act.

# THE SCHEDULE

[See section 2(f)]

The National Capital Region shall comprise the following areas:-

1. **Delhi** 

The whole of the Union territory of Delhi.

# 2. Haryana

(i) The whole of District of Gurgaon comprising the Tehsils of Gurgaon, Nuh and Ferozepur-Jhirka;

(ii) The whole of District of Faridabad comprising the Tehsils of Ballabgarh, Palwal and Hathin;

(iii) The whole of District of Rohtak comprising the Tehsils of Rohtak, Jhajjar, Bahadurgarh, Meham and Kosli;

- (iv) The whole of District of Sonepat comprising the Tehsils of Sonepat and Gohanna; and
- (v) Panipat Tehsil of District of Karnal and Rewari Tehsil of District of Mohindergarh.

#### 3. Uttar Pradesh

(i) The whole of District of Bulandshahr comprising the Tehsils of Anupshahr, Bulandshahr, Khurja and Sikanderabhad;

(ii) The whole of District of Meerut comprising the Tehsils of Meerut, Bagpat, Mawana and Sardhana; and

(iii) The whole of District of Ghaziabad comprising the Tehsils of Ghaziabad and Hapur.

#### 4. Rajasthan

(i) The whole of the following Tehsils of Alwar District namely Behroor, Mandawar, Kishangarh and Tijara; and (ii) Part of Alwar Tehsil comprising the area bounded in the north by the Tehsil boundaries of Mandawar and Kishangarh, in the east of the boundaries of Tehsil Ferozepur-Jhirka of District Gurgaon, Haryana and Alwar Tehsil, in the south by the Barah river right up to Umran lake in the west, and then following the southern boundaries of Umran lake up to the junction of Urman lake and State Hightway from Alwar to Bairat and from then on west by north-west across the ridge upto the junction of the Tehsil boundaries of Alwar and Bansur.

Explanation: - Save as otherwise provided, reference to any district or tehsil in this Schedule shall be construed as a reference to the areas comprised in that district or tehsil, as the case may be, on the 27th day of August, 1984 being the date on which the National Capital Region Planning Board Bill, 1984 was introduced in he House of the People.

R.V.S. PERI SASTRI

Secy. to the Govt. of India

#### CORRIGENDA

In the Arms (Amendment) Act, 1983 (25 of 1983), as published in the Gazette of India, Extraordinary, Part II, Section 1, dated the 2nd September, 1983:-

- i. at page 1, in line 6, for "Act", read "Act),",
- ii. at page 2, -
  - (a) in line 1, for "preson" read "person",
  - (b) in line 7, for "is member" read "is a member",
  - (c) in line 10, for "rifle club or rlife" read "rifle club or rifle",
  - (d) in line 13, for "sub-section" read "sub-sections",
  - (e) in line 44, for "and words" read "the words",
  - (f) in line 47, for "section" read "sections",
- iii. at page 3,
  - (a) in line 14, for "so do" read "so to do",
  - (b) in line16, for "areas" read "area",
  - (c) in line 22, for "in his section" read "in this section",
  - (d) in line 38, for "such area are if" read "such area if",
  - (e) in line 40, for "convenance" read "conveyance",
  - (f) in line 47, for "section" read "sections",
- iv. at page 4,
  - (a) in line 4, for "purpose" read "purposes",
  - (b) in lines 8 and 9, for "to the period specified in the notification" read to "the period specified in the notification",
  - (c) in line 12, for "offcences" read "offences",
  - (d) in line 13, for "neccesary" read "necessary",
  - (e) in line 13, for "be notification" read "by notification",
  - (f) in line 22, for "such areas" read "such area",
  - (g) in line 24, for "State Government" read "a State Government",
  - (h) in line 27, for "vessel of vehicle" read to "vessel or vehicle",
  - (i) in line 28, for "though" read "through",
  - (j) in line 31, for "premises or such" read "premises or on such",
  - (k) in line 33, for "specifid" read "specified",
  - (1) in line 40, for "Govenment" read "Government",
  - (m) in line 41, for "at any time, if" read "at any one time if,",
  - (n) in line 43, for "tranquillty" read "tranquility",
  - (o) in line 47, for "seizsre" read "seizure",
- v. at page 5,
  - (a) in line 2, for "sub-section (1)" occurring for the second time read "sub-section (2)",
  - (b) in line 3, for "reference" read to "references",
  - (c) in line 3, for "to the period" read 'to "the period",

- (d) in line 9, for "for the sale" read "for sale",
- (e) in line 9, for "possession" read "possession",
- (f) in line 23, for "contlaventiin" read "contravention",
- vi. at page 6, -
  - (a) in line 11, for "aslo" read "also",
  - (b) in line 40, for "for term" read to "for a term",
  - (c) in line 42, for "Whoevser" read "Whoever",
  - (d) in the marginal heading to section 10, for "section" read "sections",

vii. at page 7, -

- (a) in the marginal heading to section 11, for "Amendment section" read "Amendment of section",
- (b) in line 2, for "thundred" read "hundred",
- (c) in line 10, for "fingures" read to "figures",
- (d) in line 13, for "Criminal Procedure" read "Criminal Procedure,",
- (e) in line 18, for "sepcified" read "specified",
- (f) in line 19, for "principal" read to "principal",
- (g) in line 23, for ' "in sub-section (3)" read "in sub-section (3)",
- (h) in line 23, for "the words two" read 'the words "two",
- (i) in line 24, for "seession" read to "session",
- (j) in line 26, for "successive session" read "successive sessions".

# **Constituent areas of NCR**

As per the NCR Planning Board Act,1985, NCR covered an area of 30,242 sq. km consisting of whole of NCT of Delhi, six districts of Haryana viz. Gurugram, Faridabad, Sonipat, Rohtak (tincluding Jhajjar tehsil) and Panipat & Rewari tehsils those were then in Karnal and Mahendragarh districts respectively; three districts of Uttar Pradesh viz. Bulandshahr, Meerut (then including Baghpat tehsil), and Ghaziabad (then including Hapur tehsil) and some part of the Alwar district of Rajasthan.

As defined in the Schedule {Section 2(f)} of the NCRPB Act, 1985 and the subsequent notifications of 14.03.1986 and 23.08.2004 (to include remaining part of Alwar district) the National Capital Region (NCR) covered an area of about 34,144 sq. km. falling in the territorial jurisdictions of four State Governments, namely, National Capital Territory of Delhi, Haryana, Uttar Pradesh and Rajasthan. The Regional Plan-2021 prepared for the aforementioned area was notified in 2005.

Subsequently, certain more areas/districts were added in the NCR. Details are as under:

Bhiwani & Mahendragarh districts of the State of Haryana and Bharatpur district of the State of Rajasthan	Govt. of India vide Gazette Notification dated 01.10.2013
Jind and Karnal districts of the State of Haryana and Muzaffarnagar district of the State of Uttar Pradesh	Govt. of India vide Gazette Notification dated 24.11.2015
Shamli district of the State of Uttar Pradesh	Govt. of India vide Gazette Notification dated 16.04.2018.

The NCR as notified covers the whole of NCT-Delhi and 24 districts of Haryana, Uttar Pradesh and Rajasthan, covering an area of about 55,083 sq. kms. The sub-region wise details are as under:

Sub-	Name of the District	Area in	Population-2011
Region		sq. kms.	(in lakh)
Haryana	Faridabad, Gurgaon, Mewat, Rohtak, Sonepat, Rewari, Jhajjhar, Panipat, Palwal, Bhiwani (including Charkhi Dadri), Mahendragarh, Jind and Karnal	25,327	164.3
Uttar Pradesh*	Meerut, Ghaziabad, GautamBudh Nagar, Bulandshahr, Baghpat, Hapur, Muzaffarnagar and Shamli	14,825	187.1
Rajasthan	Alwar and Bharatpur	13,447	62.2
Delhi	Whole of NCT Delhi	1,483	167.9
	Total	55,083	581.5

#### **Reorganization of districts**

Subsequent to constitution of NCR, several reorganization of districts has been made as given below:

- a) Baghpat district in Uttar Pradesh was separated from Meerut in 1997.
- b) Gautam Buddha Nagar district was created out of the existing NCR districts of Ghaziabad and Bulandshahr in 1997.
- c) Jhajjar district was carved out of Rohtak district in 1997.
- d) Mewat (Renamed as "Nuh" in 2016) district was created out of the existing NCR districts of Gurugram and Faridabad in 2005.
- e) Palwal district was carved out of Faridabad district in 2008.
- f) Hapur district was carved out from Ghaziabad district on 28 September 2011.
- g) Charkhi Dadri district was carved out of Bhiwani district in Haryana in 2016.
- h) Shamli district in Uttar Pradesh was separated from Muzaffarnagar district in 2011.

#### **Counter Magnet Areas (CMAs)**

In addition, NCRPB Act, 1985, under Section 8 (f), empowers the Board to select any urban area outside the NCR having regard to its location, population and potential for growth as a 'Counter Magnet Area' in consultation with the concerned State Government, in order to achieve the objectives of the Regional Plan. As on date, there are nine CMAs as under:

- i) Hissar in Haryana
- ii) Ambala in Haryana
- iii) Bareilly in Uttar Pradesh
- iv) Kanpur in Uttar Pradesh
- v) Kota in Rajasthan
- vi) Jaipur in Rajasthan
- vii) Gwalior in Madhya Pradesh
- viii) Patiala in Punjab
- ix)Dehradun in Uttrakhand



Maps showing the Constituent areas of NCR since inception

# NCR Area 30,242 Sq. Km.



# **RP 2021**

NCR Area 33,578 (34,144)

Present NCR in 2020



RP 2021 (addendum)

NCR Area 55,083 Sq. Km.

# Overview of projects financed by NCRPB (as on 30.06.20)

(Rs.	in	Cr.)
(		,

S.No.	States	Status	No. of projects	Estimated cost	Loan sanctioned	Loan released by NCRPB
	Rajasthan [including	Ongoing	54	3437	2427	2019
1	CMA- Jaipur]	Completed	30	1679	631	595
	Sub Total		84	5116	3058	2614
	UP [including	Ongoing	6	7005	2549	2332
2	Bareilly]	Completed	51	2117	919	681
	Sub Total		57	9122	3468	3013
	Haryana [including	Ongoing	31	1566	1076	543
3	CMA- Hissar]	Completed	176	13985	6355	5682
	Sub Total		207	15551	7431	6225
		Ongoing	2	467	350	20
4	NCT-Delhi	Completed	2	521	310	310
	Sub Total		4	988	660	330
	CMA –Patiala	Ongoing	0	0	0	0
5	in Punjab	Completed	2	79	46	46
	Sub Total		2	79	46	46
	CMA –Gwalior	Ongoing	2	475	341	32
6	in M P	Completed	4	134	101	101
	Sub Total		6	609	442	133
		Ongoing	95	12949	6743	4946
	Total	Completed	265	18515	8362	7415
	Grand Total		360	31464	15105	12361

# A) SCHEDULE OF SECTOR-WISE WORKSHOPS ORGANISED FOR PREPARATION OF REGIONAL PLAN-2041 FOR NCR

Date	Sector			
03.12.19 (Tuesday)	Transport and Mobility			
05.12.19 (Thursday)	Power and Energy			
09.12.19 (Monday)	Water and Drainage			
11.12.19 (Wednesday)	Sanitation and Comprehensive Waste Management			
13.12.19 (Friday)	Environment and Disaster Management			
16.12.19 (Monday)	Agriculture			
18.12.19 (Wednesday)	Rural Development			
20.12.19 (Friday)	Health			
03.01.20 (Friday)	Education			
06.01.20 (Monday)	Tourism and Heritage			
08.01.20 (Wednesday)	Economic Growth and Income Generation			
10.01.20 (Friday)	Sports, Skills and Social support system			
13.01.20 (Monday)	Safety and Security			
16.01.20 (Thursday)	Digital Technology and Platforms			
20.01.20 (Monday)	Citizen Centric Planning			
22.01.20 (Wednesday)	Housing Infrastructure and Zoning Regulations			
24.01.20 (Friday)	Implementation Strategies			

#### (Timing 10:00 AM to 05:30 PM)

#### **B) BRIEF ON KEY PARTICIPANTS AND SPEAKERS**

Each of the workshops had dedicated session for all the 4 NCR States participants for presenting their views on the subject. The workshops had very senior level participants from Center and State Government Ministries, knowledge partners, sector experts, NGOs, District Level functionaries etc.Few of them are as listed below workshop wise for ready reference.

**Transport :** Shri Amit Ghosh, Joint Secretary, MoRTH, ; Shri A.K. Singh, Principal Secretary, T&CP Dept. Govt. of Haryana ; Shri V. K. Singh, Managing Director, National Capital Region Transport Corporation; Smt. Usha Padhee, Joint Secretary, M/o Civil Aviation & CMD, Pawan Hans Ltd, Shri AnantSwarup, Joint Secretary (Logistics), Deptt. of Commerce, Shri Abhishek Chaudhary, Vice President, Delhi–Mumbai Industrial Corridor (DMIC), Shri Amit Kumar Jain, General Manger (Operations), CRIS, Railway Board; Shri M.V. Subramanian, General Manager (Planning), Delhi International Airport Limited; Shri AbhayDamle, Joint Secretary, Ministry of Roads, transport and Highways; Shri Gangwar, Member Technical, Inland Waterways Authority of India; Dr.Mangu Singh, Managing Director, Delhi Metro Rail Corporation; Shri S.K. Lohia, Managing Director & Chief Executive Officer, Indian Railway Stations Development Corporation Limited; Shri Kal Singh, DDG (TRW), Ministry of Roads, transport and Highways

**POWER AND ENERGY:**Shri Praveen Kumar, Special Secretary, Ministry of New and Renewable Energy;Shri. Sudhir Kumar Rahate, Additional Secretary, Ministry of Power;Shri MrityunjayNarain, Joint Secretary, Ministry of Power; Shri K.V.S. Baba, CMD, Power Systems Corporation of India (POSOCO); Shri AbhayBakre, Director General, Bureau of Energy Efficiency, Ministry of Power; Shri Sushanta Chatterjee, Chief (Regulatory Affairs), Central Electricity Regulatory Commission ; Shri M. Devraj, Managing Director, Uttar Pradesh Power Corporation Ltd. (UPPCL)

**WATER &DRAINAGE:**Shri A.B. Pandya, Secretary General, International Commission on Irrigation and Drainage (ICID); Shri Niteshwar Kumar, Joint Secretary, Department of Water Resources. Ministry of Jal Shakti;Shri Muralidharan, Dy. Advisor, Jal Jeevan Mission ;Shri Nikhil Kumar, Chief Executive Officer, Delhi Jal Board; Shri K.C. Naik, Chairman, Central Ground Water Board; Prof. Ashwini Kumar Gosain ,Ex professor -IIT Delhi; Shri Musood Husain, Ex-Chairman, Central Water Commission; Shri A D Mohile, Ex-Chairman, Central Water Commission; Dr. Sushil Gupta, Ex-Chairman, Central Ground Water Board;Shri Avinash Mishra, Advisor, Water Resources, NITI Ayog;

**SANITATION AND COMPREHENSIVE WASTE MANAGEMENT:** Shri ArunBaroka, Additional Secretary, Ministry of Jal Shakti; Shri. V K Jindal, Joint Secretary, Swachh Bharat Mission, Ministry of Housing and Urban Affairs;Smt. D Thara, JS, AMRUT, Ministry of Housing and Urban Affairs;Shri Ajay Mathur, Director General, The Energy and Resources Institute; Ms. Manisha Saxena, Secretary, Urban Development, GNCT Delhi; Shri Sanjeev Goel, Sr. Principal Scientist and Head, CSIR NEERI Delhi; Ms. Almitra Patel, Solid Waste Management Expert; Ex.Prof. Subir Paul, IIT, Kharagpur;

**ENVIRONMENT AND DISASTER MANAGEMENT:** Shri A K Mohanty, Joint Secretary, The Ministry of Environment, Forest and Climate Change (MoEFCC); Mrs. Bharati, Joint Secretary, Ministry of Environment Forest & Climate Change ; Shri S.P. Singh Parihar, Chairman, Central Pollution Control Board (CPCB); Shri Kamal Kishore, Member, National Disaster Management Authority (NDMA); Major General S K Jindal, ED, National Institute of Disaster Management ; Shri D.K. Shami Chief Fire Advisor, Ministry of Home Affairs ; Dr. M Mahapatra, Director General, India Meteorological Department (IMD); Dr. Y.V. Singh, Principal Scientist, The Indian Agricultural Research Institute (IARI); Shri Ashish Agnihotri, PHD Chamber of Commerce and Industry (PHDCCI)

**AGRICULTURE:** Shri AtulChaturvedi, Secretary, Department of Animal Husbandry & Dairying (GoI); Smt. Vasudha Mishra, Special Secretary, Ministry of Agriculture and Farmers Welfare; Shri P.K. Swain Joint Secretary, Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare ; Dr. Sunil Kumar Gulati, Add Chief Secretary, Deptt. Of Animal Husbandry and Dairying, Govt of Haryana;Dr. S.K. Malhotra, Commissioner, Department of Agriculture Cooperation; Dr. B.N. Srinivasa Murthy, Commissioner, Horticulture, Ministry of Agriculture and Farmers Welfare; Shri PawaneshKohli, Chief Advisor and CEO, National Centre for Cold-chain Development (NCCD); Shri AvinashVerma Director General, ISMA; Shri Sanjiv Chadha, Chairman, National Agricultural Cooperative Marketing Federation of India Ltd.(NAFED); Dr.Sudhanshu, Secretary, Agricultural and Processed Food Products Export Development Authority (APEDA); Shri Paban K. Borthakur, CMD, Agricultural and Processed Food Products Export Development Authority (APEDA); Dr. Rohan Jain, GCMMF (AMUL)

**RURAL DEVELOPMENT:** Smt. AlkaUpadhyay, Additional Secretary, Ministry of Rural Development; Shri Rohit Kumar, Joint Secretary, Ministry of Rural Development; Smt. Leena Johri, Joint Secretary, Ministry of Rural Development ;Sh. Sushil Sarwan, Director, Development and Panchayats Department, Govt of Haryana ; Philip Mathew, Expert, United nation Development Program;Prof.Murugeshan, National Institute of Rural Development

**HEALTH :** Smt. Preeti Pant, Joint Secretary, National Urban Health Mission, Ministry of Health end Family Welfare; Shri Praveen Gedam, Dy. CEO, Ayushman Bharat ; Shri VikasSheel, Joint Secretary, Ministry of Health & Family Welfare, Govt. of India ; Dr. S B Kamboj, Director General Health, on behalf of Shri Rajeev Arora, Additional Chief Secretary, Health, Govt. of Haryana ; Dr S K Raheja, Director General (Health), GNCTD and Medical Superintendent, G B Pant Hospital, Delhi ;Shri Manish Chaturvedi, Professor, National Institute of Health & Family Welfare; Dr. Vijay Agarwal, President, Consortium of Accredited Health Care Organisation ; Dr Ved Prakash, Indian Council of Medical Research(ICMR); Red Cross Society of India

**EDUCATION**: Prof. Anil D. Sahasrabudhe, Chairman, All India Council for Technical Education (AICTE); Prof.BiswajitSaha, Director, Central Board of Secondary Education (CBSE); RenuBatra, Additional Secretary, University Grants Commission (UGC); Shri Ankur Gupta, Principal Secretary, Higher Education, Govt. of Haryana ; Shri Sridhar Srivastava, Dean, National Council of Educational Research and Training (NCERT); IIT, Delhi &Roorkee; Dr.AlkaMuddgal, Head Amity Institute of Education; Smt. Shobha Mishra Ghosh, Asstt. Secretary General, FICCI; Ms. Rupamanjari Ghosh, Vice-Chancellor of Shiv Nadar University, Uttar Pradesh; Prof. B.K. Patnaik, Director, School of Extension and Development Studies (SOEDS), Indira Gandhi National Open University (IGNOU); SEPT Ahemdabad

**TOURISM & HERITAGE:** Smt. Meenakshi Sharma, Director General, Ministry of Tourism; Shri Kamal Vardhan Rao, Chairman, India Tourism Development Corporation (ITDC); Smt. Nirupama Y. Modwel, Principal Director, INTACH; Smt. RupinderBrar, Additional DG, Ministry of Tourism ASI; Ms. Bharti Sharma, Asst. Director General, Ministry of Tourism; Shri Ashok Khemka, Principal Secretary, Govt. of Haryana; Shri VivekSagar, Head Development Tourism, Hospitality Skill Council ; SmtRajniHasija, Director, Indian Railway Catering And Tourism Corporation Limited; Shri Shiv Pal Singh, Special Secretary, Tourism Govt. of UP

**ECONOMIC GROWTH AND INCOME GENERATION :** Shri R.M. Mishra, Special Secretary, Ministry of Micro, Small & Medium Enterprises; Shri SajeevSanyal, Principal Economic Adviser, Department of Economics Affairs ; Shri Hardeep Singh, Addl. Director General, Foreign Trade, M/o. Commerce & Industry ; Dr. S.P. Sharma, Sr. Director, PHD Chamber of Commerce and Industry (PHDCCI); KVIC; Shri Sugata Sen, Deputy Director General , Society of Indian Automobile Manufacturers (SIAM) ; Ms. Swati Aggarwal, Director, PricewaterhouseCoopers Pvt Ltd (PwC); Shri MohitBhasin, Partner, KPMG ; Shri Ravi Chauhan, Jones Lang LaSalle (JLL)

SPORTS, SKILLS AND SOCIAL SECURITY SYSTEM: Dr Savant BhaskarAtmaram, Principal secretary in Deptt of Urban Development and Housing, Govt. Of Rajasthan and Secretary Sports and

Youth Affairs, Govt. Of Rajasthan ,Ms. JuthikaPatankar, Additional Secretary, Ministry of Skill Development & Entrepreneurship; Shri Manish Kumar, MD, National Skill Development Council; Smt. SunitaSanghi, Senior Adviser, Ministry of Skill Development and Entrepreneurship : Dr.Imtiaz Ahmed, Mission Director (Age Care), HelpAge India; Heads and CEO of NCR relevant sectors of Skill Councils; Senior cricketers including Chetan Sharma, Vijay Yadav; Shri Rajesh Singh, DDG, Rural Business, Deptt. of Posts

**SAFETY AND SECURITY:** Dr. Sanjay Bahl, Director General, Cert-In; Shri S.K. Bhalla, DG, ICCCC & Director, Ministry of Home Affairs; Shri Ram Phal Pawar, Director, National Crime Records Bureau (NCRB); Smt. Rama Vedashree, Chief Executive Officer, Data Security Council of India (DSCI); Smt. LeenikaKhattar, Northern Region Head, National Association of Software and Services Companies (NASSCOM); NIC; Shri Navin Jain, Senior Director, Centre for Development of Advanced Computing (C-DAC)

**DIGITAL TECHNOLOGY AND PLATFORMS:** Shri Anil Swaroop, Ex-Secretary, Coal/HRD, Gol& Ex-CEO, RSBY; Shri Vishnu Chandra, DDG & Head of Group, NIC ; Sh. Prakash Kumar, CEO, Goods and Service Tax Network (GSTN); Shri Sanjay Goel, Joint Secretary, Ministry of Electronics and Information Technology (MeitY) ; Shri P. Mohanty, DDG, Unique Identification Authority of India (UIDAI); Shri Abhishek Singh, President & CEO, NeGD/My Gov; .Shri Dinesh Tyagi, CEO, CSC; Shri D.K. Singh, Director, Centre for Railway Information Systems (CRIS); Shri Vishal AnandKanvaty, Chief of Innovation, National Payments Corporation of India (NPCI); NASSCOM;

**CITIZEN CENTRIC PLANNING:** Shri Kunal Kumar, Joint Secretary, Smart Cities, MoHUA; Shri Hitesh Vaidya, Director, National Institute of Urban Affairs; Dr. Rakesh Kumar, Chief Advisor, UN Habitat, India; World Resources Institute WRI, Observer Research Foundation (ORF), IIPA; TCPO;

**HOUSING INFRASTRUCTURE AND ZONING REGULATIONS:** Dr.SekharBonu, DG, DMEO, NITI Ayog; Shri Biswajit Banerjee, Joint Secretary, Rural Development; Smt. D. Thara, JS, AMRUT, MoHUA ;Prof.Dr.P.S.N.Rao, Director, School of Planning and Architecture, Delhi; Shri P.K. Gupta, CEO & MD, National Buildings Construction Corporation Limited; HUDCO; MMRDA; HMDA; World Bank; KfW; CREDAI; Shri Balvinder Kumar, Member UP RERA, Ex VC, DDA

**IMPLEMENTATION STRATEGIES:** Shri Shankar Aggarwal, Ex-Secretary, MoHUA; Shri P K Sarangi. Commissioner, NCR Cell Uttar Pradesh ; Smt. Kanchan Verma, V.C., GDA; Dr. Christoph Kessler, Country Head, KfW; Shri O.P. Agarwal, CEO, World Research Institute

Knowledge partners invitees included KPMG, WWF, OMIDYAR, BCG, iSPIRT amongst others. Apart from these, there were representations from DCs, DMs, ZilaParishads, Panchayats, ADM, ADCs, NGOs as well.

# **Chapter-2-Demography**

City/	ty/ Greater Mumbai UA Kolkata UA		Chennai UA			NCT-Delhi						
Year	Area in	Population	Decadal Growth	Area in	Population	Decadal	Area in	Population	Decadal	Area in	Population	Decadal
	square kilometre	square square (Person) Rate (%) kilometre (Person) Rate (%)		Rate (%)	kilometre (Person) Rate (%)		square kilometre (Person)		Rate (%)			
1	2	3	4	5	6	7	8	9	10	11	12	13
1951		3,216,904			4,685,869			1,542,333			1,744,072	
1961	539.83	4,515,495	40.37	610.50	6,008,656	28.23	226.07	1,944,502	26.08	1483	2,658,612	52.44
1971	559.99	6,596,370	46.08	679.36	7,447,429	23.95	490.58	3,155,944	62.30	1483	4,065,698	52.93
1981	588.50	9,421,962	42.84	870.35	9,232,103	23.96	531.82	4,273,329	35.41	1483	6,220,406	53.00
1991	1040.90	12,596,243	33.69	920.65	11,110,314	20.34	580.06	5,416,903	26.76	1483	9,420,644	51.45
2001	1135.11	16,434,386	30.47	1046.46	13,251,339	19.27	788.69	6,686,140	23.43	1483	13,850,507	47.02
2011	1063.49	18,394,912	11.93	1056.13	14,057,991	6.09	932.474	8,653,521	29.42	1483	16,787,941	21.21
Avera	ge		34.23			20.31		1	33.90			46.34

# Demography Snapshot of NCR

Table 1.1: Comparative Growth for NCT-Delhi and three Mega-cities in India (1951-2011)

Source: Census 1951, 1961, 1971, 1981, 1991, 2001 and 2011, Census of India.





Sub-region/ Year	Population		Decadal Growth Rate (%)	Share of Population (%)	
	2001	2011	2001-2011	2001	2011
1	2	3	5	7	8
NCT-Delhi	13850507	16787941	21.21	29.19	28.87
Haryana	13388603	16427524	22.70	28.22	28.25
Rajasthan	5093734	6222641	22.16	10.74	10.70
Uttar Pradesh	15110452	18719180	23.88	31.85	32.19
NCR	47443296	58157286	22.58	100.00	100

Table 1.2: Sub-region wise Distribution and Growth of Population in NCR (2001-2011)

Source: Census 2001, 2011, Census of India and Report on Population Projections for National Capital Region 2016-2041.

Urban-Rural Component/	Populat	ion (Person)	Percent share (%)		
Year	2001	2011	2001	2011	
1	2	3	5	6	
Total NCR	47413296	58157286	100.00	100.00	
Urban NCR	23169390	31731165	48.87	54.56	
Rural NCR	24243906	26426121	51.13	45.44	
Urban NCR excluding NCT- Delhi	10293610	15362266	19.64	25.69	

Table 1.3: Urban-Rural Population of NCR (2001-2021)

Source: Census 2001, 2011, Census of India and Report on Population Projections for National Capital Region 2016-2041.

Table 1.4: Sub-Region wise Population Density in NCR (2001-2011)

Sub-region/	Area	Рори	lation	Density (Person/sq km)		
Year	(Sq. Km.)	2001	2011	2001	2011	
1	2	3	4	5	6	
NCT-Delhi	1483	13850507	16787941	9340	11320	
Uttar Pradesh	25327	15110452	18719180	1019	1263	
Haryana	14826	13388603	16427524	529	649	
Rajasthan	13447	5093734	6222641	379	463	
NCR	55083	47443296	58157286	861	1056	

Source: Census 2001, 2011, Census of India

District/ State		Sex Ratio 2011		
District State	Male	Female	Total	
NCT Delhi				
Delhi	8987326	7800615	16787941	868
Haryana Sub-region				
Faridabad	966110	843623	1809733	873
Gurgaon	816690	697742	1514432	854
Jhajjar	514667	443738	958405	862
Mewat	571162	518101	1089263	907
Palwal	554497	488211	1042708	880
Panipat	646857	558580	1205437	864
Rewari	474335	425997	900332	898
Rohtak	568479	492725	1061204	867
Sonipat	781299	668702	1450001	856
Mahendergarh	486665	435423	922088	895
Bhiwani	866672	767773	1634445	886
Jind	713006	621146	1334152	871
Karnal	797712	707612	1505324	887
Total & SR	8758151	7669373	16427524	876
Uttar Pradesh Sub- region			1	
Baghpat	700070	602978	1303048	861
Bulandshahr	1845260	1653911	3499171	896
Gautam Buddha Nagar	890214	757901	1648115	851
Ghaziabad	2488834	2192811	4681645	881
Hapur				
Meerut	1825743	1617946	3443689	886
Muzaffarnagar Shamli	2193434	1950078	4143512	889

Table 1.5: District wise Population and Sex Ratio of NCR, 2011

District/State		Population 2011			
District State	Male	Female	Total		
Total & SR	9943555	8775625	18719180	883	
Rajasthan Sub-region					
Alwar	1939026	1735153	3674179	895	
Bharatpur	1355726	1192736	2548462	880	
Total & SR	3294752	2927889	6222641	889	
NCR	30983784	27173502	58157286	877	

Source: Census 2011, Census of India.
Year	1961	1971	1981	1991	2001	2011
1	2	3	4	5	6	7
Population (lakhs)	26.59	40.66	62.2	94.2	138.21	167.88
Growth Rate (%)	52.44	52.91	53	51.45	46.72	21.47
Growth of Population (lakhs)	-	14.07	21.54	32	44.01	29.67
Component of Migrants (lakhs)						
a) In-migrants	-	8.76	12.3	15.87	22.22	26.01
b) Out-migrants	-	2.42	2.78	2.82	4.58	7.82
c) Net-migrants	-	6.34	9.52	13.05	17.64	18.19
		45.06%	44.20%	40.78%	40.08	61.30
Component of natural increase		7.73	12.02	18.95	26.37	11.48
(lakhs)		54.94%	55.80%	59.21%	59.92	38.69

 Table 1.6: Growth of Population and Migrants into Delhi (1961-2011)

Source: Census 1961, 1971, 1981, 1991, 2001 and 2011, Census of India.

Table 1.7: Migrants	s classified by place of	of last residence (1991-2	2001 & 2001-2011)
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Place of last residence	1991-2001	2001-2011
	(%)	(%)
1	2	3
Jammu & Kashmir	0.77	0.69
Himachal Pradesh	1.12	1.00
Punjab	2.23	2.16
Chandigarh	0.29	0.16
Uttarakhand	5.00	4.26
Haryana	7.70	8.18
Rajasthan	3.98	4.27
Uttar Pradesh	39.18	42.31
Bihar	18.67	22.79
Sikkim	0.04	0.03

Diago of last residence	1991-2001	2001-2011		
r lace of last residence	(%)	(%)		
1	2	3		
Arunachal Pradesh	0.05	0.04		
Nagaland	0.34	0.06		
Manipur	0.17	0.18		
Mizoram	0.04	0.02		
Tripura	0.04	0.03		
Meghalaya	0.12	0.05		
Assam	0.69	0.38		
West Bengal	3.80	1.86		
Jharkhand	2.89	0.73		
Odisha	1.03	0.40		
Chhattisgarh	0.52	0.26		
Madhya Pradesh	1.94	2.49		
Gujarat	0.53	0.43		
Daman & Diu	0.02	0.00		
Dadra & Nagar Haveli	0.00	0.00		
Maharashtra	1.18	1.23		
Andhra Pradesh	0.51	0.51		
Karnataka	0.40	0.36		
Goa	0.10	0.03		
Lakshadweep	0.01	0.00		
Kerala	1.41	0.95		
Tamil Nadu	0.86	0.67		
Puducherry	0.02	0.01		
Andaman & Nicobar Islands	0.02	0.02		
Others (include outside India and unclassifiable)	4.34	3.44		

Place of last residence	1991-2001	2001-2011	
	(%)	(%)	
1	2	3	
Total	100	100	

Source: Census 1991, 2001 and 2011, Census of India.

Urban Settlement	Class-I	Class-II	Class-III	Class-IV	Class-V	Class- VI	
/Sub-region	100,000 +	50,000- 99,999	20,000- 49,999	10,000- 19,999	5,000- 9,999	Below 5,000	Total
1	2	3	4	5	6	7	8
Haryana	11	6	27	19	20	06	89
Rajasthan	03	0	10	08	06	00	27
Uttar Pradesh	13	13	27	36	22	02	113
NCT-Delhi	01	-	-	-	-	-	01
NCR	28	19	64	63	48	08	230

#### Table 1.8: Urban Settlements in NCR and their Census Classification, 2011

Source: Census 2011, Census of India

### Table 1.9: No. of Census town as per Census 2011

S.No	Sub Region	No. of Census town
1	NCT Delhi	-
2	Haryana Sub Region	33
3	Uttar Pradesh Sub Region	34
4	Rajasthan Sub Region	11
Nationa	ll Capital Region	78

Source: Census 2011, Census of India

### Table 1.10: Census Towns in the National Capital Region

S.No	Sub Region	2011	Name of the Census Town
1	NCT Delhi	-	
2	Haryana Sub Region	33	Tilpat (CT) Manesar (154) (CT) Ugra Kheri(19) (CT) Kundli (55) (CT)

S.No	Sub Region	2011	Name of the Census Town
			Bhondsi (168) (CT)
			Nagina (51) (CT)
			Pingwan (127) (CT)
			Kheri Nangal (131) (CT)
			Tosham (CT)
			Garhi Harsaru (46) (CT)
			Ladrawan (CT)
			Khori Kalan (37) (CT)
			Salamba (154) (CT)
			Baghola (44) (CT)
			Kachrauli (1) (CT) WARD NO0001
			Kabri (18) (CT) WARD
			Sikanderpur (19) (CT)
			Asan Khurd (CT)
			Bhakali (165) (CT)
			Aakera (292) (CT)
			Ghatal Mahaniawas (291) (CT)
			Maheshari (293) (CT)
			Rampura (132) (CT)
			Manethi (28) (CT)
			Sunari Kalan (101) (CT)
			Bayyanpur (207) (CT)
			Badh Malak (68) (CT)
			Bhuran (16) (CT)
			Uncha Siwana (CT)
			Nagal Chaudhry (CT)
			Piala (54) (CT)
			Faizabad (87) (CT)
			Badshahpur (87) (CT)
			Noida (CT)
			Greater Noida (CT)
			Shekhpura (CT)
			Khatauli Rural (CT)
			Chipyana Buzurg (CT)
			Salarpur Khadar (CT)
			Buxer (CT)
3	Uttar Pradesh Sub Region	34	Hasangarh (CT)
			Patadi (CT)
			Kherli Hafizpur (CT)
			Abupur (CT)
			Basantpur Saitli (CT)
			Muradgram Pur Pursi (CT)
			Sikri Kalan (CT)
			Ordnance Factory Muradnagar (CT)
			Khanupur (CT)

S.No	Sub Region	2011	Name of the Census Town
			Pavi Sadakpur (CT)
			Bahalimpura (CT)
			Khurja Rural (CT)
			Sindhawali (CT)
			Amehra Adipur (CT)
			Aminagar Urf Bhurbaral (CT)
			Mohiuddinpur (CT)
			Rori (CT)
			Aurangabad Gadana (CT)
			Bisokhar (CT)
			Begumabad Budhana (CT)
			Haqiqatpur Urf Khudawas (CT)
			Banthla (CT)
			Khora (CT)
			Sarwat (CT)
			Shahbudinpur (CT)
			Almaspur (CT)
			Kukra (CT)
			Bhiwadi (M)
			Kishangarh (CT)
			Ramgarh (CT)
			Govindgarh (CT)
			Neemrana (CT)
4	Rajasthan Sub Region	11	Shahjahanpur (CT)
			Tapookra (CT)
			Desoola (CT)
			Bhoogar (CT)
			Diwakari (CT)
			Bayana ( Rural ) (CT)

**Note:** Towns in bold are covered under Master/ development Plans, as per available information, however, some more towns can also fall in this category.

#### Sub-Region wise Growth of Population

### i) NCT-Delhi

The decadal growth of population in the National Capital Territory of Delhi during the period 1951-1991 has been consistently above 50%. However, during the 2001-2011, the population growth declined drastically from 47.02% to 21.21%. Table 4.5 depicts the growth of population from 1901 to 2011.

#### a) Rural Population

As per the Census 2011, the rural population of NCT-Delhi is 4,19,042. The rural population shows sharp increase during the decade 1981-1991 (109.86%), after which it declined by - 0.45% during 1991-2001 to -55.64% during 2001-2011. Table 1.1.1 depicts the growth of Urban and Rural population within NCT Delhi from 1901 to 2011.

	Tot	al	Rura	ıl	Urban	
Year	Population	Decadal Growth	Population	Decadal Growth	Population	Decadal Growth
	(Person)	(%)	(Person)	(%)	(Person)	(%)
1	2	3	4	5	6	7
1901	4,05,819		1,91,704		2,14,115	
1911	4,13,851	1.98	1,75,907	-8.24	2,37,944	11.13
1921	4,88,452	18.03	1,84,032	4.62	3,04,420	27.94
1931	6,36,246	30.26	1,88,804	2.59	4,47,442	46.98
1941	9,17,939	44.27	2,22,253	17.72	6,95,686	55.48
1951	17,44,072	90	3,06,938	38.1	14,37,134	106.58
1961	26,58,612	52.44	2,99,204	-2.52	23,59,408	64.17
1971	40,65,698	52.93	4,18,675	39.93	36,47,023	54.57
1981	62,20,406	53	4,52,206	8.01	57,68,200	58.16
1991	9420644	51.45	949019	109.86	8471625	46.87
2001	13850507	47.02	944727	-0.45	12905780	52.34
2011	16787941	21.21	419042	-55.64	16368899	26.83

#### Table 1.1.1: Growth of Population of NCT-Delhi (1901-2011)

Source: Census 1901 - 2011, Census of India.

#### b) Urban Population

NCT-Delhi is already highly urbanized, with 97.50% of its population living in urban areas as against the national average of 31.14% during 2011. Table 1.1.2 depicts the percentage growth of urban population in Delhi during 1951-2011. While only 84.71 lakhs persons lived in Delhi's urban areas in 1991 and it has increased to 163 lakhs, almost doubled in 2011.

Census Year	1951	1961	1971	1981	1991	2001	2011
1	2	3	4	5	6	7	8
Percent Urban	82.40	88.75	89.68	92.73	89.93	93.16	97.50

Table 1.1.2: Trends of Urbanization in NCT-Delhi (in Lakhs)

Source: Census 1951, 1961, 1971, 1981, 1991, 2001 and 2011, Census of India

### c) Components of Growth in NCT-Delhi

The main components of the population growth of NCT-Delhi are natural growth and inmigration. Migration plays an important role in the growth of population of NCT-Delhi. Table 1.6 presents the migration data for Delhi for the period of 1961-2011. The figures pertaining to natural increase depicts downfall in the total figure of component of natural increase from 26.27 lakhs in 2001 to 11.48 lakhs in 2011 while in-migration component has doubled from 1991 (15.87 lakh) to 2011(26.01) it has marginally increased during 2001-2011. The out migration has increase almost three times from 2.82 lakh in 1991 to 7.82 lakh in 2011. Table 1.7 presents the state wise migration in NCT Delhi by the place of last residence for the year 1991-2001 and 2001-2011. During 2001-2011 about 42.31% of the total in-migrants of NCT-Delhi is from UP followed by Bihar (22.79%) and Haryana (8.18%).

### ii) Haryana Sub-region

Table 1.1.3 presents the decadal growth rate for the revised Haryana Sub-Region for the period 2001-2011.

	Total		Rural		Urban		
Year	Year Population		adal Population		Population	Decadal Growth	
	(Person)	(%)	(Person)	(%)	(Person)	(%)	
1	2	3	4	5	6	7	
2001	13388603		9464477		3924126		
2011	16427524	22.70	10439814	10.30	5987710	52.59	

 Table 1.1.3: Growth of Population in Haryana Sub-region (2001-2011)

Source: Census 2001 and 2011, Census of India.

iii) Rajasthan Sub-region

Table 1.1.4 shows the population growth in the Rajasthan Sub-region during 2001 and 2011 along with the decadal growth rate for 2011.

	]	Total		Rural	Urban		
Year	Population	Decadal Growth	Population	Decadal Growth	Population	Decadal Growth	
	(Person)	(%)	(Person)	(%)	(Person)	(%)	
1	2	3	4	5	6	7	
2001	5093734		4249835		843899		
2011	6222641	22.16	5073091	19.37	1149550	36.22	

 Table 1.1.4: Growth of Population in Rajasthan Sub-region i.e., entire Alwar and Bharatpur District (2001-2011)

Source: Census 2001 and 2011, Census of India.

### iv) Uttar Pradesh Sub-region

Table 1.1.5 shows the population growth in the U.P. Sub-region during 2001 and 2011 along with the decadal growth rate for 2011.

1 able 1.1.5: Growth of Population in Uttar Pradesh Sub-region (2001-2011
---------------------------------------------------------------------------

	To	otal	R	tural	Urban			
Year	Population	Decadal Growth	Population	Decadal Growth	Population	Decadal Growth		
	(Person)	(%)	(Person)	(%)	(Person)	(%)		
1	2	3	4	5	6	7		
2001	15110452		9584867		5525585			
2011	18719180	23.88	10494174	9.49	8225006	48.85		

Source: Census 2001 and 2011, Census of India.

Annexure D-1.2

Existing Urban Settlements in NCR -2011



# Annexure-D-1.3.1

## Population Projection for NCR (2016-2041)

	NCR	NCT-De	lhi	Haryan	a	Rajastha	an	Uttar Pradesh		
Year	Total	Population	% to total	Population	% to total	Population	% to total	Population	% to total	
1	2	3	4	5	6	7	8	9	10	
2016	645.51	185.23	28.70	182.74	28.31	68.71	10.64	208.84	32.35	
2021	718.20	204.64	28.49	204.12	28.42	75.87	10.56	233.58	32.52	
2026	801.09	226.33	28.25	229.05	28.59	83.78	10.46	261.93	32.70	
2031	895.92	250.59	27.97	258.31	28.83	92.51	10.33	294.52	32.87	
2036	1004.80	277.71	27.64	292.87	29.15	102.15	10.17	332.07	33.05	
2041	1130.26	308.03	27.25	334.00	29.55	112.80	9.98	375.43	33.22	

Table 3.1: Proposed Population of NCR and Sub-regions (in lakhs)

Source: Census 2001 and 2011, Census of India and Report on Population Projections for National Capital Region 2016-2041.

Table 3.2. Rulai and Urban Fregetted Fopulation of MCF	<b>Table 3.2:</b>	<b>Rural and</b>	Urban	Projected	<b>Population</b>	of NCR
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NCR Sub-Region	2011	2021	2031	2041
Haryana Sub-Region				
Urban	5987710	8901944	13140403	19408451
Rural	10439814	11510160	12690244	13991316.13
Total	16427524	20412105	25830647	33399767
Uttar Pradesh Sub-Region				
Urban	8225006	11872707	16882545	23786926.22
Rural	10494174	11485056	12569499	13756338.21
Total	18719180	23357763	29452045	37543264.44
Rajasthan Sub-Region				
Urban	1149550	1540531	2044211	2690555
Rural	5073091	6046448	7206560	8589259
Total	6222641	7586979	9250771	11279814
Delhi				
Urban	16368899	20284030	24981804	30770279

Rural	419042	179486	76878	32929
Total	16787941	20463516	25058682	30803208
TOTAL –NCR				
	31731165	425,99,212	570,48,964	766,56,211
Urban	(54.56%)	(59.31%)	(63.68%)	(67.82%)
	26426121	29221150	32543181	36369842
Rural	(45.44%)	(40.69%)	(36.32%)	(32.18%)
Total	58157286	71820362	89592145	113026053

Sr. No.	Level	Name	TRU	2011	2021	2026	2031	2036	2041
	HARAYANA SUI	<b>B-REGION</b>							
1	DISTRICT	Faridabad	Total	18,09,733	2379713	2728851	3129211	3588310	4114765
			Rural	3,70,878	203190	51924	14555	14555	14555
			Urban	14,38,855	2176523	2676927	2790044	2790044	2790044
2	DISTRICT	Gurgaon	Total	15,14,432	2592807	3392582	4439054	5808321	7599951
			Rural	4,72,179	1016214	1453516	2054179	2875140	3992404
			Urban	10,42,253	1576592	1939066	2384876	2933181	3607547
3	DISTRICT	Jhajjar	Total	9,58,405	1042304	1086968	1133547	1182121	1232777
			Rural	7,15,066	674210	634247	576740	497299	390509
			Urban	2,43,339	368093	452722	556806	684822	842269
4	DISTRICT	Mewat	Total	10,89,263	1505867	1770572	2081807	2447752	2878023
			Rural	9,65,157	1318135	1539678	1797829	2098484	2448456
			Urban	1,24,106	187732	230894	283978	349268	429568
5	DISTRICT	Palwal	Total	10,42,708	1307182	1463601	1638737	1834830	2054388
			Rural	8,06,164	949367	1023521	1097479	1169132	1235639
			Urban	2,36,544	357815	440080	541258	665699	818749
6	DISTRICT	Panipat	Total	12,05,437	1497365	1668857	1859991	2073015	2310436
			Rural	6,50,352	657700	636146	589850	510856	389122
			Urban	5,55,085	839664	1032711	1270141	1562159	1921314

# Table 3.3: District - wise Rural-Urban projected Population of NCR, 2011-41

Sr. No.	Level	Name	T R U	2011	2021	2026	2031	2036	2041
7	DISTRICT	Rewari	Total	9,00,332	1053989	1140388	1233870	1335015	1444451
			Rural	6,66,902	700885	706102	699737	678080	636480
			Urban	2,33,430	353104	434286	534133	656935	807971
8	DISTRICT	Rohtak	Total	10,61,204	1195144	1268326	1345989	1428408	1515874
			Rural	6,15,040	520242	438258	325080	172782	-28432
			Urban	4,46,164	674902	830069	1020909	1255626	1544306
9	DISTRICT	Sonipat	Total	14,50,001	1677606	1804475	1940939	2087722	2245607
			Rural	9,96,637	991813	961012	903555	811834	676379
			Urban	4,53,364	685793	843464	1037384	1275889	1569227
10	DISTRICT	Jind	Total	13,34,152	1693050	1907226	2148496	2420286	2726459
			Rural	10,28,569	1230802	1338702	1449263	1560293	1668746
			Urban	3,05,583	462248	568524	699233	859993	1057713
11	DISTRICT	Karnal	Total	15,05,324	1910269	2151924	2424148	2730810	3076265
			Rural	10,50,514	1222288	1305770	1383455	1450852	1502032
			Urban	4,54,810	687981	846154	1040693	1279958	1574232
12	DISTRICT	Mahendragarh	Total	9,22,088	1170138	1318163	1484915	1672761	1884370
			Rural	7,89,233	969171	1070992	1180917	1298871	1424519
			Urban	1,32,855	200967	247171	303998	373890	459851
13	DISTRICT	Bhiwani	Total	16,34,445	2074125	2336507	2632082	2965048	3340135
			Rural	13,13,123	1752803	2015185	2310760	2643726	3018813

Sr. No.	Level	Name	T R U	2011	2021	2026	2031	2036	2041
			Urban	3,21,322	321322	321322	321322	321322	321322
	UTTAR PRA	DESH STATE							
14	DISTRICT	Baghpat	Total	13,03,048	1457907	1542108	1631171	1725378	1825025
			Rural	10,28,023	1051667	1048380	1031113	996091	938679
			Urban	2,75,025	406240	493728	600058	729286	886346
15	DISTRICT	Bulandshahr	Total	34,99,171	4066795	4384256	4726498	5095456	5493215
			Rural	26,31,742	2785515	2827038	2833916	2795286	2697680
			Urban	8,67,429	1281281	1557218	1892582	2300170	2795536
16	DISTRICT	Gautam Buddha Nagar	Total	16,48,115	2483016	3047722	3740859	4591635	5635901
			Rural	6,73,806	1043862	1298632	1615084	2008051	2495914
			Urban	9,74,309	1439153	1749091	2125776	2583584	3139987
17	DISTRICT	Meerut	Total	34,43,689	3991659	4297522	4626823	4981356	5363056
			Rural	16,84,507	1393168	1139419	788588	316516	-306407
			Urban	17,59,182	2598491	3158103	3838235	4664840	5669463
18	DISTRICT	Ghaziabad	Total	33,43,334	4686422	5548457	6569057	7777390	9207987
			Rural	5,90,534	620257	606599	562918	477764	336309
			Urban	27,52,800	4066165	4941858	6006140	7299626	8871678
19	DISTRICT	Hapur	Total	13,38,311	1606435	1760015	1928277	2112626	2314599
			Rural	9,28,564	1001197	1024433	1034279	1026096	994073

Sr. No.	Level	Name	T R U	2011	2021	2026	2031	2036	2041
			Urban	4,09,747	605238	735582	893998	1086530	1320526
20	DISTRICT	Muzaffarnagar	Total	28,69,934	3444912	3774255	4135084	4530409	4963529
			Rural	20,64,724	2255535	2328733	2378253	2395226	2368511
			Urban	8,05,210	1189377	1445522	1756831	2135183	2595018
21	DISTRICT	Shamli	Total	12,73,578	1528733	1674884	1835008	2010440	2202643
			Rural	8,87,476	958422	981750	992599	986609	958320
			Urban	3,86,102	570312	693135	842409	1023830	1244323
RAJASTHAN STATE									
21	DISTRICT	Alwar	Total	36,74,179	4541379	5048954	5613260	6240636	6938132
			Rural	30,19,728	3654056	4015755	4410202	4839795	5306993
			Urban	6,54,451	887323	1033199	1203057	1400840	1631139
22	DISTRICT	Bharatpur	STATE	25,48,462	3149964	3502025	3893435	4328592	4812385
			Rural	20,53,363	2478695	2720399	2983310	3268842	3578412
			Urban	4,95,099	671269	781626	910125	1059750	1233973
	NCT of DELHI	I							
23	DISTRICT	North West	Total	3656539	4659677	5260157	5938018	6703233	7567060
			Rural	213950	111389.06	32231.003	0	0	0
			Urban	3442589	4548288	5227926	5938018	6703233	7567060
24	DISTRICT	North	Total	887978	1008116	1074149	1144507	1219475	1299352
			Rural	17746	6432	3872	2331	1403	845

Sr. No.	Level	Name	T R U	2011	2021	2026	2031	2036	2041
			Urban	870232	1014547	1078021	1146838	1220878	1300197
25	DISTRICT	North East	Total	2241624	2834160	3186802	3583323	4029180	4530514
			Rural	21527	2672	941	332	117	41
			Urban	2220097	2836831	3187743	3583654	4029297	4530555
26	DISTRICT	East	Total	1709346	1993998	2153635	2326053	2512274	2713403
			Rural	3530	588	240	98	40	16
			Urban	1705816	1994586	2153875	2326150	2512313	2713419
27	DISTRICT	New Delhi	Total	142004	112276	99835	88772	78935	70188
			Rural	0	0	0	0	0	0
			Urban	142004	112276	99835	88772	78935	70188
28	DISTRICT	Central	Total	582320	524317	497519	472091	447963	425068
			Rural	0	0	0	0	0	0
			Urban	582320	524317	497519	472091	447963	425068
29	DISTRICT	West	Total	2543243	3033473	3312961	3618199	3951560	4315635
			Rural	6420	314	70	15	3	1
			Urban	2536823	3033788	3313030	3618214	3951564	4315636
30	DISTRICT	South West	Total	2292958	2985245	3406214	3886546	4434613	5059967
			Rural	143676	90608	71954	57141	45377	36035
			Urban	2149282	3075853	3478168	3943687	4479991	5096002
31	DISTRICT	South	Total	2731929	3286522	3604708	3953700	4336479	4756317

Sr. No.	Level	Name	T R U	2011	2021	2026	2031	2036	2041
			Rural	12193	618	139	31	7	2
			Urban	2719736	3287140	3604847	3953731	4336486	4756319
	NCT OF DELHI		Total	1,67,87,941	20463516	22633050	25058682	27770712	30803208
			Rural	4,19,042	179486	117467	76878	50314	32929
			Urban	1,63,68,899	20284030	22515583	24981804	27720398	30770279

Source: Report on Population Projections for National Capital Region 2016-2041.

# POPULATION OF TOWNS OF NCR AS PER MASTER PLAN

The NCR States have given the population of their Master Plan of some selected TOWNs in the NCR. Population of all the towns of NCR have been projected in table below:

Table 3.1: Population of Towns according to Master Plan

Sub-Reg	gion District	Towns	2011	2021	2031	2041
Delhi						
	All	NCTD	18200000	23000000	28383670	35027510
Rajastha Sub-Reg	an jion District					
	Alwar					
		Alwar	322568	535000	760000	1060469
		Greater Bhiwadi	104921	131193	1502221	3797379
		Khairthal	38298	70000	82718	132605
		Kherli	17634	35000	45000	75848
		Rajgarh	26631	41000	52500	75154
		SNB	NA	NA	NA	1820000
		Tijara	24747	55000	98925	177929
	Bharatpur					
		Bharatpur	252838	369150	385000	530705
		Deeg	44999	69000	72000	102778
		Bayana	38502	55500	72000	98328
		Kumher	23540	33280	43000	57889
		Nadbai	26411	36500	48000	63530
		Kaman	38040	48123	60000	74107
		Weir	19385	28000	36000	49237
		Nagar	25572	36000	47000	63075
		Bhusawar	19946	29500	39000	54263
Uttar P	radesh Sub-Region					
	Bulandshahar					
		Khurja	143000	150000	157169	164680

Sub-Region	District	Towns	2011	2021	2031	2041
		Sikandrabad	81000	150000	242428	391809
		Bulandshahar	235000	350000	489422	684382
		Jahangirabad	19776	90137	226862	570981
Нар	ur					
		Gaghmukteshwar- Brijghat	43000	100000	184397	340023
		Pikhuwa	83000	300000	685483	1566288
Gha	ziabad					
		Modinagar	150000	300000	507944	860024
		Ghaziabad	1883000	3350000	5279915	8321643
Mee	erut					
		Meerut	1310000	2300000	3594629	5617980
Muz	zaffarnagar					
		Muzaffarnagar	496000	730000	1012122	1403275
		Khatauli	72949	100000	131541	173030
Gau Nag	tam Buddha ar					
		Noida	637000	1200000	1959969	3201231
		Gr. Noida	102000	1200000	4158125	14408335
		YEIDA	-	-	35000	-
Haryana						
Sub-Region						
Fario	dabad					
		Faridabad (M. Camp.)	1414050	1919941	3955407	6814332
		Tilpat (CT)	20514	27853	33851	41142
Gurg	gaon					
		Gurgaon (M.Corp.+OG)	886519	1203680	4250000	9611526
		Dundahera				#VALUE!
		Sohna (MC)	36552	49629	640000	2276411

Sub-Region	District	Towns	2011	2021	2031	2041
		HailyMandi (CT)	20906	28385	100980	229130
		Pataudi (MC)	20418	27723	91310	200151
		Farukhnagar (MC)	13513	18347	125000	364856
Jhaj	jar					#DIV/0!
		Jhajjar (MC)	48424	65748	500000	1514389
		Bahadurgarh (MCI)	170767	231861	484000	840198
		Ladrawan (CT)	6905	9375	11394	13848
		Beri (MC)	15934	21635	28000	31956
Mev	wat	FerozpurJhirka (MC)	24750	46000	74512	120695
Palv	val					
		Palwal (MCI+OG)	131926	400000	843689	1779529
		Hathin (MC)	14421	19580	46000	85290
		Hodal (MC)	50143	68082	170652	327466
		Hasanpur (MC)	11569	15708	19091	23202
Pani	ipat					
		Panipat (MCI+OG)	295970	709612	1330139	2493294
		Samalkha (MCI+OG)	39710	67200	102552	156501
Rew	/ari					
		Rewari (MCI)	143021	450000	965815	2072887
		Bawal (MC)	16776	22778	27683	33645
		Dharuhera (MC)	30344	200000	577144	1665474
Roh	tak		190141	672778	1570642	3772006
		Rohtak (MCI)	374292	508199	1300000	2521020
		Maham (MC)	20484	51000	97521	186478
		Kalanaur (MC)	23319	31662	38480	46767
Soni	ipat					
		Sonipat (MCI+OG)	289333	1000000	2240177	5018393
		Ganaur (MC)	35603	48340	58751	71403

Sub-Region	District	Towns	2011	2021	2031	2041
		Kharkhoda (MC)	25051	125000	325925	849817
		Gohana (MC)	65708	150000	273812	499821
Jind						
		Jind (MCI)	167592	227550	517000	941288
		Narwana (MCI)	62090	127000	217881	373798
		Safidon (MC)	34728	90000	175704	343020
		Uchana (MC)	16815	22831	66000	136061
		Julana (MC)	18755	25465	30949	37614
Karn	al					
		Karnal (MCI+OG)				
		+ Onchastwana (CT)	311062	422348	900000	1580909
		Gharaunda (MC)	37816	51345	117250	214068
		Nilokheri (MC)	17938	24356	162000	468961
		Taraori (MC)	25944	35226	42812	52032
		Assandh (MC)	27125	36829	117000	252239
		Indri (MC)	17487	23743	86291	197644
Bhiw	vani					
		Bhiwani (MCI	196057	266198	360000	468671
		Loharu (MC)	13937	18293	22998	27951
		CharkhiDadri	56337	75000	96460	124061
		Nuh	16260	22077	90000	216475
		Tohana			214000	
		Tarou	22599	45000	75994	128335
Mah	endragarh					
		Mahendragarh (MC)	29128	39549	100000	192763
		Narnaul (MCI)	74581	250000	552394	1220556

Source: Report on Population Projections for National Capital Region 2016-2041.

*Note: Population of Master Plan/Development Plan provided for 2025 have been considered for 2031. Population of YEIDA has been considered for 2021 and 2031.* 

In this reference, it may be mentioned master plan data for towns were given upto 2021, some have given data upto 2031. However projection has been done for all towns upto 2041 using exponential growth rate.

# **CHAPTER-3** – Economic Growth & Income Generation

# Annexure-D-3.1

# **Brief Economic Scenario of NCR and its Participating States**

The National Capital Region has over the past decade, emerged as one of the foremost economic centres in India. It contributes significantly to India's growth, accounting for about seven to eight percent of the total Gross Domestic Product (s). The Gross State Domestic Product (GSDP) growth of Delhi was 8.1 percent in 2017. That year, the services sector contributed 85 percent to the state economy. This was followed by manufacturing at 12 percent and agriculture at three percent.

The government of Delhi is committed towards creating a progressive business environment. As per the new Industrial Policy for Delhi 2010-21, the government is keen on developing and promoting the high-tech, sophisticated, knowledge-based IT and ITeS industries in the state. The government has planned to set up a "Centre of Excellence" to promote innovation and entrepreneurship in the sectors to achieve this aim.

According to the Department of Industrial Policy & Promotion (DIPP), FDI inflows in Delhi, including part of Uttar Pradesh and Haryana, stood at US\$ 74.150 billion from April 2000 to September 2017. The state government allocated a plan outlay of US\$ 340.5 million for the development of the energy sector in the state and US\$ 483.1 million was allocated to housing and urban development in 2017-18.

Located in Haryana State, Gurgaon (Gurugram) is a major city in the NCR. The city is popularly known as "Cyber City" and "Millennium City" as a number of IT companies are located there. In the past few years, the city has witnessed a substantial growth in the economy with the rise of information technology, ITeS, pharmaceuticals and automobile industries. Many multi-national companies have their branches in Gurgaon considering it a best place to operate business. Gurgaon is home to many global giants such as Microsoft, Oracle, American Express, IBM, Price Waterhouse Coopers, McKinsey and Company, Google, Dell, Ericsson and Motorola. It is also the manufacturing base of the Maruti Suzuki and Hero Honda groups.

Ghaziabad's economic growth is attributed to its many industries, especially the steel sector. More than 500 steel industries in Ghaziabad employed about 25,000 workers. The manufacturing sector makes up 53 percent of non-agricultural jobs in Ghaziabad. The manufacturing industry is credited with an income that is eight times the income of other industries put together⁶⁷.

NCR constituent State wise details are provided as follow:

# 1. Economic scenario of Delhi:

- 1.1. Delhi is a major trading and Education hub and multicultural city in the Country. It has excellent public Infrastructure & Communication facility for promotion of Business. Consistent good fiscal health, around 90-95% of Govt, of NCTD Budget is financed from its internal resources. Service Sector contribution is the highest to Delhi's Economy i.e 84.12 % in 2018-19. These are the strengths of Delhi's Economic Growth. Delhi scored 100 in the index on SDG 9: Industry Innovation & Infrastructure by NITI AAYOG in its SDG India Index 2.0 released on 30th Dec, 2019. Major contributions of different service sectors activities to Delhi Economy in 2018-19 as per Advance Estimates: Professional Services & Real Estate (28%), Transport, storage & Communication (14.70%), Financial Services (13.79%), Trade, hotels & Restaurants (12.44%), etc.
- 1.2. It is also observed that Growth Rate of GSDP of Delhi, which indicates performance of Economy is 8.61% during 2018-19, while it is 6.8% at National Level. Delhi has highest Per Capita Income in the Country and for the year 2018-19, it is Rs. 36,5529/ which is three times of the -National average of Rs. 126406/. Annual rate of growth is more than 12%. Delhi contributes 4% to the National Economy though its population share is only 1.4% and it's economy grew at 8.36% annually in the last 07 years, whereas the same is 7.1% at All India Level (Base Year 2011). Targets fixed for perspective year 2030 are listed below in Box

## **Future Perspective 2030 of Delhi: Targets of some Growth Indicators**

- a) Target of Economic Development Indicators: Annual Growth Rate to increase from 7.54 % in Base Year 2016-17 to 9.85% upto 2030
- b) Per Capita Income to consistently Grow at the annual growth rate of 7.95% from present level.
- c) Access to Formal Credit to increase to 40 % in 2030 from 4.03 % in 2016-17
- d) Share of Formal sector Employment to Total Employment to increase to 50 % in 2030 from 4.25 % in 2016-17
- e) Unemployment Rate to decrease to 2.5% in 2030 from the 3.06% in 2016-17
- f) Females in NEET (Not in Education, Employment, or Training -15 to 29 Years): to be reduced to 20% from present 40%
- g) Males in NEET (Not in Education, Employment, or Training -15 to 29 Years) : to be reduced to 2% from present 7% (as envisaged in draft Delhi Vision 2030 under SDG Framework)

⁶⁷Source: <u>https://www.eyeonasia.sq/india/know/selected-india-states/ncr-india-profile/#fn:11</u>

- 1.3. The percentage contribution of Primary Sector (Agriculture and Allied) to the Gross State Value added at basic prices has declined from 0.94 % in 2011-12 to 0.39 in 2017-2018. The contribution of Secondary Sector (Industry Sector) and Tertiary Sector (Service sector) has been variable in between, from 2011-12 to 2017-2018 though further leading to 15.91% and 83.70% in 2017-2018.
- 1.4. The percentage change of per capita income at constant prices in Delhi has been increased from 4.22% in 2011-2012 to 6.07% in 2017-2018. However, the percentage change of per capita income at current prices has been declining from 11.45% in 2011-2012 to 9.41% in 2017-2018.
- 1.5. In Delhi highest employment is generated in Textile industries (46.68%) whereas the highest turnover is generated from engineering equipment industry (40.60%).
- 1.6. Maximum no. of industrial estates can be found in North West (7) and South West districts (5).
- 1.7. Maximum no of mandis is there in North West district (6) followed by East Delhi district (3) South West district (2) and North East district (1).
- 1.8. South Delhi (SDMC) has 51 informal markets and the total no of sellers are 4410.
- 2. Economic scenario of Haryana:
  - 2.1. Haryana is important contributor to NCR and the entire country. As per FY 2018-19 report, it contributes around 3.32% to the GDP of the country. Haryana is third in ease of doing business and doing well on economic front. *For example*, Gurugram which is the original hub of the automobile industry of the country since Maruti 800 launch. Gurugram is now Transitioning into IT hub. With regard to MSME sector, there are more than 1 lakh registered MSMEs contributing to about 20,000 crore of investment and providing employment to 10 lakhs of people, as per the report. The problem is ease of business, conducive eco-system for growth, statutory plans that is what planning side need to look deeply.
  - 2.2. Government of Haryana has followed macro approach such as Focus on fiscal reforms and digitisation, Pre-budget sessions with stakeholder for discussion on budgetary reforms, Try to build an accurate database which will be linked to the services that are to be delivered to the public in a most efficient manner, Chief Minister's good governance association which is in charge of implementing specific reforms in a particular district, Generally most government schemes are working for BPL. On the same line government of Haryana has initiated new scheme.
  - 2.3. Focus area for Haryana are as follows:
    - a) Important factor social parameters. Sex ratio in Haryana is poor which was below 800. Only in last five years Haryana has improved on sex ratio. Need to see through Gender lens of economic growth and how to move forward.
    - b) Haryana need to mainstream the women empowerment.

- c) With improvement in social status of women along with the literacy rate they have started going out in the job market especially middle class. Study by UNDP shows that women hesitate to take up better job outside their district even if the remunerations are good. Reason is mobility and security. There should be handholding support by the employer.
- 2.4. Important Initiatives taken by Govt. of Haryana is listed as under: All policies are in place for cost and ease of doing business. Haryana is placed at number 3 as per World Bank ranking. GDP of Haryana is 6%, GSDP is USD 75.3 billion, Growth rate 11.79% and Per capita 2963 USD.
  - i) Industrial corridors:
    - a) Delhi Mumbai Industrial Corridor (DMIC)
    - b) Amritsar Kolkata Industrial Corridor (AKIC)
    - c) Kundli-Manesar-Palwal Expressway (KMP)
  - ii) Strategic factors such as proximity to large market and manufacturing zones making Haryana an obvious choice to setup Logistics hubs and Warehouses
  - iii) Key developments

## > Panchgram City development across KMP Global Corridor;

- a) Government of Haryana developing five new cities in an area of 2.5 lac hectares as part of 'Panchgram' vision
- b) Each city to accommodate on an average ~15-18 lac people
- c) Core group constituted to develop these five new cities around Kundli-Manesar- Palwal corridor
- d) Panchgram authority vested with required powers so as to expedite and fast track the project completion
- e) Boundaries of the new cities to be towards Delhi and UP borders
- f) Planning of the 'Panchgram' based on the trends of rapid urbanization

## Global City at Gurugram

- a) Located in Delhi NCR as part of the Manesar Urban Development Complex
- b) 1000 acres of land in the Haryana sub region of Delhi-Mumbai Industrial Corridor
- c) Approx. 30 km from the Indira Gandhi International airport (New Delhi)
- d) Proximity to the Delhi-Jaipur rail line, NH-8 and KMP Peripheral road
- e) Allowable Built Up Area of 12.17 million Sq mt
- f) High Density with Mixed Land use More than 5 Lakh people turning up at peak, 785 person / acre
- g) Dominant manufacturing, and service hub of Gurgaon in proximity
- h) Investment Potential US \$ 15 billion (Rs. 1,00,000 crore)
- i) Implementation mode- Joint venture of HSIIDC and DMICDC- SPV incorporated DMIC Haryana Global City Project

## > Integrated Multi Modal Logistics Hub

- a) To be developed as the largest logistics hub in North India over 1200 acres at Nangal Chaudhary, Narnaul
- b) Envisaged Investment of about INR 5000 crore
- c) 260 crore fund has been approved by Union Cabinet and it will soon be released to the SPV
- d) Has the potential to reduce the goods movement time from 14 days to 14 hours
- e) To be implemented as a 50:50 joint venture between HSIIDC and DMICDC/DMIC Trust DMIC Haryana Multi Modal Logistic Hub Project Limited
- f) Site abutting the Delhi Mumbai Dedicated Freight Corridor passing through Haryana

## > Integrated Aviation Hub, Hisar

- a) Integrated Aviation Hub is being developed over 4200 acres of land
- b) Six Lane Controlled access Highway from Delhi to Hisar
- c) Rapid Rail Connectivity is under construction (to be extended up to Airport)
- d) MoU signed with Spice Jet
- e) Great opportunities for logistics sector
- f) **Phase I-** Regional Connectivity Scheme (RCS) Airport inaugurated on 15th August 2018 and MoU signed with Spice Jet
- g) **Phase II-** 9000 ft. airstrip and 3 hangars to be developed and Fixed base operations (FBO) and MRO Hub
- h) **Phase III** International Airport and Aviation University & Training Centre and Aerospace Manufacturing

### > Connectivity Augmentation: extending opportunities beyond Gurugram

- a) Metro connectivity between Faridabad & Gurugram
  - Route Length 30.38 km (Elevated)
  - Number of Station: 07 (Elevated)
  - Expected Date of Completion: 31 March 2021
- b) Metro connectivity between Narela to Kundli
  - Route Length : 4.86 km
  - Number of Station: 03
  - Expected Date of Completion: 31 March 2021
- c) Metro connectivity between HUDA City Centre to Sector 21, Dwarka
  - Route Length 11.96 km
  - Number of Station: 07
  - Expected Date of Completion: 31 March 2021

### 3. Economic scenario of Rajasthan:

- 3.1. Rajasthan's sub-region forms 25% of the total NCR. Rajasthan has second largest rail route, 3rd largest in national highways, 7 airports, multi-model logistics park in Neemrana, producer of zinc, largest producer of marble / granite, second largest producing state of mineral and crude oil, highest potential for solar energy, 2nd largest producer of milk, one of the most preferred tourist destination. GAIL gas grid is going through many districts of Rajasthan and there are more proposed lines as well. Various sectors that can use gas as a primary fuel. As per DIPP, Govt. of India, 2017- Rajasthan among top States in India in 'Ease of Doing Business' Reforms, 2017 with an implementation score of 95.70% and as per SKOCH Awards, 2017- Single Window won SKOCH Smart e-Governance Award in Gold Category.
- 3.2. **Skilled manpower,** National level awards for Skilling Initiatives received 3 years in a row. Rajasthan is emerging as National Hub. There are 83 number of Universities for higher education which is the highest in number. This is the only State with 2 dedicated Skill Universities. Around 1/3rd of Chartered and Cost Accountants in India from Rajasthan. Also 1909 ITIs, 152 Polytechnics and 117 Engineering colleges in the State.
- 3.3. Reason behind the economic development in the region are, (i) Rajasthan Govt. allowing entrepreneurs to start their businesses by filling self-declaration form, (ii) Exemption from inspections from various departments for first 3 years, (iii) Clearly defined land allotment processes, (iv) All requisite business clearances granted online in defined time, (v) Peaceful labour relations, (vi) Excellent Law & Order situation across the State etc. RIICO Infrastructure is given at **under:** 
  - a) **Robust infrastructure:** Roads, storm water drainage, electricity network and streetlights, water supply, dumping yards etc.
  - b) All **environmental clearances (ECs) acquired** with due care as per the Central and State Government Regulations.
  - c) **Holistic development of industry** with supporting commercial, social, institutional and residential infrastructure (in a few places).
  - d) E-Auction
    - Plots in RIICO Industrial areas are sold through E-Auction.
    - For Online Participation in e-auction, bidder can view the advertisement as well as the relevant information published in Print Media / Website of RIICO.
    - The registered bidder shall also be required to upload requisite KYC documents and fill the project profile in Project Profile Form, the bidder can also download the project profile form and after filling, he can upload the same.
- 3.4. Potential Sectors for Investment is Rajasthan are:
  - a) Resource based Mines & Minerals; Petrochemicals; Food Processing; IT / ITeS
  - b) Market based (Rajasthan and north India) Textile & Apparels; Auto, ESDM; Leather & Footwear; Pharmaceuticals
  - c) Geography based Logistics, Solar and Tourism
  - d) Others Gems and Jewelry, Defence and Chemical

### 4. Economic scenario of Uttar Pradesh:

Some of the major initiatives taken by the government to promote Uttar Pradesh as an investment destination  $are^{68}$ :

- 4.1. In December 2019, Zurich Airport International got the approval from state cabinet to develop and construct the Jewar Aiport.
- 4.2. In 2019, the state recorded the fastest construction of houses under the Pradhan Mantri Awas Yojna with 14.26 lakh houses constructed from 2016-17 to 2019-20.
- 4.3. As per state budget 2019-20, amount of Rs 2,000 crore (US\$ 286.16 million) has been allocated for 'Smart City Mission'.
  - 1. As per Investor Summit 2018, Uttar Pradesh government will majorly focus on key sectors such asIT and ITeS, Dairy, Electronics, Tourism, Manufacturing, Renewable Energy, &Agro & Food Processing
- 4.4. The state is in the process of implementing and testing the public–private partnership model in the power sector with an input-based franchisee system.
- 4.5. The state cabinet approved UP Defence and Aerospace Units and Employment Promotion Policy 2018, with an intention to generate 0.25 million jobs and expects an investment of Rs 50,000 crores (US\$ 7.46 billion) over the next five years.
- 4.6. The state offers a wide range of subsidies, policy and fiscal incentives as well as assistance for businesses under the Industrial and Service Sector Investment Policy, 2004 and Infrastructure & Industrial Investment Policy, 2012.
- 4.7. The Uttar Pradesh Information Technology and Start-up Policy, 2016 is aimed at promoting Uttar Pradesh as a preferred and attractive location for investments for various IT/ITeS companies and for establishing IT Parks as well as IT cities for the development of IT Infrastructure in the state.
- 4.8. The state has proposed 40 IT/ITeS parks (apart from IT SEZs), two biotech zones and a knowledge park.
- 4.9. The Uttar Pradesh State Industrial Development Corporation (UPSIDC) and the Department of Infrastructure and Industrial Development are responsible for the development of industrial infrastructure in the state.
- 4.10. The state has a robust industrial infrastructure, including 15 industrial areas, 12 specialised parks, four growth centres and industrial infrastructure development centres (IIDC). As of February 2020, Uttar Pradesh had 20 notified, 13 operational SEZs and 23 formally, approved SEZs. Merchandise exports from Uttar Pradesh reached US\$ 16.29 billion in 2018-19 and US\$ 12.82 billion in April-December 2019.
- 4.11. In 2018, domestic tourist arrivals in the state were 285 million and stood second. Foreign tourist arrivals had crossed over 3.78 million and rank third.
- 4.12. According to the Department for Promotion of Industry and Internal Trade (DPIIT), cumulative FDI inflows1 in Uttar Pradesh, during April 2000 to September 2019,

⁶⁸https://www.ibef.org/states/uttar-pradesh-presentation

amounted to US\$ 699 million.In 2019, 147 investment intentions worth Rs 16,799 crore (US\$ 4,404 billion) were filed in Uttar Pradesh.

- 4.13. Uttar Pradesh is the most populous state in India, with a large pool of skilled, semiskilled and unskilled labour. Alternately, the population is also looked upon as the largest consumer base in the country with around 200 million people. It is the largest producer of food grains among all states in India and accounted for about 17.83 per cent share in the country's total food grain output in 2016-17. Food grain production in the state in 2017-18 stood at 51,252.7 thousand tonnes and 18,416.3 thousand tonnes in 2018-19. Pulses production in the state stood at 2,208.0 thousand tonnes in 2017-18 (4th Advance estimates) and 660.7 thousand tonnes under kharif season in 2018-19 (1st Advance Estimates).
- 4.14. Production of Vegetables stood 1002.64 thousand MT in 2018-19. The state has become a hub for the semiconductor industry with several major players having their offices and research and development (R&D) centres in Noida.
- 4.15. Between 2011-12 and 2020-21, Gross State Domestic Product (GSDP) expanded at a Compound Annual Growth Rate (CAGR) of 10.59 per cent to Rs 17.91 trillion (US\$ 256.30 billion).

5	Details	of Mai	or ind	ustrial	clusters
J.	Details	UI MIAJ	or mu	usulai	ciusici s

Location	Product	No of units	Employment (Direct)	Turnover (Crores)
Meerut	Auto components	4700	26000	100
	Band Instruments	433	8500	20
	Glass & Wooden beads	3000	15000	0.7
	Mini Gas Cylinders	160	7500	100
	Power loom/ Embroidery	3000	30000	40
	Rubber Products	130	2500	40
	Scissors	225	5000	25
	Sport goods	3500	70000	200
	Transformers and voltage regulators	100	3500	400
Ghaziabad	Chemicals	224	1574	135.54
	Engineering Equipments	635	7400	340
	Pilkhuwa Textile Printing	400	20000	100
	Plastic Packaging	150	10000	350
Bulandshahr	Pottery Cluster Khurja	80	2500	450

Table 2.1: Major Industrial clusters in NCR

Location	Product	No of	Employment (Direct)	Turnover (Croros)
	Khuria Ceramics	600	50000	200
NOIDA	Chamicala	111	20000	100.40
NOIDA	Chemicals	111	2221	109.49
	Auto and engineering item	12000	200000	50000
	Garments	6014	94736	3200
	Packaging Material	124	1800	84.15
	Plastic Products	350	6500	250
Alwar	Auto Components	200	19500	250
Delhi	Auto Components	1500	50000	297.2
	Chemicals	339	3562	337.02
	Engineering Equipments	2691	47000	2,000.00
	Food Products	432	1939	594.28
	Textiles including garment	1901	132000	921.32
	Cosmetic & Packaging	240	7200	100
	Plastic Products	746	16478	54.22
	Rubber Products	178	18684	192.64
	Sanitary Fittings	100	900	30
	Printing & Packaging, Naraina	450	5000	400
Gurgaon	Automobile and engineering	5000	260000	10000
	Rubber & Chemicals	472	11619	907
	Electronic and Electricals	107	3427	702
	Readymade Garments	1310	87380	13000
	Leather and Leather and Fur Products, Manesar	205	35000	867
Panipat	Handloom	1800	23000	
	Powerloom	720	50000	600
	Cotton Spinning and Shoddy Yarn	500	50000	500
	Carpet	400	60000	150
	Home Furnishing Cluster	85	2800	465
	Textile machinery	28	477	32.4

Location	Product	No of units	Employment (Direct)	Turnover (Crores)
	Samalkha Foundry Cluster	30	1200	95
Faridabad	Auto components and engineering	2500	10000	3250
	Chemicals	275	1375	825
	Electrical Engineering Equipments	203	5000	1500
	Textiles	320	7000	3,200.00
Jhajjar	General Engineering	134	1000	70
	Footwear	125	12400	1560
Sonipat	Stainless Steel Cluster- Kundli	72	8000	800
	Chemicals	120	2500	100
	General Engineering	150	3000	100
	Printing and Packaging Cluster, Rai	110	4400	165

Source: Cluster observatory, MSME Foundation

### 6. Details of industrial parks in NCR

Department for promotion of Industry & Internal Trade has developed Industrial Information System (IIS) portal, a GIS-enabled database of industrial areas/clusters across the country to adopt a committed approach towards resource optimization, industrial up gradation and sustainability. There are about 142 industrial parks in the NCR (registered on IIS portal of DPIIT) as detailed in the following table:

Table 2.2: District wise distribution of Industrial Parks in NCR with sector

Sub Region/ District	Number of Industrial Parks	Sector
*NCT Delhi	30	Mixed
Haryana Sub Region		
Faridabad	3	Engineering
Gurgaon	21	Electronics Hardware, Engineering, Mixed,
		Software, Automobiles etc.
Jind	2	Engineering
Jhajjar	2	Automobiles, Electronics Hardware,
		Engineering, Food Processing, Machine Tools,
		Textile
Karnal	2	Engineering
Mahendragarh	1	Engineering
Panipat	4	Chemicals, Textile, Electronics Hardware,
		Software
Rohtak	3	Automobiles, Engineering, Mixed, Food

Sub Region/ District	Number of Industrial	Sector
	Parks	
		Processing
Rewari	2	Automobiles
Sonipat	8	Automobiles, Chemicals, Mixed, Food
		Processing, Engineering
Uttar Pradesh Sub		
Region		
Bulandshahr	3	Mixed
Ghaziabad	8	Mixed
G B Nagar	16	Electronics Hardware, Engineering, Mixed,
		Pharmaceuticals, Software
Meerut	2	Mixed
Muzaffarnagar	2	Mixed
Shamli	2	Mixed
Rajasthan Sub		
Region		
Alwar	26	Mixed, Electronics Hardware, Engineering
Bharatpur	5	Mixed
Total	142	

Source: https://iis.ncog.gov.in/parks/admin/mainDashboardIPRSUrl

*Delhihttps://pib.gov.in/PressReleasePage.aspx?PRID=1602006



# Indicative Map showing Major Manufacturing clusters in NCR



Source: Annual Survey of Industries (ASI) and Knight Frank Research, 2019

Brief about National Infrastructure Pipeline (NIP)

- 1. The National Infrastructure Pipeline (NIP) is a group of social and economic infrastructure projects in India over a period of five years to provide world-class infrastructure across the country, and improve the quality of life for all citizens. It aims to improve project preparation, attract investments (both domestic and foreign) into infrastructure, and will be crucial for target of becoming a \$5 trillion economy by FY 2025.
- 2. As per the Final Report on NIP presented on 29th April 2020, projects worth USD1.5 trillion (INR111 trillion) over FY 2020-2025 has been announced for the projects. Out of the total expected capital expenditure of Rs. 111 lakh crore, projects worth Rs 44 lakh crore (40% of NIP) are under implementation, projects worth Rs 33 lakh crore (30%) are at conceptual stage and projects worth Rs 22 lakh crore (20%) are under development Information regarding project stage are unavailable for projects worth Rs 11 lakh crore (10%). Sectors such as energy (24%), roads (18%), urban (17%) and railways (12%) amount to around 71% of the projected infrastructure investments in India. The Centre (39%) and States (40%) are expected to have almost equal share in implementing the NIP in India, followed by the private sector (21%).
- 3. Subsequently, Atma Nirbhar Bharat Abhiyan, KPMG on 13 May 2020 introduced a USD266 billion (INR20 trillion)with the aim of making the country independent against the tough competition in the global supply chain and to help in empowering the poor, labourers, migrants who have been adversely affected by COVID.

Affordable and clean	<ul> <li>24x7 power availability for allreliable transmission</li> </ul>
energy	and distribution infrastructure
	Reduce pollution through clean energy
Convenient and efficient	Enhanced road connectivity and infrastructure for electric
transportation and logistics	vehicles
	<ul> <li>World-class stations and fully integrated railnetwork</li> </ul>
	<ul> <li>Airports in accordance with NCAP2016</li> </ul>
	<ul> <li>Ports and waterways as per Sagarmala2016</li> </ul>
Doubling farmer	<ul> <li>Increased irrigation andmicro- irrigationcoverage</li> </ul>
income	<ul> <li>Integrated agro-logistics systems from farms to end-</li> </ul>
	consumers
	<ul> <li>Enhanced access toquality inputs</li> </ul>
	<ul> <li>Pumping investments inR&amp;D</li> </ul>
	• Integrated quality assaying infrastructure (soil, water,
	MRL, commodities /output)
	Farm gate infrastructure for primary processing activities
	• Digitally connected agrivalue- chain eco-system with solid
	market intelligenceplatform
	<ul> <li>Digitization of agri-landrecords &amp; creditsystems</li> </ul>

Infrastructure goals, strategies and standards of NIP
0	
Quality education	World-class educational institutes for teaching and     research
	• Technology-driven learning to meet the GER target of 50
	percent
	by 2035 inaccordance with the draft National Education
	Policy 2020
Sustainable and smart	Waste water collection, treatment/recycling meeting
cities	national standards in all towns acrossIndia
	• Smart city infrastructure for mobility entertainment.
	business safety and resilience
T	Lasses data from information and to the locate
Leverage technologylor	• Leverage data from infra services andtechnologyto
publicgood	enhance cost efficiency, access, durability and resilience
	of public infrastructure services and projects
Digital services accessforall	· Providing telecom and high-qualitybroadband coverage to
_	allcitizens
	Facilitatingdigital payments and e-governance infrastructure for
	banking and public services
Housing and water supply	• Providing housing for all by 2022and minimising slum
	population
	• Supplying piped water in line with national standards to all
	householdsby 2024
Good health and well-being	• Superior accessible healthcare infrastructure facilities to meet
Good neutri and wen being	NHP 2017goals
	• Medical para-medical education infrastructure to meet
	manpower needs by 2020 and CHVs by 2025 in accordance
	with the IPHSnorms
Disastan nasilian aa	Design and construct multipling infunctions to must discrete
Disaster resilience	• Design and construct public infrastructure to meet disaster
	resilience

# <u>Mapping NIP sectors with the Infrastructure Vision 2025 themes (illustrative)</u> which could be considered for NCR Area

#### 1. Healthcare

- Standards in infrastructure
- Health UID for all
- Upgradation of government medical colleges
- E-Learning Management System
- Improve bed density
- Increase healthcare spend 2.5 per cent of GDP
- Achieve objective of Mission Indradhanush: attain full immunisation coverage
- Utilisation of teleconsultation: link tertiary care institutions to district and sub-district hospitals
- New medical colleges on PPP basis
- Develop framework for digital healthcare blueprint acrossstates
- Improve medical supply chain logistics for effective emergency response and disastermanagement

Major projects of NIP identified for Rajasthan and Delhi State of NCR: Construction of new AIIMS, upgradation of government medical colleges, setting up of special education and research blocks at government hospitals.

#### 2. Transportation and logistics

- Last-mile connectivity improved access to all remoteareas
- Reclaiming streets forpedestrians
- 100 per cent of the existing railway network electrified
- IncreasedusedofFASTagand tollingbasedon'payperuse' concept
- Onlineticketing
- Building resilience againstrisks
- Measurable reduction in infrastructure losses from disasters
- Higher penetration of technology (automated traffic controllers, speed regulators, digital message boards)
- ExpandregionalairconnectivitytoallTier-2andTier-3cities
- Commercial operations of Jewar Airport

**Major projects of NIP identified for NCR:**Delhi-MumbaiExpressway,Dwarka Expressway and Trans Haryana North-South Expressway, New airports at Jewar, modernization and expansion of airports across metro's inIndia.

#### 3. Energy

- 24x7 clean and affordable power to be available all households, industries, commercial businesses, agriculture in all states and union territories
- Improvingfinancialhealth of Discoms
- Medium termPPAs
- Time of Daytariffs
- Improving subsidy policies
- Quality baselinedata
- Improved scheduling & forecasting
- Public charging infrastructure; including e-highway infrastructure in selectcorridors
- Power System modernization
- Smart metering for all categories of customers, including prepaidmeters

#### There is no specified projects of NIP identified for NCR

#### 4. Agriculture and irrigation

- Improving and modernising cold storage facilities, packaging and processing and processing units and storage infrastructure
- Building of world class agriculture universities and R&Dfacilities
- Doubling of farm incomes by upgrading of 22,000 rural haats into Gramin Agricultural
- Markets (GrAM
- Widespread adoption of e-NAM
- Cropping&credit systems
- Agri-education & extensionsystems
- Ownership&tenancy
- Robust IT and automated systems to track efficient use of water
- Primaryprocessing
- Integrated physical market infra with digital e-marketplaces

• Dedicated perishable logistics infra (road / rail / air-cargo)

**Major projectsof NIP identified for Haryana state of NCR:** Conversion of rural haats into GrAM, agri-market infrastructure, computerization of primary agricultural credit societies, testing facilities, creation of cold chain facilities and mega food parks

#### 5. Education and skilling

- Remotelearning
- Digitallearning solutions
- OverallGERneeds to improve to at least 40 percent
- Focus on research, Grade levellearning
- HEIs inglobal ranking
- Upgrade medical colleges and institutes to strengthen higher education and R&D
- Education institutes that provide state-of- the-art technology to drive learning in line with globalpeers

Major projects of NIP identified for Delhi and Uttar Pradesh in NCR:Construction of AIIMS and medical institutes, more IITs, Central Universities, NITs,IIMs,IISc, IISERs, and MHRD institutions and better school infrastructure and regional institute of education

#### 6. Urban and rural infrastructure

- Improved quality and connectivity of public and mass-transport system
- Availability of public charging infrastructure within 3 km in all cities
- 100 per cent of urban andrural households connected to piped-water supply
- Slum population rehabilitated through PMAY
- Number of green spaces to increase
- Walkability within cities to improve and focuson river front development
- Implementation of urban mobility solutions such as bicycles and e-bikes
- All municipal solid waste to be collected and treated with advanced techniques
- Use of advanced techniques to maintain water quality
- All urban and rural households connected to piped-water supply Jal JeevanMission by 2024

**Major projects of NIP:** Affordable housing, mass rapid transitsystem, Smart City Mission, AMRUT, Jal Jeevan Mission, All rural households to have toilets and all villages to beODF

#### There is no specified projects of NIP identified for any states.

#### 7. Digital infrastructure

- Access to healthcare facilities to remote areas throughmobile
- Access to quality education to remote areas throughmobile
- 5G technology will fuel industry growth and adoption of IoT, cloud, AI and big data
- Universalaccess of broadband by 2022
- Provideseamless connectivity in remoteareas

#### There is no specified projects of NIP identified for any states.

#### 8. Disaster resilience

- Ensuring disaster-resilient infrastructure
- Increasing use of digital technologies in enhancing quality, safety, resilience and efficiency of infrastructure
- Higher emphasis being placed on robust inclusive urban design and planning exercise to better handle any future disasters

There is no specified projects of NIP identified for any states.

#### **Industrial Development in NCR**

Industrial activities in the NCR have evolved over the last three-four decades. To a great extent, industrial activity in the NCR characterized is by the 'scale factor', wherein developments can be characterized by large and medium units, small-scale industries (SSIs) and development in tiny unorganized units.

Industrialization in NCR is concentrated in the sub-regions of Uttar Pradesh (general manufacturing), Haryana (automobile, electronics and Handloom) and Rajasthan (marble, leather and textile). The region accounts for a substantial part of the country's production of cars, motorcycles, and tractors. Industrialization in and around NCR is expected to receive further boost through the proposed creation of Special Economic Zones (SEZs)/industrial zones Make In India.

There are about **100 industrial clusters** in NCR. Most of the clusters are located in Meerut, Ghaziabad, Gautambudha Nagar, Bulandshahr, Delhi, Gurgaon, Faridabad, and Panipat and Alwar districts of NCR which are mainly related to auto component, textiles, general engineering, power looms, carpet, etc.

1. Automotive industry in NCR - NCR has emerged as a modern hub of automotive industry. It produces over 30% of the cars and 50% of two-wheelersin India⁶⁹.Development of automotive and other heavy industries through well planned and integrated Industrial Estates are foreseen to boost economic growth in NCR and to generate ample employment opportunities. Country's largest car manufacturer Maruti Suzuki India chose Gurugram and Honda set up a car plant in Greater Noida. Also Hero MotoCorp has set its two-wheeler plants in Gurugram and Manesar, Honda has a twowheeler plant in Tapukhera (Alwar) and Yamaha a two wheeler plant in Greater Noida. Main attraction for auto manufacturers is availability of manpower – both skilled and shop floor workers has been easily available since the region has large number of engineering colleges with Uttar Pradesh taking the lead. The growth for automotive industry is important for growth in economy, particularly because the automotive industry has strong multiplier effect. Govt. of India aims to make automobile manufacturing the main drive of 'Make in India' initiative, as it expected passenger vehicles market to triple to 9.4 million units by 2026, as highlighted in the Automotive Mission Plan (AMP) 2016-26.

#### Vision for Automotive Mission Plan 2016-26

- By 2026, the Indian automotive industry will be among the top three of the world in engineering, manufacture and export of vehicles and components, and will encompass safe, efficient and environment friendly conditions for affordable mobility of people and transportation of goods in India comparable with global standards, growing in value to over 12% of India's GDP, and generating an additional 65 million jobs"
- Automotive Mission Plan 2026 envisages a 3 3.5x growth in volumes over its tenure.

⁶⁹ Shri Sugata Sen, Deputy Director General, Society of Indian Automobile Manufacturers (SIAM)

- 2. The role of **IT industry** in enhancing the economic development of the country has been acknowledged by the Government of India. So as the case for NCR as there is many IT companies in the region. It has the potential to improve the productivity as well as other dimensions of economic and social development in the region. Strengthening of this sector is one of the major focus areas.
- 3. NCR not only caters to the intrinsic warehousing demand but also acts as a key storage and warehousing hub for the neighboring states and other distant regions in the North.National Logistics Policyand Multi-Modal Logistics Parks (MMLPs)are the key policy initiatives of the Government of India for boosting 'Make in India' program and to improve country's logistics sector. This initiative will lower freight costs, reduce vehicular pollution and congestion and cut warehouse costs to promote domestic and global trade. Development of well planned, integrated and interconnected **Logistics corridors** and **MMLPs** across NCRwill be a milestone to accelerate economic growth of the region. Broad policy framework is given as bellow:

#### 3.1. Key Announcements regarding the National Logistics Policy⁷⁰

- 1) Geo-tagging of all warehousing.
- 2) Warehousing shall be promoted to comply with Warehousing Development and Regulatory Authority (WDRA) norms.
- 3) Viability Gap Funding (VGF) shall be provided for setting up of warehousing at the block
   / taluk levels on PPP mode. Food Corporation of India, Central Warehousing Corporation shall also offer their land for this purpose.
- 4) Village Storage Scheme through Women Self-help groups shall provide backward linkages for seeds thereby reducing logistics costs. Financial assistance under MUDRA loans and NABARD shall be provided for this purpose.
- 5) Cold chains for fish and perishables shall be promoted.
- 6) Refrigerated vans shall be attached to passenger trains to promote quick movement of perishables.
- 7) Krishi trains shall also be run on PPP mode.
- 8) Krishi Udan scheme shall be promoted / launched whereby horticulture and perishable commodities shall be transported through the air-route that will especially benefit the North-East region and tribal area.
- 9) Cluster approach shall be adopted for promoting horticulture. One Product One District shall be encouraged.
- 10) National Organic e-Market will be developed for organic products.
- 11) Financing of negotiable warehousing receipts would be encouraged and also its integration with e-NAM.
- 12) Rs.100 lakh crore National Infrastructure pipeline has been launched which includes over 6500 infrastructure projects and has projects worth Rs.19.6 lakh crore for roads, Rs.13.69 lakh crore for railways, Rs.1.43 lakh crore for airports and Rs.1.01 lakh crore for ports.

⁷⁰ Source: <u>https://commerce.gov.in/writereaddata/UploadedFile/MOC_636850457336854610_Notification-Draft-</u> 05022019.pdf

- 13) Accelerated development of highways will be undertaken. 2500 kms. of access controlled highways, 9000 kms. of economic corridors, 2000 kms. of coastal and land-port roads and 2000 kms. of strategic highways.
- 14) Delhi Mumbai and Chennai Bengaluru express highways to be made operational by 2023.
- 15) 12 lots of highway building consisting of over 6000 kms. shall be offered for monetisation by 2024.
- 16) Governance structure for corporatisation of one major port shall be introduced.
- 17) Inland Waterways especially Jal Vikas Marg (NW1) will be made operational.
- 18) Inland Waterways from Dhubri to Sadia in Assam shall be promoted by 2022.
- 19) Inland Waterways shall be promoted under the Programme called Arth-Ganga i.e., promoting economic activities along with banks of the river.
- 20) 100 more airports shall be established under the UDAN scheme.
- 21) 1200 airplanes shall be added from the present 600.

#### 3.2. NCR Warehousing and Logistics Scenario

#### A. Uttar Pradesh Warehousing and Logistics Policy 2018⁷¹

Uttar Pradesh Warehousing and Logistics Policy 2018 aim at complementing the UP Industrial Investment & Employment Promotion Policy (UP IIEP) 2017, and strengthen the state's foothold in the logistics sector. Its basic objective is to promote private investments in setting up logistics facilities in the state with forward and backward linkages. Govt of UP is already promoting projects such as Integrated Industrial Township at Greater Noida, Multi-Modal Logistics hub at Dadri and Multi-Modal Transport Hub at Boraki.

#### B. Haryana Logistics, Warehousing & Retail Policy, 2019⁷²

Government of Haryana has notified, Haryana Logistics, Warehousing & Retail Policy, 2019 with an objective to create at least five Logistics Parks across Haryana with private sector participation (by 2023) and generate employment to the tune of 25,000 new jobs⁷³.

#### C. Rajasthan Industrial Development Policy, 2019⁷⁴

The Rajasthan Industrial Development Policy, 2019 states that assistance shall be provided for developing Multimode Logistics Hubs, Logistics Parks, Cold Chains and Inland Container Depot shall be provided to strengthen the logistics infrastructure.

### 3.3. Major warehousing clusters in NCR⁷⁵

⁷¹ Source: <u>https://niveshmitra.up.nic.in/Documents/DraftPolicies/UPWarehousingandLogisticsPolicy_2018.pdf</u>

⁷²http://www.egazetteharyana.gov.in/Gazette/Extra-Ordinary/2019/88-2019-Ext/8310.pdf

⁷³ Source: <u>https://investharyana.in/content/pdfs/Notified%20LWR%20policy.pdf</u>

⁷⁴ource:http://www.industries.rajasthan.gov.in/content/dam/industries/pdf/riico/policies/Rajasthan%20Industrial%20Poli cy/Rajasthan%20Industrial%20Development%20Policy%202019.pdf

⁷⁵ Source: Source: Knight Frank Research – NCR WAREHOUSING MARKET REPORT, 2018

- a) According to a Knight Frank "India Warehousing Market Report-2018", Logistics cost in India accounts for 13-14% of the Gross Domestic Product (GDP) which is nearly double (6-9%) the logistics cost to GDP ratio in developed countries such as the US, Hong Kong and France.
- b) Delhi NCR being of the largest consumer of manufacturing good and retail market, Historically, warehousing activities in NCR have been concentrated in the peripheral areas of New Delhi, such as Alipur, GT Road, Kapashera, Bamnoli, Dhulsiras and Okhla, with godown-type structures dominating the landscape. As land prices became unfeasible for such activities, they slowly started shifting outside the Delhi border. In the southern region, markets such as Kherki Daula and Manesar on NH-8 started attracting warehousing activities, while Kundli and Sonipat on NH-1 in the northern region developed as alternative markets. Similarly, NH-91, NH-24 and NH-58 near Ghaziabad became attractive for warehousing activities as land prices on GT Road became unviable. Over the last ten years, with residential and commercial development mushrooming on the NH-8 stretch, warehousing activities have gradually shifted towards locations on the internal roads of Haryana.
- c) These locations are just off the main national highway but well connected to it. Locations such as the Gurgaon-Pautaudiroad, Jamalpur-Panchgaon road, Bilaspur-Tauru road and Barota have witnessed a phenomenal growth in terms of warehousing space over the last decade. Similarly, Dharuhera on NH-8 and Palwal on NH-2 have observed massive warehousing development in recent years.
- d) Various warehousing markets are classified into two major clusters: NH-8 cluster and Ghaziabad cluster, based on factors such as geographical location, proximity to the national highway, and access to the Delhi city centre and distance from the major manufacturing hubs. These two clusters collectively account for the majority of the warehousing space demand in the NCR market.
- e) Currently, NCR's total requirement for warehousing space is estimated to be 223 mn sq ft, of which more than 80%, or 187 mn sq ft, is from the manufacturing sector. However, the majority of the warehousing requirement of the manufacturing sector is fulfilled by captive space, either in terms of space at the manufacturer's plant or company owned warehouses. Such leasable market in NCR is currently estimated to be in the range of 100-120 mn sq ft. However, the share of annual transacted volume is approximately 7mn sq ft.
- f) The E-tail sector has emerged as a major driver for the incremental warehousing space requirement in recent years and currently accounts for 14% of the total space requirement of the consumption led demand. While brick-and-mortar stores still lead in terms of space requirement, at 31 mn. sq ft, the E-tail segment contributes upto 5 mn sq ft. However, the current estimated space requirement from the E-tail segment to increase by 60%, to more than 8 mn sq ft in 2020.
- g) With the development of major national highways in south west NCR and Peripheral Expressway or Kundli Ghaziabad-Palwal (KGP) Expressway and the Western Peripheral Expressway in west and eastern part of the NCR, logistrics and warehousing facilities started developing in the areas like Palwal, Sohna, Faridabad, Noida-Greater Noida, Alipur, Kundli, Sonipat, Murthal, Barota and Mundka and

along these corridors due to the presence of better and cheaper road and rail infrastructure.



Indicative Map of NCR showing warehousing locations

Source: India Warehousing Market Report 2019 by Knight Frank India

#### Warehousing space requirements of major manufacturing industries in NCR



Note: The warehousing space requirement mentioned in the chart above is the total space requirement (estimated warehouse stock) as of April 2016. This is calculated on the basis of the latest output data from ASI.The majority of the warehousing requirement of the manufacturing sector is fulfilled by captive space, either in terms of space at the manufacturer's plant or companyowned warehouses

Demand for warehousing in NCR is on a upward swing with a year to year

Source: Knight Frank Research – NCR WAREHOUSING MARKET REPORT, 2018

#### Total requirement for warehousing space in NCR, 2018



Share in output of the various manufacturing industries in NCR



Source: Annual Survey of Industries (ASI) and Knight Frank Research, 2018- NCR WAREHOUSING MARKET REPORT

4. India is the world's second largest producer of fruits & vegetables after China but hardly 25 of the produce is processed⁷⁶. Food Processing Industry (FPI) has enormous significance as it provides vital linkages and synergies between the two major pillars of the economy i.e. agriculture and industry. Agro & Food Processing Industries has a vital potential & role for NCR's economy and growth. Total production of various types of fruits, vegetables and spices in NCR in year 2015-16 was around 6690 thousand MT. Detail of production Vegetables, Fruits and Spices in NCR districts and Raw Material based Agro & Food Processing Enterprises is given below. The organised milk market in the region, estimated at five million litres per day, is growing at 6-8 per cent annually⁷⁷.

Sl.	Sub-Region	Districts	Major Fruit	Major Vegetable
No.				
1.	U.P.	Meerut, Hapur, Baghpat,	Mango, Guava,	Cauliflower, Okra,
		Ghaziabad, Gautam Budh	Peach, Litchi	Turnip, Cabbage,
		Nagar and Bulandshahr		Brinjal, & Potato
2.	Haryana	Sonipat and Mewat	Guava, Mango,	Potato, Cauliflower,
			Watermelon,	Tomato, Onion, Radish,
			Muskmelon	Leafy Vegetables,
				Cabbage, Brinjal,
				Carrot, Bottle Gourd
3.	Rajasthan	Alwar	Nil	Onion, Carrot

Table 3.1: District wise Fruits and Vegetables Produced in NCR

Source: Ministry of Food Processing Industries, Government of India⁷⁸ⁱ

5. As per Functional Plan for Micro and Household Enterprises in NCR, there are more than 42 lakh MSMEs in the region. Among these MSMEs about 86,000 are micro & small scale enterprises, employing over 9-10 lakh people. MSMEs including Khadi & Village Industries, handicrafts, Pottery, Sports Goods & other small & medium size enterprises has a vast economic potential in NCR which is proposed be harnessed in accordance with the prevalent MSME Act, polices and schemes of the Govt. of India and various NCR

⁷⁶ Source: <u>https://www.drishtiias.com/to-the-points/paper3/food-processing-in-india</u>

⁷⁷ Source: <u>https://www.ibef.org/states/delhi.aspx</u>

⁷⁸ Source: <u>http://mofpi.nic.in/Schemes/agro-processing-cluster</u>

participating States initiatives.

6. Electronics System Design and Manufacturing (ESDM) sector: The ailing electronics hardware industry of India got a strong boost with the setting up of an electronics manufacturing cluster (EMC) in Bhiwadi & Neemrana , Rajasthan. Launched under the Electronics Manufacturing Cluster Scheme 2012 and backed by Electronic Industries Association of India (ELCINA), the Bhiwadi EMC is a greenfield project spread across 100 acres. As of now, 19 domestic component makers have invested in the cluster, having committed over US\$ 150 for Phase I. The overall investment in this EMC is ₹ 2.19 billion, and it has the capacity to accommodate almost 50 companies. the growth of the ESDM sector in the NCR is expected to grow tremendously after the UP government announced its plans to promote the Noida, Greater Noida and Yamuna Expressway area as an electronics & Information Technology (MeitY), Govt. of India⁸⁰ in Integrated Industrial Township at Greater Noida & Ghaziabad in U.P. sub-region and in Sonipat, Jhajjar, Palwal, Faridabad, Gurugram, Bawal and Dharuhera areas of Harayna sub-region in NCR considering the requirements of the sector.

**Electronic Manufacturing Clusters (EMC) Scheme**⁸¹ - To make India a global player in the field of Electronics Manufacturing and to offset disabilities faced by industries for reliable infrastructure, Electronics Manufacturing Clusters (EMC) scheme was notified vide notification no. 252 dated 22nd October, 2012 to provide support for creation of world-class infrastructure for attracting investments in the Electronics Systems Design and Manufacturing (ESDM) Sector. For effective functioning of the scheme, a set of guidelines for operationalization of the EMC scheme were issued on 15th April 2013. The guidelines for EMC contains the requisite project parameters, detailed terms and conditions of the scheme along with the applications forms for making preliminary and final application. The EMCs scheme provides grant assistance for setting up of both Greenfield and Brownfield EMCs across the country. The financial assistance under the scheme is in the form of grant-in-aid only.

The application form for making application for Greenfield EMCs and Brownfield EMCs are provided on the website of Ministry of Electronics & Information Technology, Government of India. An application can be made by an SPV created for the purpose or by a Chief promoter who may be a public sector or private sector entity.

All the applications received under the EMC scheme are considered by Steering Committee for Cluster (SCC) for giving its recommendations to the Government for accord of in- principle / Final approval. Detailed Scheme and Guidelines can be seen on MeitY website:

 ⁷⁹Source: <u>https://www.electronicsb2b.com/headlines/delhi-ncr-generating-growth-opportunities-diverse-segments-economy/</u>
 ⁸⁰Source: <u>https://meity.gov.in/content/archive-list-notified-electronics-manufacturing-clusters-purpose-m-sips</u>

⁸¹ Source: <u>https://meity.gov.in/esdm/clusters</u>

- 7. **Airports**: The Indira Gandhi International (IGI) airport is India's largest and the world's 16th most busy airport as per the Airports Council International (ACI). As per technoeconomic feasibility report (TEFR) by PwC (Price Waterhouse Cooper) the IGI and upcoming second international airport in Jewar (to be operational by 2022) will cater to over 300 million passengers annually, by 2050. As per the report the IGI airport currently serves over 60 million passengers annually. The Jewar international airport, which will be completed in four phases, over an area of 5,000 hectares in Uttar Pradesh sub-region, will have four runways. Airport at Jewar may serve a total annual passenger demand of around 5 million which may go up to 16 million by 2029-30, 71 million by 2043-44 and continue to operate at around 77million till end of the concession. Overall cargo demand at the proposed airport is expected to be around 0.4 million metric tons in 2022-23 and reach up to 2.9 million metric tons by 2049-50⁸².
- 8. Attractive Startup Zone and Incubator facilities: During 2017, Delhi-NCR was ranked second, after Bengaluru, as the technology hub of India. As on April, 2020, there were about 20887 Startups(about10,927 tech startups⁸³) in NCR, including startups in the financial and consumer services fields. Delhi-NCR also hosts the highest number of online retail startups a total of 1,288. Major online startups like Ibibo, Lenskart, Paytm, Snapdeal, Shopclues and Policy Bazaar are based in NCR.As per India Angel Report 2017⁸⁴ NCR continues to attract the largest share of investment whereas Bengaluru share declined. During 2017, Delhi NCR received up to 33 percent of angel investments, whereas Mumbai, Chennai and Bengaluru received only 14 percent, 12 percent and 10 percent, respectively. One of the crucial reasons for startups choosing Delhi-NCR above Bengaluru or any other metro is the presence of the strong network of business incubators in the region, which fuel their growth, giving them the thrust they need to take that giant leap into the entrepreneurial world. Sub-region &city wise no. of startups recognized and non-recognized with DPIIT are given in the following tables:

State	City	No. of Startups	<b>DPIIT Recognized Startups</b>
Rajasthan	Alwar	110	33
	Bharatpur	24	24
Uttar	Ghaziabad	1124	352
Pradesh	Noida	2341	935
	Meerut	286	60
Haryana	Gurgaon	2312	1125
	Faridabad	863	310
	Panipat	125	43
	Sonipat	119	38
	Rohtak	92	27
Delhi	Delhi	7567	2717
	New Delhi	5924	2268
NCR	Total	20887	7932

⁸² Source: <u>http://environmentclearance.nic.in/writereaddata/online/EC/170620191KAW3B3CPFR.pdf</u>

⁸³ Source: https://tracxn.com/explore/Startups-in-Delhi-NCR/

⁸⁴ Source: https://www.innovencapital.com/wp-content/uploads/2018/11/Innoven-Capital-India-Angel-Report-2017.pdf

Source: Startupindia portal⁸⁵

Note: DPIIT recognized startups receive Intellectual Property Rights (IPR) benefits, relaxation in public procurements norms, self-certification under Labour & Environment law etc.

#### Table 3.3: NCR District Wise Recognition Startups Analysis

State	District	Total Startups Recognized	2016	2017	2018	2019	2020	Startups with atleast one female director	Percentage of Startups with atleast one female director
	SOUTH DELHI	1004	30	181	257	304	232	444	44%
	SOUTH WEST DELHI	748	12	158	196	185	197	357	48%
	EAST DELHI	659	9	100	193	192	165	309	47%
	NORTH WEST DELHI	564	11	100	129	175	149	233	41%
	WEST DELHI	528	5	98	146	143	136	231	44%
Delhi	SOUTH EASTDELHI	340	0	0	64	169	107	157	46%
	CENTRAL DELHI	281	5	55	60	96	65	113	40%
	NEW DELHI	177	2	17	41	52	65	80	45%
	NORTH DELHI	170	0	21	53	43	53	78	46%
NO DI	NORTH EAST DELHI	92	0	8	22	38	24	41	45%
	SHAHDARA	63	0	4	23	21	15	30	48%
	Not Provided	4	0	0	0	2	2	1	25%
	Alwar	48	1	10	13	8	16	20	42%
Rajasthan	Bharatpur	10	0	1	1	2	6	3	30%
	Gautam Buddha Nagar	1078	8	135	261	356	318	544	50%
	Ghaziabad	465	7	70	118	135	135	247	53%
	Meerut	76	1	11	19	27	18	40	53%
Uttar	Muzaffarnagar	14	0	3	5	4	2	5	36%
Pradesh	BULANDSHAHR	13	0	1	6	0	6	7	54%
	Hapur	9	0	1	1	3	4	4	44%
	Baghpat	4	0	2	0	1	1	2	50%
	Shamli	3	0	0	0	0	3	1	33%
Haryana	Gurugram	1360	17	190	312	502	339	629	46%

## (a) District wise trends⁸⁶

⁸⁵ Source: <u>https://www.startupindia.gov.in/content/sih/en/search.html?roles=Startup&page=0</u>

⁸⁶ Data as of 6th September 2020

State	District	Total Startups Recognized	2016	2017	2018	2019	2020	Startups with atleast one female director	Percentage of Startups with atleast one female director
	Faridabad	231	7	20	57	76	71	124	54%
	Panipat	53	0	4	б	24	19	16	30%
	Sonipat	50	0	3	11	15	21	19	38%
	Karnal	48	1	6	5	21	15	20	42%
	Rohtak	41	0	6	14	7	14	20	49%
	Jhajjar	25	0	0	12	6	7	10	40%
	Rewari	13	0	0	5	5	3	6	46%
	Bhiwani	12	0	0	7	1	4	5	42%
	Jind	9	0	2	3	2	2	2	22%
	Mahendragarh	6	0	0	2	3	1	4	67%
	Charki Dadri	4	0	0	3	1	0	3	75%
	Palwal	4	0	0	0	3	1	2	50%
	Nuh (Mewat)	0	0	0	0	0	0	0	0%
NCR Total		8206	116	1207	2045	2622	2216	3807	

# b. Top Sectors⁸⁷

State	District		Top Sectors			
	SOUTH DELHI	Healthcare & Lifesciences	IT Services	Education		
Delhi	SOUTH WEST DELHI	IT Services	Education	Healthcare & Lifesciences		
	EAST DELHI	IT Services	Professional & Commercial Services	Healthcare & Lifesciences		
	NORTH WEST DELHI	Healthcare & Lifesciences	IT Services	Education		
	WEST DELHI	IT Services	Education	Healthcare & Lifesciences		
	SOUTH EAST DELHI	IT Services	Education	Healthcare & Lifesciences		
	CENTRAL DELHI	IT Services	Education	Healthcare & Lifesciences		
	NEW DELHI	IT Services	Professional & Commercial Services	Healthcare & Lifesciences		
	NORTH DELHI	Healthcare & Lifesciences	IT Services	Construction		
	NORTH EAST DELHI	Professional & Commercial Services	IT Services	Education		

⁸⁷ Data as of 6th September 2020

State	District	Top Sectors				
	SHAHDARA	Education	Healthcare & Lifesciences	Retail		
	Alwar	Agriculture	Education	Healthcare & Lifesciences		
Rajasthan	Bharatpur	Agriculture	Education	Healthcare & Lifesciences		
	Gautam Buddha Nagar	IT Services	Education	Professional & Commercial Services		
Uttar	Ghaziabad	IT Services	Education	Healthcare & Lifesciences		
Pradesh	Meerut	IT Services	Education	Healthcare & Lifesciences		
	Muzaffarnagar	IT Services	Enterprise Software			
	Bulandshahr	IT Services	Construction	Marketing		
	Hapur	Healthcare & Lifesciences				
	Baghpat	Agriculture	Automotive	Finance Technology		
	Shamli	Education	Enterprise Software	Fashion		
	Gurugram	IT Services	Healthcare & Lifesciences	Education		
	Faridabad	IT Services	Healthcare & Lifesciences	Education		
	Panipat	Construction	Non- Renewable Energy			
	Sonipat	Technology Hardware	Healthcare & Lifesciences			
	Karnal	Construction	Healthcare & Lifesciences			
Haryana	Rohtak	Education	Healthcare & Lifesciences	IT Services		
2	Jhajjar	IT Services	Construction	Healthcare & Lifesciences		
	Rewari	Education	Green Technology	Healthcare & Lifesciences		
	Bhiwani	Construction	Education	Healthcare & Lifesciences		
	Jind	Education	Professional & Commercial Services			
	Mahendragarh	Marketing	IT Services			
	Charki Dadri	Chemicals	Construction	Education		
	Palwal	Education	IT Services	Professional & Commercial Services		

## c. Incubators in the Districts

State	District	Incubator Name
		ANDC inStart Foundation
Delhi N/A		Clean Enery International Incubation Center
		DUCIC MSME Technology Business Incubator, Cluster Innovatio Centre, DU

State	District	Incubator Name
		DPSRU Innovation & Incubator Foundation (DIIF), Delhi Pharmaceutical Sciences and Research University
		DTU INNOVATION AND INCUBATION FOUNDATION (DTU IIF),Delhi Technological University (DTU)
		Foundation for Innovation and Technology Transfer(FITT),IIT Delhi
		IAN mentoring & incubation services
		IGDTUW Anveshan Foundation
		IIITD Innovation & Incubation Center
		Incubation Research Foundation
		Pusa Krishi Incubator, Indian Agricultural Research Institute, New Delhi
		Indigram Labs Foundation
		National Centre for Integrated Pest Management, New Delhi
		North Eastern India-ASEAN Chamber of Commerce & Industry
		NSUT IIF,Netaji Subhas University of Technology
		Shriram Institute – Technology Business Incubator (SRI-TBI),Shriram Institute for Industrial Research
		Springboard Solutions Pvt. Ltd. (This is 91 Springboard at multiple locations)
		SSCBS Innovation and Incubation Foundation (SIIF), SSCBS, DU
		Technology based Incubator Society (TBIS)
		ZTM-BPD, IARI
	Alwar	Alwar Institute of Engineering Technology
Rajasthan	Bharatpur	Directorate of Rapeseed Mustard Research, Bharatpur, Rajasthan
	Bharatpur	Incubation Center at Government Engineering College, Bharatpur
	Ghaziabad	Hi Tech Institute of Engg. & Technology
Uttar	Ghaziabad	TBI - KIET Group of Institutions
Pradesh	Meerut	IIMT College Of Medical Sciences Meerut
	Meerut	Shobhit University
	Faridabad	I C Bose University of Science and technology, YMCA, Faridabad
	Faridabad	BSC BioNEST Bio-Incubator
	Rohtak	Pandit Lakshmi Chand State Performing University, University of Visual Arts, Rohtak
	Gurugram	AIC-Sangam Innovation Foundation
Haryana	Gurugram	Centre of Excellence for Internet of Things (CoE – IoT)
	Gurugram	GoH-IAMAI Mobile10X Hub
	Gurugram	NASSCOM 10 000 Startups
	Gurugram	NASSCOM CoF IoT
	Gurugram	IAMAI Mobile10X

# Incubator facilities⁸⁸

⁸⁸ Source: https://www.electronicsb2b.com/headlines/delhi-ncr-generating-growth-opportunities-diverse-segmentseconomy/

From providing mentorship to entrepreneurs and sharing office space, to enabling networking opportunities and access to investors, a business incubator offers every type of assistance that a startup may require in the early stages. There are about 575 incubators in India and out of which about 83 incubators are in NCR as given in the table below:

Sub-region	City	No. of Incubators
Delhi	Delhi	55
Uttar Pradesh	Ghaziabad	2
	Noida	9
Haryana	Gurgaon	14
	Faridabad	3
Rajasthan	-	-
NCR (Total)		83

Table 3.4: City wise No. of Incubators in NCR

Source: Startupindia portal⁸

These incubators provide support and assistance to startups to succeed and help the young entrepreneurs to resolve the issues related to workspace, seed funding, mentoring and training. Some of the incubators that are supporting startups in Delhi-NCR are as under:

a) **Amity Innovation Incubator:** Established in 2008, the Amity Innovation Incubator (AII) centre is run by Amity University. This Noida based incubator is a registered 'not for profit' society backed by an advisory body consisting of industrialists, venture capitalists, technical specialists and managers. The motive of this incubator is to enable entrepreneurs to realise their dreams by providing a range of infrastructure, business advisory, mentoring and financial services.

*Benefits offered:* The AII mentors startups in the areas of e-learning, bio-fuels, software testing, mobile testing, clinical data management, media and e-commerce. The centre has incubated more than 100 companies and claims to have generated employment for around 3,500 people so far.

b) **Electropreneur Park**: Funded by the Ministry of Electronics and IT (MeitY), the Electropreneur Park was launched in 2015 with a target to incubate 50 ESDM startups over the first five-year period. Situated at the University of Delhi, South Campus, the centre was created to promote, develop and mentor breakthrough innovations in the ESDM sector.

*Benefits offered:* The platform offers a state-of-art electronics lab and prototyping machines to enable startups to build electronic products within a short turnaround time. The centre offers mentorship by industry veterans and academicians in the ESDM domain, apart from providing access to funding agencies to facilitate seed funding for promising ventures.

c) **Indian Angel Network (IAN) Incubator**: The IAN was started in April 2006, and comprises a network of angel investors interested in funding early-stage businesses that have the potential to create disproportionately high value. The centre helps startups scale up and create value quickly.

*Benefits offered:* Along with funding, the incubator offers constant access to high quality mentoring, a diverse network of resources as well as suggestions on strategy and operations.

⁸⁹ Source: <u>https://www.startupindia.gov.in/content/sih/en/search.html?roles=Startup&page=0</u>

Technology Based Incubator (TBI): Located in the University of Delhi, South Campus, TBI was established in 2009 with the aim to help startups and early-stage businesses in the areas of industrial microbiology and biotechnology, with an emphasis on the fermentation-based production of different bioactive molecAnnexure-D-1.4

# **Brief of Central Government initiatives for Economic Development & Income Generation**

- 1. Deen Dayal Antyodaya Yojana National Rural Livelihoods Mission (NRLM)⁹⁰ and National Urban Livelihoods Mission (NULM)⁹¹- enabling rural & urban poor to increase household income through sustainable livelihood enhancements, gainful self employment and skilled wage employment opportunities and improved access to financial services.
- 2. Startup India⁹² a flagship initiative of the Government of India (launched January 2016), intended to build a strong eco-system for nurturing innovation and Startups in the country that will drive sustainable economic growth and generate large scale employment opportunities. The Government through this initiative aims to empower Startups to grow through innovation and design. In order to meet the objectives of the initiative, Government of India announced Startup India Action Plan that addresses all aspects of the Startup ecosystem. With this Action Plan the Government hopes to accelerate spreading of the Startup movement: The Action Plan is divided across the following areas:
  - a) Simplification and Handholding
  - b) Funding Support and Incentives
  - c) Industry-Academia Partnership and Incubation
- 3. Modernisation and Strengthening of Intellectual Property Office (MSIPO)⁹³- the objective of the scheme is to strengthen the capabilities of the Intellectual Property Offices in India; to develop a vibrant Intellectual Property regime in the country; and also to develop modern infrastructure for the Indian Patent Offices to function as an International Search Authority and International Preliminary Examining Authority in order to meet the requirements for international registration of Trade Marks. During last five years focus of the scheme was on infrastructure development, augmentation of human resources, and enhancement in quality of service, computerisation and improvement in IT infrastructure. Training of personnel and outreach activities were the other objectives. The implementing agency in respect of the Scheme has been identified as the office of the Controller General of Patents, Designs and Trademarks (CGPDTM).
- 4. Project Based Support to Autonomous Institutions-National Productivity Council

⁹⁰https://vikaspedia.in/social-welfare/rural-poverty-alleviation-1/schemes/aajeevika ⁹¹https://nulm.gov.in/

⁹²https://dipp.gov.in/programmes-and-schemes/industrial-promotion/startup-india

⁹³<u>https://dipp.gov.in/programmes-and-schemes/intellectual-property-rights/modernisation-and-</u> strengthening-intellectual-property-office-msipo

(NPC)⁹⁴ - a tripartite character, wherein Government, Industry and Labour are equally represented. The main objectives of the Council are to increase awareness of productivity and demonstration of the concepts and techniques of Productivity in all the sectors of the economy. NPC undertakes management and technological consultancy, training and information services in various productivity subjects for the benefit of its clients. The specialized productivity functions dealt by NPC are Process Management, Environment Management, Information Technology and Knowledge Management, Energy Management, Human Resource Management, Agri-business Technology Management etc.

- 5. India International Convention & Expo Centre (IICC, Dwarka) The Government of India has approved development of India International Convention and Expo Centre (IICC) in Sector-25, Dwarka, NewDelhi & allied infrastructure in PPP and non-PPP Mode at an estimated cost of Rs.25,703 crore by the year 2025. Development of Exhibition& Convention space, arena, trunk infrastructure, Metro/NHAI connectivity, hotels, office and retail space etc. are visualised in the project. For development of this project, a Special Purpose Vehicle (SPV) i.e. India International Convention and Exhibition Centre Limited (IICC Ltd), a 100 % owned and controlled Company by Government of India represented through Department for Promotion of Industry and Internal Trade (DPIIT) has been incorporated on 19th December, 2017. Development of the project is visualised in two phases. In Phase-1, trunk infrastructure along with Exhibition-cum-Convention Centre is likely to be operational in 2020. This phase is being implemented as non-PPP component. The remaining Exhibition Area such as hotels, retail and others to be developed by PPP developers in Phase – II and would be completed by 2025⁹⁵
- 6. Industrial Corridors-
  - 6.1. Delhi Mumbai Industrial Corridor (DMIC)⁹⁶-A mix of road, rail, port and airport, the DMIC was launched to change the business landscape, in pursuance of an MOU signed between the Government of India and the Government of Japan in December 2006. DMIC Development Corporation (DMICDC) incorporated in 2008, is the implementing agency for the project. DMICDC has been registered as a company with 49% equity of Government of India, 26% equity of the JBIC and the remaining held by government financial institutions. The Japanese Government had also announced financial support for DMIC project to an extent of US\$ 4.5 billion in the first phase for the projects with Japanese participation involving cutting edge technology. Key features of the project are:
    - a) The project spans the States of Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra along the Western Dedicated Freight Corridor (DFC) of the railways. Initially, 8 nodes/cities in the six DMIC states have been taken up for development.
    - b) SPVs have been constituted in Five DMIC projects.
    - c) Four DMIC projects are ready to be launched. The details of the projects are given below:
      - Ahmedabad-Dholera Special Investment Region in Gujarat
      - Shendra-Bidkin Industrial Park in Maharashtra

⁹⁴<u>https://dipp.gov.in/programmes-and-schemes/others/project-based-support-autonomous-institutions-</u> national-productivity-council

 ⁹⁵<u>https://dipp.gov.in/policies-and-schemes/india-international-convention-expo-centre-licc-dwarka</u>
 ⁹⁶https://dipp.gov.in/iapan-plus/delhi-mumbai-industrial-corridor-dmic

- Integrated Industrial Township Project in Greater Noida, Uttar Pradesh
- Integrated Industrial Township Project in Vikram Udyogpuri in Ujjain, Madhya Pradesh.
- d) Land has been transferred to the SPVs by the concerned State Governments. Matching equity by DMIC trust has been released to the SPVs.
- e) Master Planning, Environment Clearance and legal framework, authorizing power to SPVs have been completed.
- f) Work on Trunk Infrastructure packages which includes Common Effluent Treatment Plant (CETP), Administrative Business Centre (ABC), Water Treatment Plant (WTP), Sewage Treatment Plant (STP) and Roads and Services are ready to commence after finalization of tenders which have already been floated.



Map 5.1: Delhi Mumbai Industrial Corridor Source: <u>https://dipp.gov.in/japan-plus/delhi-mumbai-industrial-corridor-dmic</u>

6.2. Amritsar Kolkata Industrial Corridor (AKIC)⁹⁷- The Government of India is developing Amritsar-Kolkata Industrial Corridor (AKIC) along the alignment of the Eastern Dedicated Freight Corridor (EDFC) traversing a route length of 1839 km in six States. The objective of AKIC would be to optimise the present economic and employment potential of the region, stimulate investments particularly in the manufacturing, agro-processing, services and export oriented units and promote overall economic development of the area through creation of high standard infrastructure and an enabling pro-business environment. The AKIC is proposed to be developed in a band of 150-200 Kms on either side of EDFC, in a phased manner. The AKIC will have an influence area across seven States of Punjab, Haryana, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand and West Bengal.



Map 5.2: Amritsar Kolkata Industrial Corridor

Source: Maps of India

7. Scheme for implementation of National Manufacturing Policy⁹⁸ (NMP) - The Scheme covers the components of National Manufacturing Policy. These components are (i) Cost of Master Planning of National Investment & Manufacturing Zones (NIMZ) and (ii) Technology Acquisition and Development Fund (TADF). However, the scheme component TADF has been transferred to M/o Micro, Small and Medium Enterprises (MSME) on 16th September, 2016 and is now

⁹⁷<u>https://dipp.gov.in/sites/default/files/ic-annex3.pdf</u>

^{98&}lt;u>https://dipp.gov.in/sites/default/files/po-ann3.pdf</u>

being implemented by the Ministry⁹⁹.

- 8. E-commerce can be the driver of overall economic growth over the next decade through its impact on generating demand, expanding manufacturing, employment generation and greater transparency. A Committee, chaired by CEO, NITI Aayog examined issues related to the e-commerce industry and made recommendations for the sector's growth including increasing internet access, digitizing payments, further improving transportation infrastructure, logistics and distributed warehousing support. Refer Market Study on E-Commerce in India-2020 conducted by CCI given at Annexure-P-1.7.1
- 9. The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014¹⁰⁰. Some of the major provisions are as under:
  - a. Street Vendors have been defined to include 'any person engaged in vending of articles, goods, food etc or offering services to the general public in a street lane, sidewalk, footpath, pavement, public park, or any other public or private area. It includes hawkers, peddlers, and squatters.
  - b. Any person above 14 years of age, who is a street vendor has to register him/herself with the Town Vending Committee (TVC).
  - c. The TVC shall have a 40% representation from street vendors and another 10% from civil society. The remaining would be represented by local authorities, residential associations etc..
  - d. Every street vendor has to obtain a certificate of vending from TVC, for which he/she will be issued with an identity card.
  - e. The local authorities shall frame a street vending plan, which shall be revised every 5 years. The plan should contain free vending zones, restricted vending zones, and novending zones.
  - f. The local authorities can relocate the street vendors in case of causing a public nuisance. The relocated street vendor shall be provided a new site for vending.
  - g. The local authority is also empowered to confiscate the goods of the vendors in the manner specified in the street vending scheme.
  - h. The duties of the local authority to include monitoring and supervising the street vendor scheme, monitoring the effectiveness of the TVC and deciding appeals.
  - There is also a provision to provide credit insurance and welfare schemes to the street i. vendors by the appropriate government.
  - j. There is a provision for independent Grievance Redressal Mechanism composing a retired judicial officer.

⁹⁹https://dipp.gov.in/programmes-and-schemes/manufacturing-industrial-policy/scheme-implementation-nationalmanufacturing-policy-nmp ¹⁰⁰http://legislative.gov.in/sites/default/files/A2014-7.pdf

d) ules. Along with the support of the Department of Science and Technology (DST), this incubator also has a close association with the National Research Development Corporation (NRDC), the Federation of Indian Chambers of Commerce and Industry (FICCI), the Association of Small and Medium Entrepreneurs (ASME), and others.

*Benefits offered:* The most crucial benefit offered by TBI is product development. In addition, it also provides a unique interface between academia and industry, where laboratory scale research can be converted into pilot manufacturing processes.

9. Tourism sector: Delhi along with its surrounding cities and neighboring areas one of the key arrival destinations for both foreign and domestic tourists. As per India Tourism Statistics, 2019, in NCT Delhi about 2.9 Cr. domestic and about 27.4 lakh foreign tourists were recorded during 2017 and which were almost same during 2018. In respect of foreign tourist visits in 2018, the top 5 States/UTs were Tamil Nadu (6.1 million), Maharashtra (5.1 million), Uttar Pradesh (3.8 million), Delhi (2.7 million) and Rajasthan (1.8 million), with their respective shares being 21.0%, 17.6%, 13.1%, 9.5% and 6.1% These 5 States/UTs accounted for about 67.3% of the total foreign tourist visits to the States/UTs in the country¹⁰¹. The percentage share of Foreign Tourist Arrivals in India during March 2020 among the top 15 ports was highest at Delhi Airport (27.39%). This shows that tourist's inflow and related activities will enrich Delhi-NCR economy through its multiplier effect. In future multiplier effect of tourism will be of immense importance for NCR economy due to joint presence of Delhi IGI airport and upcoming Jewar airport.

¹⁰¹<u>http://tourism.gov.in/sites/default/files/Other/India%20Tourism%20Statistics%202019.pdf</u>

# **Brief of Central Government initiatives for Economic Development & Income Generation**

- 10. Deen Dayal Antyodaya Yojana National Rural Livelihoods Mission (NRLM)¹⁰² and National Urban Livelihoods Mission (NULM)¹⁰³ enabling rural & urban poor to increase household income through sustainable livelihood enhancements, gainful self employment and skilled wage employment opportunities and improved access to financial services.
- 11. Startup India¹⁰⁴ a flagship initiative of the Government of India (launched January 2016), intended to build a strong eco-system for nurturing innovation and Startups in the country that will drive sustainable economic growth and generate large scale employment opportunities. The Government through this initiative aims to empower Startups to grow through innovation and design. In order to meet the objectives of the initiative, Government of India announced Startup India Action Plan that addresses all aspects of the Startup ecosystem. With this Action Plan the Government hopes to accelerate spreading of the Startup movement: The Action Plan is divided across the following areas:
  - d) Simplification and Handholding
  - e) Funding Support and Incentives
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- 12. Modernisation and Strengthening of Intellectual Property Office (MSIPO)¹⁰⁵- the objective of the scheme is to strengthen the capabilities of the Intellectual Property Offices in India; to develop a vibrant Intellectual Property regime in the country; and also to develop modern infrastructure for the Indian Patent Offices to function as an International Search Authority and International Preliminary Examining Authority in order to meet the requirements for international registration of Trade Marks. During last five years focus of the scheme was on infrastructure development, augmentation of human resources, and enhancement in quality of service, computerisation and improvement in IT infrastructure. Training of personnel and outreach activities were the other objectives. The implementing agency in respect of the Scheme has been identified as the office of the Controller General of Patents, Designs and Trademarks (CGPDTM).
- 13. Project Based Support to Autonomous Institutions-National Productivity Council (NPC)¹⁰⁶ a tripartite character, wherein Government, Industry and Labour are

¹⁰²<u>https://vikaspedia.in/social-welfare/rural-poverty-alleviation-1/schemes/aajeevika</u>
¹⁰³<u>https://nulm.gov.in/</u>

¹⁰⁴<u>https://dipp.gov.in/programmes-and-schemes/industrial-promotion/startup-india</u>

¹⁰⁵<u>https://dipp.gov.in/programmes-and-schemes/intellectual-property-rights/modernisation-and-</u> strengthening-intellectual-property-office-msipo

¹⁰⁶https://dipp.gov.in/programmes-and-schemes/others/project-based-support-autonomous-institutionsnational-productivity-council

equally represented. The main objectives of the Council are to increase awareness of productivity and demonstration of the concepts and techniques of Productivity in all the sectors of the economy. NPC undertakes management and technological consultancy, training and information services in various productivity subjects for the benefit of its clients. The specialized productivity functions dealt by NPC are Process Management, Environment Management, Information Technology and Knowledge Management, Energy Management, Human Resource Management, Agri-business Technology Management etc.

- 14. India International Convention & Expo Centre (IICC, Dwarka) The Government of India has approved development of India International Convention and Expo Centre (IICC) in Sector-25, Dwarka, NewDelhi & allied infrastructure in PPP and non-PPP Mode at an estimated cost of Rs.25,703 crore by the year 2025. Development of Exhibition& Convention space, arena, trunk infrastructure, Metro/NHAI connectivity, hotels, office and retail space etc. are visualised in the project. For development of this project, a Special Purpose Vehicle (SPV) i.e. India International Convention and Exhibition Centre Limited (IICC Ltd), a 100 % owned and controlled Company by Government of India represented through Department for Promotion of Industry and Internal Trade (DPIIT) has been incorporated on 19th December, 2017. Development of the project is visualised in two phases. In Phase-1, trunk infrastructure along with Exhibition-cum-Convention Centre is likely to be operational in 2020. This phase is being implemented as non-PPP component. The remaining Exhibition Area such as hotels, retail and others to be developed by PPP developers in Phase – II and would be completed by 2025¹⁰⁷
- 15. Industrial Corridors-
  - 15.1. Delhi Mumbai Industrial Corridor (DMIC)¹⁰⁸-A mix of road, rail, port and airport, the DMIC was launched to change the business landscape, in pursuance of an MOU signed between the Government of India and the Government of Japan in December 2006. DMIC Development Corporation (DMICDC) incorporated in 2008, is the implementing agency for the project. DMICDC has been registered as a company with 49% equity of Government of India, 26% equity of the JBIC and the remaining held by government financial institutions. The Japanese Government had also announced financial support for DMIC project to an extent of US\$ 4.5 billion in the first phase for the projects with Japanese participation involving cutting edge technology. Key features of the project are:
    - g) The project spans the States of Uttar Pradesh, Haryana, Rajasthan, Madhya Pradesh, Gujarat and Maharashtra along the Western Dedicated Freight Corridor (DFC) of the railways. Initially, 8 nodes/cities in the six DMIC states have been taken up for development.
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 ¹⁰⁷<u>https://dipp.gov.in/policies-and-schemes/india-international-convention-expo-centre-licc-dwarka</u>
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- j) Land has been transferred to the SPVs by the concerned State Governments. Matching equity by DMIC trust has been released to the SPVs.
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¹⁰⁹<u>https://dipp.gov.in/sites/default/files/ic-annex3.pdf</u>

present economic and employment potential of the region, stimulate investments particularly in the manufacturing, agro-processing, services and export oriented units and promote overall economic development of the area through creation of high standard infrastructure and an enabling pro-business environment. The AKIC is proposed to be developed in a band of 150-200 Kms on either side of EDFC, in a phased manner. The AKIC will have an influence area across seven States of Punjab, Haryana, Uttar Pradesh, Uttarakhand, Bihar, Jharkhand and West Bengal.



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Source: Maps of India

- 16. Scheme for implementation of National Manufacturing Policy¹¹⁰ (NMP) The Scheme covers the components of National Manufacturing Policy. These components are (i) Cost of Master Planning of National Investment & Manufacturing Zones (NIMZ) and (ii) Technology Acquisition and Development Fund (TADF). However, the scheme component TADF has been transferred to M/o Micro, Small and Medium Enterprises (MSME) on 16th September, 2016 and is now being implemented by the Ministry¹¹¹.
- 17. E-commerce can be the driver of overall economic growth over the next decade through its impact on generating demand, expanding manufacturing, employment generation and greater transparency. A Committee, chaired by CEO, NITI Aayog

¹¹⁰https://dipp.gov.in/sites/default/files/po-ann3.pdf

¹¹¹https://dipp.gov.in/programmes-and-schemes/manufacturing-industrial-policy/scheme-implementation-nationalmanufacturing-policy-nmp

examined issues related to the e-commerce industry and made recommendations for the sector's growth including increasing internet access, digitizing payments, further improving transportation infrastructure, logistics and distributed warehousing support. Refer Market Study on E-Commerce in India-2020 conducted by CCI given at Annexure-P-1.7.1

- The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014¹¹². Some of the major provisions are as under:
  - k. Street Vendors have been defined to include 'any person engaged in vending of articles, goods, food etc or offering services to the general public in a street lane, sidewalk, footpath, pavement, public park, or any other public or private area. It includes hawkers, peddlers, and squatters.
  - 1. Any person above 14 years of age, who is a street vendor has to register him/herself with the Town Vending Committee (TVC).
  - m. The TVC shall have a 40% representation from street vendors and another 10% from civil society. The remaining would be represented by local authorities, residential associations etc,.
  - n. Every street vendor has to obtain a certificate of vending from TVC, for which he/she will be issued with an identity card.
  - o. The local authorities shall frame a street vending plan, which shall be revised every 5 years. The plan should contain free vending zones, restricted vending zones, and novending zones.
  - p. The local authorities can relocate the street vendors in case of causing a public nuisance. The relocated street vendor shall be provided a new site for vending.
  - q. The local authority is also empowered to confiscate the goods of the vendors in the manner specified in the street vending scheme.
  - r. The duties of the local authority to include monitoring and supervising the street vendor scheme, monitoring the effectiveness of the TVC and deciding appeals.
  - s. There is also a provision to provide credit insurance and welfare schemes to the street vendors by the appropriate government.
  - t. There is a provision for independent Grievance Redressal Mechanism composing a retired judicial officer.

¹¹²http://legislative.gov.in/sites/default/files/A2014-7.pdf

#### Brief of issues and challenges related to economic development of NCR

- 1. Despite of enormous importance and potential of MSMEs in NCR, many micro, household and small enterprise/ clusters in the region are facing numerous problems related to availability of physical infrastructure (i.e. electricity, water supply, road, shelter, storage, etc.), procurement of raw material, purchase of machinery & equipment, design & technology, access to credit, marketing products and institutional support, etc. Strengthening of MSMEs in NCR is a challenge.
- 2. Availability of land for industries, high-land prices and up-gradation of deteriorating common infrastructure in existing industrial units/areas are major challenges for industry sector.
- 3. Some of the other issues, as also highlighted in Functional Plan for Economic Development of NCR are summarised as follow:
  - a) Wide Variation in Level of Economic Growth in NCR There is a wide variation in GDP growth as well as disparity in per capita income among the sub-regions of NCR.
  - b) Disguised employment in agriculture sector Substantial share of workers is engaged in primary sector activities in NCR. This leads to inadequate per capita income as well as lack of productive full time employment, besides contributing lesser to the overall GDP, compared to secondary and tertiary sector activities.
  - c) Uneven distribution of main workforce
  - d) Inadequate infrastructure for Industrial Development including common facility centres, quality power supply, and lack of infrastructure for effective treatment & disposal of polluting industries waste.

This has been mainly because of limited size of production unit due to urbanization pressure and increasing cost of land in NCR. Availability of adequate water supply due to limited irrigation facilities and ground water availability is also an issue for development of industries in Delhi region. Besides, horticulture practices in NCR are not standardized. In spite of a rich horticulture background the processing of horticulture products is still very low. There are difficulties also in getting financial support from Banks/Financial Institutions for perishable goods.

There is also lack of a comprehensive policy for strengthening of the craft-based informal sector that flourishes in urban centers. Lack of effective interventions for technological upgradation of existing industrial clusters, such as Meerut, affecting their competitive advantage. Besides, Inadequate level of support infrastructure in existing industrial areas, leading to vehicular congestion and pollution in industrial areas, such as Ghaziabad. Lack of required level of support to the traditional craft clusters, such as Khurja has also been one of the major issues behind development of such industries.

- e) Limited non-farm sector employment and poor rural economy inadequate rural infrastructure like Mandies and marketing facilities, common storage, cold storage facilities and inadequate food, fruits and vegetables processing facilities/industries.
- f) Informal Sector Activities -The informal sector units in the NCR can be differentiated as three types. The first type consists of micro and small units, and is found in the vicinity of organized large industries. Their primary role is to serve large industries as sub-contractors. For example, Govindpuri in South– East Delhi mainly provides subcontracting services to the garment units in Okhla and NOIDA. Similarly, other subcontractors such as NGOs, Self Help Groups, and other informal networks also exist in the NCT-Delhi sub-region. The second type consists of units producing specialized products. For example; Khurja for pottery and ceramics, Tri Nagar for PVC and plastics, Vishwas Nagar for cables, plastics and utensils, Alwar for fabrication and metal products and Sonipat for light engineering and metal products. The third type consists of the service sector for example; construction workers, petty traders, street vendors, other home-based service providers facilitating laundry, transport and domestic help, etc.

Workers in the informal sector earn an unstable and comparatively low income, and do not have access to basic protections and services. Informal businesses also lack the potential for growth, trapping employees in menial jobs for an indefinite period. On the other hand, the informal sector provides employment to a large proportion of the population and save them from extreme poverty. Appropriate policy is required to be formulated & implemented in order to extend necessary support and infrastructure to the informal sector and bring them to the mainstream.

g) Lack of uniform district &city level GDP data in NCR poses problem in comparability and compatibility.

### **Chapter-4-Transport & Mobility**

## **Draft National Logistics Policy**¹¹³

The vision of the policy is to drive economic growth and trade competitiveness of the country through a truly integrated, seamless, efficient, reliable and cost effective logistics network, leveraging best in class technology, processes and skilled manpower.

Key objectives of the policy:

- Creating a single point of reference for all logistics and trade facilitation matters in the country which will also function as a knowledge and information sharing platform.
- Driving logistics cost as a % of GDP down from estimated current levels of 13-14% to 10% in line with best-in-class global standards and incentivize the sector to become more efficient by promoting integrated development of logistics.
- Creating a National Logistics e-marketplace as a one stop marketplace. It will involve simplification of documentation for exports/imports and drive transparency through digitization of processes involving Customs, PGAs etc in regulatory, certification and compliance services.
- Creating a data and analytics center to drive transparency and continuous monitoring of key logistics metrics.
- Encouraging industry, academia and government to come together to create a logistics Center of Excellence, and drive innovation in the logistic sector
- Creating and managing on an ongoing basis, an Integrated National Logistics Action Plan which will serve as a master plan for all logistics related development. Also, there will be support for states for development of respective state logistics plans aligned with the national and state priorities. An annual execution plan to continuously monitor progress against the set objectives will also be created.
- Providing an impetus to trade and hence economic growth by driving competitiveness in exports.
- Doubling employment in the logistics sector by generating additional 10-15 million jobs and focus on enhancing skills in the sector and encouraging gender diversity.
- Improve India's ranking in the Logistics Performance Index to between 25 to 30.
- Strengthening the warehousing sector in India by improving the quality of storage infrastructure including specialized warehouses across the country.
- Reducing losses due to agri-wastage to less than 5% through effective agri-logistics involving access to cold chain, packaging and other post-harvest management techniques and thereby enhance agriculture price realization and farmer income.
- Providing impetus to MSME sector in the country through a cost-effective logistics network
- Promoting cross regional trade on e-commerce platforms by enabling a seamless flow of goods
- Encouraging adoption of green logistics in the country

 $^{^{113}\} https://commerce.gov.in/writereaddata/UploadedFile/MOC_636850457336854610_Notification-Draft-05022019.pdf$ 

This draft policy defines the key thrust areas for logistics in India, which will be the focus of the relevant ministries as well as act as a guidance to the state governments. The prioritized focus areas for logistics are detailed below:

- Focusing on critical projects to drive an optimal modal mix and to enable first mile and last mile connectivity.
- Driving development of Multi Modal Logistics Parks (MMLPs).
- Driving interventions to reduce logistics cost and promote logistics efficiency for movement of key commodities.
- Creating a single window Logistics e-marketplace.
- Setting up a Logistics Data and Analytics Center.
- Creating a Center of Trade facilitation and Logistics excellence (CTFL) and leveraging expertise of multilateral agencies.
- Creating an Integrated National Logistics Action Plan and align with respective state development plans.
- Support strengthening of the warehousing sector.
- Enhancing transport and rolling stock infrastructure.
- Streamlining EXIM processes to promote trade competitiveness.
- Reducing dwell time for interstate cargo movement by road.
- Promoting standardization in the logistics sector.
- Ensuring seamless movement of goods at Land Customs Stations (LCS) and Integrated Check Points (ICP).
- Generating employment, enhancing skilling and encouraging gender diversity in the logistics sector.
- Strengthening the MSME sector through efficient logistics.
- Promoting cross regional trade on e-commerce platforms through seamless flow of goods.
- Promoting Green & Sustainable Logistics.
- Setting up a Startup acceleration fund.
- Funding for logistics initiatives.
- Framework Act on Integrated Logistics.
- Institutional Framework & Governance for Logistics.
- Amendment of Policy.

#### Eighteen (18) thrust areas of the National Logistics Policy

Eighteen (18) thrust areas of the National Logistics Policy have been divided into four groups:

#### Group 1 : Logistics Infrastructure development and commodity cost optimization

a) Optimal modal mix including road, rail, waterways, coastal, air cargo with first/last mile connectivity

- b) Enhancing transport and rolling stock infrastructure
- c) Logistics efficiency for movement of key commodities
- d) National Logistics Action plan and respective state plans

e) Green & Sustainable Logistics

#### Group 2 : Agri logistics, MSME and Warehousing

a) Strengthening the warehousing sector

b) Developing Cold chain infrastructure

c) Strengthening the MSME sector

d) Development of Multi Modal Logistics Parks (MMLPs)

#### Group 3 : Logistics processes, logistics skilling and standardization

a) Streamlining EXIM processes

b) Reduce dwell time for interstate cargo movement

c) Generating employment and enhancing skilling

d) Promoting standardization

#### Group 4 : New technology, e-commerce, leveraging data & analytics

a) Single window Logistics e-marketplace

b) Logistics planning & performance monitoring tool

c) Center for trade facilitation and logistics excellence

d) Promoting startups in logistics

e) Promoting seamless movement of parcels in e-commerce

### Major Initiatives of Government to related to Transport and Mobility

#### A) Initiatives of Govt. of India

#### **Road Sector**

- **1) Simplification of Driving License Application:** To improve ease in licensing, this Ministry has simplified the driving license application form.
- 2) Revision of Axle Weight: The permissible safe axle weight of goods vehicles was revised and increased by about 15% to 20 % for different configurations of axles. The decision was taken with a view to help in increasing the carrying capacity of goods transport vehicles and bring down logistics cost. The amendment will increase the carrying capacity of goods vehicles by about 20-25 % and lower logistics costs by about 2%. It will also bring down the incidence of overloading.
- 3) Launch of Ranking System for Toll Plazas: NHAI has developed a matrix-based methodology to rank the Fee Plazas on parameters such as electronic tolling, time taken in clearance of FASTag lanes, display panels, staff behaviour, cleanliness, etc. The data for the matrix is to be collected by the Regional Officers who will use the same to rank the Fee Plazas under their jurisdiction. Meanwhile, a countrywide drive was launched by NHAI on more than 300 toll plazas across the country on 10 February, 2018, to address issues that affect highway users. Officers visited toll plazas and addressed issues of user convenience and took feedback from the people.
- 4) Revision in Maximum Speed of vehicles: The Ministry has revised the maximum speed of various classes of vehicles vide notification dated 6th April 2018. The notification prescribes the speed of various classes of vehicles. Thus a passenger vehicle with not more than 8 seats including driver can have a maximum speed of 120 km/hr on expressways and 70km/hr on municipal roads.
- 5) Acceptance of Documents through Digi Locker and m Parivahan Platform: An advisory has been issued by the Ministry to all the States / UTs to accept the documents in electronic form through Digi Locker platform of the Ministry of Electronics and Information Technology, Government of India and the m Parivahan mobile app of the Ministry of Road Transport & Highways. Such electronic records available on Digi Locker or m Parivahan are deemed to be legally recognized at par with the original documents as per the provisions of the Information Technology Act, 2000. This will also address Grievances / RTI applications of the citizens and facilitate promotion of Digital India campaign.
- 6) Notification regarding Vehicle Location Tracking Device and Emergency Button in all public service vehicles: With a view to enhancing the safety of women passengers, detailed standards for Installation of Vehicle Location Tracking Device (VLT) and Emergency Button on public service vehicles have been notified on October 25, 2018. The States/ UTs have been mandated to ensure compliance of the rule and check fitment and functional status of the VLT device in the public service vehicles at the time of checking of the vehicles for fitness certification.

The Command and Control Centres in the States will be used to provide interface to various stakeholders such as State emergency response centre, the Transport authorities of the state and
central governments, device manufacturers and their authorized dealers, testing agencies etc. The Command and control Centre will also be able to provide feed to the VAHAN database or the relevant data base of the state with regard to over speeding and the health status of the device.

- 7) **Fitness Certificate in respect of Transport Vehicle**: As per this notification the renewal of the fitness certificate in respect of transport vehicle up to eight years old shall be done for two years and for one year for vehicle older than eight years. No fitness certification shall be required at the time of registration for the new transport vehicle sold as fully built vehicle and such vehicle shall be deemed to be having certificate of fitness for a period of two years from the date of registration.
- 8) Use of Dual Fuel: The Ministry has issued a notification for Dual fuel usage which covers Emission of smoke and vapour from agriculture tractors, power tillers, construction equipment vehicles and combine harvesters driven by dual fuel diesel with Compressed Natural Gas (CNG) or Bio-Compressed Natural Gas (Bio-CNG) or Liquefied Natural Gas (LNG) engines.
- 9) Electric, Ethanol and Methanol Vehicles exempted from Permit : Keeping in view the need for promoting electric mobility and alternate fuels, the Ministry, vide notification issued on October 18, 2018, has exempted Battery Operated Vehicles, as well as vehicles driven on Methanol fuel or Ethanol fuel, from the requirement of permit for carrying passengers or goods.
- 10) Advisory on Linking of PUC data (emission related data) with the VAHAN database: A system has been developed and tested by this Ministry for linking of Pollution Under Control (PUC) data with the VAHAN database. An advisory dated October 1, 2018 has been issued to all the States by the Ministry wherein all the PUC vendors have been directed to comply with the guidelines and facilitate electronic uploading of emissions test data to VAHAN database.
- 11) Notification regarding Registration Mark of Battery Operated Vehicles: To give a distinct identity to the electric vehicles, it has been decided that the registration mark will be exhibited on a number plate with Green background. A notification to this effect was issued on 7th August, 2018.
- 12) M 15 (15%) Methanol blending with Gasoline: The Ministry issued a notification regarding the blending of Gasoline with methanol in order to reduce vehicle exhaust emissions and also to reduce the import burden on account of crude petroleum from which gasoline is produced. The Hon'ble Prime Minister had announced an ambitious target of reducing 10% import dependence of oil and gas by 2022 from 2014-15 levels. Methanol can be used as an alternative transportation fuel thereby reducing Import dependence to some extent.
- 13) **Requirement of PUC Certificate for vehicle insurance/ renewal of insurance**: The Ministry has requested IRDA and the MDs / Chairpersons of all general insurance companies on to ensure that no third-party insurance policy is issued or renewed without ascertaining the availability of a valid PUC. This has been done following orders of the Supreme Court of India.
- 14) Emission Standards for Construction Equipment Vehicles and Tractors: The Ministry has notified emission standards for Construction Equipment Vehicles and Tractors. This would help in ensuring environment friendly construction / mining activities.
- 15) Quadricycles included as Non-Transport Vehicles: The Ministry notified the insertion

of the item 'Quadricycle' as a 'non-transport' vehicle under the Motor Vehicles Act 1988. A Quadricycle is a vehicle of the size of a 3-wheeler but with 4tyres and fully covered like a car. It has an engine like that of a 3-wheeler. This makes it a cheap and safe mode of transport for last mile connectivity. Quadricycles were only allowed for transport usage under the Act, but now has been made usable for non-transport also.¹¹⁴

16) The major acts which govern the road sector:

- The Road Transport Corporations Act, 1950
- The National Highway Act, 1956
- The Motor Vehicles Act, 1988
- The National Highways Authority of India Act, 1988
- Road Transport Corporations Act, 1950
- Carriage by Road Act, 2007 repealed to Carriers Act, 1865
- 17) The associated offices created under MoRTH for implementation of various tasks related to road transport mainly includes:
  - National Highways Authority of India
  - National Highways & Infrastructure Development Corporation Ltd. (NHIDCL)
  - Indian Academy of Highway Engineers (IAHE)
  - Indian Road Congress (IRC)
- 18) Bharatmala Pariyojana: The Cabinet Committee on Economic Affairs approved the implementation of an umbrella programme for the National Highways "Bharatmala Pariyojana Phase-I" in its meeting held on 24th October 2017, for construction/ upgradation of National Highways of 34,800 kms length over a period of 5 years (2017-18 to 2021-22) at an estimated outlay of Rs. 5,35,000 Crore. The programme focuses on optimizing efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions like development of Economic Corridors, Inter Corridors and Feeder Routes, National Corridor Efficiency Improvement, Border and International Connectivity roads, Coastal and Port Connectivity roads and Green-field expressways. Multi-modal integration is also built into this program. Special attention has been paid to fulfilling the connectivity needs of backward and tribal areas, areas of economic activity, places of religious and tourist interest, border areas, coastal areas and trade routes with neighbouring countries.
- 19) **Delhi-Meerut Expressway (DME):** The Delhi-Meerut Expressway aims to provide faster and safer connectivity between Delhi and Meerut and beyond this, with Uttar Pradesh and Uttarakhand. The alignment of DME starts from Nizamuddin Bridge from Delhi and follows existing NH 24 upto Dasna. While one leg of DME will continue from Dasna on NH 24 to Hapur, a Greenfield alignment has been planned from Dasna to Meerut. The Expressway is being constructed in 4 packages. The total length of the project is 82 km, of which the first 27.74 kms will be 14-laned, while the rest will be 6-lane expressway. The project is likely to cost Rs 4975.17 crore. This is the first National Highway in the country with 14 lanes, and has several features that would help reduce pollution. These include a 2.5-metre-wide cycle track on either side of the highway, a

¹¹⁴ All of the above initiatives are taken by Ministry of Road Transport and Highways. May be accessed at https://morth.nic.in/initiatives.

vertical garden on the Yamuna Bridge, solar lighting system and watering of plants through drip irrigation only.

- 20) **Delhi Vadodara Expressway:** A greenfield alignment between Delhi Vadodara with a length of 844 km through Sohna, Dausa, Jaora, Ratlam, Godhra, which reduces the travel distance between Delhi Vadodara by around 150 km, is being developed.
- 21) **Funding Models and other policies to facilitate construction of National Highways:** Monetization of Assets through Toll-Operate-Transfer (TOT) Model, Infrastructure Investment Fund (InvIT).

### 22) E-initiatives:

- 22.1. **Bhoomi Rashi Land Acquisition portal:** The process of issuing Land Acquisition notification was beset with delays due to clerical mistakes, time taken in processing notification and huge amount of public funds was also parked with the Competent Authority for Land Acquisition (CALA). With the adoption of the portal w.e.f. 01.04.2018, the system has become transparent, error free, and paperless. The system also ensures accountability at each level. The portal has also reduced the time period for publication of notification in the Gazette of India. Processing of payment through Bhoomi Rashi has ensured real time deposition of compensation in the account of the beneficiary. Real time deposition of compensation through the Bhoomi Rashiportal has been successfully done for MoRTH projects in the State of Himachal Pradesh, Maharashtra, Odisha, Bihar, Karnataka, etc.
- 22.2. **Enterprise Resource Planning (ERP) Project-eDISHA:** eDisha, Digitally Integrated System of Highway Assets is the face of 'Design, Development, Implementation and Enablement of Technology Solution at Ministry, NHAI and NHIDCL. This will eliminate data duplication and provide data integrity with a "single source of truth" along with digitization. Ministry is the main stakeholder along with NHAI and NHIDCL. eDISHA will facilitate the flow of real time information across departments and ecosystems, so businesses can make data-driven decisions and manage performance-live. eDISHAis being implemented in all ROs/BOs of Ministry, NHAI & NHIDCL along with Hqrs.
- 22.3. **E-tolling:** Electronic Toll Collection (ETC) system, has been implemented on pan India basis in order to remove bottlenecks and ensure seamless movement of traffic and collection of user fee as per the notified rates, using passive Radio Frequency Identification (RFID) technology. Indian Highways Management Company Limited (IHMCL), a company under the Company's act 1956 has been incorporated for working as implementing agency for ETC with National Payment Corporation of India (NPCI) functioning as the Central Clearing House (CCH). 24 banks (including Public and Private sector banks) have been engaged as issuer banks in order to issue FASTag to road users. A cashback of 2.5% is being offered for the FY 2019-20 in order to incentivize road users for usage of FASTag. There are 538 operational National Highways (NH) fee plazas out of which 536 plazas are live with ETC infrastructure in all lanes.
- 23) **Major Initiatives taken by Land Acquisition Division:** Establishment of Highway Administration under the Control of National Highways (Land and Traffic) Act 2002.
- 24) **Way-side Amenities and Highway Nest (Mini):** The Ministry recognizes the importance of availability and development of way-side amenities as basic facilities value added service for its highway users. While it has made plans for development of such full-fledged facilities along the new Projects, it has also taken up provision of such facilities along the existing NHs wherever found feasible. The procurement process is under way for the development of Way-side Amenities of larger sizes in PPP mode along

the National Highways, the NHAI has taken up construction of 450 numbers Highway Nest (mini). These are being developed near Toll Plazas, approximately 200 meters downstream on a 10m x 20m paved platform and comprises of facilities like toilets, water, ATM, a small kiosk with Tea/ Coffee vending machines and packaged food items for Highway users.

- 25) Launch of Annual Awards for Excellence In National Highways Sector: Annual Awards for excellence in National Highways sector have been instituted for recognizing concessionaires and contractors who have been performing exceptionally well.
- 26) In order to assist the State Governments in the development of state roads, Central Government also provides financial assistance out of the Central Road Fund (CRF) and Inter State Connectivity and Economic Importance (ISC & EI) scheme. Besides National Highways development Project (NHDP) & National Highway Interconnectivity Improvement programme (NHIIP), Ministry is implementing SARDP-NE & LWE schemes which includes National Highways and State roads.
- 27) **Development and Maintenance of National Highways:** The Government is implementing Bharatmala and National Highways Development Project (NHDP).
- 28) State PWD and Border Road Organization (BRO): An amount of Rs. 30,284.00 crore has been allocated during current year 2019-20, for the NH entrusted to State PWDs and Rs. 350.00 crore for NHs entrusted to BRO for Development of NHs/roads. (ii) An amount of Rs. 1,427.17 crore including Rs. 140 crore for BRO has been allocated during 2019-20 for the maintenance of National Highways entrusted to the State PWDs & BRO.
- 29) National Highways Interconnectivity Improvement Projects: It includes Road Improvement and Maintenance, Institutional Development Components, Road Safety Components.
- 30) Inter State Connectivity and Economic Importance (ISC&EI) schemes.
- 31) **Indian Academy of Highway Engineers (IAHE):** The Academy has been playing pivotal role in imparting training to highway engineers.
- 32) The National Highways & Infrastructure Development Corporation Limited (NHIDCL): NHIDCL is a Public Sector Undertaking under the Ministry of Road Transport and Highways, with the objective to develop National Highways and other infrastructure at a fast pace in the North East and Strategic areas of the country sharing International Borders. Presently the efforts are focused on economically consolidating these areas with overall economic benefits flowing to each and every strata of the local population & integrating them in a more robust manner with the National Economy.
- 33) In order to facilitate inter-State movement of goods carriages, a new national permit system has been implemented in all States/Union Territories with effect from 08.05.2010.
- 34) **Major initiatives under Motor Vehicle Legislation:** Motor Vehicles (Amendment) Act, 2019.- The Motor Vehicles Act, 1988 is the principal instrument through which road transport is regulated in the country. The same has been amended first time in a comprehensive way after thirty years by The Motor Vehicles (Amendment) Act, 2019, passed by the Parliament and published in the Gazette of India on 9th August 2019.
  - a) Acceptance of Driving Licence, Registration Certificate and other documents presented in Electronic form thorough IT or mobile app platform.
  - b) Common Format for the Driving Licence and the Certificate of Registration.
  - c) Removal of Requirement of NoC for the renewal/change of address in the Driving Licence.
  - d) HSRP (High Security Registration Plate).

- e) Hybrid Electric System: Rule 115D of the Central Motor Vehicles Rules, 1989 regarding the Retro-fitment of hybrid electric system or electric kit to Motor Vehicles have been amended.
- f) Braking System and Anti-Lock Braking System: MoRTH has issued a notification regarding advanced Braking system for promoting road safety such as Anti-Lock Braking system for M1, M2, M3 and N category of vehicles.
- g) Additional features for fully built buses (AIS 135 and AIS 153): -It has been mandated that all fully built buses of M2 and M3 categories manufactured on and after 1st April 2019, by Original Equipment Manufacturers having seating capacity exceeding 22 or more excluding the driver to be in accordance with AIS:153 so that these will meet the stringent standards which would enable smoother ride, passenger safety and comfort.
- h) Affixing reflective tapes on commercial Vehicles.
- 35) Steps taken to reduce vehicular pollution and use of green fuels: -The Ministry has issued emission standards for additional alternate fuels usage in motor vehicles.
- 36) **Integrated Road Accident Database (IRAD) management system:** This will enable the States and Centre to compile the information related to road accidents, analyse the root cause of road accidents and develop and implement 'data-led' road safety interventions to reduce accidents
- 37) **Strengthening of Road Transport System** The Ministry has appraised the existing scheme namely "Strengthening ITS in Public Transport System" to provide financial assistance to State Governments for use of latest technologies such as GPS/ GSM based vehicle tracking system, computerized reservation/ ticketing system, inter-modal fare integration, passenger information system etc. for services covering inter-city and mofussil areas and to provide financial assistance for preparation of total mobility plan for the entire State.
- 38) **Development of Bus Terminals-** In order to develop high quality bus terminal facilities, and more importantly, to ensure its continued operations and maintenance in a proper manner, the Ministry has launched a scheme (on 5th September 2018) namely Development of Bus Ports in States/ UTs on BOT/ HAM basis. The scheme is a Central Sector Scheme and is aimed at initiating the process of development of bus terminal infrastructure by the states. The scheme objective is to enhance the capacity and quality of the bus terminal infrastructure to benefit the users of the public bus transportation by providing them safe, convenient and user-friendly locations to board and de-board as well as better passenger amenities. The scheme also aims to cater to the requirements of both public and private sector intercity bus operators.
- 39) **Safety and Security of Women Passengers (Nirbhaya Scheme):** The Government of India has set up a dedicated fund Nirbhaya Fund. MoRTH gives financial assistance from the Nirbhaya fund to the States/ UTs for the projects specifically designed to improve safety and security of women in public transport.
- 40) Accessible India Campaign (Sugamya Bharat Abhiyan): The Accessible India Campaign was launched by Hon'ble Prime Minister for creating universal accessibility for persons with Disabilities in Built Environment, Transport, and Information & Communication Technology (ICT) ecosystem. Targets of Accessible India Campaign include (i) 25% of Government owned public transport vehicles should be made fully accessible by March 2019 (ii) All bus stops/ terminals/ ports should be made accessible (iii) Facilities for speedy licensing and registration may be provided to differently abled persons.

- **41) Other Citizen friendly initiatives:** The Government has taken the decision to do away with VIP culture by removing the Red and Amber Lights atop the vehicles with the exception of specific dignitaries/ duty related categories. A fixed compensation of Rs. Five Lakh has been notified under the Structured Compensation for Third party insurance liabilities. This will help majority of the victims and will help them get expeditious compensation with ease. The safety standards of the vehicles have been upgraded to ensure that even the cheapest vehicles sold by the OEMs have safety features at par with global standards. The Ministry has amended the rules to enable carriage of Driving License and Registration Certificates in electronic form and produce the same in Digital form to the enforcement agencies as and when called for.
- 42) Guidelines for setting up Driver Training Schools in districts.
- 43) SukhadYatra App and Toll-Free Emergency Number.
- 44) **Vehicle** Location Tracking Device and Emergency Button in all public service vehicles and Scheme for setting up the Monitoring centres in the States.
- 45) **Research** scheme to design a Geopolymer mix using Fly Ash, Ground granulated Blast furnace slag & also Reclaimed Asphalt Pavement (RAP) Aggregates and to analyze its life.
- 46) **Research** scheme for estimation of Modulus of Resilience by volumetric/ Performance properties of Asphalt Mixes.
- 47) **New Materials and Techniques**: In order to encourage the usage of emerging materials and techniques on National Highways, Ministry has stipulated that new materials/technologies proven in India and abroad shall be deemed accredited provided the promoters furnish the proved performance and set up a permanent base in India. Additionally, the Ministry directed that new/alternative materials and technologies shall be given priority in field trials and their performance evaluated over a period of time to enable the formulation of guidelines and codes of practice for their future usage on National Highways.
- 48) **Road Safety Engineering:** Ministry of Road Transport & Highways has been making concerted efforts towards improvement of road safety through engineering measures on National Highways.
- 49) **The Grievance Redressal & CPGRAMS:** The Public Grievance Redressal Machinery in the Ministry is headed by the Joint Secretary (O&M). He is designated as Nodal Officer of Public Grievances. Public grievances received are referred to the concerned administrative units for speedy redressal. The Public Grievances Redressal and Monitoring System (PGRAMS), a web based grievance redressal mechanism is also operational in the Ministry.
- 50) **Transport Research**: The Transport Research Wing (TRW) of the Ministry of Road Transport & Highways (MoRTH) is involved in collection, compilation, dissemination and analysis of data on roads and road transport sector including road accidents. The Wing is also responsible for rendering research and data support to the Ministry for policy planning and monitoring. In this direction, the Wing is working for systemic improvement of data quality and is also taking up studies on key areas in road transport sector through reputed institutions. Consistent efforts are being made to improve the quality of road transport data (including data of road accidents) so as to support the Ministry's schemes and interventions. On the roads and road transport sector, TRW disseminates data through four annual publications, namely, Basic Road Statistics, Road

Transport Year Book, Road Accidents in India and Review of Performance of Road Transport Undertakings.

- 51) International Cooperation: The International Cooperation Division of this Ministry engaged in various bilateral and regional level activities for cooperation with other countries. Example: Memorandum of Understanding between the Ministry of Road Transport and Highways of the Republic of India and the Ministry of Transport of the Russian Federation on Bilateral cooperation in the Road Transport and Road Industry was signed during the Eastern Economic Forum in Vladivostok, Russia in September, 2019. To strengthen relations with countries in the South and South East Asian region and to facilitate seamless movement of vehicles across international borders, Ministry of Road Transport and Highways initiated negotiations to forge Motor Vehicle Agreements and conclude bus service agreements with neighboring countries in the sub-region.¹¹⁵
- 52) Apart from the above initiatives, a few initiatives at state level also are mentioned below:
  - i. Online reservation facilities in Volvo and Ordinary Buses.
  - ii. Free/Concessional travelling facility for a special category of people.
  - iii. Issue of bus passes to general public.
  - iv. Passenger Enquiry Telephone Numbers at Bus Stands.
  - v. Passenger Amenities- Enquiry Counter, Advance Booking Counters, Time-Table, Separate Toilets, Waiting Hall, Safe Drinking Water, Cycle/Scooter Stand, Yatri Niwas, Cloak Rooms etc. at Bus Stands.
  - vi. Online registration of complaints/Suggestions.

### **Rail Sector**

1) National Capital Region Transport Corporation (NCRTC) – a joint venture company of Govt of India and States of Delhi, Haryana, Rajasthan and U.P, under the administrative control of Ministry of Housing and Urban Affairs, is mandated for implementing the Regional Rapid Transit System (RRTS) project across the NCR of India, ensuring a balanced and sustainable urban development through better connectivity and access.¹¹⁶

### 2) Initiatives by Indian Railways (IR):

- 2.1. **Procurement of goods rakes by inviting private investment:** 
  - i. General Purpose Wagon Investment Scheme (GPWIS)
  - ii. Liberalized Wagon Investment Scheme (LWIS)
  - iii. Special Freight Train Operator (SFTO)
  - iv. Automobiles Freight Train Operator Scheme (AFTO)
  - v. Wagon Leasing Scheme (WLS)
- 2.2. Development of private freight terminals through private investment.
- 2.3. The new fully air-conditioned Vande Bharat Express was introduced with higher speed, comfort and facilities.

¹¹⁵ The details about the above initiatives may be accessed at: https://morth.nic.in/sites/default/files/Ministry%20Annual%20Report_2019-20.pdf

- 2.4. **Punctuality:** The punctuality of Mail/Express trains (arriving at destinations on right time) during the year 2018-19 was 69% as per Integrated Coaching Management System (ICMS). This computer based on-line system was adopted from January 2009 for analyzing Punctuality Performance.
- 2.5. **Catering Services:** Indian Railways provide approximately 12 lakh meals/services per day to cater to the needs of about 2.3 crore travelling passengers every day in 2018-19. In its endeavour to bring noticeable improvement in catering services on Indian Railways, a number of new initiatives have been taken which include Upgradation of Kitchen Units, Installation of CCTV cameras to monitor Kitchen activities on real-time basis with live streaming available on the IRCTC website as well as Rail Drishti, QR code on food packets, Hand held POS machines, Awareness Campaigns for passengers like "No Bill The food is for FREE", 'No Tips' stitched/displayed on uniforms etc. have been launched.
- 2.6. **Rail Tourism:** The various tourism business segments of IRCTC include Luxury Train Tours Maharajas' Express, Buddhist Circuit Special Train, Bharat Darshan Special Tourist Trains, Rail Tour Packages, International and Domestic Air packages, Land Tour Packages, Hotel booking, Cruise Packages, Customized and LTC tours and Event Management etc. IRCTC have its exclusive tourism portal, www.irctctourism.com for showcasing and booking of various tourism products in a single space, Online booking of Retiring Rooms at Stations and Hotel Booking. Besides, IRCTC Mobile Apps is a step towards promoting digitalization initiative of Government of India, IRCTC has introduced user friendly travel and tourism mobile Apps.
- 2.7. **Passenger Reservation System (PRS):** Computerized reservation terminals, the facility of e-ticket has been made available for all Mail and Express trains through www.irctc.co.in website.
- 2.8. Automatic Ticket Vending Machines (ATVMs)/Coin-cum-Card Operated Automatic Ticket Vending Machines (CoTVMs).
- 2.9. Special Features of Ticket Booking on Indian Railways: E-Ticketing system, Unreserved ticket booking through mobile phone, Mobile Application-Rail Connect, SMS Alerts, Full Tariff Rate Booking Of Train/Coaches, Rationalisation Of Flexifare Sheme, Linking of Two PNRs to Facilitate Rail Passengers in Case of Mis-Connection of Trains, Information on Status of Booking, Alternate Train Accommodation Scheme –" Vikalp", Station Ticket Booking Agent (STBA), Yatri Ticket Suvidha Kendra (YTSK), Online concessional ticket booking facility to Divyangjan, Booking of Foreign Tourists through Internet upto 365 Days in Advance, Facility of Online Change of Boarding Point Introduced for e-Tickets.
- 2.10. **Coaching Vehicle**: Manufacture of Train sets, increasing production of LHB coaches, Amenities for unreserved passengers (Antyodaya Train Service, Deen Dayalu coaches etc.), Improving amenities for reserved passengers (Humsafar Trains, Tejas trains, Uday trains etc), Improving safety in new manufactured coaches like Fire detection and suppression system, Fire and Smoke detection system, Fire extinguishers, Automatic plug type doors etc.
- 2.11. **Improving interiors of Coaches:** Project Swarn, Upgradation of rakes of Mail/ Express trains (Project Utkrisht).
- 2.12. Quick Watering Facilities
- 2.13. Automatic Coach Washing Plants
- 2.14. **Cleanliness on Trains:** Intensive mechanized cleaning of coaches, Clean Train Stations (CTS) scheme, On Board House Keeping Service (OBHS), 'Clean My Coach' / 'Coach Mitra' service, Automatic Coach Washing Plants, Mechanized laundries for washing of Linen.
- 2.15. **Cleanliness at Stations :** Provision of Integrated Housekeeping Contracts at major stations, award of rag picking / garbage disposal contracts, Mechanized cleaning at stations, Concrete washable aprons on platform tracks are provided to facilitate clearing of night soil on platform

lines by washing with water jets, Provision of clean and hygienic toilets, third party survey to assess Cleanliness standards of major railway stations is being done periodically, Enforcement of Indian Railways (Penalties for activities affecting cleanliness at railway premises) Rules, 2012 has been intensified, Use of CCTVs is being extended for monitoring cleanliness work at major Stations, Social / Charitable Organisations / NGOs have been associated in periodic cleanliness / awareness drives, Railways have taken up a pilot project for disposal of Municipal Solid Waste (MSW) being generated at major railway terminals in an environment friendly manner including segregation of waste and conversion of bio-degradable waste to energy (bio-methanation) with placement of separate dustbins for dry and wet waste.

- 2.16. **Track Upgradation**: The track constitutes the basic infrastructure of a railway system and bears the burden of coping with ever increasing traffic. Higher speed and heavy axle load operation of IR has necessitated up-gradation of the track structure. Several policy initiatives have been taken in order to modernize the track.
- 2.17. **Track Modernization:** Indian Railways are working towards progressive mechanization and modernization of maintenance, laying, inspection and monitoring of track.
- 2.18. **Track Recording Cars (TRC)** are deployed for electronic monitoring of track parameters at periodic intervals to enable planning of maintenance.
- 2.19. Level Crossing- Indian Railway has decided to progressively eliminate the level crossings for the safety of Road users and train passengers. All unmanned level crossings on Broad Gauge have been eliminated. To improve safety of train operation and reduce inconvenience to road users, level crossings are being replaced by Road Over/Under Bridges/ Subways (ROBs/RUBs) in a phased manner based on the quantum of traffic.
- 2.20. **Bridge inspection and management System**: Modern Bridge Inspection techniques have been adopted, which include testing by non-destructive testing equipments, under water inspections, monitoring the water level with the help of water level system etc.
- 2.21. Land Management: About 90% of the total land under Railways' are operational and allied usages such as laying of new lines, doubling, gauge conversions, track stations, workshops, staff colonies etc. Preservation and meaningful interim use of railway land is the main objective of IR's land-use policy. During 2018-19, Railways did mass plantation of 110.09 lakh trees. Railways have already finalized a model agreement with Ministry of Environment & Forests to be entered by Zonal Railways with State Forest Department. Plantation will further improve in coming years. Moreover, now instructions have been issued to all Zonal Railways to make provision of 1% in all estimates to environment related matter. This will help in meeting the cost of plantation. As such, Railways are making all efforts to plant more and more trees. Besides, railway land is also licensed to Railway employees belonging to Group 'C' and 'D' category under 'Grow More Food' scheme, for growing vegetables, crops etc. Licensing of railway land is permitted for purposes directly connected with railway working. Plots of railway land at stations, goods sheds and sidings are licensed to other parties for stacking/storing of goods either received or to be dispatched by rail. Railway land is also leased to Kendriya Vidyalaya Sangathan to open Kendriya Vidyalayas. A part of this land is also leased to Central/State Governments/Public Sector Undertakings on long term basis for public utility purposes like ROB/RUB, construction/ widening of roads, etc. Railways have also taken up commercial use of such land which may not be required by the Railways for its immediate future use. Through an amendment to Railways Act, 1989, Rail Land Development Authority (RLDA), under the Ministry of Railways was constituted on 1st November, 2006 to undertake all tasks related to commercial development on railway land/air-space under the control of Ministry of Railways. Besides commercial development of vacant Railway land, RLDA has also been assigned the task of development of Multi Functional Complexes (MFCs).
- 2.22. **Railway Electrification:** With a view to reduce the Nation's dependence on imported petroleum based energy and to enhance energy security to the Country, as well as to make the

Railway System more eco- friendly and to modernize the system, Indian Railways has been progressively electrifying its rail routes.

- 2.23. **Signaling :** To increase efficiency and to enhance safety in train operations, advanced Signaling System with Panel Interlocking/Route Relay interlocking/Electronic Interlocking (PI/RRI/EI) along with Multi Aspect Colour Light Signals are being provided at stations replacing the obsolete Multi Cabin Mechanical Signaling System, that involved a large amount of human intervention.
- 2.24. Automatic Train Protection (ATP) System: In order to enhance safety in Train operations, Indian Railways has decided to provide Automatic Train Protection (ATP) System using a mix of proven European Train Control System (ETCS) level 2 and indigenously developed Train Collision Avoidance System (TCAS). The system will be an aid to Loco Pilot, which will help to eliminate accidents due to Signal Passing at Danger (SPAD) and over speeding, ensure visibility of signals in foggy weather in addition to increasing line capacity.
- 2.25. Centralized Traffic Control (CTC) in Indian Railways: Centralized Traffic Control is a computer based system which facilitates the control and management of multiple Signaling installations at various stations from a single location. It also provides a real time simulation of railway traffic in a section at a single location.
- 2.26. **Train Management System (TMS):** This is a tool to control train movements. Announcements at stations are triggered automatically from the central servers. IR is planning to provide Train Management System at the suburban sections of metro cities.
- 2.27. **Telecommunication:** Telecommunication plays an important role in train control, operation and safety on IR. Indian Railways has set up a state of the Art, nationwide telecom network for meeting its communication needs. RailTel, a Railways Central Public Sector Enterprise formed in September, 2000 is successfully exploiting surplus capacity of IR Telecom network commercially.

Railways have planned Wi-Fi facility to be provided at all stations excluding Halt Stations for internet **facility** to passengers which will aid in "Digital India" initiatives of Government of India.

To enhance the security of passengers & premises and to work as a strong deterrent to crime in station premises particularly those against women and children, IR has planned to provide Video Surveillance System at stations.

- 2.28. **Rashtriya Rail Sanraksha Kosh (RRSK)**: The Fund under RRSK are utilized for safety works relating to Traffic Facilities, Rolling Stock, Level Crossings Road Over/Under Bridges, Track Renewal, Bridge Works, Signal and Telecommunication Works, other Electrical Works, TRD Works, Machinery and Plant, Workshops, Training/HRD, Passenger Amenities and Other Specified Works.
- 2.29. Air conditioned EMU
- 2.30. Modernization of Workshops: Central Organisation for Modernisation of Workshops (COFMOW) was established under the Ministry of Railways by the Government of India for modernizing Indian Railways workshops. Since its establishment in 1979, COFMOW has been assisting in moderinizing Indian Railways Production Units and maintenance of Workshops. COFMOW is now taking up composite turnkey projects of setting up workshop/expansion of PUs' workshops as well as specialised technical projects allotted by Ministry of Railways.
- 2.31. **Staff Welfare**: IR's welfare schemes cover a wide spectrum of activities, viz., **educational** facilities and financial assistance to the children of Railway employees, handicraft centres for augmenting family income, financial assistance in sickness, subsidized housing and canteen facilities at work places and medical cover for employees and their families during service and after retirement.

- 2.32. **Research and Development:** Research Designs Standards Organisation (RDSO) under Ministry of Railways is the sole R&D organisation of Indian Railways and functions as the technical advisor to Railway Board, Zonal Railways and Production Units. RDSO also offers international consultancy services in matters pertaining to design, testing and inspection of railway equipments as well as survey for construction of new lines. RDSO attracts worldwide attention in the area of Research & Development in Railway equipment and systems.
- 2.33. Eliminating the use of wooden sleepers: Indian Railways has developed and adopted composite sleepers made of a polymer matrix for use on girder bridge and other isolated location like special turnouts, bridges in track circuited area where wooden sleepers were being used earlier.
- 2.34. Green Energy Initiatives on IR: As an initiative to provide thrust to environment and climate change, Indian Railways has given big focus on tapping renewable energy by way of setting up solar & wind plants.
- 2.35. **Escalators and Lifts:** With an objective to provide ease of movement to differently **abled**, aged and children on Railway platforms, Indian Railway has been providing lifts and escalators under 'Sugamya Bharat Abhiyan'. IR has recently revised policy for provision of escalators at stations. The escalators will now be installed at stations of State capitals, Million cities, Places of tourist importance & Other Stations starting from highest footfall to lowest footfall, subject to minimum footfall of 25,000 per day (Policy revised in March,19).

#### 2.36. Improved illumination level at Railway Stations

- 2.37. Use of IT: (i) ODC Crossing Approval Monitoring System is an Online portal developed for granting clearance to State Electricity Boards (SEBs) for cable /transmission line crossings under/over Railway tracks and for granting permission to ODCs (Overhead Dimensional Consignment), at level crossing in electrified territory. (ii) Rail-Saver A web/mobile based application which captures energy data related to energy conservation, energy management and Renewable energy and its implementation on IR which facilitates systematic collection, assimilation and analysis of data for evolving future strategies for conceiving and implementation of energy conservation efforts over IR. (iii) Traction Distribution Management System (TDMS) TDMS is a pilot project rolled out in Northern Railway being developed by CRIS with an objective to facilitate day to day e-TrD working by improving efficiency of employee through hassle free record up-keeping and integration of TrD asset at Field, Division and Zonal level.
- 2.38. **Awards**: Various units of Indian Railways and Pus & PSUs are being honored with various awards for taking works of excellence in the field of energy efficiency and Green Energy.
- 2.39. Indian Railways have installed **bio-toilets** in coaches to prevent open discharge of human waste on Railway Tracks from trains.
- 2.40. **Remote Monitoring and Management of Locomotives and Trains (REMMLOT)** REMMLOT enables remote monitoring of Diesel Locomotives. It **specifically** enables analysis of lapses on part of the loco pilot. This will enable focused counseling and training of such crew, who are prone to unsafe working. REMMLOT also monitors condition of locomotive and helps in preventive maintenance of locomotives. REMMLOT monitors shutting down of locomotives when idle for a long time and generates management information to ensure this.
- 2.41. **CNG/ LNG DEMU-** Indian Railways has already embarked on its journey to use alternate **source** of energy like CNG in its fleet of Diesel Electric Multiple Units (DEMUs). Presently, CNG DEMU rake are running in four sections viz., Rewari- Rohtak, Delhi-kurukshetra, Delhi-Samli and Farukhnagar- Garhi Harsaru Delhi Sarai Rohilla section of Northern Railway.
- 2.42. **Human Resource Development and Manpower Planning:** Human Resource Development strategies on Indian Railways have been reoriented towards enhancing competitiveness in the context of internal and external changes. In addition to in house training facilities, Railway

men are provided specialized training in other institutions in India and abroad. Indian Railway employees are also encouraged to enhance their knowledge and skill by acquiring higher educational qualifications in the specified areas relevant to their work by granting financial incentives. Efforts to improve the basic infrastructure for training are a continuous process. Manpower Planning system has been redesigned to regulate manpower intake with reference to emerging operational and business needs.

2.43. National Rail & Transportation Institute (NRTI): The National Rail & Transportation Institute (NRTI), the country's first University focused on the Transportation sector, has been set up to establish a world-class institute in transportation-focused applied education, training and research. NRTI has signed MoUs with leading global Universities in US (Cornell, UC Berkeley), Russia(Railway Transport University, Moscow and St. Petersburg State Transport University, St. Petersburg), UK (University of Birmingham) and Japan (Japan Transport and Tourism Research Institute, Tokyo) to establish collaborative frameworks for faculty exchange, developing curriculum, undertaking joint research projects and executive education programs.

The institution set up its first Centre of Excellence on "Next Generation Transportation Systems" in **collaboration** with the University of Birmingham in December 2019 offering post- graduate, doctoral and post-doctoral programmers, customized training programmes for in- service professionals, and undertaking joint research projects.

- 2.44. **Indian Railway Medical Services**: Services provided by Health Directorate includes **Promotive**, preventive, primary, secondary & tertiary health care to all beneficiaries. Under Industrial Health Medical Examination of UPSC/RRB/RRC candidates, Periodical Medical examination of staff and Medial facility as per Workshop Act. Attendance at Railway accidents and attending passengers who fall ill on journey. Carrying out all programmers of Ministry of Health & Family Welfare. Besides the above, it is also involved in carrying out testing of food and water samples under Food Safety & Standard Act.
- 2.45. Facilities to Persons with Disabilities: A reservation quota in 3AC and in Sleeper Class has been earmarked in all trains running on non-suburban sections for persons with disability, performing their journey on concessional ticket. The person accompanying the persons with disability as escort is also allotted the berth out of this quota. The facility to book concessional e-tickets online using Photo identity card issued by Railways has been introduced for the persons with disability. Specially designed coaches known as SLRD coaches with wider entrance doors to allow a wheel chair to enter, wider aisles and modified toilet for persons with disability have been attached in almost all Mail/Express trains except Rajdhani, Shatabdi, Jan Shatabdi Express Train and Duronto Express Trains. Wheel chairs and Battery operated cars are provided at major stations to facilitate boarding/alighting of physically challenged persons and senior citizens along with their baggage. In allotment of STD/PCO booths at Railway Stations, 25% booths have been reserved for PWD (Divyangjan) (including blind) with disability of 40% and above. All necessary security related assistance is rendered to PWD (Divyangjan), women, children, elderly people etc., by RPF personnel to ensure their comfortable journey, Unauthorized persons found travelling in coaches/seats reserved for persons with disabilities (Divyangjan) are removed from coaches and prosecuted under relevant provisions of the Railways Act. Awareness program among rail users are conducted to educate public not to encroach the accommodation reserved for persons with disabilities (Divyangjan). Training programmers are conducted for sensitization of RPF Personnel towards the needs of specially abled persons, elderly persons, women and children. Security Helpline number "182" and twitter handle of Ministry of Railways '@RailMinIndia' are functional round the clock over entire network of Indian Railways.
- 2.46. **Separate Reservation Counters**: Separate counters are earmarked to various Passenger Reservation System (PRS) centers for dealing with the reservation requisitions received from persons with disability, Female Passengers, Senior Citizens, Ex. M.Ps, MLAs, accredited

journalists and freedom fighters, if the average demand per shift is not less than 120 tickets. In case there is no justification for earmarking of an exclusive counter for any of these categories of persons including persons with disability or senior citizens, one or two counters depending upon the total demand are earmarked for dealing with the reservation requests for all these categories of persons.

2.47. **Security:** The Railway Protection Force (RPF) has been constituted under the RPF Act, 1957 (as amended in the year 1985 and 2003) for better protection and security of Railway property, passenger area, passengers and matters connected therewith.¹¹⁷

### 3. Initiatives by Delhi Metro Rail Corporation (DMRC):

The total route length of metro network implemented and operational is 343.67 km including 22.70 Km of Airport Express Line (Source: DMRC Annual Report 2018-2019). Delhi metro has 26 interchange stations for switching over from one corridor to another. Smooth connectivity is thus available to commuters thereby reducing their travel time and cost.

- a) Delhi Metro covers major residential and commercial areas in Delhi and NCR.
- b) Increased indigenization of Rolling Stocks resulted in boosting local manufacturing and generation of employment opportunities.
- c) Steps to move to condition based maintenance from the present scheduled time based management.
- d) Improved Asset Based Management System
- e) Customer Facilities: Automatic Fare Collection Gates, Token Vending Machines, Point of sale machines, Lifts, Escalators etc.
- f) Improvements at station surrounding by undertaking special cleanliness drives in and around metro stations.
- g) Installation of Platform Screen Doors for highest level of safety of commuters and better crowd management
- h) Promoting GOI's efforts of cashless digital economy, DMRC has continued its efforts in cashless transactions and Smart Cards.
- i) Customer Satisfactory Survey to receive feedback from customers and act upon the same accordingly.
- j) Initiative to provide last mile connectivity through feeder buses.
- Source: Annual Report of Delhi Metro (2018-19)

### **Aviation Sector**

- 1) Regional Connectivity Scheme: AAI, is the implementing Agency for RCS-UDAN. The primary objective of RCS is to facilitate / stimulate regional air connectivity by making it affordable. Promoting affordability of regional air connectivity is envisioned under RCS by supporting airline operators through (1) concessions by Government and airport operators to reduce the cost of airline operations on regional routes / other support measures and (2) financial (viability gap funding or VGF) support to meet the gap, if any, between the cost of airline operations and expected revenues on such routes.
- 2) Comprehensive National Civil Aviation Policy (NCAP) was launched in 2016 for promoting rapid growth of the sector, ease of doing business and advanced regional

¹¹⁷ For further details about initiatives mentioned above under Indian Railways the following link may be accessed:

https://indianrailways.gov.in/railwayboard/uploads/directorate/stat_econ/Year_Book/Indian%20Railways%20Annual%20R eport%20%26%20Accounts%20English%202018-19.pdf

connectivity.

- 3) Air Cargo:
  - 3.1. Airport Authority of India Cargo Logistics & Allied Services Company Ltd. (AAICLAS) has been set up as a wholly-owned subsidiary of AAI to promote, represent, organize, undertake, establish, conduct, handle, arrange, own, operate, participate, facilitate, sponsor, encourage, and provide the business as Cargo Terminal Operator, Free Trade Zone, Air Freight Station and Inland Container Depot for air cargo.
  - 3.2. Setting up Air Freight Stations (Off-airport Common User-Facility) has been encouraged.
  - 3.3. Airports are increasingly deploying technology to enhance utilization and efficiency in cargo transactions. IT-based Cargo Management and Mobile Apps have been developed by AAICLAS/ AAI for functioning at their pan-India air cargo facilities.
  - 3.4. An Inter-Ministerial Air Cargo Logistics Promotion Board (ACLPB) has been constituted to promote better, inter-ministerial coordination and to take forward the needed interventions to promote growth of air cargo.
  - 3.5. Key Initiatives for improving efficiency, transparency and ease of doing business:
    - 3.5.1. A digital National Air Cargo Community System is being developed as a common platform for all stakeholders to communicate with each other digitally and improve ease of doing business in air cargo sector.
    - 3.5.2. e-Sahaj, an online portal for processing 22 types of security related clearances has been introduced, in order to streamline the procedure and to make it time-bound.
    - 3.5.3. Airport Entry Permits (AEPs) for businesses (e.g. MROs) and other employees (including visitors) within airports has been introduced.
    - 3.5.4. No Objection Certificate Application System (NOCAS) for height clearance of structures, including buildings, introduced by Airports Authority of India (AAI).
    - 3.5.5. 24x7 Customs clearance facility is now available at Air Cargo Complexes. Upgrading of air cargo screening facilities carried out at most terminals.
    - 3.5.6. Single Window Interface for Facilitating Trade (SWIFT) clearances system has been introduced on ICEGATE portal covering requirements of all Partner Government Agencies (PGAs).
    - 3.5.7. Customs authorities have eliminated the need for physical documentation for Customs clearances, for instance, bank payments and import declaration are electronically integrated. The number of mandatory documents has been reduced and only three mandatory documents are now prescribed for general import/ export.
    - 3.5.8. Other air cargo facilitation measures taken up include reduction of free period for air cargo clearance from 72 hours to 48 hours w.e.f. 01.04.2017, notifying service level standards to all stakeholders for reduction of dwell time, and use of digital signatures for transmission of messages and digital submission of documents under SWIFT.
- 4. Rajiv Gandhi National Aviation University: Designed to have state of art infrastructure for students, officials and faculty members with a dedicated data center, smart classrooms with the latest audio-visual training aids.
- 5. Skill Development in Aviation Sector: Government has laid out a road map for "Aviation Education and Skill Building" through the National Civil Aviation Policy, 2016.
- 6. An MoU has been signed between the Ministry of Civil Aviation of the Republic of India and the Department of Infrastructure and Regional Development of the Commonwealth of Australlia for promotion and development of cooperation in Civil Aviation Security.
- 7. Ministry of Civil Aviation has the following organizations under its administrative

control:

- 7.1. Attached offices
  - a) Directorate General of Civil Aviation.
  - b) Bureau of Civil Aviation Security.
  - c) Commission of Railway Safety
  - d) Aircraft accident investigation bureau.
- 7.2. Autonomous Bodies
  - a) Indira Gandhi Rastriya Uran Akademi
  - b) Airports Economic Regulatory Authority.
  - c) Rajiv Gandhi National Aviation University
- 7.3. Public Sector Undertakings
  - a) Airports Authority of India
  - b) Air India Limited
  - c) Pawan Hans Limited
- 8. Redressal of Public Grievances: CPGRAMS has been implemented in the Ministry for prompt and effective redressal of grievances.
- 9. AirSewa is an initiative of Ministry of Civil Aviation where passengers are able to register their grievances. It operates through an interactive Web Portal as well as through a mobile app. It also provides information about flight status/schedule, airport information (basic weather information, connecting flight details, wheel chair services, transport/Parking) etc.
- 10. Welfare of senior citizens: Instructions have been issued by the ministry from time to time for the following:
  - a) Remove all physical barriers to facilitate easy entry, movement and exit at all airports and in airlines.
  - b) Change the design of the frisking booths in the security hold area so that the elderly are not required to climb and descend while undergoing security checks.
  - c) Give preference in reservation and earmarking of seats in the airlines
- 11. The Flight Standard Directorate (FSD)- safety oversight of scheduled/non schedule operators and their air crew to ensure effective implementation of safety related standards and recommended practices as prescribed by ICAO.
- 12. The directorate of Aerodrome Standards Inspection and licensing /authorization of aerodrome/heliport and monitoring of the aircraft operations at aerodromes vis-avis the facilities provided at the aerodrome/heliport approved/licensed by this directorate.
- 13. DGCA has accorded top priority for Bird/Wildlife Hazard Management by Airport operators and major initiatives have been taken in this direction to effectively deal with this challenge.
- 14. Bureau of Civil Aviation Security: to safeguard civil aviation operations against acts of unlawful interference.
- 15. Airport Authority of India: To control and manage the India Air Space (excluding special user air space) extending beyond the territorial limits of the country as accepted by ICAO; Communication, Navigation and Surveillance Aids; Expansion and Strengthening of operational areas viz. Runways, Aprons, Taxiways etc.; Design, Development, Operation and Maintenance of Passenger Terminals, Development and management of cargo terminals.
- 16. Air Navigation Services (ANS) : AAI has inducted new technology and upgraded CNS

ATM system in its existing ANS infrastructure to cope up with increasing Air Traffic Growth.

- 17. Facilities to Persons with disabilities : Smooth ramps with anti skid flooring at terminal building entry points and Kerb area, sensor fitted doors, specially designed handicapped toilets, availability of wheel chairs etc. at airport terminals.
- 18. Air India Mobile App for quick, easy and convenience of booking on all Air India flights.
- 19. Pollution Control: Air India Limited in all new Civil/Electrical works, are using LED lights to reduce carbon footprint. Solar Plants are being installed. As a green initiative, the company has gone for large scale plantation in its premises.
- 20. Indira Gandhi Rastriya Uran Akademi Conduct airline oriented flying training courses to the level of contemporary international standards.
- 21. Pawan Hans Limited: Providing helicopter support services to the oil and gas sector in offshore exploration, operate in hilly and inaccessible areas, make available charter flights for promotion of travel and tourism.
- 22. Helliport/Hellihub in Delhi: Pawan Hans has developed and operationalized India's first heliport in Rohini, Delhi in 2017.
- 23. Rajiv Gandhi National Aviation University to facilitate and promote aviation studies and research, achieve excellence in areas related to aviation sector, produce quality human resource, create a strong base with a pool of scientific and technical manpower in the civil aviation sector.118
- 24. NABH Nirman Scheme: NextGen Airports for Bharat (NABH) aims to increase the number of Airports and their capacity to handle traffic.
- 25. Manual on aerodrome licensing procedures of DGCA, GOI describes the rules and procedures used by DGCA to process applications for the issue of aerodrome license. It is designed to ensure that the standards and requirements are applied when an aerodrome license is issued.

### Workshop Suggestions

- 1.1. A Comprehensive exercise of NHAI for decongestion of arterial road network of National Highways connecting NCT Delhi indicated that efforts are ongoing for development/ decongestion of NH1, NH 8 and NH 24. For complete decongestion, few more road network are required to be included.
- 1.2. Regarding impact of odd-even (2016) the Traffic Survey and Travel Attributes Study of SPA, Delhi stated a substantial reduction in traffic volume and congestion, average speed of a journey was as high as 50 kmph. as against 20-25 kmph. on regular days; busy Ring Road experiencing about 30 to 50 per cent increase in the average speed of vehicles during the odd-even fortnight; increase in average occupancy in personal cars at major nodes from 1.4 to 2.1. Even the Odd- Even (2019) with staggered working hours (Period: Nov 4-15, 2019) was successful but social acceptability is poor due to inconvenience caused- not sustainable.
- 1. NHAI has also taken up DPR for development of UER 2 (another Ring road for Delhi) under Bharatmala. On Development of Delhi Meerut Expressway (DME), 6 lane Expressway for

¹¹⁸ For further details about initiatives mentioned above under Aviation Sector the following link may be accessed: https://www.civilaviation.gov.in/sites/default/files/annual_report-2017_18_en.pdf

through traffic along with 6/8 lane National Highway for local traffic to ensure seamless connectivity, has been planned with a total Investment of Rs 6273 crore . (First package: Sarai Kale Khan to UP Border (Within Delhi) completed, 8.72 Km, Rs. 842 Crore; Second package: UP Border to Dasna (Ghaziabad) 60% completed, 19.28 Km, Rs. 1989 Crore. ; Third package: Dasna to Hapur (Ghaziabad/Hapur) completed, 22.27 Km, Rs. 1058 Crore ; Fourth package: Dasna to Meerut (Ghaziabad) 57% completed, 31.78 Km, Rs. 2384 Crore.

- 2. Efforts on De-Congestion Projects in Delhi-Manesar Corridor on NH-48 include Signal free corridor from Dhaula Kuan to Airport. ; Grade separators at T Intersection of Station Road with NH 8 ; T Junction of Parade road with NH 8 (project cost Rs 270 crore)
- 3. As per Inland Waterways Authority of India, DPR study for River Yamuna awarded to M/s WAPCOS. Study is under finalization. It would have 110 Terminals with Okhla, New Delhi (Dirty Cargo and Multipurpose Terminal); Naujhil Bridge, Matura (Dirty Cargo) ; Mahewa Khachhar, Kaushambi (Dirty Cargo) ; Daulatpur, Kanpur (Dirty Cargo); Naini Bridge, Allahabad (Dirty Cargo) ; Yamuna Bridge, Allahabad (Dirty Cargo) ; Kalpi, Jalaun (Dirty Cargo and Multipurpose Terminal). Challenges/ Intervention involved in such a project would include Modifications of Cross structures on River Yamuna (77 No"s bridges Road & Rail & HT/LT Lines-43 No"s) ; Modification for Existing Barrage for Navigational Locks ; Construction of 20 No"s of Barrages for LAD 2.5 M.
- 1.3. Regional Plan 2021 (RP-2021) for NCR notified in 2005, formulated a set of policies and proposals for the Transport Sector within an objective to promote and support the economic development of the region and relieve the Capital of excessive pressure on the infrastructure including traffic congestion. It was to provide accessibility to all the parts of the region and discourage the transit of passengers and goods through the core area of NCT-Delhi by providing bypasses and thereby opening areas for economic development of the region. The Plan emphasised unrestricted movement of buses, taxis, & auto-rickshaws within NCR and execution of the Regional Plan-2001 (notified in 1989) proposals of Integrated Mass Rapid Transport System (MRTS), Regional Rapid Transport System (RRTS), Expressways and Bypasses without further delays.
- 1.4. To guide the NCR participating States 'Functional Plan on Transport for National Capital Region-2032' was also prepared for the area of NCR covered under RP-2021. The Functional Plan on Transport comprises eleven elements which includes (i) Regional Rapid Transit System (RRTS), (ii) New Rail Lines, (iii) Regional Mass Rapid Transit System (MRTS), (iv) Up-gradation of Roads, (v) Expressways, (vi) Bus Transport System, (vii) Bus Terminals, (viii) Logistic Hubs, (ix) Integrated Freight Complexes, (x) Highway Facilities Centres, and (xi) Airports

Box: :The Supply Management efforts may include Grade Separators, road widening, creating more space for vehicles, adding more trains, vehicle oriented development. However, as per MOUD's High Powered Committee on Decongesting Traffic in Delhi, 2016, "despite increasing the length of the road network and road surface space through widening the traffic congestion has continued to increase unabated". Regarding impact of odd-even (2016) the Traffic Survey & Travel Attributes Study of SPA, Delhi stated a substantial reduction in traffic volume and congestion, average speed of a journey was as high as 50 kmph as against 20-25 kmph on regular days; busy Ring Road experiencing about 30 to 50 per cent increase in the average speed of vehicles during the odd-even fortnight; increase in average occupancy in personal cars at major nodes from 1.4 to 2.1. Even the Odd- Even (2019) with standard working, hours, (Pariod: New 4.15, 2010) was successful but social accontability is poor due to

### **B)** Initiatives of NCR Participating States

1.5. About 2000 electric buses are proposed in Delhi. DTC app has been launched. 10000 auto rickshaw new permits have been issued. One Cell for Electric Vehicles has been created for providing subsidy.

Enhanced FAR upto 350 within 500 mtrs intense zone along Metro Corridor and 250 between 500-800 mtrs zone with a provision of mixed land use has been proposed. Walkability is one of the most vital key elements in encouraging people to walk for transportation under the concepts of TOD and accordingly high density, especially around a transit stop or station was suggested so that more residents could be within proximity of the transit stop or station.

### Annexure-D-4.3



### Annexure-D-4.4





## Key challenges regarding Logistics Sector

- 1. Infrastructure:
  - a. Inadequate and low-quality modal and terminal transport infrastructure, limited availability of multi modal interchange points.
  - b. Inefficient and ill-designed storage facilities for cargo and containers.
  - c. Inefficient operational and maintenance protocols.
  - d. Poor adoption/adaptation of technology.
- 2. Regulatory Hurdles:
  - a. Obstacles in land acquisition and consolidation
  - b. Obstacles in change in land use
  - c. Lack of transparency in compliances
- 3. Suboptimal Modal Mix: Nearly 60 % of the cargo is moved by road, 32% by rail, and rest by the coastal shipping, airways and inland waterways. Pipelines constitute only a very minor proportion. Globally, it is accepted that movement of long haul bulk traffic by road is less efficient than by rail or coastal or waterways.
- 4. Tariff Structure:
  - a. Cross-subsidy of passenger tariff by freight in railways leading to high freight cost of rail
  - b. Underdeveloped coastal transportation market leading to high and unstable tariffs
  - c. High vessel related charges on Indian ports
- 5. Skill Development: Lack of skilled manpower in truck drivers, seafarers, warehousing managers, quality inspection supervisors.

# City Regions with Four or More Airports¹¹⁹

	Airport	Location	Within city limits	Distance and direction from city center	Passengers (2014)	
Six	airports					
1.	United Kingdom, Englan	d, Greater London, L	ondon	-		
i)	London City Airport	London Docklands	Yes	11 km (6.8 mi) east	4,820,292 (2018)	
ii)	Gatwick Airport	Crawley, West Sussex	No	46 km (29 mi) south	46,075,400 (2018)	
iii)	Heathrow Airport	London Borough of Hillingdon	Yes	24 km (15 mi) west	80,102,017 (2018)	
iv)	London Luton Airport	Luton	No	48 km (30 mi) north	16,769,634 (2018)	
v)	London Stansted Airport	Uttlesford	No	48 km (30 mi) northeast	25,902,618 (2017)	
vi)	London Southend Airport	District of Rochford	No	69 km (43 mi) east	1,095,914 (2017)	
2.	United States, New York,	New York metropoli	itan area, I	New York City		
i)	John F. Kennedy International Airport	Queens	Yes	19 km (12 mi) southeast	61,909,148 (2018)	
ii)	LaGuardia Airport	Queens	Yes	4 km (2.5 mi) east	30,094,074 (2018)	
iii)	Long Island MacArthur Airport	Islip, New York	No	81 km (50 mi) east	620,000 (2017)	
iv)	Newark Liberty International Airport	Newark, New Jersey	No	8 km (5.0 mi) west	46,065,175 (2018)	
v)	Stewart International Airport	Newburgh, New York	No	88 km (55 mi) north	448,000 (2017)	
vi)	Westchester County Airport	White Plains, New York	No	53 km (33 mi) north	1,468,851 (2013)	
Fiv	e airports	·			·	
1.	United States, California,	Greater Los Angeles	s Area, Los	s Angeles		
i)	Hollywood Burbank Airport	Burbank, California	No	25 km (16 mi) north	5,263,972 (2018)	

¹¹⁹ <u>https://en.wikipedia.org/wiki/List of cities with more than one airport</u>

Airport	Location	Within city limits	Distance and direction from city center	Passengers (2014)
ii) John Wayne Airport	Santa Ana, California	No	70 km (43 mi) southeast	10,664,038 (2018)
iii) Ontario International Airport	Ontario, California	No	61 km (38 mi) east	5,115,894 (2018)
iv) Long Beach Airport	Long Beach, California	No	58 km (36 mi) south	3,884,721 (2018)
v) Los Angeles International Airport	Los Angeles	Yes	27 km (17 mi) southwest	87,534,384 (2018)
2. United States, Washington	on, Seattle		·	•
i) Seattle–Tacoma International Airport	SeaTac, Washington	No	23 km (14 mi) south	24,894,338
ii) Boeing Field	Seattle	Yes	9.7 km (6 mi) south	_
iii) Paine Field	Everett, Washington	No	40 km (25 mi) north	-
iv) Kenmore Air Harbor Seaplane Base	Seattle	Yes	1.85 km (1 mi) north	_
v) Kenmore Air Harbor[1]	Kenmore, Washington	No	25 km (16 mi) east	
Four airports				
1. Australia, Victoria, Melb	ourne			
i) Avalon Airport	Avalon, Victoria	No	50 km (31 mi) southwest	1,400,000[2]
ii) Essendon Airport	Essendon, Victoria	Yes	11 km (6.8 mi) northwest	
iii) Melbourne Airport	Tullamarine, Victoria	Yes	20 km (12 mi) northwest	27,700,000
iv) Moorabbin Airport	Mentone, Victoria	Yes	22 km (14 mi) southeast	
2. France, Île-de-France, Pa	aris		·	
i) Charles de Gaulle Airport	Roissy-en-France	No	31 km (19 mi) northeast	72,229,723 (2018)
ii) Orly Airport	Orly	No	18 km (11 mi) south	33,120,685 (2018)
iii) Beauvais–Tillé Airport	Tillé	No	90 km (56 mi)	3,997,856 (2016)

	Airport	Location	Within city limits	Distance and direction from city center	Passengers (2014)	
				north		
iv)	Châlons Vatry Airport	Vatry	No	147 km (91 mi) east	96,221 (2014)	
3.	Russia, Moscow			•		
i)	Vnukovo International Airport	Moscow	Yes	28 km (17 mi) southwest	18,139,000 (2017)	
ii)	Sheremetyevo International Airport	Khimki, Moscow Oblast	No	29 km (18 mi) northwest	34,030,000 (2016)	
iii)	Zhukovsky International Airport	Zhukovsky, Moscow Oblast	No	40 km (25 mi) southeast	passenger flights started in 2016	
iv)	Domodedovo International Airport	ort Domodedovo, Moscow Oblast		42 km (26 mi) southeast	28,500,000 (2016)	
4.	Japan, Tokyo Metropolis	, Special wards of To	kyo	•		
i)	Narita International Airport	Narita, Chiba	No	60 km (37 mi) east	42,600,000 (2018)	
ii)	Haneda Airport	Ōta, Tokyo	Yes	14 km (8.7 mi) south	87,130,000 (2018)	
iii)	Chōfu Airport	Chōfu, Tokyo	Yes	15 km (9.3 mi) west	94,816 (2015)	
iv)	Ibaraki Airport	Omitama, Ibaraki	No	80 km (50 mi) northeast	538,227 (2015)	
5.	Sweden, Stockholm Coun	ty, Stockholm		•		
i)	Stockholm Arlanda Airport	Sigtuna Municipality	No	37 km (23 mi) north	16,962,416	
ii)	Stockholm Bromma Airport	Bromma borough	Yes	7.4 km (4.6 mi) northwest	2,488,779	
iii)	Stockholm Skavsta Airport	Nyköping Municipality	No	100 km (62 mi) south	2,524,633	
iv)	Stockholm Västerås Airport	Västerås Municipality	No	100 km (62 mi) west	174,496	
6.	United States, California,	San Francisco Bay A	Irea	1	1	
i)	Charles M. Schulz– Sonoma County Airport	Sonoma County, California	No	87 km (54 mi) northwest	238,917 (2014)	
ii)	Oakland International Airport	Alameda County, California	No	19 km (11.8 mi) southeast	13,594,251 (2018)	

Airport	Location	Within city limits	Distance and direction from city center	Passengers (2014)
iii) San Francisco International Airport	San Mateo County, California	No	18.3 km (11.4 mi) south	57,793,313 (2018)
iv) San Jose International Airport	San Jose, California	No	63 km (39 mi) southeast	14,319,292 (2018)
7. United States, Florida, N	Iiami			
i) Miami International Airport	Miami-Dade County, Florida	No	13 km (8 mi) northwest	45,044,312 (2018)
ii) Fort Lauderdale– Hollywood International Airport	Broward County, Florida	No	34 km (21 mi) north	26,941,511 (2015)
iii) Palm Beach International Airport	West Palm Beach, Florida	No	166 km (103 mi) north	6,265,530 (2015)
iv) Miami Seaplane Base	Watson Island, Florida	Yes		
8. United States, Massachu	setts, Boston	_		
i) Logan International Airport	Boston	Yes	4 km (2.5 mi) east	40,941,925 (2018)
ii) Manchester–Boston Regional Airport	Manchester, New Hampshire	No	81 km (50 mi) northwest	2,814,125
iii) T. F. Green Airport	Warwick, Rhode Island	No	95 km (59 mi) south	3,566,769
iv) Worcester Regional Airport	Worcester, Massachusetts	No	76 km (47 mi) west	107,000

## **Chapter-5-Power & Energy**

Annexure-D-1.4

# Central/State/Private Sector Power Projects for Power Allocation to Northern Region and NCR States

Table 1.1: Central Sector Power projects /UMPPs involving Power Allocation to Northern Region states during 12th Plan and beyond (as on 15.05.2019)

Project name	State	Developer	Fuel Type	Capa city (MW)	Sha re of NR	Remarks	Year of Commissi oned
1. Kameng HEP	Arunachal Pradesh	NEEPCO	Hydro	600	150	under construction	-
2. Subansiri Lower HEP	Arunachal Pradesh	NHPC	Hydro	2000	-	under construction	-
3. Parbati-II HEP	Himachal Pradesh	NHPC	Hydro	800	800	under construction	-
4. Rampur HEP	Himachal Pradesh	STU	Hydro	412	412	Commission ed	2014
5. Kol Dam HEP	Himachal Pradesh	NTPC	Hydro	800	800	Commission ed	2015
6. Chamera-III HEP	Himachal Pradesh	NHPC	Hydro	231	231	Commission ed	2012
7. Parbati III HEP	Himachal Pradesh	NHPC	Hydro	520	520	Commission ed	2014
8. Kishan Ganga HEP	J & K	NHPC	Hydro	330	330	Commission ed	2018
9. Uri II HEP	J & K	NHPC	Hydro	240	240	Commission ed	2013 & 2014
10. Tapovan Vishnugad HEP	Uttarakhand	NTPC	Hydro	520	520	under construction	-
11. Tehri PSP	Uttarakhand	THDC	Hydro	1000	100 0	under construction	-
12. Indira Gandhi TPP (Jhajjar)JV U-3	Haryana	NTPC	Coal	500	500	Commission ed	2012
13. Rihand TPP-III U-5,6	Uttar Pradesh	NTPC	Coal	1000	100 0	Commission ed	2012 & 2013
14. Mundra UMPP U 2-5	Gujarat	Tata Power	Coal	3200	149 5	Commission ed	2012 & 2013
15. Sasan UMPP U 1-6	Madhya Pradesh	Reliance Power	Coal	3960	232 6.5	Commission ed	2013, 2014 &

Project name	State	Developer	Fuel Type	Capa city (MW)	Sha re of NR	Remarks	Year of Commissi oned
							2015
16. RAPP U 7 & 8	Rajasthan	NPCIL	Nuclea r	1400	140 0	under construction	-
17. Meja STPP U-1&2	Uttar Pradesh	JV of NTPC & UPRVUN L	Coal	1320	132 0	under construction	-
18. Tanda TPS-II U-1&2	Uttar Pradesh	NTPC	Coal	1320	132 0	under construction	-
19. Ghatampur TPP U-1 to 3	Uttar Pradesh	NLC	Coal	1980	198 0	under construction	-
20. Barsingsar TPP Ext U-1	Rajasthan	NLC	Coal	250	250	under construction	-
21. Bithnok TPP U-1	Rajasthan	NLC	Coal	250	250	under construction	-
22. Vishnugarh Pipalkoti	Uttarakhand	THDC	Hydro	444	444	under construction	-
23. Naitwar Mori	Uttarakhand	SJVNL	Hydro	60	60	under construction	-
24. Pakal Dul	J & K	CVPPL	Hydro	1000	100 0	under construction	-
25. Lata Tapovan	Uttarakhand	NTPC	Hydro	171	171	under construction	-

Source: CEA, Power sector Review Report for RP-2021

# Table 1.2: Central Sector / State Sector / Private Sector Power Projects forPower Allocation to NCR States during 12th Plan and beyond (as on 15.05.2019)

	Project name	State	Developer	Sect or	Fuel Type	Capacity (MW)	Remarks	Year of Commissi oned
1.	Pragati-III Bawana) CCGT (GT 3,4 + ST 2)	Delhi	PPCL	State	Gas /LNG	750	Commissi oned	2012, 2013 & 2014
2.	Mahatma Gandhi Jhajjar TPP U-2	Haryana	China Light Power	Priva te	Coal	660	Commissi oned	2012
3.	Kalisindh TPP U- 1,2	Rajastha n	RRVUNL	State	Coal	1200	Commissi oned	2014 & 2015
4.	Chhabra TPP Ext U-3,4	Rajastha n	RRVUNL	State	Coal	500	Commissi oned	2013 & 2014

	Project name	State	Developer	Sect or	Fuel Type	Capacity (MW)	Remarks	Year of Commissi oned
5.	Ramgarh CCGT	Rajastha n	RRVUNL	State	Gas	160	Commissi oned	2013 & 2014
6.	Jalipa Kapurdi TPP U 5-8	Rajastha n	Raj West Power	Priva te	Lignite	540	Commissi oned	2013
7.	Kawai TPP U 1,2	Rajastha n	Adani Power	Priva te	Coal	1320	Commissi oned	2013
8.	Anpara D TPP U 1,2	Uttar Pradesh	UPRVUNL	State	Coal	1000	Commissi oned	2015 & 2016
9.	Parichha TPP Extn U-5,6	Uttar Pradesh	UPRVUNL	State	Coal	500	Commissi oned	2012 & 2013
10.	Harduaganj TPP Ext U-9	Uttar Pradesh	UPRVUNL	State	Coal	250	Commissi oned	2012
11.	Bara (Prayagraj) TPP U 1-3	Uttar Pradesh	Prayagraj Power Gen. Co. Ltd.	Priva te	Coal	1980	Commissi oned	2015, 2016 & 2017
12.	Lalitpur TPP U1-3	Uttar Pradesh	Bajaj Energy	Priva te	Coal	1980	Commissi oned	2016
13.	RAPP U 7 & 8	Rajastha n	NPCIL	Cent ral	Nuclea r	1400	under constructi on	_
14.	Meja STPP U- 1&2	Uttar Pradesh	JV of NTPC & UPRVUNL	Cent ral	Coal	1320	under constructi on	_
15.	Vishnugarh Pipalkoti	Uttarakh and	THDC	Cent ral	Hydro	444	under constructi on	-
16.	Kishan Ganga HEP	J & K	NHPC	Cent ral	Hydro	330	Commissi oned	2018
17.	Parbati-II HEP	Himachal Pradesh	NHPC	Cent ral	Hydro	800	under constructi on	-
18.	Kameng HEP	Arunacha 1 Pradesh	NEEPCO	Cent ral	Hydro	600	under constructi on	-
19.	Tapovan Vishnugad HEP	Uttarakh and	NTPC	Cent ral	Hydro	520	under constructi on	_
20.	Tehri PSP	Uttarakh and	THDC	Cent ral	Hydro	1000	under constructi on	_

Source: CEA, Power sector Review Report for RP-2021

No. of Fuel Cap. **Project Name** Implementin State Sector Unit No Units Туре (MW) g Agency x MW Centra 1 x 1. Barsingsar NLC U-1 Rajasthan Coal 250 250 1 TPP ext Centra 1 x 2. Bithnok NLC Rajasthan Coal U-1 250 250 1 TPP Uttar Centra U-1 to U-3 x Ghatampur 3. NLC JV Coal 1980 Pradesh 1 3 660 TPP JV of NTPC Uttar Centra Coal U-2 1x 660 660 Meja STPP 4. & UPRVUNL Pradesh 1 U-1 to U-2 x Uttar Centra NTPC Coal 1320 Tanda TPP 5. Pradesh 1 660 2 U-7 to U-2 x Suratgarh 6. RRVUNL Rajasthan Coal State 1320 660 8 TPS 7. Harduaganj Uttar 1 x UPRVUNL Coal State U-1 660 Exp.-II Pradesh 660 TPP Uttar U-1 to U-2 x 8. Jawaharpur UPRVUNL Coal State 1320 Pradesh 2 660 STPP Uttar U-1 to U-2 x 9. Obra-C UPRVUNL Coal State 1320 Pradesh 2 660 STPP Uttar UPRVUNL Coal State U-1 1X660 660 10. Panki Pradesh 11. Suratgarh 2 x Rajasthan Coal State 1320 TPS/ 660 RRVUNL 12. Rajasthan Atomic U-7 & U-Centra NPCIL Rajasthan Nuclear 2x700 1400 Power 1 8 Station (RAPP) Himachal Centra 13. Parbati St. NHPC Hydro 4x200 800 --Pradesh 1 Π Centra 14. Tapovan NTPC Uttarakhand Hydro 4x130 520 --1 Vishnugad Centra THDC Uttarakhand Hydro 4x250 1,000 --15. Tehri PSS 1 Centra 16. Vishnugad THDC Uttarakhand Hydro 4x111 444 --1 Pipalkoti Arunachal Centra Hydro 8X250 2000 --17. Subansiri Pradesh 1

Table 1.3: Under construction power projects likely to benefits NCR (states) (as on15.05.2019)

18. Natwarmor i		Uttarakhand	Hydro	Centra 1		2X30	60	
19. Lata Tapovan*		Uttarakhand	Hydro	Centra 1		3X57	171	
20. Kameng	NEEPCO	Arunachal Pradesh	Hydro	Centra 1		4x150	600	
Total								

* Subject to start of work

Source: CEA, Power sector Review Report for RP-2021

# **Snapshot of Power Sector of NCR**

### Details of CEA 19th Electric Power Survey of India (EPS) (Volume-II) for NCR¹²⁰

The Report on Nineteenth Electric Power Survey of India (Volume-II) (National Capital Region), providing power forecasts for NCR and its sub-region (FY 2019-20 to 2029-30, indicates the followings:

a) Based on total electricity consumption and T&D Losses, the total energy requirement of NCR is estimated as 102631 MU in year 2019-20 and it is expected to reach 127149 MU in year 2024-25 with CAGR of 4.38%. The energy requirement is estimated as 154916 MU by the year 2029-30 with CAGR of 4.03% for the period 2024-25 to 2029-30. The CAGR of energy requirement for the next ten years (2019-20 to 2029-30) is expected as 4.20%.



Figure 2.1: Energy Requirement Forecast of NCR (FY 2018-19 to 2029-30)

b) Peak Demand for NCR is expected to see 6.14% CAGR upto 2024-25 and will reach 22070 MW in comparison to 16386 MW in year 2019-20. The Peak Demand is expected to reach 29233 MW in year 2029-30 with a CAGR of 5.78% after 2024-25. The CAGR of peak energy demand for the next ten years (2019-20 to 2029-30) is expected as 5.96 %.

Sl.	Catagowy	Energ	Energy Consumption CAGR in %							
No.	Category	2019-20 to 2024-25	2024-25 to 2029-30	2019-20 to 2029-30						
1.	Domestic	5.25	4.44	4.85						
2.	Commercial	4.97	4.68	4.83						
3.	Industrial	4.22	4.00	4.11						

¹²⁰ Report on Nineteenth Electric Power Survey of India (Volume-II) (National Capital Region), CEA, Ministry of Power, Government of India



Figure 2.2: Peak Demand Forecast of NCR (FY 2018-19 to 2029-30)



Figure 2.3: Category wise energy Consumption Forecasts (FY 2018-19 to 2029-30)

c) T&D losses of NCR targeted to bring down to about 11.51 % and 10.30 % by the end of 2024-25 & 2029-30 respectively.



Figure 2.4: T&D Loss Forecast of NCR (FY 2018-19 to 2029-30)

d) NCR and sub-region wise details of forecasts for Electrical Energy Consumption, Energy Requirement and Peak Electricity Demand for (FY 2019-20 to 2029-30) are as under:

		Nat	iona	l Cap	ital R	legio	n				
Electric	al Energy (	Consump	tion, En	ergy Rec	luiremer	nt and Pe	ak Elect	tricity De	mand		
		(Categ	ory Wis	eand Ye	ar Wise	Summar	y)				
Year	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Domestic	32225	34033	35878	37760	39675	41625	43605	45615	47591	49639	51724
Commercial	13142	13801	14491	15213	15966	16752	17568	18415	19271	20155	21060
Public lighting	935	980	1027	1074	1123	1173	1223	1276	1328	1383	1440
Public Water Works	2073	2181	2295	2414	2538	2669	2805	2948	3095	3250	3412
Irrigation	11138	11605	12085	12579	13090	13617	14160	14721	15273	15869	15482
LT Industries	5079	5265	5452	5643	5835	6030	6226	6424	6624	6830	7040
HT Industries	19350	20217	21116	22048	23012	24010	25042	26108	27201	28337	29508
Railway Traction	504	520	538	556	575	595	618	642	666	691	717
Bulk Supply	4650	4912	5184	5465	5753	6049	6351	6657	6965	7273	7580
Total (Energy Consumption)	89096	93515	98066	102751	107568	112519	117599	122805	128013	133426	138964
T&D losses -MU	13535	13624	13863	14096	14321	14530	14935	15236	15476	15718	15952
T&D losses - in %	13.19	12.72	12.39	12.06	11.75	11.51	11.27	11.04	10.79	10.54	10.30
Energy Requirement - MU	102631	107139	111929	116847	121889	127149	132534	138041	143490	149144	154916
AnnualLoad Factor - %	71.50	70.31	69.15	68.00	65.88	65.77	64.68	63.61	62.55	61.51	60.49
Peak Load - MW	16386	17394	18478	19615	20806	22070	23392	24775	26187	27678	29233

### Category wise NCR Forecast (2019-20 to 2029-30)



# Delhi - NCT

Electrical Energy Consumption, Energy Requirement and Peak Electricity Demand											
(Category Wise and Year Wise Summary )											
Year	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Domestic	15786	16502	17228	17963	18705	19454	20206	20964	21697	22457	23243
Commercial	7792	8002	8216	8435	8660	8889	9125	9366	9601	9841	10087
Public lighting	577	605	633	662	691	720	751	781	813	845	879
Public Water Works	707	741	776	813	851	891	933	976	1020	1066	1114
Irrigation	26	25	25	24	24	23	23	22	22	21	21
LT Industries	3001	3089	3176	3264	3351	3439	3526	3614	3704	3797	3891
HT Industries	530	535	539	544	549	553	558	562	567	572	576
Railway Traction	104	108	112	117	121	126	132	139	146	153	161
Bulk Supply	1673	1719	1767	1818	1870	1925	1982	2042	2103	2166	2231
Total (Energy Consumption)	30197	31326	32473	33639	34821	36020	37235	38467	39672	40917	42203
T&D losses-MU	4345	4381	4411	4434	4450	4553	4653	4752	4801	4849	4896
T&D losses - in %	12.58	12.27	11.96	11.65	11.33	11.22	11.11	11.00	10.80	10.60	10.40
Energy Requirement - MU	34542	35707	36884	38073	39272	40573	41888	43219	44473	45767	47099
AnnualLoad Factor - %	53.29	52.42	51.57	50.73	49.91	49.10	48.30	47.52	46.75	45.99	45.24
Peak Load - MW	7400	7776	8164	8567	8982	9433	9899	10382	10860	11360	11884



# Haryana Sub Region

#### Electrical Energy Consumption, Energy Requirement and Peak Electricity Demand

		(Cate	gory Wis	e and Ye	ar Wise	Summar	Y)				
Year	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Domestic	6319	6677	7048	7432	7828	8237	8658	9090	9532	9984	10445
Commercial	3693	4044	4419	4818	5239	5683	6147	6629	7127	7638	8158
Public lighting	108	114	120	125	132	138	144	151	158	164	171
Public Water Works	831	870	910	951	994	1038	1083	1130	1178	1228	1279
Irrigation	6307	6548	6797	7054	7319	7592	7872	8159	8455	8757	9067
LT Industries	943	984	1025	1068	1112	1157	1203	1250	1299	1348	1399
HT Industries	9398	9821	10256	10702	11159	11626	12103	12590	13085	13588	14099
Railway Traction	314	319	325	331	337	343	349	355	361	367	373
Bulk Supply	1184	1248	1314	1382	1453	1527	1604	1683	1765	1849	1936
Total (Energy Consumption)	29098	30624	32213	33863	35573	37341	39163	41037	42959	44923	46926
T&D losses -MU	5291	5388	5486	5582	5677	5770	5860	5947	6031	6110	6183
T&D losses -in %	15.39	14.96	14.55	14.15	13.76	13.38	13.02	12.66	12.31	11.97	11.64
Energy Requirement - MU	34389	36012	37699	39445	41250	43111	45023	46984	48990	51033	53109
Annual Load Factor - %	60.04	60.49	60.94	61.39	61.84	62.30	62.76	63.23	63.70	64.17	64.64
Peak Load - MW	6538	6796	7062	7335	7614	7899	8189	8483	8780	9079	9379


		orta	I I I G	rere o li	oub	negi	om				
Electric	al Energy	Consum	otion, En	ergy Rec	uireme	nt and P	eak Elect	tricity D	emand		
		(Categ	gory Wis	e and Ye	ar Wise	Summa	y)				
Year	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Domestic	9139	9809	10490	11183	11890	12610	13344	14091	14817	15579	16344
Commercial	1344	1421	1500	1581	1664	1751	1842	1937	2033	2138	2248
Public lighting	215	225	234	244	255	265	276	288	299	311	323
Public Water Works	441	473	506	542	580	621	665	712	761	815	873
Irrigation	2678	2798	2918	3040	3165	3293	3425	3561	3674	3817	3964
LT Industries	1010	1061	1114	1167	1221	1276	1331	1388	1442	1499	1555
HT Industries	6759	7071	7400	7747	8112	8499	8906	9336	9783	10262	10767
Railway Traction	86	93	100	108	117	126	137	148	159	170	183
Bulk Supply	1727	1876	2030	2189	2351	2516	2681	2845	3008	3166	3319
Total (Energy Consumption)	23401	24827	26293	27801	29356	30957	32608	34306	35975	37757	39576
T&D losses -MU	2560	2619	2731	2843	2957	3073	3190	3307	3419	3538	3657
T&D losses - in %	9.86	9.54	9.41	9.28	9.15	9.03	8.91	8.79	8.68	8.57	8.46
Energy Requirement - MU	25961	27446	29024	30645	32313	34030	35798	37614	39394	41295	43234
Annual Load Factor - %	72.55	72.02	71.50	70.98	70.46	69.95	69.44	68.93	68.43	67.93	67.43
Peak Load - MW	4085	4350	4634	4929	5235	5554	5885	6229	6572	6940	7319



		Ra	jasth	ian S	ub Re	egion					
Electrica	al Energy (	onsump	tion, En	ergy Rec	uiremer	nt and Pe	ak Elect	ricity De	mand		
		(Categ	ory Wise	e and Ye	ar Wise	Summar	y)				
Year	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2025-27	2027-28	2028-29	2029-30
Domestic	980	1045	1113	1182	1252	1324	1397	1471	1545	1619	1693
Commercial	312	334	356	379	403	429	455	482	510	539	568
Public lighting	34	37	40	43	46	49	52	56	59	63	67
Public Water Works	93	98	108	108	114	119	124	130	135	141	146
Irrigation	2128	2234	2345	2461	2582	2708	2840	2978	3123	3273	3430
LT Industries	124	130	137	144	151	158	165	172	180	187	194
HT Industries	2663	2790	2921	3055	3192	3332	3474	3619	3766	3916	4067
Railway Traction	0	0	0	0	0	0	0	0	0	0	0
Bulk Supply	66	69	72	75	78	81	84	87	89	92	95
Total (Energy Consumption)	6400	6738	7087	7447	7818	8200	8592	8995	9407	9829	10259
T&D losses -MU	1339	1236	1237	1237	1236	1235	1232	1229	1225	1221	1215
T&D losses -in %	17.30	15.50	14.86	14.24	13.65	13.09	12.54	12.02	11.53	11.05	10.59
Energy Requirement - MU	7739	7974	8323	8684	9054	9435	9825	10224	10633	11050	11474
Annual Load Factor - %	70.11	69.71	69.31	68.92	68.52	68.13	67.74	67.35	66.97	66.58	66.20
Peak Load - MW	1260	1306	1371	1438	1508	1581	1656	1733	1813	1894	1978



Table 2.2: Energy	requirement	of the	States	and	their	DISCOM	S up	to	2026-27
(as per 19 th EPS)									

									Energy Requirement (MU)				
	2016-17	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	2022- 23	2023- 24	2024- 25	2025- 26	2026- 27		
Delhi	31937	33070	34401	35380	36573	37778	38997	40224	41557	42904	44267		
NDMC	1600	1627	1655	1684	1713	1743	1773	1804	1835	1867	1900		
BYPL	7259	7545	7842	8153	8470	8790	9113	9438	9665	10091	10418		
BRPL	12803	13234	13680	14143	14613	15093	15584	16082	16682	17295	17922		
TPDDL	9269	9625	9948	10290	10630	10968	11305	11640	11975	12309	12643		
MES	250	257	265	273	281	289	298	307	316	326	336		
HYN	48991	51254	54062	57083	60336	63618	66747	70333	75110	80239	85743		
DHBV N	26553	28068	30058	32196	34493	36963	39234	42142	45271	48639	52262		
UHBV N	21436	22138	22898	23721	24609	25345	26149	26752	28303	29960	31727		
UP	108070	11568	12395	13247	14142	15079	15941	16773	17647	18567	19532		
		8	1	6	6	7	2	1	7	4	3		
MVVN L	18874	20706	22681	24728	26919	29256	31626	34094	36683	39389	42199		
PUVV NL	24287	26140	28136	30077	32007	33906	35489	36954	38484	40090	41766		
PVVNL	33136	35397	38709	40388	43141	46083	48593	51021	53570	56252	59063		
DVVN L	28580	30103	31702	33379	35122	36940	38686	40201	41779	43428	45145		
NPC	1688	1730	1896	2059	2258	2511	2799	3126	3503	3929	4429		
Raj	73222	76569	79485	83168	87051	91216	95782	10120	10880	11721	12629		
								0	8	9	0		
AVVN L	19236	20032	20715	21491	22372	23302	24330	<b>0</b> 25380	<b>8</b> 27108	<b>9</b> 29054	<b>0</b> 31111		

L											
JVVNL	27954	28762	29425	30502	31557	32587	33695	34858	37140	39606	42209
Peak Demand (MW)											
	2016-	2017- 18	2018- 19	2019- 20	2020- 21	2021- 22	2022- 23	2023- 24	2024- 25	2025- 26	2026- 27
Delhi	6318	6541	6764	6997	7233	7471	7712	7954	8217	8482	8751
HYN	9428	9861	10397	10975	11596	12222	12819	13501	14415	15398	16451
UP	16067	17379	18821	20334	21948	23664	25331	26658	28053	29522	31064
Raj	11535	12070	12540	13133	13761	14435	15176	16048	17282	18651	20131

<b>Table 2.3:</b>	Long	term	Energy	requirement	and	peak	load	of	NCR	Constituen
States										

		<b>Energy Requi</b>	rement (MU)	Peak demand (MW)						
	2021-22	2026-27	2031-32	2036-37	2021-22	2026-27	2031-32	2036-37		
Delhi	37778	44267	51850	61085	7471	8751	10139	11549		
HYN	63618	85743	105853	126074	12222	16451	20046	23486		
UP	150797	195323	234290	284645	23664	31064	38885	48498		
Raj	91216	126290	161606	199552	14435	20131	26575	34000		

NCRPB during 2018-19 undertook review of policies, proposals & recommendations of the RP-2021 and its implementation through an Experts Study Group constituted under CEA. The Study Group observed that during 2012-13 there were peak power deficit of 5%, 9.5%, 4.8%,13.6% in NCT Delhi, Haryana, Rajasthan and Uttar Pradesh sub-regions, respectively, whereas peak power deficit figures for Northern Region were 8.9%. Over the years situation has improved as compared to 2012-13 and during 2018-19 the demand not met figures were 2.1% for Uttar Pradesh and other states of NCR are able to meet the peak demand however in Northern Region the peak demand not met is about 2.3%. The Power Network of NCR is shown as follow:

#### Power Map of NCR, 2019



Source: CEA, Power sector Review Report on RP-2021

During 2012-13 energy demand not met figures were 0.5%, 7.7%, 3% and 6% in Delhi, Haryana, Rajasthan and Uttar Pradesh sub-regions, respectively. Further, situation has improved and the figures of energy demand not met during 2018-19 were 0.1%, 0.2%, 0.8% in respect of Delhi, Rajasthan and Uttar Pradesh respectively. Northern Region as a whole has seen the improvement from 9.2% to 1.4% over the period. However, efforts are still to be made to improve the power supply position in NCR. District wise elecricity demand of NCR (FY 2016-2017) is given in Table 2.4 below:

Sub- Region	Sub- Region Districts		Energy Consumpt ion for 2016-17 (MU)	Growt h (%)	T&D Losse s (%)	Energy Requirem ent (MU)	Peak load (MW )
1	2	3	4	5(4- 3/3)	6	7(4+6)	8
	Karnal	2873	2892	0.69	32.40	4279	1595
	Panipat	5629	5726	1.72	25.66	7703	855
	Rohtak	895	959	7.26	39.44	1584	416
	Jhajjar	1101	1003	-8.89	35.48	1554	727
	Sonepat	1791	1969	9.96	25.90	2657	907
	Faridabad	3020	3136	3.84	12.62	3589	1377
Haryana	Mewat	61	65	8.14	59.40	161	49
	Gurgaon	5555	5769	3.86	10.11	6418	2231
	Rewari	1333	1357	1.83	21.38	1726	325
	Palwal	647	864	33.61	35.31	1336	322
	Bhiwani & Charkhi Dadri**	1494	1591	6.55	33.61	2397	569
	Mahendargarh	576	713	23.78	28.43	997	225
	Jind	1049	1128	7.47	38.37	1830	719
TI44	Ghaziabad	4187	4392	4.90	11.38	4956	2492
Uttar Pradesh	Hapur	570	650	13.97	15.22	766	302
	Bulandshar	1560	1780	14.09	18.52	2184	916

Table 2.4: District wise Electricity Demand & Energy Requirement for NCR (FY2016-17)

Sub- Region	Districts	Energy Consumpt ion for 2015-16 (MU)	Energy Consumpt ion for 2016-17 (MU)	Growt h (%)	T&D Losse s (%)	Energy Requirem ent (MU)	Peak load (MW )
	Gautam Budh Nagar	3987	4369	9.58	6.21	4659	1200
	Muzzafarnagar	1287	1440	11.87	21.03	1824	2059
	Bagpat*						
	Meerut*						
	Shamli*						
Rajastha	Alwar	4092	4530	10.69	23.91	5953	950
n	Bharatpur	805	865	7.44	47.25	1639	343
Delhi	Delhi	25658	26604	3.69	19.37	32996	6342
	Total	68169	71804	5.33		91208	2215 2
** Charkhi	Dadri- Recently forme	d in the vear 2	016. Before th	nat. it was	a part of	f Bhiwani hen	ce data

** Charkhi Dadri- Recently formed in the year 2016. Before that, it was a part of Bhiwani hence data is included in Bhiwani district upto 2016

* Data yet to be received for Merrut, Bagpat and Shamli

Source: CEA, Power sector Review Report on RP-2021

Aggregate Technical and Commercial (AT&C) losses have shown reducing trend in DISCOMS of NCT Delhi and Paschimanchal Vidyut Vitaran Limited (Uttar Pradesh), however in case of JVVNL (Rajasthan) the AT&C losses have increased from 22.66% to 33.08%. Efforts are to be made by the constituent DISCOM to reduce the AT&C losses to the lowest level. The AT&C losses of Discoms supplying power to NCR are indicated below. AST&C losses are inclusive of distribution and commercial losses:

State		2010-11	2015-16
Delhi	BRPL	15.80	13.29
	BYPL	18.13	15.39
	TPDDL	13.75	8.90
Delhi total		15.76	12.47
Haryana	DHBVNL	26.29	30.23
	UHBVNL	29.85	35.03
Haryana Total		28.02	32.35
Rajasthan	JVVNL	22.66	33.08
Uttar Pradesh	PVVNL	31.61	25.79
All India		26.15	23.98

Table 2.5: AT&C losses of Discoms supplying power to NCR

Source: CEA, Power sector Review Report on RP-2021

Details of transmission and distribution (T&D) losses for DISCOMS's as per 19th Electric Power Survey (EPS) of CEA given in Table 2.6 as under:

Table 2.6: Transmission and distribution (T&D) losses for DISCOMS's as per the trajectory of loss reduction adopted in 19th Electric Power Survey (EPS) – (2017 – 2027)

	T&D losses (in %)											
	2016-	2017-	2018-	2019-	2020-	2021-	2022-	2023-	2024-	2025-	2026-	
	17	18	19	20	21	22	23	24	25	26	27	
Delhi	15.68	15.31	14.95	14.65	14.35	14.04	13.74	13.43	13.32	13.21	13.10	
NDMC	13.82	13.72	13.62	13.52	13.42	13.32	13.22	13.12	13.02	12.92	12.82	
BYPL	18.64	18.19	17.74	17.29	16.84	16.39	15.94	15.49	15.04	14.59	14.14	
BRPL	13.70	13.20	12.70	12.20	11.70	11.20	10.70	10.20	10.20	10.20	10.20	
TPDDL	9.70	9.50	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	9.30	
MES	9.43	9.44	9.43	9.43	9.44	9.43	9.43	9.43	9.43	9.43	9.43	
HYN	26.99	24.99	23.52	22.07	20.64	19.22	17.82	16.74	16.74	16.74	16.74	
DHBVN	22.00	20.00	19.00	18.00	17.00	16.00	15.00	15.00	15.00	15.00	15.00	
UHBVN	29.77	27.77	25.77	23.77	21.77	19.77	17.77	15.00	15.00	15.00	15.00	
UP	27.42	26.57	25.70	24.84	23.98	23.12	22.26	21.40	20.54	19.69	18.84	
MVVNL	25.10	24.20	23.30	22.40	21.50	20.60	19.70	18.80	17.90	17.00	16.10	
PUVVNL	26.00	25.20	24.40	23.60	22.80	22.00	21.20	20.40	19.60	18.80	18.00	
PVVNL	25.30	24.60	23.90	23.20	22.50	21.80	21.10	20.40	19.70	19.00	18.30	
DVVNL	29.90	28.80	27.70	26.60	25.50	24.40	23.30	22.20	21.10	20.00	18.90	
NPC	8.56	8.57	8.75	8.80	8.85	8.90	8.95	9.00	9.15	9.20	9.50	
Raj	29.02	27.03	25.05	23.09	21.14	19.19	17.33	15.98	16.00	16.01	16.03	
AVVNL	26.30	24.23	22.17	20.11	18.04	15.98	13.92	11.85	11.85	11.85	11.85	
JdVVNL	23.46	21.91	20.37	18.82	17.27	15.72	14.37	14.37	14.37	14.37	14.37	
JVVNL	29.92	27.54	25.15	22.77	20.39	18.01	15.63	13.25	13.28	13.30	13.31	

Source: CEA, Power sector Review Report on RP-2021



Figure 2.5: Energy Consumption Profile of Figure 2.6: Sub-region wise Energy<br/>NCR in 2018-19Requirement Profile of NCR in 2018-19

Source: Report on Nineteenth Electric Power Survey of India (Volume-II) (National Capital Region), CEA, Ministry of Power, Government of India

- Haryana sub region and NCT Delhi had the most of NCR electrical energy requirement in 2018-19 followed by Uttar Pradesh & Rajasthan sub region. Haryana sub region and NCT Delhi had almost equal energy requirement in 2018-19 constituting about 34% & 33% of the total NCR energy requirement respectively, whereas their area shares in NCR differ substantially (2.69 % & 46 % respectively).
- The comparison of energy data of NCR with the entire Northern Region for the year 2018-19 indicates that the energy requirement of NCR was more than one fourth (26.03 %) of total Northern Region Energy Requirement. Energy requirement of NCR was 7.75% of the total energy requirement of the country whereas its contribution in area and population were 1.68 % and 4.96 % only. It shows comparatively huge concentration of energy demand in the NCR region (refer Table 2.6).

F	Particulars	NCT Delhi	NCR	Northern Region (NR)	All India	NCR as % of NR	NCR as % of all India
1.	Energy	32282	98271	377595	1267526	26.03	7.75
	Requirem						
	ent (MU)						
2.	Peak	7016	15430	61726	175528	25.00	8.79
	Demand						
	(MW)						
3.	Population	192,07,448	673,58,564	4186,65,806	13571,98,722	16.09	4.96
4.	Area (in	1,483	55,083	10,10,616	32,87,240	5.45	1.68
	sq km)						

Table 2.7: Comparison of NCR with NR & All India in 2018-19

Source: Report on Nineteenth Electric Power Survey of India (Volume-II) (National Capital Region), CEA, Ministry of Power, Government of India

 Table 2.8: Comparison of Power Supply Position (2016-17 to 2018-19)

2016-17									
	Energy requirement (MU)	Energy supplied (MU)	Energy not supplied		Peak demand (MW)	Peak Met (MW)	Demand Met	Demand not Met	
			(MU)	(%)			(MW)	(%)	
Delhi	30829	30797	32	0.1	6342	6261	81	1.3	
Haryana	48895	48895	0	0	9262	9262	0	0	
Rajasthan	67838	67415	423	0.6	10613	10348	265	2.5	
Uttar	107569	105701	1868	1.7	17183	16110	1073	6.2	
Pradesh									
Northern	349172	343513	5659	1.6	53372	52612	760	1.4	
Region									
2017-18									
State	Energy	Energy	Energy	not supplied	Peak	Peak	Demand	not	
	requirement	supplied			demand	Met	Met		
	(MU)	(MU)	(MU)	(%)	( <b>MW</b> )	( <b>MW</b> )	(MW)	(%)	
Delhi	31826	31806	19	0.1	6553	6526	27	0.4	
Haryana	50775	50775	0	0	9671	9539	132	1.4	

Rajasthan	71194	70603	591	0.8	11722	11564	158	1.3
Uttar	120052	118303	1749	1.5	20274	18061	2213	10.9
Pradesh								
Northern	371934	365723	6211	1.7	60749	58448	2301	3.8
Region								
2018-19								
State	Energy	Energy	Energy not supplied		Peak	Peak	Demand	not
	requirement	supplied			demand	Met	Met	
	requiremente	Supplied			acinana		1.100	
	(MU)	(MU)	(MU)	(%)	(MW)	(MW)	(MW)	(%)
Delhi	(MU) 32299	(MU) 32282	( <b>MU</b> ) 17	(%) 0.1	( <b>MW</b> ) 7016	( <b>MW</b> ) 7016	( <b>MW</b> )	<b>(%)</b> 0
Delhi Haryana	(MU) 32299 53665	(MU) 32282 53665	( <b>MU</b> ) 17 0	(%) 0.1 0	(MW) 7016 10270	( <b>MW</b> ) 7016 10270	(MW) 0	(%) 0 0
Delhi Haryana Rajasthan	(MU) 32299 53665 79826	(MU) 32282 53665 79637	( <b>MU</b> ) 17 0 189	(%) 0.1 0 0.2	(MW) 7016 10270 13276	( <b>MW</b> ) 7016 10270 13276	(MW) 0 0 0	(%) 0 0 0
Delhi Haryana Rajasthan Uttar	(MU) 32299 53665 79826 117101	(MU) 32282 53665 79637 116118	(MU) 17 0 189 984	(%) 0.1 0 0.2 0.8	(MW) 7016 10270 13276 20498	( <b>MW</b> ) 7016 10270 13276 20062	(MW) 0 0 0 436	(%) 0 0 2.1
Delhi Haryana Rajasthan Uttar Pradesh	(MU) 32299 53665 79826 117101	(MU) 32282 53665 79637 116118	(MU) 17 0 189 984	(%) 0.1 0 0.2 0.8	(MW) 7016 10270 13276 20498	(MW) 7016 10270 13276 20062	( <b>MW</b> ) 0 0 0 436	(%) 0 0 2.1
Delhi Haryana Rajasthan Uttar Pradesh Northern	(MU) 32299 53665 79826 117101 383028	(MU) 32282 53665 79637 116118 377776	(MU) 17 0 189 984 5251	(%) 0.1 0 0.2 0.8 1.4	(MW) 7016 10270 13276 20498 63166	( <b>MW</b> ) 7016 10270 13276 20062 61726	(MW) 0 0 0 436 1440	(%) 0 0 2.1 2.3

Source: CEA, Power sector Review Report on RP-2021

#### Table 2.9: Comparison of Energy and Power deficit (2012-13 to 2018-19)

	Energy not supplied				Demand not Met			
State	(MU)	(%)	(MU)	(%)	(MW)	(%)	( <b>MW</b> )	(%)
	2012-13		2018-19		2012-13		2018-19	
Delhi	138	0.5	17	0.1	300	5.0	0	0
Haryana	3198	7.7	0	0	707	9.5	0	0
Rajasthan	1670	3	189	0.2	425	4.8	0	0
Uttar Pradesh	15201	16.6	984	0.8	1892	13.6	436	2.1
Northern Region	27534	9.2	5251	1.4	4070	8.9	1440	2.3

Source: Source: CEA, Power sector Review Report on RP-2021

#### **Upcoming Scenario – Key Facts**

- 1. Power for All (PFA) Initiative- Government of India had taken a joint initiative with respective State Governments/UT's for preparation of State specific documents for providing 24x7 Power to all households/homes, industrial and commercial consumers and adequate supply of power to agricultural consumers as per their policy. This initiative aimed at ensuring uninterrupted supply of quality power to existing consumers and providing access to electricity to all un-connected consumers by the year 2019 in a phased manner. This initiative has resulted in higher growth of electrical energy requirement in the initial years of the forecast period.
- Planned Inter State (ISTS) network in NCR Area The power evacuation systems for Inter State Generating Stations (ISGS) is finalised by Central Transmission Utility (CTU): Power Grid Corporation of India Limited (POWERGRID), Ministry of Power. Further, for State Sector generation projects power evacuation system is to be planned and implemented by respective State Transmission Utilities (STUs).
- **3.** Cost comparison between overhead, underground and aerial bunched cables As per the Central Electricity Authority, the cost of an underground cabling system is three to four times that of an equivalent overhead system. The estimated cost of an 11 kV overhead single- circuit line with dog conductor is Rs 0.5 million-Rs 0.6 million per km while the estimated cost of a 3×300 square mm 11 kV underground cabling system is around Rs 2 million per km. The cost of the underground cabling system also depends on the cost of the road restoration work required¹²¹.

Voltage level	Tentative estimated cost per km (Rs million)						
	Overhead cables	Underground cables	Aerial bunched cables				
LT	0.35	1.3	0.80				
11 kV	0.50	2.0	1.35				
33 kV	1.20	3.5	-				
66 kV	4.50	8.0	<del></del>				

#### Source: Central Electricity Authority

Attaining 100% underground cabling would result in reduction of damage caused by severe weather conditions such as lightning, cyclones and power theft, thereby reducing aggregate technical and commercial (AT&C) losses. Initially overhead cables may be cheaper in laying cost; however, underground cables will help in network expansion in densely populated areas across NCR. It will also add to the aesthetics of the areas, as it does not obstruct the view.

**4. Renewal Energy**: (A) While DISCOMS are cooperating in Delhi, the response of government agencies/institutes likes CPWD, Kendriya Vidyala Sanghathan (KVS), MES and private schools etc. is not forthcoming. The renewable purchase obligations as decided by Ministry of Power, Government of India vide OM dated 14th June, 2018 for

¹²¹<u>https://powerline.net.in/2019/01/17/underground-cabling/</u>

various utilities are as given below:

Long term RPO Trajectory	2019-20	2020-21	2021-22
Non-Solar	10.25%	10.25%	10.50%
Solar	07.25 %	08.75%	10.50%
Total	17.50%	19.00%	21.00%

 Table 3.1: National Renewable Purchase Obligations (RPO)

Source: Review Report of Power Sector of RP-2021

Table 3.2: Proposed targets for NCR States & Northern Region as per the Ministry of MNRE -2022

State/Uts	Solar Power (MW)	Wind (MW	SHP (MW)	Biomass Power (MW)
Delhi	2,762			
Haryana	4,142		25	209
Himachal Pradesh	776		1,500	
Jammu and Kashmir	1,155		150	
Punjab	4,772		50	244
Rajasthan	5,762	8,600	0.5	
Uttar Pradesh	10,697		25	3,499
Uttarakhand	900		700	197
Chandigarh	153			
Northern Region	31,120	8,600	2,450	4,149

Source: NITI Aayog Report - https://niti.gov.in/writereaddata/files/175-GW-Renewable-Energy.pdf

(B) India's National Electricity Plan, 2018 – Coal gets cut, renewable growth rapidly in the new plan



## 600 gigawatts capacity

*Source:* Institute For Energy Economics and Financial Analysis- <u>https://ieefa.org/ieefa-india-new-national-electricity-plan-reinforces-intent-toward-275-gigawatts-of-renewables-generated-electricity-by-2027/</u>

#### 5. Solar Sector

- a) Almost the entire NCR has been battling with the problem of air pollution, a subject that makes the headlines every year. Therefore, solar energy has been suggested as an important step in combating pollution.
- b) Acting quickly in this direction, NCT Delhi has increased its solar power generation capacity to 78MW from the 56MW recorded last year. Govt. of NCT Delhi, has put forth

a proposal to develop the New Delhi Municipal Council (NDMC) area as a Solar City by installing SPV panels on the rooftops of government buildings, metro stations, bus stops, etc. Besides this, 74MW of solar capacity is being created across Delhi, at various government departments, as well as in the domestic and social sectors.

- c) NCR area has a **huge potential for tapping solar energy** either through PV (Photovoltaic) using the free space on rooftop or ground mounted solar. PV system or through CST (Concentrated Solar Thermal), which can help in cutting down the load demand from grid, saving on T&D infrastructure. The cost of solar power has shown decreasing trend during past few years and possibility of large scale solar application in the long run in the country would further bring down the cost of generation of solar electricity. Delhi PWD has already installed Grid Interactive Solar Power Generation (1 MWp) at Tyagraja Indoor Stadium with state-of-art facility. Taking into consideration the shortage of conventional power and importance of renewable energy in the NCR area, SERCs of the constituent states may consider putting in place the necessary regulations for development of renewable power in the respective states in order to encourage and facilitate expeditious development of off grid/grid connected renewable power generation.
- d) In addition, to increase adoption of rooftop solar products within the region, Delhi based company, Mysun, has announced a special scheme for Delhi/NCR customers. Under the terms of the scheme, the company has waived the installation fees for customers installing solar rooftop facilities, within a limited period.
- e) Gurugram, too, has reached a total installed capacity of 25MW of solar power, which is a 47 per cent increase over the corresponding period of 2017 underlining the growing potential of renewable energy in the NCR.
- *f*) The Government of India has released its roadmap to achieve 175 GW capacity in renewable energy by 2022, which includes 100 GW of solar power and 60 GW of wind power. The Government of India is preparing a 'rent a roof' policy for supporting its target of generating 40 gigawatts (GW) of power through solar rooftop projects by 2022.
- g) Coal-based power generation capacity in India, which currently stands at 229.40 (As of October 2019) GW is expected to reach 330-441 GW by 2040.
- h) India could become the world's first country to use LEDs for all lighting needs by 2019, thereby saving Rs 40,000 crore (US\$ 6.23 billion) on an annual basis.
- All the states and union territories of India are on board to fulfil the Government of India's vision of ensuring 24x7 affordable and quality power for all by March 2019, as per the Ministry of Power and New & Renewable Energy, Government of India.
- 6. Regarding promotion of Renewable Energy in the NCR Area:
  - NCT of Delhi in its Solar policy set the target for 2020 as 1000 MW however, actual achievement till March, 2019 was 128 MW.
  - RPO Obligation: For non-solar it is 10.50% by 2021-22, and for solar also it is 10.50% by 2021-22.
  - Present compliance of Delhi is 3%. Delhi DISCOMs are entering into Long term and short term power contracts to fulfill this requirement

- Rajasthan would be able to meet this as it has wind and solar capacity
- UP & Haryana need to meet it through procurement of renewable power or purchase of Renewable Energy Certificates (RECs).

Source: Economic Survey of Delhi 2017-2018 and <u>https://www.ibef.org/industry/power-sector-india.aspx</u>

#### Brief of Issues and Challenges related to Power & Energy Sector in NCR

- 1. Manufacturing sector's contribution to Economic Structure is immense and its base of functioning is poised to increase in future. This would require adoption of modern fuel sources for energy generation.
- 2. The financial stress that DISCOMS are in, has meant payment delays for developers, cancellation of auctions, and lack of enforcement of contracts -- this dampens investor confidence and developers' interest.
- 3. Though the Government of India is targeting of generating 40 gigawatts (GW) of power through solar rooftop projects by 2022, but till March 2019, only 1796.39 megawatt (MW) of grid-connected solar rooftop systems had been installed. Also, the preference has been for commercial and industrial installations residential consumers, who hold immense potential, account for less than 20 per cent of the total installed capacity.
- 4. Cyber Security NCR is hub of commercial activities and security of power supply is most important aspect of this. As power is a part of Critical National Information infrastructure, cyber security of this sector is most important as its availability affect many other important sector like transport, health and security of strategic locations in NCR. NCIIPC, CERT-In and CERT-MOP are coordinating Cyber Security aspects of power sector. While Central Power Utilities and private DISCOMS in Delhi are prepared to an extent do deal with Cyber Security, other distribution and transmission companies in NCRs are not geared up. Even after lot of efforts by Ministry of Power these utilities have not prepared their Crisis management Plan (CMP) and not identified their Critical Infrastructure (CII). There are incidents wherein their public or billing portals are victims of Cyber-attack.
- 5. Electric Vehicles (EVs) As per the National Electric Mobility Mission Plan 2020 of Department of Heavy industries, Government of India, the number of electric vehicles in India is likely to increase in a big fold (National target to bring 6 to 7 million EVs on roads by 2020 and to achieve 30% e-mobility by 2030). The growth rate of 7% in commercial category during the period 2016-17 to 2021-22, includes electricity demand of e-rickshaw, two wheelers, cars etc. was expected, however, if all the electric vehicle as projected in the National Electric Mobility Mission Plan materialize, the additional electrical energy requirement would be of the order of 8-9 BUs on all-India basis. Assuming 50% of the electric vehicles will charge simultaneously, the additional electricity demand would be of the order of 10,000 MW. The electric vehicles are likely to charge their batteries during day time i.e. during periods of high solar power, and thermal power stations during such time could be operated at lower capacity.
- 6. Automatic Demand Side Management (ADSM), Energy Conservation & Efficiency Improvement programmes: - ADSM has been fully implemented by TPDDL in Delhi and is under implementation in Rajasthan (LoA placed on 12.12.2018 with an execution period of 18 months for ADMS at the level of 33kV feeders at EHV Substation of RVPN

under SCADA / EMS part of project). In U.P.remote operation of 132 kV feeders under ADMS is operational with some issues prevail for the down below network which needs to be taken up with the DISCOMs. Haryana has not implemented ADMS scheme so far.

- 7. The smart grid provides an opportunity for energy companies to make power delivery more efficient, whether by minimizing the visits of personnel to transmission and distribution locations or by enabling better decisions through timely information. Automation is the key to development of smart grid. The implementation of automation and smart grid initiatives have been taken up by the DISCOMs of Delhi at a larger scale through installation of ring main units automatic sectionalizer and installation of unmanned grid sub stations. Metering infrastructure has also been created by installation of static meters. Other DISCOMs of the NCR region have also taken initiatives under integrated power development scheme. The cities of Faridabad and Karnal of Haryana, Ghaziabad of Uttar Pradesh and New Delhi Municipal Council (Delhi) are covered under smart city proposals. Such initiatives shall be further extended for achieving 'Smart NCR'.
- 8. **Planned Inter State (ISTS) network in NCR Area** The power evacuation systems for Inter State Generating Stations (ISGS) is finalised by Central Transmission Utility (CTU), Power Grid Corporation of India Limited (POWERGRID), Ministry of Power. Further, for State Sector generation projects power evacuation system is to be planned and implemented by respective State Transmission Utilities (STUs).

## Salient Features of the Electricity (Amendment) Bill 2020¹²²

M/o Power & MNRE, power sector reforms are steps in the direction of making the sector consumer centric aimed at promoting more transparency. While significant improvements have been made in the electricity generation and transmission segments, the distribution segment, having achieved 100% village electrification and near-universal access to electricity, is beset with problems of operational inefficiencies, liquidity, and financial solvency. In this regard Ministry of Power had prepared a draft proposal for Amendments in Electricity Act 2003 in the form of draft Electricity (Amendment) Bill 2020 with the following broad objectives –

- a) Ensure consumer centricity
- b) Promote Ease of Doing Business
- c) Enhance sustainability of the power sector
- d) Promote green power

The other major amendments proposed in the Electricity Act are as follows.

#### Sustainability

(i) Cost reflective Tariff: To eliminate the tendency of some Commissions to provide for regulatory assets, it is being provided that the Commissions shall determine tariffs that are reflective of cost so as to enable Discoms to recover their costs. It is estimated that the total regulatory asset, ie revenue due to a Discom but not collected because appropriate tariff increase was not given, in the country is about Rs. 1.4 lakh crore.

(ii) Establishment of adequate Payment Security Mechanism for scheduling of electricity - It is proposed to empower Load Dispatch Centres to oversee the establishment of adequate payment security mechanism before dispatch of electricity, as per contracts.

Late payment of dues of generating and transmission companies have reached unsustainable levels. As of 31.03.2019, the payables to the Gencos and Transcos were Rs. 2.26 lakh crore. This not only impairs the finances of the Gencos and Transcos making it difficult for them to pay for fuel and other expenses but also has a debilitating impact on the Banks. If liquidity is not maintained, the power sector can collapse. Thus, it is in our collective interest to put in place systems for ensuring timely payments. That is why it is being provided that electricity shall not be scheduled or despatched unless security of payment has been established.

#### **Ease of Doing Business**

(iii) Cross Subsidy: At present, the Act provides for the State Commissions to progressively reduce cross subsidies. Despite the requirement of the Tariff Policy to reduce cross-subsidies to within 20% of average cost of supply, they are in excess of 50% in some States making industries uncompetitive. The Bill provides for the SERCs to reduce cross subsidies as per the provisions of the Tariff Policy. The Tariff Policy is prepared after consultation with the all stakeholders and the views of the State Governments are taken into consideration before finalising its provisions. It is noteworthy that there is no proposal to eliminate cross subsidy.

(iv) Establishment of Electricity Contract Enforcement Authority: CERC and SERCs do not have powers to execute their orders as decree of a civil court. An Authority headed by a retired Judge of the

¹²²<u>https://pib.gov.in/PressReleasePage.aspx?PRID=1634253</u>

High Court is proposed to be set with such powers including but not limited to powers of attachment and sale of property, arrest and detention in prison and appointment of a receiver to enforce performance of contracts related to purchase or sale or transmission of power between a generating company, distribution licensee or transmission licensee. This will enhance sanctity of contracts and spur much needed investment in the power sector.

#### **Renewable and Hydro Energy**

(v) National Renewable Energy Policy: For environmental reasons, it is in our long term interest to promote green power. India is a signatory to the Paris Climate Agreement. It is therefore proposed to have a separate policy for the development and promotion of generation of electricity from renewable sources of energy.

(vi) It is also proposed that a minimum percentage of purchase of electricity from hydro sources of energy is to be specified by the Commissions.

(vii) Penalties: It is being further proposed to levy penalties for non-fulfilment of obligation to buy electricity from renewable and/or hydro sources of energy.

#### Miscellaneous

(viii) Strengthening of the Appellate Tribunal (APTEL): It is proposed to increase the strength of APTEL its strength of Members, apart from the Chairperson, to at least seven to facilitate quick disposal of cases. It may be noted that there are a large number of cases pending in APTEL at present. To be able to effectively enforce its orders, it is also proposed to give it the powers of High Court under the provisions of the Contempt of Courts Act.

(ix) Penalties: In order to ensure compliance of the provisions of the Electricity Act and orders of the Commission, section 142 and section 146 of the Electricity Act are proposed to be amended to provide for higher penalties.

(x) Cross border trade in Electricity: Provisions have been added to facilitate and develop trade in electricity with other countries.

(xi) Distribution sub-licensees: To improve quality of supply, an option is proposed to be provided to Discoms to authorise another person as a sub-license to supply electricity in any particular part of its area, with the permission of the State Electricity Regulatory Commission.

It may be noted that provisions relating to Distribution Franchisee already exist in the Act and are being successfully used by Distribution Companies to improve performance and enhance efficiencies. These are enabling provisions for use by DISCOMs / States which want to give out some areas to Franchisees / Sub-licensees. It has been ensured that Distribution Sub Licensee remains under regulatory control and jurisdiction to protect interest of consumers.

#### Salient Features of National Policy on Biofuels – 2018¹²³

#### **Background:**

In order to promote biofuels in the country, a National Policy on Biofuels was made by Ministry of New and Renewable Energy during the year 2009. Globally, biofuels have caught the attention in last decade and it is imperative to keep up with the pace of developments in the field of biofuels. Biofuels in India are of strategic importance as it augers well with the ongoing initiatives of the Government such as Make in India, Swachh Bharat Abhiyan, Skill Development and offers great opportunity to integrate with the ambitious targets of doubling of Farmers Income, Import Reduction, Employment Generation, Waste to Wealth Creation. Biofuels programme in India has been largely impacted due to the sustained and quantum non-availability of domestic feedstock for biofuel production which needs to be addressed. The National Policy on Biofuels has been revised in 2018. The salient features of the policy are as under:

- i. The Policy categorises biofuels as "Basic Biofuels" viz. First Generation (1G) bioethanol & biodiesel and "Advanced Biofuels" Second Generation (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels, Third Generation (3G) biofuels, bio-CNG etc. to enable extension of appropriate financial and fiscal incentives under each category.
- ii. The Policy expands the scope of raw material for ethanol production by allowing use of Sugarcane Juice, Sugar containing materials like Sugar Beet, Sweet Sorghum, Starch containing materials like Corn, Cassava, Damaged food grains like wheat, broken rice, Rotten Potatoes, unfit for human consumption for ethanol production.
- iii. Farmers are at a risk of not getting appropriate price for their produce during the surplus production phase. Taking this into account, the Policy allows use of surplus food grains for production of ethanol for blending with petrol with the approval of National Biofuel Coordination Committee.
- iv. With a thrust on Advanced Biofuels, the Policy indicates a viability gap funding scheme for 2G ethanol Bio refineries of Rs.5000 crore in 6 years in addition to additional tax incentives, higher purchase price as compared to 1G biofuels.
- v. The Policy encourages setting up of supply chain mechanisms for biodiesel production from nonedible oilseeds, Used Cooking Oil, short gestation crops.
- vi. Roles and responsibilities of all the concerned Ministries/Departments with respect to biofuels has been captured in the Policy document to synergise efforts.

#### **Expected Benefits:**

- a) **Reduce Import Dependency**: One crore lit of E10 saves Rs.28 crore of forex at current rates. The ethanol supply year 2017-18 is likely to see a supply of around 150 crore litres of ethanol which will result in savings of over Rs.4000 crore of forex.
- b) Cleaner Environment: One crore lit of E-10 saves around 20,000 ton of CO₂ emissions. For the ethanol supply year 2017-18, there will be lesser emissions of CO₂ to the tune of 30 lakh ton. By reducing crop burning & conversion of agricultural residues/wastes to biofuels there will be further reduction in Green House Gas emissions.
- c) **Health benefits**: Prolonged reuse of Cooking Oil for preparing food, particularly in deep-frying is a potential health hazard and can lead to many diseases. Used Cooking Oil is a potential feedstock

¹²³<u>https://pib.gov.in/Pressreleaseshare.aspx?PRID=1532265</u>

for biodiesel and its use for making biodiesel will prevent diversion of used cooking oil in the food industry.

- d) **MSW Management**: It is estimated that, annually 62 MMT of Municipal Solid Waste gets generated in India. There are technologies available which can convert waste/plastic, MSW to drop in fuels. One ton of such waste has the potential to provide around 20% of drop in fuels.
- e) **Infrastructural Investment in Rural Areas**: It is estimated that, one 100klpd bio refinery will require around Rs.800 crore capital investment. At present Oil Marketing Companies are in the process of setting up twelve 2G bio refineries with an investment of around Rs.10,000 crore. Further addition of 2G bio refineries across the Country will spur infrastructural investment in the rural areas.
- f) **Employment Generation**: One 100klpd 2G bio refinery can contribute 1200 jobs in Plant Operations, Village Level Entrepreneurs and Supply Chain Management.
- g) Additional Income to Farmers: By adopting 2G technologies, agricultural residues/waste which otherwise are burnt by the farmers can be converted to ethanol and can fetch a price for these waste if a market is developed for the same. Also, farmers are at a risk of not getting appropriate price for their produce during the surplus production phase. Thus conversion of surplus grains and agricultural biomass can help in price stabilization.

#### Brief about Perform, Achieve and Trade (PAT)

PAT¹²⁴is a regulatory instrument to reduce specific energy consumption in energy intensive industries, with an associated market based mechanism to enhance the cost effectiveness through certification of excess energy saving which can be traded. The energy intensive industries including the thermal power plants are the major players in this entire scheme of PAT. It refers to the calculation of Specific Energy Consumption (SEC) in the baseline year and projected SEC in the target year covering different forms of net energy going into the boundary of the designated consumers' plant and the products leaving it over a particular cycle.

#### PAT Cycles for Implementation of Scheme:

a)PAT Cycle -I (2012-2015); PAT cycle – I started from 1st April 2012 and in its first cycle 478 industrial units from 8 sectors (Table 2) viz. Aluminum, Cement, Chlor- Alkali, Fertilizer, Iron & Steel, Paper & Pulp, Thermal Power Plant and Textile. The overall SEC reduction targets aimed to secure an energy saving of 6.686 million tonne of oil equivalent. PAT Cycle I was completed on 31st March, 2015. The energy savings achieved in PAT Cycle –I is 8.67 MTOE which was excess of 30 percent against the target of 6.686 MTOE. This energy saving also translates into avoiding about 31 million tonne of CO2 emission.

#### **Trading of ESCerts:**

The energy savings of the DCs of PAT Cycle-I were converted to tradable Energy Saving Certificates (ESCerts). Ministry of Power, Government of India had issued about 38.25 lakh ESCerts to 309 designated consumers while 110 Designated Consumers were directed to purchase about 14.25 lakh for their compliance. BEE has developed online PATNet portal for issuance/entitlement to purchase of ESCerts in electronic forms defined in the PAT Rules, 2012. CERC is the market regulator for trading of ESCerts and POSOCO is Registry for ESCerts. Trading of ESCerts at Power Exchange had commenced from 26th September, 2017. The total volume of ESCerts traded in "PAT cycle I" is about 12.98 lakhs resulting into a business of about INR 100 crores.

#### Achievements of PAT cycle –I:

¹²⁴<u>https://beeindia.gov.in/content/pat-read-more</u>



#### b) PAT Cycle -II (2016-17 to 2018-19):

In order to include new sectors and to identify new DCs under PAT Scheme, "Deepening study" –identifying new DCs in existing sectors and "Widening study" –including new sectors of PAT, was respectively carried out before the commencement of the second cycle. Deepening study resulted into identification of 89 DCs from the existing sectors of PAT. Widening study resulted into notification of three new sectors namely Refineries, Railways and DISCOMs under PAT scheme. PAT in its second cycle (2016-17 to 2018-19) seeks to achieve an overall energy consumption reduction of 8.869 MTOE for which energy reduction targets have been assigned and notified to DCs in these11 sectors (eight existing sectors and three new sectors). This energy saving will translate into avoiding about more than 31 million tonne of Carbon dioxide. PAT Cycle II commenced from 1st April, 2016 covering 621 DCs from 11 sectors which include eight existing sectors and three new sectors viz. Railways, Refineries and DISCOMs.

The deadline for submission of Monitoring & Verification (M&V) reports by the DCs of PAT cycle –II that was extended for the sectors namely Aluminium, Cement, Chlor-Alkali, Fertilizer, Iron & Steel, Pulp & Paper, Textile, Thermal Power Plant, Petroleum Refineries till 31st August 2019 and for the sectors namely Railways, Electricity DISCOMs till 30th September 2019 has ended. The verification of the M&V reports is under process at the State Designated Agencies (SDAs) and at BEE.

#### c) PAT Cycle –III (2017-18 to 2019-20)

The Parliamentary Standing Committee on Energy, Executive Committee on Climate Change under Prime Minister's Office (PMO) and Group of Secretaries recommended to include DCs annually for accelerated coverage of DCs under PAT. Consequently, PAT scheme is being implemented on a rolling cycle basis where new DCs/sectors will be included every year. In view of this PAT cycle –III has started from 1st April, 2017. PAT Scheme in its third cycle seeks to achieve and overall energy consumption reduction of 1.06 MTOE for which SEC reduction targets have been assigned to 116 Designated Consumers from six sectors viz. Thermal Power Plant, Cement, Aluminum, Pulp & Paper, Iron & Steel and Textile. The energy consumption of these DCs is 35.00 MTOE.

#### d) PAT Cycle -IV (2018-19 to 2020-21)

The fourth cycle of PAT has been notified on 28th March-2018. A total of 106 DCs with a total reduction target of 0.6998 million tonnes of oil equivalent have been notified under PAT cycle -IV. These DCs are from 8 sectors consisting of 6 existing sectors and two new sectors. The new sectors are Petrochemicals and Buildings. Under building sector, hotels have been selected as the potential designated consumer sub-sector for this cycle. Other sub-sectors in the building sector may come up in future. Under Petrochemical, naphtha crackers and gas crackers has been considered under this cycle of PAT.

#### e) PAT Cycle -V (2019-2020 to 2021-22)

PAT cycle –V has commenced with effect from 1st April 2019. Under PAT cycle –V, 110 DCs from the existing sectors of PAT i.e. Aluminum, Cement, Chlor-Alkali, Commercial Buildings (Hotels), Iron & Steel, Pulp & Paper, Textile and Thermal Power Plant have been notified. The total energy consumption of these DCs comes out to be 15.244 million toe and it is expected to get a total energy savings of 0.5130 million toe through the implementation of PAT cycle –V.

Annexure-D-1.5

# **Brief of NCRPB initiatives for improvement of power & energy infrastructure in NCR**

The Regional Plan-2001 (RP-2001) for NCR had proposed for uninterrupted supply of power in adequate quantity and quality, and priority in making additional power available to NCR. Further NCRPB in conjunction with Central Electricity Authority (CEA) in RP-2021 had identified various issues and recommended various measures to address the requirement of power sector for the then area of NCR. As per RP-2021,power requirement in the then region was estimated to be 23,345 MW by the year 2021 and accordingly need to generate additional power and strengthen/ expand the transmission and distribution lines was envisioned in the Plan. Total investment required for the generation of power by the year 2021 was Rs.93,380 crores and for strengthening/expansion of transmission and distribution system, it was Rs.58,362 crores. NCRPB is facilitating the NCR participated States and CMAs to create necessary infrastructure forstrengthening the power sector. Till 31.03.2019, NCRPB has been sanctioned a loan amount of Rs. 2041.31 crores and Rs 1931.85 crores have been released so far. Thirteen projects were funded in Haryana sub-region, six in Rajasthan sub-region, one in Uttar Pradesh sub-region and remaining in CMAs. While most of the projects pertain to creating, strengthening and upgradation of transmission and distribution system two of the projects were related to power generation. The details of NCRPB financed competed and ongoing power infrastructureprojects given in **Table 9.1** and **Table 9.2** below:

	Power Sector Projects	Implementing Agency	Estimated Cost	Loan Sanctioned	Actual Loan Amount released
1.	Creation of power infrastructure in Gurgaon & Bahadurgh, Haryana	Haryana Vidyut Prasaran Nigam	89.91	67.43	67.43
2.	Strengthening and Upgradation of Sub-transmission & Distribution Network, Gurgaon	Dakshin Haryana Bijli Vitran Nigam	40.16	30.12	25.00
3.	Strengthening of sub- transmission and distribution network, Bawal, Dharuhera, Pali (Gothra), Buroli, Kosli and Rewari (District Rewari)	Dakshin Haryana Bijli Vitran Nigam	23.05	17.29	17.29
4.	Strengthening of sub- transmission and distribution network, Sohna, Nuh, Ferozepur Jhirka, Taoru, Manesar, Pataudi, Farukhnagar & Badshahpur (distt.Gurgaon)	Dakshin Haryana Bijli Vitran Nigam	14.44	10.83	10.83
5.	Scheme for HVDS/LVDS & Reallocation of meters under DHBVN in NCR area	Dakshin Haryana Bijli Vitran Nigam	138.47	103.85	103.85
6.	Reinforcement of Power infrastructure in Gurgaon and Rewari districts	Haryana Vidyut Prasaran Nigam	9.27	6.95	6.95
7.	Project for creating power infrastructure in Haryana subregion of NCR	Haryana Vidyut Prasaran Nigam	117.45	82.01	82.01
8.	Strengthening of Transmission & Distribution Network in Rohtak Circle by Uttar Haryana Bijli Vitran Nigam Ltd.	Uttar Haryana Bijli Vitran Nigam	11.11	8.33	7.57
9.	Loss Minimisation and Strengthening of Distribution system being fed from 132 KV substation Khokhrakot Rohtak, kalanaur and Sampalaunder SE 'OP' Circle, UHBVNL, Rohtak by proposing 6 no. 33KV sub	Uttar Haryana Bijli Vitran Nigam	12.53	9.40	9.40

# Table 9.1: Completed power infrastructure projects with loan assistance from NCRPB (as on 31 March 2019) (Rs Crore)

Implementing Agency	Estimated Cost	Loan Sanctioned	Actual Loan Amount released
Uttar Haryana Bijli Vitran Nigam	10.2	7.65	7.65
Haryana Vidyut Prasaran Nigam	79.43	59.58	59.58
Rajasthan Rajya Vidyut Prasaran Nigam Ltd.	47.61	28.36	28.36
Rajasthan Rajya Vidyut Prasaran Nigam Ltd.	34.77	26.08	26.08
JVVNL	43.80	32.85	28.76
JVVNL	39.42	29.56	28.91
RRVPNL	125.98	88.18	88.18
U.P. Power Corporation Ltd.	299.89	224.89	140.40
SADA, Gwalior	16.00	12.00	12.00
Rajasthan Rajya Vidyut Prasaran Nigam Ltd.	880.00	160.00	160.00
Haryana Power Genration Corporation Ltd.	4258.65	500.00	500.00
Dakshin Haryana Bijli Vitran Nigam	40.01	30.01	21.02
	Implementing AgencyJuttar Haryana Bijli Vitran NigamHaryana Vidyut Prasaran NigamRajasthan Rajya Vidyut Prasaran Nigam Ltd.Rajasthan Rajya Vidyut Prasaran Nigam Ltd.JVVNLJVVNLJVVNLU.P. Power Corporation Ltd.SADA, GwaliorRajasthan Rajya Vidyut Prasaran Nigam Ltd.Juttar Corporation Ltd.SADA, GwaliorRajasthan Rajya Vidyut Prasaran Nigam Ltd.Juttar Corporation Ltd.SADA, GwaliorRajasthan Rajya Vidyut Prasaran Nigam Ltd.Dakshin Haryana Bijli Vitran NigamDakshin Haryana Bijli Vitran Bijli Vitran Nigam	Implementing AgencyEstimated CostUtar Haryana Bijli Vitran Nigam10.2Haryana Vidyut Prasaran Nigam79.43Rajasthan Rajya Vidyut Prasaran Nigam Ltd.47.61Rajasthan Rajya Vidyut Prasaran Nigam Ltd.34.77JVVNL43.80JVVNL39.42RRVPNL125.98U.P. Power Corporation Ltd.299.89SADA, Gwalior16.00Rajasthan Rajya Vidyut Prasaran Nigam Ltd.4258.65Dakshin Haryana Bijli Vitran Nigam40.01	Implementing AgencyEstimated CostLoan SanctionedUttar Haryana Bijli Vitran Nigam10.27.65Haryana Vidyut Prasaran Nigam79.4359.58Rajasthan Rajya Vidyut Prasaran Nigam Ltd.47.6128.36Rajasthan Rajya Vidyut Prasaran Nigam Ltd.34.7726.08JVVNL43.8032.85JVVNL39.4229.56RRVPNL125.9888.18U.P. Power Corporation Ltd.299.89224.89SADA, Gwalior16.0012.00Rajasthan Rajya Vidyut Prasaran Nigam Ltd.880.00160.00Haryana Power Genration Corporation Ltd.4258.65500.00Dakshin Haryana Bijli Vitran Nigam40.0130.01

Table 9.2: Ongoing power infrastructure projects with loan assistance from NCRPB (as on 31March 2019) (Rs Crore)

Name of the Projects	Implementing Agency	Date of sanction	Estimated Cost	Loan Sanctioned	Actual Loan Amount released (till March-19)
Strengthening of Sub- transmission& distribution network including metering in Jhajjar, Rohtak, Panipat&Sonipat Circles of Haryana (under IPDS) by UHBVN	UHBVN	Nov-17	19.74	5.93	0.59

 Table 9.3: Summary of Power Sector Projects with loan assistance from NCRPB (as on 30th September 2020)

Sub-region/CMA		No. of Projects	Estimated cost	Loan Sanctioned/ Final Loan as per CC	Actual Loan Amount released
Ongoing Projects					
Haryana Sub Region		1	19.74	5.93	4.15
Rajasthan Sub Region		2	75.28	56.46	13.11
S	ub-total	3	95.02	62.39	17.26
Completed Projects					
Haryana Sub-region		11	546.03	403.45	397.56
Rajasthan Sub Region		5	291.58	205.03	200.29
UP Sub Region		1	299.89	224.89	140.40
CMA Gwalior		1	16.00	12.00	12.00
CMA Kota		1	880.00	160.00	160.00
CMA Hisar		2	4298.66	530.01	521.02
S	ub-total	21	6332.16	1535.38	1431.27
Total		24	6427.18	1597.77	1448.53

(Rs. in Cr.)

## Table 9.4: List of Ongoing Power Projects with loan assistance from NCRPB (as on 30th<br/>September 2020)

(Rs. in Cr.)

S.N o	Name of the Projects	Implementin g Agency	Date of sanction	Estimate d Cost	Loan Sanctione d/ Final Loan as per CC	Actual Loan Amount released (till Sep-20)
	Haryana Sub Region					
1	Strengthening of Sub-transmission& distribution network including metering in Jhajjar, Rohtak, Panipat&Sonipat Circles of Haryana (under IPDS) by UHBVN	UHBVN	Nov-17	19.74	5.93	4.15
	Haryana Sub Total			19.74	5.93	4.15
	Rajasthan Sub Region					
2	New transmission projects in Rajasthan Sub Region of NCR-New proposal for funding 132 KV GSS Bahadurpur, Telco Circle and Khairthal in Alwar District	RRVPN LTD.	Jun-19	43.7	32.78	13.11
3	New transmission Projects in Rajasthan Sub Region of NCR – Construction of Sub-Station at Karoli District Alwar and Station at Sikri (Jai Shri) District Bharatpur	RRVPN LTD.	28/09/20 20	31.58	23.68	0.00
	Rajasthan Sub Total			75.28	56.46	13.11
	Total Ongoing Power Projects			95.02	62.39	17.26

#### Chapter-6-Water & Drainage

Annexure-D-6.1

#### A detailed note on Water Supply of NCT Delhi

#### 30.12.2020

- 1. The total area of the National Capital Territory of Delhi (NCT of Delhi) is about 1483sqkm. As per 2011 census, the population of Delhi was 167.88 lakhs. DDA had projected population of 230 lakhs for the year 2021.
- 2. Delhi Jal Board is responsible for treatment, supply and distribution of water in Delhi. Functions of Delhi Jal Board also include collection, treatment and proper disposal of sewage. Bulk Supply of water is made for the areas under the jurisdiction of New Delhi Municipal Council, Delhi Cantonment Board/Military Engineering Services and Delhi Development Authority for further distribution by these authorities.

- 3. Fresh water resources for the National Capital are limited and the situation is increasingly becoming challenging on the supply-demand matrix. On the supply side, Delhi is constrained by its very limited sources of river water, which is totally predicated by inter-state river water allocation agreements and their implementation. Ground Water Resources are severely restricted due to its small geographical area of 1483sqkm, which are already over stressed. On the demand side, Delhi is buffeted by one of the highest population density in the country with continuous in-migration of people from across the country, which is on a rising trend, resulting in continuous increase in demand of potable water for domestic use.
- 4. PRESENT WATER SUPPLY SCENERIO:

There are 09 water treatment plants as detailed here under and about 4400 numbers of tube-wells across Delhi, which are being operated by Delhi Jal Board for supply of potable water meeting the standards as per BIS 10500-2012. Present optimum production is about 935MGD including about 90MGD from ground water resources.

S.No	Name of WTP	<b>Optimum Production</b>	Source of Raw Water Supply	
		(in MGD)		
1	Sonia Vihar	142	Upper Ganga Canal	
2	Bhagirathi	114	Upper Ganga Canal	
3	Chandrawal I&II	94	Wazirabad Pond	
4	Wazirabad I.II & III	134	Wazirabad Pond	
5	Haiderpur I&II	228	Delhi Branch/ CLC Munak	
			Canal	
6	Nangloi	42	Delhi Branch/ CLC Munak	
			Canal	
7	Okhla	21	Reclaimed water from	
			Chandrawal Recycling Plant	
			and Water from Ranney-	
			Wells/ CLC Munak Canal	
8	Bawana	20		
9	Dwarka	50	CLC Munak Canal	
	Production from	845		
	WTPs			
10	Ranney wells &	90	Sub- surface water	
	Tube-wells			
	Total	935*MGD	*Including production of	
			recycling plants at WTP	

Production of 595MGD (610 MGD raw water less about 3% treatment losses) at seven water treatment plants (Wazirabad, Chandrawal, Haiderpur, Nangloi, Dwarka, Bawana, and Okhla) is dependent on conveyance of river water (Ravi - Beas water from BBMB and Yamuna Water-610 MGD i.e. 1133cusec) through Haryana, while two water treatment plants (Sonia Vihar and Bhagirathi-production-about 250MGD) located in East Delhi receive Ganga water from Murad Nagar in Uttar Pradesh.

Present production of about 935MGD of potable water including 90 MGD from ground water resources is supplied through water supply network of about 14500 KM pipe line. Further more than 1000 water tankers are deployed on daily basis with multiple trips for supplying drinking

water in the areas which are not having piped water supply network and in the water deficit areas. Delhi Jal Board is progressively extending piped water supply network in unauthorized colonies. Presently about 93percent of households are covered through piped water supply.

A total of 1622 numbers of unauthorized colonies have been covered with piped water supply network and out of these, water supply has been released in 1571 colonies upto November, 2020. Piped water supply in all the unauthorized colonies will be ensured in next two years in phased manner except for 113 colonies which presently are either without NOC from ASI or fall in Forest/O-Zone areas.

#### 5. WATER DEMAND:

DJB had earlier considered per capita potable water requirement @ 60 GPCD. Water demand for population of 230 lakhs projected for 2021@ 60 GPCD works out to 1380 MGD (6265MLD). This did not include water requirement for horticulture/gardening/agriculture and industrial process water.

Delhi Jal Board had considered per capita potable water requirement @ 60 GPCD for the MPD-2021 as per the following details:

Ι	Domestic (150+22) As per CPHEEO Manual	172 LPCD
Π	Industrial, Commercial and community Required at 45,000	45 LPCD
	liter Per hectare per day.	
III	Special uses, embassies, floating population, hotels, airport	52 LPCD
	and railway station etc.	
IV	Fire protection @ 1% of total demand	3 LPCD
	Total	272 LPCD

With above per capita water requirement, there would be shortfall of about 350MGD for the population of 23millions. Given the limited availability of raw water to Delhi, water demand of potable water for domestic use need to be rationalized and need to be progressively reduced to 50 GPCD (225 LPCD) by use of non-potable recycled water of desired quality standard in for non drinking purposes like toilet flushing etc. Water demand for industrial process water & horticulture/gardening/agriculture purposes will need to be necessarily met out from recycling of waste water of desired quality standards.

Requisite infrastructure for use of non-potable recycle water of desired quality standards for toilet flushing with mandatory dual plumbing and dual piping systems is to be ensured by the Land Developing Agencies. Necessary infrastructure for use of non-potable recycled water in horticulture/gardening/agriclture/construction/industrial processes shall also be ensured by the Land Developing Agencies to bring down water demand for the city from 60GPCD to 50 GPCD.

#### 6. PRESENT SOURCES OF RAW WATER:

(a) Present average potable water production is 935 MGD with raw water available

Source	Raw Water from River Sources (MGD)		Production (MGD)
Ravi-Beas Water	221	610	595
Yamuna Water	389		
Ganga Water	253		250
Ground Water	-		90
Total			935

from various sources as per the following details:

The production of potable water has increased progressively with commissioning of Water Treatment Plants at Sonia Vihar (140MGD) in 2006, Dwarka (50MGD), Okhla (20MDG) & Bawana (20MGD) in 2015 and implementation of recycle plants at the existing water treatment plants at Chandrawal, Haiderpur and Bhargirti to reclaim process waste water in the old conventional technology. Delhi Jal Board has been able to commission Water Treatment Plants at Dwarka, Okhla & Bawana because of the commissioning of efficient conveyance system to carry allocated Yamuna and Ravi-Beas Water to Delhi from Munak to Haiderpur, known as Carrier Lined Channel (CLC)/Munak Canal.

#### (b) Share in Yamuna Water- MOU of 1994:

Pending constriction of upstream storage, allocation of Yamuna water among the basin states has been made in the MOU of May-1994 as per the table given below;

S.No.	States	Allocation (BCM)			Annual Allocation
		July to Oct.	Nov. to	March to	(BCM)
			Feb	June	
1.	Haryana	4.107	0.686	0.937	5.730
2.	Uttar Pradesh	3.216	0.343	0.473	4.032
3.	Rajasthan	0.963	0.070	0.086	1.119
4.	Himachal	0.190	0.108	0.080	0.378
	Pradesh				
5.	Delhi	0.580	0.068	0.076	0.724
		(1926 cusec)	(232	(255 cusec)	(809 cusec)
			cusec)		
Total		9.056	1.275	1.652	11.983

Source: MOU of 12th May, 1994 (BCM: Billion Cubic Meter)

Delhi's allocations are for its consumptive drinking water needs and therefore, return flow from Delhi is to be considered for increased allocation of Yamuna water to Delhi. Presently, Upper Yamuna River Board has considered only 495cusec of return flow from Delhi, while allocationg/distributing Yamuna Water to Delhi.

Further, Haiderpur and Wazirabad reservoirs are to be kept full in terms of the Hon'ble Supreme Court orders dated 29.02.1996 in WPC-537/1992 for meeting raw water requirement for Haiderpur WTP and Wazirabad & Chandrawal WTPs.

As per the MoU-1994 on sharing of Yamuna Raw Water, Delhi has water allocation of 0.724 BCM or 6.042 % of total Yamuna water. Whereas the population of Delhi in 1994 was only around 107 Lakh, it has now more than doubled and has one of the highest population density in the country. Therefore, given the primacy to drinking water need in National Water Policy and as impressed upon Hon'ble Supreme Court, share of Yamuna Water to Delhi need to be reviewed and increased.

#### 7. Initiatives by Delhi Jal Board for Improvement of Water Supply Infrastructure:

- (I) Installation of Bulk Flow Meters in Water Supply Distribution System: DJB has already installed 3170 bulk flow meters in its Primary and Secondary distribution systems and is in process of installing 121 more flow meters for water auditing, rationalization and equitable distribution of water.
- (II) To reduce leakage losses, works on replacement of old/ damaged water pipe line network, replacement of outage house service connections etc. are undertaken from time to time for revamping of water supply distribution network. Entire DJB network is also proposed to be subdivided in District Metered Areas (DMA). Work on 82 DMAs in 3 PPP Projects under the command areas of Nangloi WTP, Malviya Nagar UGR and in Mahraulli-VasantVihar are in progress.
- (III) Reform projects on revamping of water distribution infrastructure under existing water treatment plant at Chandrawal & Wazirabad will be implemented for improvement and efficient management of the water supply system. About 330 DMAs are proposed to be taken up under the command of these Water Treatment Plants.
- (IV) Formation of District Metered Areas (DMAs) in remaining areas under the jurisdiction of Delhi Jal Board to address the issue of Non Revenue Water and reduction in physical losses of water in the distribution system and will result in improved availability of water to the consumers for the given supply. Concerted approach would be to bring down NRW well below the threshold limit of 15%.
- (V) Recycling Plants: the existing water treatment plants at Chandrawal, Wazirabad, Haiderpur ,Bhagirathi were built on conventional technologies where loss of water during process of treatment is around 10%. DJB has taken up recycling of this process waste to extract treatable water which is being further treated and supplied to consumers for which recycling

plants have been installed at each of the above plant with a total installed capacity of 45 MGD.

#### (VI) **QUALITY CONTROL INITIATIVES:**

Delhi Jal Board has the responsibility to treat the water & provide safe potable water to the citizen of NCT of Delhi.

- a) For ensuring a smooth and drinkable supply as per standards of BIS 10500-2012, there are 09 laboratories working 24x7 in the Water Treatment Plants (WTPs) to monitor water quality starting from intake of raw water to various stages and upto the consumers end. DJB also has 08 zonal laboratories located in the different parts of the capital.
- b) Level of Supervision includes (i) Evaluate & examine Raw Water (ii) Determine the treatment process (iii) Round the clock quality monitoring (iv) Plant status monitoring.
- c) Water quality surveillance in Distribution System: DJB lifts about 450 to 500 water samples daily from WTPs (all stages), Reservoirs, Tube Wells, Ranney Wells, and distribution network for Physical, Chemical & Bacteriological analysis. Essential parameters which are tested in the laboratories are colour, odour, pH Value, Turbidity, Electrical Conductivity, TDS, Alkalinity, Hardness, Ammonical-N, Nitrate, Nitrite, Dissolved Oxygen, Oxygen Absorption, Chloride, Iron, Fluoride, Chromium, Cyanide, Chlorine Demand, Residual Chlorine, Residual Alumina etc.
- d) DJB also gets its water tested through an independent outside Agency i.e National Environmental Engineering Research Institute (NEERI), CSIR, Ministry of Science & Technology, G.O.I.
- e) Water Samples at consumers end are also regularly collected and tested by the zonal field staff for residual chlorine to ensure that water reaching to the consumers is contamination free.

#### f) Samples Taken & Passed as per BIS & WHO for the last 3 years:

S. No.	Year	Total Nos. of water samples	Satisfactory	Unsatisfactory	% of Unsatisfactory
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1.	2018	179743	177380	2363	1.3
2.	2019	208532	205774	2758	1.3
3.	2020 (till 22 Dec 2020)	197336	196469	867	0.4

Water samples are collected and tested by the qualified Quality Control personnel under the supervision of ACWAs/CWAs/ Director (T&QC), DJB including bacteriological examination in routine manner to ensure quality of water supplied. The percentages of non-satisfactory samples are less than the permissible limits of 5% for non-satisfactory samples as per the prescribed standards.

Further, WHO guidelines requirement regarding numbers of monthly samples are as under:

"1 sample per 10,000 population, plus 10 additional samples".

For Delhi having approximate present population of 21 Million, the number of samples per month are be 2110 as per above WHO norms, whereas Delhi Jal Board is lifting and testing more than 16,000 samples per months, which is about seven and half time of the WHO guidelines.

- (VII) Rain Water Harvesting and Ground Water Conservation: Concerted efforts for sustainability and augmentation of ground-water resources in the NCT of Delhi through aquifer recharge, rainwater harvesting etc are being made. These measures will not only help in sustainability of ground water resources, but would help in augmentation of ground water resources. Initiatives taken by Delhi Jal Board for conservation of ground water resources include;
  - (a) Implementation of rain water harvesting systems in its own building installations and is promoting implementation of rain water harvesting systems through incentive and penal provisions in consumers' water bills. Further, to encourage installation of Rain Water Harvesting Structure by domestic consumers, having plot area of 500sqm or more, Delhi Jal Board has approved a 'Scheme for grant of Financial Assistance' to these consumers (including Group Housing Societies) for construction of Rain Water Harvesting Structures. Financial Assistance of 50% of total cost of rain water Harvesting structures or Rs. 50,000/-, whichever is less would be given to the consumers by DJB.
  - (b) Delhi Jal Board installed Roof top rain water harvesting system in their own installations and office buildings under their jurisdiction. Out of 771 installations, RWH system is feasible at 594 installations. RWH system is installed at 563 installations up to 01.10.2020. Remaining 31 installations are likely to be completed before monsoon 2021. Delhi Jal Board has identified 89 buildings other than DJB/maintained by PWD/DMCs/GOI/DDA etc in 2019, where RWH system is feasible to be

installed. At present RWH system is installed at 20 installations and 59 buildings are likely to be completed before monsoon 2021.

- (c) The implementation of RWH system in schools, colleges, Government buildings etc is monitored by DJB. Out of 4778 schools& colleges, RWH systems have been installed in 3687 schools & colleges upto October 2020.
- (d) Rebate in water bills is given to extent of 10% to the consumers of Delhi Jal Board for having functional and adequate rain water harvesting system and is applicable on plots size of 100sqm and above. At the same time non provision of adequate and functional rain water harvesting by the consumers' of Delhi Jal Board having plot area of 500sqm and above, invite penalties in water bills, which are increased by 1.5 times.
- (e) Intensive awareness program for publicity of Rain Water Harvesting is also carried out from time to time. Publicity material including leaflets have also been distributed at these workshops and also to the general public. Guidelines of DJB for implementation of Rain Water Harvesting and the relevant instructions issued by the Govt. of India on RWH have been uploaded on the Delhi Jal Board website.
- (f) Revival of Water Bodies: 155 water bodies have been taken up by Delhi Jal Board for revival/rejuvenation. Works have been awarded in respect of 46 Water Bodies. Works on creation of 04 new lakes at Dwarka WTP, Sector-25 Rohini WWTP, Timarpur oxidation ponds and at Pappankalan WWTP have also been taken up, where treated effluent will be utilized for ground water recharge. DJB will also be reviving 3 other water bodies namely Satpula Lake, Roshnara Lake and Tihar Lake. Delhi Jal Board will also be taking up revival of about 83 water bodies assigned by Irrigation & Flood Control Department, GNCTD.
- (g) Delhi Jal Board has also taken many initiatives in promoting utilization of treated effluent for water conservation. DJB has installed filling points for treated effluent at its 16 STPs located across Delhi for land owning agencies to use treated effluent for watering their parks.
- (h) Decentralized waste water treatment plants may also be set up by tapping the generated sewage within the building premises for utilization of the adequately treated effluent for flushing, AC cooling towers, bus/train washing, gardening and other non-potable purposes or in case of big parks from the manholes of nearby DJB sewerage network. 90% rebate in Sewer Maintenance Charges (sewer maintenance charges are levied @ 60% of water bills and therefore gets reduced to 6%) is given for installation of

decentralized STPs and use of adequately treated effluent for non- potable water purposes like horticulture, flushing, etc. This is in addition to the 15% rebate in water bills on having both Rain Water Harvesting and decentralized STPs/WWTP.

#### **8.** WATER AUGMENTATION PLAN OF DELHI JAL BOARD:

Delhi Jal Board has planned for augmentation of water resources for Delhi. A twin – pronged strategy has been adopted, which focuses on the augmentation of both, ground-water and river (surface)-water resources, while also emphasizing the need for enhanced water conservation measures, rainwater harvesting initiatives, restoration of water bodies etc. While augmentation of ground water resources are in the hands of Delhi only, outcome of initiatives/proposals for augmentation of river (surface) water resources by Delhi is entirely dependent on cooperation and constructive collaboration from the neighbouring states and the Ministry of Housing & Urban Affairs (Delhi Division), Govt. of India and Ministry of Jal Shakti, Govt. of India for additional availability of raw water to the National Capital for its planned and orderly development in consonance with the availability of water.

#### (i) Short Term Plans:

**Ground Water**: Proposed Augmentation of ground water by about 100 MGD in addition to present availability of 90MGD through addition tubewells, recharge etc.

#### (ii) Medium and Long Term Plans:

(a) Himachal Pradesh Share of Un-utilized water in Yamuna Share: Memorandum of Understanding was signed between the States of Himachal Pradesh and NCT of Delhi on 20.12.2019, for usage of unutilized Yamuna Water share of Himachal Pradesh by Delhi. Availability to Delhi will be dependent on quantum of unutilized component of Yamuna Water allocated to Himachal Pradesh, which is to the tune of 368cusec (198MGD) from November to February and 268 cusec (144MGD) from March to June. Availability to Delhi will also be dependent on the conveyance system and matter has already taken up with the Upper Yamuna River Board for facilitating the release of additional water to Delhi in terms of the aforesaid MOU. Haryana has also been requested for conveyance of this additional water to Delhi through their canal system. A positive and constructive approach from Haryana will greatly help Delhi in resolving the issue of water shortage in the National Capital.

Delhi Jal Board has proposed to setup a new 50 MGD WTP at Dwarka from the additional availability of Yamuna Water as per the MOU between the states of Himachal Pradesh and Delhi. Commissioning of this WTP would enable DJB to provide water to many areas including above housing development through UGR at Mahipalpur either by displacement/re-appropriation of water distribution from Haiderpur WTP or from the proposed new WTP at Dwarka.

- (b) Substitution of of Yamuna Water with Haryana for irrigation purposes:
- (c) Discharge of High Quality Treated Effluent in the River Yamuna at Palla and its reclamation at Wazirabad as Raw Water Source:.

- (d) Additional supply of raw water from neigbouring States like Uttar Pradesh, Uttarakhand etc. Raw Water from Uttar Pradesh:
- (e) Upstream Storages on River Yamuna-Renukaji, Lakhwar-Vyasi & Kishau Dam Projects: Delhi is pursuing for early and time bound implementation of three upstream storages on river Yamuna and its tributaries namely, Renukaji Dam, Lakhwar Dam and Kishau Dam, which have been declared as National Projects. Delhi has paid Rs. 214.84 crores to Himachal for Renukaji Dam Project and has agreed to bear 90% of the cost of power component in this project. Delhi has also contributed 50% of its proportionate contribution towards seed money i.e. Rs. 7.79 crores and 8.1 crores for Lakhwar and Kishau Dam projects respectively.

Renukaji, Lakhwar and Kishau Dam Projects are proposed to be constructed on the River Yamuna and its tributaries. These upstream Projects have been declared as National Projects. Interim seasonal allocation of Yamuna water to each basin state are governed as per the MOU of 12th May 1994. On completion of the upstream storages, seasonal allocation of Yamuna Water will be revised by the Upper Yamuna Board and Delhi will get its share in Yamuna water from these storages as per the MOU of 12th May 1994 and interstate agreements on these National Projects. The interstate agreements on Renukaji and Lakhwar Dams have been signed on 28.08.2018 and 11.01.2019 respectively. Delhi has already conveyed its consent on the interstate agreement for the Kishau Dam Project vide letters dated 24.10.2017 and 21.06.2018 from the Hon'ble Chief Minister, Delhi. The interstate agreement on the Renukaji Dam Project has prioritized allocation for drinking water needs of Delhi and includes that;

- ➢ Govt. of NCT of Delhi has agreed to bear 90% of the cost of power component for the project.
- In respect of hydro power, if Himachal Pradesh desires, Power generated and cost thereof can be shared with other beneficiary State (s) through mutual / multilateral agreement to be entered separately.
- Additional water available due to construction of storage as result of implementation of Renukaji Dam Project, shall be regulated by UYRB (Upper Yamuna River Board). The additional water available due to construction of this dam will be made available to Delhi on priority to meet the drinking water needs of Delhi as worked out by UYRB. The arrangement will be only until other storages viz. Lakhwar and Kishau MPPs (Multi Purpose Projects) in upper Yamuna catchment are created at which stage releases from Renukaji Dam shall be carried out keeping in view the overall annual allocation of Yamuna water as per MoU dated 12.05.1994 between the States. Interim seasonal allocations given in the said MoU shall be modified accordingly by UYRB and put up to Upper Yamuna Review Committee (UYRC) for approval.
# 10.0 Steps taken by the Central Government to control water depletion and promote rain water harvesting and conservation¹²⁵

- 1. Creation of a new Ministry of Jal Shakti for dealing with all matters relating to water at one place in an integrated manner.
- 2. The National Water Policy (2012) has been formulated by Department of Water Resources, RD & GR, inter-alia, advocates rainwater harvesting and conservation of water and highlights the need for augmenting the availability of water through direct use of rainfall. It also, inter-alia, advocates conservation of river, river bodies and infrastructure should be undertaken in a scientifically planned manner through community participation. Further, encroachment and diversion of water bodies and drainage channels must not be allowed and wherever, it has taken place, it should be restored to the extent feasible and maintained properly.
- 3. Prime Minister has been communicating the importance of water conservation and harvesting at the Panchayat level and has been exhorted them to adopt all appropriate measures to make water conservation a mass movement.
- 4. In compliance to the decision taken by the Committee of Secretaries, an 'Inter-Ministerial Committee' under the Chairmanship of Secretary (WR, RD & GR) has been constituted to take forward the subject of 'Push on Water Conservation Related Activities for Optimum Utilization of Monsoon Rainfall'. DoWR, RD &GR has circulated a Model Bill to all the States/UTs to enable them to enact suitable ground water legislation for its regulation and development, which includes provision of rainwater harvesting. So far, 15 States/UTs have adopted and implemented the ground water legislation on the lines of Model bill.
- 5. Central Ground Water Authority (CGWA) has issued directions under Section 5 of the Environment Protection Act, 1986 for mandatory rainwater harvesting or roof top rainwater harvesting for all target areas in the Country including UTs. While granting 'No Objection Certificate (NOC)' for drawing ground water, CGWA insists for mandatory rainwater harvesting as per the guidelines issued.
- 6. Central Ground Water Board (CGWB) under DoWR, RD & GR has also prepared a conceptual document entitled "Master Plan for Artificial Recharge to Ground Water in India" during the year 2013, which envisages construction of 1.11 crore rainwater harvesting and artificial recharge structures in the Country at an estimated cost of Rs. 79,178 crores to harness 85 BCM (Billion Cubic Metre) of water, in an area of 9,41,541 sq.km by harnessing surplus monsoon runoff to augment ground water resources.
- 7. Besides, CGWB has taken up Aquifer Mapping and Management programme during XII Plan, under the scheme of Ground Water Management and Regulation. The Aquifer Mapping is aimed to delineate aquifer disposition and their characterization for preparation of aquifer/area specific ground water management plans with community

¹²⁵ Source: <u>http://mowr.gov.in/sites/default/files/Steps_to_control_water_depletion_Jun2019.pdf</u>

participation. The management plans are shared with the respective State Governments for taking appropriate measures.

- 8. Department of Water Resource, RD&GR has instituted National Water Awards to incentivize good practices in water conservation and ground water recharge. Mass awareness programmes (Trainings, Seminars, Workshops, Exhibitions, Trade Fares and Painting Competitions etc.) are conducted from time to time each year under the Information, Education & Communication (IEC) Scheme of DoWR, RD & GR in various parts of the Country to promote rainwater harvesting and artificial recharge to ground water.
- 9. The Ministry of Rural Development in consultation and agreement with the Department of Water Resources, RD & GR and the Ministry of Agriculture & Farmers' Welfare has developed an actionable framework for Natural Resources Management (NRM), titled "Mission Water Conservation" to ensure gainful utilization of funds. The Framework strives to ensure synergies in Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), erstwhile Integrated Watershed Management Programme (IWMP) now PMKSY-Watershed Development Component and Command Area Development & Water Management (CAD&WM), given their common objectives. Types of common works undertaken under these programmes/schemes are water conservation and management, water harvesting, soil and moisture conservation, groundwater recharge, flood protection, land development, Command Area Development & Watershed Management
- 10. Department of Land Resources is currently implementing 8214 watershed development projects in 28 States covering an area of about 39.07 million ha. under the Watershed Development Component (WDC) of the Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) principally for development of rainfed portions of net cultivated area and culturable wastelands. The major activities taken up under the WDC-PMKSY, inter-alia, include ridge area treatment, drainage line afforestation, soil and moisture conservation, rainwater harvesting, horticulture, and pasture development etc.
- 11. Ministry of Housing & Urban Affairs has released Model Building Byelaws, 2016 which recommends Rainwater Harvesting for all types of Building with plot size 100 sq.m or more. Barring the States/UT of Sikkim, Mizoram and Lakshadweep, all the States have incorporated the provisions in their respective building bye laws. The plans submitted to the local bodies shall indicate the system of storm water drainage along with points of collection of rainwater in surface reservoirs or in recharge wells. Further, all building having a minimum discharge of 10,000 liter and above per day shall incorporate wastewater recycling system. The recycled water should be used for horticultural purposes.
- 12. Government of India has approved Atal Bhujal Yojana (Atal Jal), a Rs. 6000 Crore Central Sector Scheme, for sustainable management of ground water resources with community participation in water stressed blocks of Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Uttar Pradesh.

- 13. National Action Plan on Climate Change (NAPCC) A National Water Mission mounted to ensure integrated water resource management helping to conserve water, minimize wastage and ensure more equitable distribution both across and within states.¹²⁶
- 14. The Groundwater (Sustainable Management) Bill, 2017 drafted by the Ministry of Water Resources, River Development & Ganga Rejuvenation provides a new template that states can use to adopt legislation capable of addressing the fast-increasing groundwater crisis faced by many states. This Bill follows on an earlier model bill drafted in 1970 and updated several times until 2005 on which the dozen of existing groundwater acts are based. This 1970 template is unsuited to the present needs of a country where groundwater is now the primary source of drinking water and irrigation. In particular, it fails to provide for local-level regulation of what is often known as the most local source of water and fails to provide for conservation measures at aquifer level. The 2017 Bill integrates legal developments having taking place since the 1970s, such as the decentralization reforms kick-started in the 1990s, the recognition of water as a fundamental right and its recognition as a public trust. In doing so, it provides new bases for regulating groundwater as a public resource and to take measures at aquifer level, something that is crucial to address ongoing overexploitation and falling water tables.

¹²⁶ <u>http://nwm.gov.in/</u>

# **Chapter-7-Sanitation & Waste Management**

#### **Brief Legacy Waste Guidelines**

1 Recently, the National Green Tribunal (NGT) has directed a committee to assess the amount of damage caused to the environment due to the dump sites (legacy waste) in Delhi. The committee comprises representatives from the Central Pollution Control Board, National Environmental Engineering Research Institute (NEERI) and IIT Delhi.

#### 2 Key Points

i. Legacy wastes are the wastes that have been collected and kept for years at some barren land or a place dedicated for Landfill (an area to dump solid waste).

- a) This waste can be roughly grouped into fourcategories.
- b) Contained and stored waste (contained or stored waste are wastes in tanks, canisters, and stainless-steel bins).
- c) Buried waste.
- d) Contaminated soil and groundwater
- e) Contaminated building materials and structures.
- ii. **Biomining method** has been proposed by the Central Pollution Control Board (CPCB) for the effective disposal of legacy wastes.

#### iii. Environmental Impact of Legacy Waste

- a) Legacy wastes not only occupy large space, but also become a breeding ground for pathogens, flies, malodors and generation of leachate, which may lead to water contamination.
- b) They also contribute to generation of greenhouse gases and pose risk of uncontrollable fire.

#### **3** Biomining

- 7. Biomining is the process of **using micro organisms** (**microbes**) to extract metals of economic interest from rock ores or mine waste. Biomining techniques may also be used to **clean up sites** that have been polluted with metals.
- 8. It is usually used for old dumped waste that remains in a **partly or fully decomposed state with no segregation in existence between wet and dry waste.** In the cost-effective method of biomining, treatment is done by dividing the garbage heap at the site into suitable blocks to let the air percolate in the heap.
- 9. As a result, the leachate which is the water in the heap with suspended solid particles is drained off and microbes are sprayed in the heap to initiate biological decompositions. The waste is turned over several times in order to devoid the waste to leachate as much as possible. This biological decomposition of the waste **decreases the volume of the waste by 40 percent.**
- 4 Legacy waste has several ill-effects like generation of greenhouse gases, pollution of the entire ecosystem around the dump site, posing risk of uncontrollable fire, etc. Thus, it is very critical to start working on clearing it today and ensuring that fresh waste is also handled accordingly. This will also improve the morale of the ULB and its residents. It is the responsibility of ULB to ensure that remediation of dumpsite is done inhouse or by engaging a competent agency. ULB will have to pay an agency the expenditure for remediation of legacy waste as one cannot forecast the chance of recovering recyclables from the highly contaminated waste nor forecast revenue from selling of recyclables so as to financially sustain the entire model. However, a clause

can be made by ULB during appointing agency that the revenue generated by selling any recoverable material shall be transferred back to ULB. This can make the executing agency a technology and manpower partner in the project, who is paid for a management cost.

- 5 The ULBs can either go with the 5 models explained for bioremediation and bio-mining of legacy waste, or make its own cost-effective, space effective and sustainable option, introduce new technology or install various other machinery/equipment based on the practical circumstances of legacy waste. Various types of waste will be recovered from legacy waste like dry waste, soil conditioner, hazardous waste, bio-medical waste, construction and debris waste, e-waste, etc. All these wastes should be disposed of as per the norms and guidelines issued by MoEF&CC under respective waste management and handling rules under the Environment (Protection) Act 1986. It would be the responsibility of ULB to bear the cost of disposal of all these types of waste. Waste below the size of 50 mm need not be shredded before sending to cement companies for co-processing. For waste above the size of 50 mm, tie-up can be done with neighboring cement plants to install shredder at their plant if agreeable.
- 6 The ULBs also needs to ensure that fresh waste generated in city is handled collected and processed separately as per the norms and guidelines issued by MoEF&CC. Covered collection vehicle and segregated collection needs to be ensured. For dry waste material recovery facility should be installed to recover maximum material for ensuring that our cities are zero waste to landfill cities. Recyclable waste is sent to authorize recyclers and non-recyclable waste should be sent to hot mix plants for plastic roads or to P2F (Polymer to Fuel) plants or for co-processing to cement plants. Wet waste should be processed to get compost/ biogas etc. Bio-medical waste, hazardous waste, e-waste, construction and debris waste, etc. should be sent to respective authorized disposal sites.
- 7 It is also very important to understand that to ensure that no such legacy waste is accumulated in future, all the ULB's should refrain from floating tenders for collection, handling, and processing of mixed waste. All the ULB's should keep infrastructure required for collection, handling and processing different type of waste separately. There are various benefits attached to clearing dumpsites which need to be understood by the ULB to speedily start work on it.
- 8 These guidelines apply to cities, towns and even villages. Bioremediation and biomining of MSW projects may not be economically viable but are mandatory to improve waste management ecosystems across India. Besides, land cleared by way of biomining and bioremediation of legacy waste, huge land area is evacuated, which can compensate the cost of its treatment (Guidelines for Disposal of Legacy Waste (Old Municipal Solid Waste), CPCB, 2019¹²⁷).

¹²⁷http://www.toxicslink.org/docs/LegacyWasteBiomining_guidelines_29.04.2019.pdf and https://www.drishtiias.com/daily-updates/daily-news-analysis/legacy-waste

#### **Global Examples of Wastes Taxing**

**1.0 Tax on Waste (landfill tax)** introduced in 1996, is the most important emission tax in Finland. The budgeted revenues in 2010 were at 52 million¹²⁸. The waste taxes aim to promote waste recovery and reduce the amounts of waste ending up in landfills. Waste taxes are paid by the owner of the landfill, who passes on the cost through fees charged for the reception of waste. It is proposed by the current Government to extend the tax base beyond municipal landfills and include all waste which could be reutilized on the basis of technical, economical or environmental premises. It is anticipated that with this review the tax rate will be increased from 30 per tonne of waste to 40 per tonne.

### 1.1 Deposit Refund Scheme in Finland

Finland set up one of the most successful systems in Europe to reduce packaging pollution. The government introduced for the first time a deposit refund system for beverage packaging in 1950. The scheme now collects disposable as well as refillable glass and plastic (PET) bottles. With deposit amounts ranging from  $\notin 0.10$  to  $\notin 0.40$  per container, return rates for single-use packaging peaked 95% in 2015. This was attributed to the close co-operation between the government, civil society, retailers and the beverage industry. Following the introduction of a beverage packaging tax in 1994, the government also offered incentives to producers and importers to take part in the deposit refund system.

#### 1.2 Plastic Bag Tax in Ireland

In 2002, Ireland introduced a  $\notin 0.15$  plastic bag levy on plastic bags at the point of sale, which increased to  $\notin 0.22$  in 2007. The aim was to reduce consumption and the adverse effects plastic bag litter had on the landscape. As a result, discarded plastic bags fell from 5% of total litter pollution in 2001 to 0.13% in 2015. The levy generated  $\notin 200$  million over a 12-year period. The revenue was used to finance environmental projects across the country. The Irish plastic bag levy is regarded as one of the most successful and well-received environmental measures ever introduced.

#### 5.4 LandfillTax in the UK

A landfill tax was introduced in the UK in 1996 to reflect the environmental cost of landfilling (e.g., greenhouse gas emissions) and also to reduce waste generation and boost recycling. Thanks to the tax, the amount of waste sent to landfill decreased from 50 million tonnes in 2001 to 12 million tonnes in 2015. Inert, non-hazardous waste (e.g., concrete, sand) is currently levied at £2.65 (€2.96) per tonne, while the tax on biodegradable waste (e.g., food, paper) stands at £84.40 (€94.21) per tonne.

#### 5.5 NOx Tax in Sweden

In 1992, the Swedish government introduced a tax on nitrogen (NOx) a powerful pollutant linked to acid rain and respiratory problems which helped reduce NOx

¹²⁸https://sustainabledevelopment.un.org/index.php?page=view&type=99&nr=133&menu=1449

emissions by 30-40 percent. The tax was applied to energy produced for space heating, electricity production and industrial processes in order to curb soil acidification, which undermines crop and pasture production. The tax rate was initially set at SEK 40 per kg NOx emitted for all types of fuel, and was increased to SEK 50 per kg in 2008 (about  $\in$ 5 at the time). The revenue was used to reimburse those taxed plants emitting low volumes of NOx in order to incentivise energy efficiency and reduce any potentially negative impact on competitiveness. This led many companies to implement emission reduction measures ahead of the introduction of the tax. Annual revenue reached £900 million (€1 billion) in 2016.

5.6 Case studies, prepared by **Institute for European Environmental Policy** (IEEP) and partners as part of a major study for the European Commission on 'Capacity building for environmental tax reform', summarise a wide range of taxes, charges, subsidies and payments related to several areas of environmental policy which are given below:

Table 7.2.1 Taxes, charges, subsidies and payments related to several areas of environmental policy

Air pollution	Waste, resources & circular economy	Water quality & marine litter	Water stress & availability	Biodiversity & land use
	<b>Landfill taxes</b> : Austria, Greece, UK	Wastewater fee: Poland		Forestry-related fees/charges: Austria, Croatia, Slovenia, Spain
Air pollution	Pay-as-you-throw schemes: Benelux	Pesticide/fertilizer/ phosphorus taxes/charges: Denmark x2, Italy, Sweden		Biodiversity offsetting: Germany
tees and taxes: Czech Republic, Hungary, Slovakia, Sweden Fluorinated greenhouse gas tax: Spain	Packaging charges/taxes/deposit refund: Belgium, Finland, Latvia, RomaniaP c c c r P I Plastic bag levy: IrelandP c c c P P IrelandPlastic bag levy: IrelandP c c p c f c c c c c p c p c p c p c c c c c c c c c c c c c c c 	Packaging charges/taxes/deposit refund: Belgium, Finland, Latvia, Romania Plastic bag levy: Ireland	Water abstraction charges: Bulgaria, France Water pricing: Cyprus, Malta, Portugal,	Result-based agri-environment measures: Germany
				Peatland tax reform: Finland
				related taxes/charges: Denmark x2, Italy, Sweden
		Environmental/natural resource charges: Belgium, Estonia, Lithuania	Netherlands	Hunting and fishing-related fees/taxes: Estonia, Ireland,
		Port fee reductions: Netherlands (Rotterdam & Amsterdam)		Ecological fiscal transfers:
	Aggregates levy: UK	egates levy: UK		тонада

Source: https://ieep.eu/publications/new-suite-of-40-case-studies-on-environmental-fiscal-reform .

# **Chapter-8-Agriculture**

**Annexure D-8.1** 

# **Agricultural and Processed Food Products Export Development Authority** (APEDA)

- 1) APEDA's Functions:
  - a. Promotion of Export Oriented Production- cereals(44%),processed food (17%),fresh fruits and vegetables(8%),animal products(23%)
  - b. Infrastructure for Transportation, Handling and Storage.
  - c. Support for R&D and Quality Assurance.
  - d. Fixing of Quality Standards and Specifications.
  - e. Inspection & Certification of Processing Plants, Storage & Transportation Points for Meat Products.
  - f. Improving Packaging of Products.
  - g. Training in Various Aspects of the Scheduled Products Industries.
  - h. Market Development and Promotion.
  - i. Market Intelligence Undertaking Surveys & Feasibility Studies.
  - j. Products covered > 700 tariff lines
  - a. Floriculture and seeds
  - b. Fruits & Vegetables
  - c. Processed Fruits & Vegetables
  - d. Other Processed Foods
  - e. Livestock Products
  - f. Cereals
- 2) Tentop products of present export in 2018-19 Basmati Rice (4723 USD Million), Buffalo Meat (3609 USD Million), Non-Basmati Rice(3048 USD Million), Groundnut (474 USD Million), Grapes (335 USD Million), Gherkin (206 USD Million), Mango Pulp (94 USD Million), Dehydrated Onion (103 USD Million), Pomegranate (99 USD Million), Mango (60 USD Million).
- 3) Ten top present export destinations
  - i. Vietnam Buffalo Meat, Animal Casings, Groundnuts, Maize, Fresh Onions
  - ii. Iran Basmati Rice, Non-Basmati Rice, Buffalo Meat, Processed Fruits, Juices & Nuts, Groundnuts
  - Saudi Arab Basmati Rice, Buffalo Meat, Non-Basmati Rice, Processed Fruits, Juices & Nuts, Mango Pulp
  - iv. UAE Basmati Rice, Non-Basmati Rice, Buffalo Meat, Alcoholic Beverages, Sheep or Goat Meat
  - v. USA Guargum, Basmati Rice, Miscellaneous Preparations, Cereal Preparations, Natural Honey
  - vi. Indonesia Buffalo Meat, Groundnuts, Non-Basmati Rice, Miscellaneous Preparations, Cocoa Products
  - vii. Nepal Non Basmati Rice, Maize, Cereal Preparations, Other Fresh Vegetables, Wheat
  - viii. Bangladesh Non Basmati Rice, Fresh Onions, Maize, Other Fresh Fruits, Cereal Preparations
  - ix. Malaysia Buffalo Meat, Fresh Onions, Miscellaneous Preparations, Groundnuts, Basmati Rice
  - x. Iraq Basmati Rice, Buffalo Meat, Non-Basmati Rice, Pulses, Other Fresh Fruits
- 4) Interventions envisaged by APEDA for boosting the exports in NCR

- a. Pre- Harvest Interventions
- i. More Number of FPOs/Co-operatives can be formed with the support of NABARD, SFAC, NCDC
- ii. Area expansion and Productivity enhancement
- iii. Up gradation of Package of practices
- iv. Area expansion of Organic Production
- v. Implementation of GAP
- vi. Fruit cap for protection of heat and pest (for Mango, kinnow, guava)
- vii. Irrigation System including source of water (Drip Irrigation)
- viii. Rejuvenation program for senile Mango orchards
- b. Post -Harvest Interventions
- i. Mechanized/Manual harvester
- ii. Collection centre for export Farm fresh fruits and vegetables can be consolidated and brought to a common Collection centre based on Hub and spoke model
- iii. Pack house for export Quality Certification
- iv. Facility of Plant Quarantine for PSC
- v. Processing unit (value added) for export Quality
- vi. Exportable Box /Bag manufacturer Unit
- c. Infrastructure and Logistics
- i. Electricity supply in each cluster and facility centre
- ii. Adequate Water supply in each cluster and facility centre
- iii. Interior Roads to link the each cluster and facility centre
- iv. Transportation/Reefer Van/Availability of containers
- v. Requirement of ICDs
- vi. Exportable Box /Bag manufacturer Unit
- d. Quality
- i. Recommended list of Pesticides and label claim
- ii. Integrated Pest and Disease Management
- iii. Identification of Pest free area
- iv. Requirement of Centre for excellence, if required
- v. Farmer registration in Hortinet for establishing Traceability
- vi. Have Food Testing Laboratories
- e. Market Linkages
- i. Connecting with exporters
- ii. RBSM or BSM
- iii. Promotion program in abroad through EOI
- iv. Promotion of "Brand India"
- v. Market Intelligence

#### 5) Market Development- Farmer Connect Portal

- a. The Farmer Connect portal which provides a platform for farmers and exporters to interact.
- b. Farmer Connect portal helps in conversion of underperforming farms into high yielding farms of quality products in demand, by leveraging ICT enabled services.
- c. The main objective of Farmer connect portal is to facilitate and integrate the activities of Farmer and aggregators in the form of Farmer producer Organization (FPO) with Exporters through the assistance of ICT platform.
- d. 840 FPOs has been registered in the portal till date

#### 6) APEDA's Initiatives for implementation of Agri Export Policy

Agri Export Policy (AEP) was announced in December 2018

- a. To double exports to USD 60 billion by 2022 in consonance with doubling the income of farmers.
- b. Policy was framed with "Farmers' Centric Approach" for improved income by minimizing losses across the value chain.

- c. In this regard, APEDA has made an intensified approach for ensuring greater involvement of all the State Governments & UT's for effective implementation of Agri Export Policy (AEP). Preparations of State action plan is at different stages of finalization in the States.
- 7) **Clusters Identified under AEP** 29 Clusters of 12 Products in 11 States covering 67 Districts. Further, for Cluster Development:
  - a. Cluster identification based on existing exports, exporters operations, scalability of operations and potential for increase in export in short term.
  - b. Focus on developing export oriented infrastructure in identified clusters with integrated postharvest processing facilities, laboratories etc. with support from MOFPI / DoC (TIES) / DAC&FW (MIDH) / DAHDF (IDMF), etc.
  - c. Concerned Organisations or Stakeholders to support :
    - i. Supply chain ownership/participation through farmer registrations,
    - ii. FPO formation,
    - iii. Provision of quality inputs,
    - iv. Price discovery,
    - v. Adoption of new technology,
    - vi. Farmer training through technical organizations
    - vii. Third party certification.
  - d. Scheme to be implemented in partnership with private exporters with natural incentive to promote such clusters.
  - e. Higher involvement and efforts of ICAR institutions / KVKs / extension machinery.

#### 8) Strategy and Action Plan

- a. Leveraging Horticulture and Organic Production
- b. Enhancing efficiency of rural supply chains
- c. Optimum utilization of marketable surplus
- d. Improving quality and reaching international markets
- e. Capacity building and skill development

#### 9) APEDA's Promotional Financial Assistance Schemes

- a. Export Infrastructure Development
- i. Emphasis on setting up of post-harvest handling facilities.
- ii. Financial assistance provided for setting up of infrastructure such as pack houses, refer van, VHT, HWT, cable system etc.
- iii. Assistance also provided for processing facilities for addressing missing gap.
- b. Quality Development
- i. Assistance provided for quality management system, lab equipment and testing of sample etc.
- c. Market Development
- i. Activities covered include development and dissemination of data base and market intelligence, participation of trade fair, BSM, R-BSM, Events, trade delegation etc.
- ii. Product development, R&D and enhancement of traceability etc

**Chapter-9-Rural Development** 

# Sub-region wise Status of Health infrastructure

#### 1. Hospitals

National Capital Region has 101 district hospitals, 214 Community Health Centers and 582 Public health centers and 97 ESI Hospitals and dispensaries under its jurisdiction. In Haryana sub region, districts like Palwal, Mewat and Sonipat have only one district level hospital whereas others districts like Gurugram, Faridabad and Jind has more than 3 district hospitals catering to the need of people in the region. Similarly. in UP sub region and NCT Delhi, Baghpat district and North East and South East districts have lesser number of district hospitals than district like Bulandshahr, Ghaziabad and Central or North West Delhi.

In terms of Community Health Centers (CHCs) and Public Health Centers (PHCs), UP sub region has 72 CHCs and Haryana sub region has 301 PHCs and 57 ESI Hospitals and dispensaries. Concentration of CHCs and PHCS are more in the rural districts of the sub regions such as Bhiwani district has 29 PHCs and 6 CHCs, Mahendragarh has 25 PHCs and 5 CHCs in Haryana sub region, Baghpat has 20 PHCs and 7 CHCs and Muzaffarnagar 43 PHCs and 9 CHCs in UP sub region.Most of the ESI hospitals and dispensaries are located in the urban districts of the NCR, like Faridabad (25), Gurugram (7) in Haryana sub region, Ghaziabad (14) in UP sub region and in Alwar (6) district of the Rajasthan sub region.

Sub Regions	Districts	No. of District Hospitals	No. of CHCs	No. of PHCs	No. of ESI Hospitals & Dispensaries	No. of Other Hospital s
NCT Delhi	9	44	25	7	4	9
Haryana	14	41	63	301	57	0
Uttar Pradesh	8	14	72	80	28	11
Rajasthan	2	2	54	194	8	2
NCR	33	101	214	582	97	22

#### Table 1: Existing Government Health Facilities in NCR, 2019

Source: NCR Monitoring and Planning Cell, Govt of NCT Delhi, Govt. of Haryana, Govt of UP and Govt of Rajasthan, *https://www.esic.nic.in/haryana and ^https://www.esic.nic.in/dispensaries-uttar-pradesh and https://www.esic.nic.in/dispensaries-rajasthan

Sub Regions	Districts	Multi- Specialty Hospital	General Hospital s	Nursing Home	Charitable Hospital	Other Hospitals	Total No.
NCT Delhi	9			1175*			1175
Haryana	14	74	2	44	17	5	142
Uttar Pradesh	8	140	294	189	7	96	726

 Table 2: Existing private & charitable health facilities in NCR, 2019

Rajasthan	2	1	27	5	1		34
NCR	33	215	323	238	25	101	2077

Source: NCR Monitoring and Planning Cell, Govt of NCT Delhi, Govt. of Haryana, Govt of UP and Govt of Rajasthan and * ECONOMIC SURVEY OF DELHI, 2019-20

There are over 2000 private and charitable health facilities including multi-specialty hospitals, general hospitals, nursing home etc. in the National Capital Region. NCT Delhi has 1175 private and charitable hospitals followed by UP sub-region with 726 health facilities, 142 in Haryana sub region and 34 in Rajasthan sub region. Concentration of General Hospitals can be seen in the NCR with 323 hospitals followed by 238 nursing homes and least number of charitable hospitals.

### 2. Blood Banks

NCR has about 177 blood banks both government owned (50) and private sector operated (127) in the region. Larger concentration of blood bank facilities is available in Uttar Pradesh Sub region withabout 59 privately operated blood bank facilities and followed by 33 each at NCT Delhi and Haryana sub region. NCT Delhi has higher number of government owned and operated blood bank facilities in the NCR. Faridabad, Gurugram, Ghaziabad and G B Nagar and Meerut districts has the maximum number of blood banks in Haryana and UP sub region, whereas, other districts of the sub region and region has comparatively less number of blood bank facilities.

Sub Regions	Total	Private	Government	
1	2 (3+4)	3	4	
NCT Delhi	55	33	22	
Haryana	48	33	15	
Uttar Pradesh	68	59	9	
Rajasthan	6	2	4	
NCR	177	127	50	

Table 3: Blood Bank Facility in NCR, 2019

Source: For Haryana - http://haryanahealth.nic.in/BloodBank.html as on 21.01.2020

For UP - https://sbtcup.org/all_blood_banks.php accessed on 01.07.2020

For Rajasthan -http://nbtc.naco.gov.in/assets/resources/reports/commonResource_1517228831.pdf

#### 3. Trauma Centers

There are 19 trauma centers in the National Capital Region with the bed capacity of 426, 128 nursing staff and 62 doctor staff catering to the urgent need of trauma patients. Haryana state has a total of 7 trauma centers of which 3 are in Haryana sub region of the NCR and the state government has proposed to build 12 more trauma centers¹²⁹ across the state to save more lives and for better coverage. According to Trauma Care Guidelines 2018-25 of Govt of UP, tertiary level trauma care services in the State are mainly limited to 21Government and 29 Private Medical Collages in the state. However, the state has 43 approved trauma care facilities, the State Government funds 37, and six receive funding from the Central Government (out of 43, construction of 30 trauma care facilities has been completed) 5 trauma centers falls within the jurisdiction of UP Sub region of the NCR. In NCT Delhi,

¹²⁹ https://economictimes.indiatimes.com/news/politics-and-nation/trauma-centres-on-haryana-highways-after-every-60-km-cm-manohar-lal-khattar/articleshow/58053779.cms

8 trauma centers are functional and working to save lives in the city. In Rajasthan Sub region, the state government is operating 3 Trauma Centers, 2 at Alwar and 1 at Bharatpur district. These trauma centers are equipped to prove emergency and accident care related services to the patients with dedicated team of experts like nurses, doctors and others.

Sub Regions	No. of Trauma Centers	Bed Capacity	Doctor Staff	Nursing Staff
NCT Delhi	8	-	-	-
Haryana	3	252	38	85
Uttar Pradesh	5	124	24	43
Rajasthan	3	50	0	0
NCR	19	426	62	128

Table 4: Trauma Centers in the NCR, 2019

Source: *https://www.credihealth.com/hospitals/delhi-ncr/emergency-and-trauma and NCR Monitoring and Planning Cell, Govt of Haryana, UP and Rajasthan

Sub Regions	Districts	No. of Trauma Centers	Bed Capacity	Facilities available
NCT Delhi	Total	8		
	Karnal	1	18	• Accident and Emergency
Harvana	Panipat	1	204	• Dedicated post-crash trauma
11ai yana	Rewari	1	30	team     Ambulance Facility etc.
	Total	3	252	
	Bulandshahr	1	10	• Accident and Emergency
	Ghaziabad	1	14	• Dedicated post-crash trauma
	Hapur^	1	70	• Trauma Team (Specialist/
	Meerut^	1	20	Nurses/ EMT) • Facilities for adequate
Uttar Pradesh	Muzaffarnagar	1	10	diagnosis
	Total	5	124	<ul> <li>Rehabilitation unit ((Physiotherapist, Vocational therapist, speech therapist, and counsellors))</li> <li>Ambulance Facility</li> </ul>
	Alwar	2	-	• Accident and Emergency (A&E) Care Unit
Rajasthan	Bharatpur	1	50	Dedicated post-crash trauma
	Total	3	50	Ambulance Facility etc.
NCR	G Total	19	426	

 Table 5: Trauma Centers in the NCR area with the facilities available, 2019

Source: https://www.credihealth.com/hospitals/delhi-ncr/emergency-and-trauma and NCR Monitoring and Planning Cell, Govt of Haryana and for Rajasthan

(http://nrhmrajasthan.nic.in/List%20of%20Trauma%20Center%20(GOI)_List%20of%20Trauma%20Center%2 0(GOR).pdf) and http://www.uphssp.org.in/Tenders/Traumacareguidelines.pdf for UP

Note: ^ under construction (approved by state govt.)

#### 4. Ambulance Facilities

National Capital Region has 1395 ambulance facilities in both urban and rural government as well as private hospitals. Haryana sub region has 634 ambulance facilities followed by Haryana sub region with 426 ambulances. Government hospitals located in the urban areas have better access to ambulance facilities in comparison to private hospitals in rural areas.

Sub Regions	Total	Governi	ment Hospitals	<b>Private Hospitals</b>		
Sub Regions	10141	Urban	Rural	Urban	Rural	
1	2 (3+4+5+6)	3	4	5	6	
NCT Delhi	261	-	-	-	-	
Haryana	426	242	88	84	12	
Uttar Pradesh	634	201	325	56	52	
Rajasthan	74	60	14	0	0	
NCR	1395	503	427	140	64	

Table 6: Ambulance facilities in the urban and rural areas of NCR, 2019

Source: NCR Monitoring and Planning Cell, Govt of NCT Delhi, Govt. of Haryana, Govt of UP and Govt of Rajasthan

# **Extract from Stakeholders Workshop on Health**

**Rajasthan sub-region**, there 68 PHCs and 5 UHCs under urban health mission in Bharatpur. One medical college and 03 trauma centres in Bayana ,Deeg exist. It is well equipped but not yet functional. Under Ayushman Bharat, 68 PHCs has been converted into Health and Wellness Centres and 18 health sub centres are also converted into Health and wellness centres. Actions have been initiated regarding Training of professionals.

**UP Sub-region**, has 14 district hospitals (exc. Shamli and Hapur), 72 CHCs facilities, 80 PHCs Facilities, 4 ESI Hospitals/Dispensaries and 11 other hospitals.

- Highest concentration of district level hospitals can be found in Bulandshahr (4) district followed by Meerut (3) and others, bed capacity is as high as 526 beds in Meerut, 404 in Bulandshahr, 366 in Ghaziabad and so on.
- In Community Health Centers (CHC) facilities, maximum CHCs are in Meerut and Shamli (14) district followed by Muzaffarnagar district (9) with bed capacity of 480, 380 and 270 respectively.
- 43 PHCs are located in Muzaffarnagar district with 172 beds followed by Bulandshahr and Baghpat district with 13 and 20 PHCS and 390 and 108 beds.
- There are 1 each ESI hospitals are preset in the G B Nagar and Ghaziabad district and 2 ESI hospitals in Hapur districts.
- Thera are 8 other hospitals in the Hapur district with 200 bed capacity and 2 other hospitals in G B Nagar with 800 bed capacity.
- There are 8 Trauma Centers in the sub region excluding G B Nagar and Shamli district. With the total bed capacity of 134 and 24 doctors and 43 nursing staff.

- Maximum number of trauma centers are in Hapur district where 3 Trauma center facilities are available for the general people with 70 bds and about 10 doctors and 13 nursing staff to provide better medical services to the masses.
- Most of these trauma centers are equipped with facilities like Imaging Room, OT, ICU and Resuscitation Area. Whereas, others have facilities like Blood Bank and Rehabilitation Equipment.
- Health scenario on Uttar Pradesh also demands major improvements, with Bulandshahar needing special focus (only 78 PHC including APHC for its 45 lakh population). With regard to health care workers, adequate steps to fill up the vacancies, to ensure doctors at block and for each CHC, need attention.

**In Haryana sub-region**, improvements planned include a 500 bedded hospital in Faridabad,200 bedded hospitals in Dharuheraand Rai and upgradation of a Gurgaon hospital to 500 beds. State also plans to add many more courses. Data analysis shows that 14 districts have CT scan facility, MRI scan facility is available in 4 districts and 18 districts have Dialysis centres on PPP model. Further, while Trauma care facilities are proposed to be upgraded to hospitals with ICU facilities, Quality Care shall be considered in all hospitals.

# Best practices of Public-Private Partnership in Health Sector in India and Health Security Examples of UK and Japan

# A). Public-Private Partnership in Health Sector in India

Public-Private Partnership (PPP) in the context of the health sector is an instrument for improving the health of the population. PPP is to be seen in the context of viewing the whole medical sector as a national asset with health promotion as goal of all health providers, private or public. The Private and Non-profit sectors are also very much accountable to overall health systems and services of the country. Therefore, synergies where all the stakeholders feel they are part of the system and do everything possible to strengthen national policies and programmes needs to be emphasized with a proactive role from the Government. The report encapsulates the successful PPP experiences in India.

#### 1. Yeshasvini Health scheme in Karnataka

The Yeshasvini Co-operative Farmer's Healthcare Scheme is a health insurance scheme targeted to benefit the poor. It was initiated by Narayana Hrudayalaya, Superspecialty Heart Hospital in Bangalore, and by the Department of Co-operatives, Government of Karnataka. The Government provides a quarter (Rs. 2.50) of the monthly premium paid by the members of the Cooperative Societies, which is Rs.10 per month. The incentive of getting treatment in a private hospital with the Government paying half of the premium attracts more members to the scheme. The cardholders could access free treatment in 160 hospitals located in all districts of the state for any medical procedure costing upto Rs. 2 lakhs.

The premium is deposited in the account of a charitable trust, the regulatory body for implementing the scheme. A Third Party Administrator- Family Health Plan Limited (FHPL) that is licensed by Karnataka's Insurance Regulatory and Development Authority. The FHPL has the responsibility for administering and managing the scheme on a day-today basis. Recognized hospitals have been admitted to the network throughout Karnataka, which are called as network hospitals (NWH). These hospitals offer comprehensive packages for operations that are paid by Yeshasvini. A Yeshasvini Farmers Health Care Trust is formed to ensure sustainability to the scheme, which comprises of members of the State Government and the network hospitals. The Trust monitors and controls the whole scheme, formulates policies, appointed the TPA and addresses the grievances of the insured members or doctors.

#### 2. ArogyaRaksha Scheme in Andhra Pradesh

The Government of Andhra Pradesh has initiated the ArogyaRaksha Scheme in collaboration with the New India Assurance Company and with private clinics. It is an insurance scheme fully funded by the government. It provides hospitalization benefits and personal accident benefits to citizens below the poverty line who undergo sterilization for family planning from government health institutions. The government paid an insurance premium of Rs. 75 per family to the insurance company, with the expected enrolment of 200,000 acceptors in the first year.

The medical officer in the clinics issues aArogyaRaksha Certificate to the person who undergoes sterilization. The person and two of her/his children below the age of five years are covered under the hospitalization benefit and personal accident benefit schemes. The person and/or her/his children could get in-patient treatment in the hospital upto a maximum of Rs. 2000 per hospitalization, and subject to a limit of Rs. 4000 for all treatments taken under one ArogyaRaksha Certificate in any one year. She/he gets free treatment from the hospital, which in turn claims the charges from the New India Insurance Company. In case of death due to any accident, the maximum benefit payable under one certificate is Rs. 10,000.

#### 3. Telemedicine initiative by Narayana Hrudayalaya in Karnataka

The Government of Karnataka, the Narayana Hrudayalayahospita, Bangalore and the Indian Space Research Organization initiated an experimental tele-medicine project called 'Karnataka Integrated Tele-medicine and Tele-health Project' (KITTH), which is an on-line health-care initiatives in Karnataka. With connections by satellite, this project functions in the Coronary Care Units of selected district hospitals that are linked with Narayana Hrudayalaya hospital. Each CCU is connected to the main hospital to facilitate investigation by specialists after ordinary doctors have examined patients. If a patient requires an operation, s/he is referred to the main hospital in Bangalore; otherwise s/he is admitted to a CCU for consultation and treatment. Tele-medicine provides access to areas that are underserved or un-served. It improves access to specialty care and reduces both time and cost for rural and semi-urban patients. Telemedicine improves the quality of health care through timely diagnosis and treatment of patients. The most important aspect of tele-medicine is the digital convergence of medical records, charts, x-rays, histopathology slides and medical procedures (including laboratory tests) conducted on patients.

#### 4. Contracting in Sawai Man Singh Hospital, Jaipur

The SMS hospital has established a Life Line Fluid Drug Store to contract out low cost high quality medicine and surgical items on a 24-hour basis inside the hospital. The agency to operate the drug store is selected through bidding. The successful bidder is a proprietary agency, and the medical superintendent is the overall supervisor in charge of monitoring the store and it's functioning. The contractor appoints and manages the remuneration of the staff from the sales receipts. The SMS hospital shares resources with the drug store such as electricity; water; computers for daily operations; physical space; stationery and medicines. The contractor provides all staff salaries; daily operations and distribution of medicine; maintenance of records and monthly reports to SMS Hospital. The SMS Hospital provides all medicines to the drug store, and the contractor has no power to purchase or sell medicines of his own. The contractor gains substantial profits, could expand his contacts and gain popularity through LLFS. However, the contractor has to abide by all the rules and regulations as given in the contract document. The SMS Hospital has also contracted out the installation, operation and maintenance of CT-scan and MRI services to a private agency. The agency is paid a monthly rent by the hospital and the agency has to render free services to 20% of the patients belonging to the poor socio-economic categories.

#### 5. The Uttaranchal Mobile Hospital and Research Center (UMHRC)

It is three-way partnership among the Technology Information, Forecasting and Assessment Council (TIFAC), the Government of Uttaranchal and the Birla Institute of Scientific Research (BISR). The motive behind the partnership was to provide health care and

diagnostic facilities to poor and rural people at their doorstep in the difficult hilly terrain. TIFAC and the State Govt. shares the funds sanctioned to BISR on an equal basis.

### 6. PHC's in Gumballi and Sugganahalli, Karnataka

Management of Primary Health Centers in Gumballi and Sugganahalli was contracted out by the Government of Karnataka to Karuna Trust in 1996 to serve the tribal community in the hilly areas. 90% of the cost is borne by the Govt. and 10% by the trust. Karuna Trust has full responsibility for providing all personnel at the PHC and the Health Sub-centers within its jurisdiction; maintenance of all the assets at the PHC and addition of any assets if required at the PHC. There has been redeployment of the Govt. staff in the PHCs, however some do remain in deputation on mutual consent. The agency ensures adequate stocks of essential drugs at all times and supplies them free of cost to the patients. No patient is charged for diagnosis, drugs, treatment or anything else except in accordance with the Government policy. The staff salaries are shared between the Govt. and the Trust. Gumballi district is considered a model PHC covering the entire gamut of primary health care – preventive, promotive, curative and rehabilitative.

### 7. Emergency Ambulance Services scheme in Tamil Nadu

The Government of Tamil Nadu has initiated an Emergency Ambulance Services scheme in Theni district of Tamil Nadu in order to reduce the maternal mortality rate in its rural area. The major cause for the high MMR is anon-medical cause - the lack of adequate transport facilities to carry pregnant women to health institutions for childbirth, especially in the tribal areas. This scheme is part of the World Bank aided health system development project in Tamil Nadu. SevaNilayam has been selected as the potential non governmental partner in the scheme. This scheme is self-supporting through the collection of user charges. The Government supports the scheme only by supplying the vehicles. SevaNilayam recruits the drivers, train the staff, maintain the vehicles, operate the program and report to the government. It bears the entire operating cost of the project including communications, equipment and medicine, and publicizing the service in the villages, particularly the telephone number of the ambulance service. However, the project is not self-sustaining as the revenue collection is lesser than anticipated.

# 8. Urban Slum Health Care Project, Andhra Pradesh

The Urban Slum Health Care Project the Andhra Pradesh Ministry of Health and Family Welfare contracts NGOs to manage health centers in the slums of Adilabad. The basic objectives of the project are to increase the availability and utilization of health and family welfare services, to build an effective referral system, to implement national health programs, and to increase health awareness and better health-seeking behaviour among slum dwellers, thus reducing morbidity and mortality among women and children. To serve 3 million people, the project has established 192 Urban Health Centers. Five

'MahilaAarogyaSanghams' (Women's Wee-Being Associations) were formed under each UHC, and along with the self-help groups and ICDS workers mobilize the community and adopt Behaviour Change Communication strategies. The NGOs are contracted to manage and maintain the UHCs, and based on their performance, they are awarded with a UHC, or eliminated from the program. Additional District Magistrates and Health Officers supervise the UHCs at district level and the Medical Officer is the nodal officer at the municipality level. The District Committee approves all appointments made by the NGOs for the UHC

staff. The Govt. of Andhra Pradesh constructs buildings for the UHCs; provide honoraria to the Project Coordinators of the UHCs, medical officers and other staff; train staff members; and supply drugs, equipment and medical registers.

### 9. Rajiv Gandhi Super-specialty Hospital, Raichur,

Karnataka The Rajiv Gandhi Super-specialty Hospital in Raichur Karnataka is a joint venture of the Government of Karnataka and the Apollo hospitals Group, with financial support from OPEC (Organization of Petroleum Exporting Countries). The basic reason for establishing the partnership was to give super-specialty health care at low cost to the people Below Poverty Line. The Govt. of Karnataka has provided the land, hospital building and staff quarters as well as roads, power, water and infrastructure. Apollo provided fully qualified, experienced and competent medical facilities for operating the hospital. The losses anticipated during the first three years of operation were reimbursed by the Govt. to the Apollo hospital. From the fourth year, the hospital could get a 30% of the net profit generated. When no net profit occurred, the Govt paid a service charge (of no more than 3% of gross billing) to the Apollo Hospital.

Apollo is responsible for all medical, legal and statutory requirements. It pays all charges (water, telephone, electricity, power, sewage, sanitation) to the concerned authorities and is liable for penal recovery charges in case of default in payment within the prescribed periods. Apollo is also responsible for maintenance of the hospital premises and buildings, and maintains a separate account for funds generated by the hospital from fees for registration, tests and medical charges. This account is audited by a Chartered Accountant engaged by Apollo with approval of the Governing Council. Likewise, Apollo maintains separate monthly accounts for all materials used by patients below the poverty line (including diagnostic services), which are submitted to the Deputy Commissioner of Raichur for reimbursement. Accountability and responsibility for outsourcing the support services remain with the Apollo.

#### 10. Community Health Insurance scheme in Karnataka

The Karuna Trust in collaboration with the National Health Insurance Company and the Government of Karnataka has launched a community health insurance scheme in 2001. It covers the Yelundur and Narasipuram Taluks. Underwritten by the UNDP, the Karuna Trust undertook the project to improve access to and utilization of health services, to prevent impoverishment of the rural poor due to hospitalization and health related issues, and to establish insurance coverage for out-patient care by the people themselves. The scheme is fully subsidized for Scheduled Castes and Scheduled Tribes who are below the poverty line and partially subsidized for non-SC/ST BPL. Poor patients are identified by field workers and health workers who visit door-to-door to make people aware of the scheme. ANMs and health workers visiting a village collect its insurance premiums and deposit them in the bank.

The annual premium is Rs. 22, less than Rs.2 a month. If admitted to any government hospital for treatment, an insured member gets Rs. 100 per day during hospitalization – Rs. 50 for bed-charges and medicine and Rs. 50 as compensation for loss of wages – up to a maximum of Rs.2500 within a 25-day limit. Extra payment is possible for surgery. The insurance is valid for one year. If members want to continue the coverage, they must renew their membership and pay the full premium.

Besides, the 108 helpline set up by the Government and in partnership with private organisations such as Ziqitza Health Care Ltd can help stay ahead of fatal emergencies. As an example of how the initiative is making waves across the country, a woman in rural Madhya Pradesh was able to safely deliver her baby thanks to the dedicated and efficient crew manning the ambulance. In Odisha too, 108 ambulance services responded to a call about an anaemic patient who was rushed to the nearest hospital in time where a crew member stepped in to donate blood and save the man's life.

Apart from the above examples of successful PPP's instrumented by healthcare sector in India there are numerous examples wherein innovative models are being envisaged to provide a robust healthcare framework in the country. Some of the projects in the pipeline include setting up of the diagnostic centres at the district hospitals of Pithoragarh and Kotdwara in Uttaranchal, establishing 200 bedded secondary level hospitals in Delhi under the PPP model.

Such cases only serve to highlight the need for Public Private Partnerships (PPP) across the country. Under this model, the infrastructure and marketing needs of the hospitals are handled by the Government, while the private establishments only need to invest in the medical professionals and equipment. As a result, not only is the level of healthcare services provided enhanced, but the costs are brought down as well. Under this model, the government requests for tenders from private establishments and enters into a partnership with the one with the lowest quote. As a result, there is a very narrow profit margin, which further forces these establishments to increase their volume of business. Expansion and enhancement takes place, leading to increased accessibility in many remote areas which were earlier facing a major challenge in terms of affordable, quality healthcare.

The lack of manpower in the public sector, along with disorganized management, outdated infrastructural capabilities, and the absence of a risk mitigation system for poorer customers, is a major challenge plaguing it today. A public private partnership in healthcare will lead to an increase in the number of premier medical institutions, and as a result, would create an influx of highly skilled medical professionals in the sector. Accountability would remain in the hands of the government, discouraging malpractices and exorbitant pricing. Not only would this help streamline operations, but it would also reduce the required time and expense for all processes, and create a premium healthcare delivery sector which is regulated by the Government. Healthcare infrastructure would also be strengthened and evenly distributed at all levels of care, geographically, unhindered by financial constraints affecting the ailing public sector.

Today, the Public Private Partnership model is an urgent necessity to breathe new life into the healthcare sector. If utilized well, the Government, through this model, could successfully standardize healthcare, while maintaining a high quality of services, in turn, raising the life expectancy and mortality rates of the country, and reducing the burden on lower-income groups.

Although, India has had some limited experience with PPP in healthcare, many states like West Bengal, Maharashtra and Bihar had entered into PPPs for specific clinical and diagnostic services MRI and CT scan. Even more difficult is the model to be chosen. A workable model could be infrastructure and services combined that can deliver outcomebased services, with payment made on a capitation basis. At present, 100 per cent FDI is allowed in the healthcare sector in greenfield projects. Capital will always flow from any part of the world to India, if the return is safe and assured of. Importance would be designing the right model; of even greater importance would be executing it.

# B). Health Security Examples of UK and Japan

#### Health Security in UK- England

Health services in England are largely free. The National Health Scheme (NHS) established in 1948 provides preventive medicine, primary care and hospital services to all those "ordinarily resident". Over 12% of the population is covered by voluntary health insurance schemes, known Private Medical Insurance (PMI), which mainly provides access to acute elective care in the private sector. Responsibility for publicly funded health care rests with the Secretary of State for Health, supported by the Department of Health. The Department operates at a regional level through 10 strategic health authorities (SHAs), which are responsible for ensuring the quality and performance of local health services within their geographic area. Responsibility for commissioning health services at the local level lies with 151 primary care organizations, mainly primary care trusts (PCTs), each covering a geographically defined population. Health services are mainly financed from public sources – primarily general taxation and national insurance contributions (NICs). Some care is funded privately through PMI, some user charges, cost sharing and direct payments for health care delivered by NHS and private providers. The picture below will provide an overview on health security of system in UK.

Overview of the health care system in England, 2010



Autors based on the object means of resent 2004a. Notes: Contractual or managerial relationships shown by continuous lines; Regulatory role shown by dotted lines; CHS: community health services; MH: mental health; PCO: primary care organization.

Source: https://www.euro.who.int/__data/assets/pdf_file/0004/135148/e94836.pdf

#### Health Security in Japan

With rapidly aging population with those aged 65 or over accounting for 27.4% of the population, declining fertility rate and changing demographic division, the users of social and health services are increasing in Japan. Ministry of Health, Labor and Welfare (MHLW) is responsible for providing

health care and health security services in the country and has been categorized as Social Insurance System. Japanese citizens are insured under Universal Health Insurance scheme and have freedom to access health care facilities and a wide range of medical services for a relatively low co-payment.

As the number of people in working population decreases and the number of dependents or elderlies are increasing the pressure on Japans social insurance scheme tends to create challenges among the policy makers to provide best health care facilities to its citizens. However, All Japanese citizens must join the health insurance scheme according to employment status, accommodation, and age. Although thousands of independent insurers exist, they are all integrated into a uniform framework that is mandated by the national government. The Japanese health system is based on fee-for-service reimbursement under a uniform national tariff schedule. The health insurance scheme is categorized into three basic groups according to age and employment status: the Employees' Health Insurance scheme (EHI) for employees and their dependents; the National Health Insurance scheme (NHI) for the self-employed, farmers, the retired and their dependents; and the Late-Stage Medical Care Scheme for the Elderly.

The figure below will provide an outlook on Japans (Social Insurance) Health Policy

Figure 1. Implementation of health policy in Japan.





Regarding social health insurance, Japan adopts a third payer scheme. All Japanese citizens must join the health insurance scheme according to employment status, accommodation and age. Although thousands of independent insurers exist, they are all integrated into a uniform framework mandated by the national government. All claim data are checked by the review organization for the validity of its contents.

Source: Matsuda S. Health Policy in Japan – Current Situation and Future Challenges. JMA J. 2019;2(1):1-10.

https://www.jmaj.jp/detail.php?id=10.31662%2Fjmaj.2018-0016#:~:text=Since%20the%20establishment%20of%20the,a%20relatively%20low%20co%2Dpayment.

### Note on Shortage of Doctors

**Shortage of Doctors** is undoubtedly the biggest crisis facing the healthcare industry. In India, it is estimated that we have a shortage of 5 lakh doctors. We produce only 50,000 MBBS graduates every year and it takes 8-10 years to become a doctor. At this rate, it will take decades to match the supply with ever increasing demand. And the situation is not better in developed world either. An alternative solution is to massively increase the **efficiency** of these care providers using technology.

India has one doctor for every 1,445 citizens —below the WHO's prescribed norm of one doctor for 1,000 people. And it has only 1.7 nurses per 1,000 people against the prescribed minimum of three.

A doctor's job description is to cure patients. Today, a doctor understands the symptoms, looks at any available past records provided by the patients and then based on her experience and education prescribes tests and medicine. More often than not, the diagnosis is a trial and error process. Now there is no substitute to the experience, intuition, and human touch of a doctor, the data based decision making (symptoms, records, test results) is better and faster done by computers just because of their ability to absorb and process terabytes of data as described in the IBM Watson example above. This is not just important for a quick diagnosis but also for an accurate diagnosis. A study by John Hopkins found that more than 40,000 patients in the US die in ICU each year due to misdiagnosis. Trial and error has no place in 21st century.

The ability to process huge data in healthcare also means we can feed in many more data points. Physical activity data tracked by your smartphone, heart beat data recorded by your smart band, your calorie intake data, your genetic profile, your sleep patterns, and even your drug adherence can be fed into a clinical decision support system to arrive at the right diagnosis and prescribe a treatment suited to you as in individual. A startup in Australia DoseMe allows doctors to dose a patient based on their own ability to absorb, process, and clear a drug. It does that by analyzing the patient's personal data. By continuous and remote monitoring of this data, healthcare will move more towards prevention than cure. Early signs of strokes and attacks can be captured by wearables and acted upon much before the situation worsens. This shift will reduce the number of visits to doctors, increasing the efficiency of the system. Doctors can even do digital rounds by remotely monitoring the vitals and data fed by support staff.

Another area where doctors are struggling is communication. Healthcare communication is very complex. A doctor interacts with 100s of other doctors, nurses, technicians, paramedics, pharma reps, and others in year. But the state of communication in healthcare is deplorable. With lack of such study in India, a study by Ponemon Institute of more than 400 U.S. healthcare providers found that hospitals in the US waste more than \$11bn a year on inefficient communication.In addition, various studies put communication related diagnostic errors in the range of 30% - 50%. In the age of online communication, such statistics are unacceptable. This represents a huge opportunity for tech and healthcare to come together and build communication solutions tailored for them. There needs to be a seamless communication channel to exchange notes, reports, instructions, and even prescription. Such a tool will also allow doctors to socialize their case discussions borrowing multiple minds.

Low to no digitization is also in part responsible for inefficiencies and miscommunication. EHRs are being given a huge push but they have only compounded the problems. A doctor instead of paying complete attention to a patient is supposed to listen and write down stuff on a screen at the same time. The eye contact between a doctor and a patient is lost. There is an

urgent need to re-imagine EHR. In the current form it is more of a liability than an asset and definitely not encouraging for providers to sign up to. Google Glass is one such product showing promise. Healthcare is the only place where Google Glass has seen any adoption. The glass can record the conversation, capture images / videos, and in future maybe even transcribe the entire conversation, and prescription. Technology needs to focus on increasing efficiency while preserving the much needed human touch.

Better communication tools between a doctor and her support staff can enable support staff to take up more responsibility under virtual supervision of a doctor. This has real potential to massively increase the efficiency of doctors and drive down the costs.

One more problem especially visible in India is a huge divide between Tier 1 cities and the rest. There is an abundance of doctors in metros while there is an acute shortage in the rest of the country. The major reason is the lack of infrastructure and lifestyle in India beyond metros. Now this is a perfect use case for telemedicine. It will provide opportunities for excess supply to meet excess demand reducing pressure on strained infrastructure. The divide is also visible in the continuous education of doctors. With digital mediums, the knowledge of and access to the latest in medicine can be provided immediately to doctors across regions. And with social communication tools for doctors, the small town physicians and metro based specialists can interact and diagnose fast.

Some of the technologies mentioned above are still in development but they will be available soon. But a lot of these are readily available to use. Adoption is a tough ask when it comes to technology adoption in healthcare but that's not a difficult nut to crack if you figure out the right value propositions for the end users of the product. Technology may never completely replace doctors but it will sure as hell massively increase their efficiency and bring an exponential change in the entire healthcare system. The system as we know it will not be the same in a decade's time.

# Note on Poor Referral system

Operationalizing an effective referral system in India

The health care system in India is plagued by overcrowding, lack of specialist doctors, paramedics and an effective referral system. There is a provision for referral of patients from sub-centres, primary health centres, community health centres to sub-district or district level and then to tertiary health facilities in medical college hospitals, superspeciality hospitals and research institutes under the public health care in India. The actual practice of referral is entirely different than that is laid down principle. Anyone can go to any level of health care system without any referral. This poses a huge burden on the secondary and tertiary level hospitals or health settings where a large number of patients with minor ailments throng the outpatient departments (OPD) and increases the bulk of patients who can be easily tackled at the lower level health care settings.

A study from a tertiary care hospital in Greater NOIDA, Uttar Pradesh reported the common morbidity as follows:

Among males, upper respiratory infection (URI), low backache (LBA), lower respiratory infection (LRI), acid peptic disease (APD), intestinal parasitosis (IP), bronchial asthma (BA), scabies, malaria and anaemia was12.6%, 9.1%, 7.2%, 7.0%, 7.0%, 6.9%, 3.7%, 2.6%, and 0.4% respectively. In females, the figures were 7.6%, 18.3%, 3.7%, 13.6%, 4.4%, 2.4%, 2.2%, 1.5% and 3.2% respectively and 8.7% for Pelvic Inflammatory Disease (PID). This shows that more than 50% morbidity could have treated at the level of primary health centre and the serious ones could have been referred to the tertiary care hospitals.

The problems in implementing a successful referral system include:

- 1. non availability of adequate trained manpower, infrastructure (laboratory facilities, drug supplies, equipments, furniture etc.) in the primary health care settings,
- 2. lack of strict regulation on the referral system,
- 3. lack of strict regulation in avoiding minor cases coming directly to secondary or tertiary care hospitals,
- 4. non-availability of universal health card indicating the health facility for initial screening.

This problem can be solved by demarcating the areas for health facility for each citizen using either the aadhaar card (digitized identity card) or universal health card and making a strict regulation that only those seen in the designated health centres would be considered for health services once referred. This will lessen the burden in the tertiary health facilities and the health care providers can dedicate their time and energy in taking care of those referred with quality service provision

# Brief about Ayushman Bharat ( Health and Wellness Canters and Pradhan Mantri Jan Arogya Yojna )

Ayushman Bharat adopts a continuum of care approach, comprising of two inter-related components, one is Health and Wellness Centres (HWCs) and another is Pradhan Mantri Jan ArogyaYojana (PM-JAY). Health and Wellness Centres (HWCs) under 'Ayushman Bharat' are being developed by transforming the existing Sub Centres and Primary Health Centres. These centres are to deliver Comprehensive Primary Health Care (CPHC) bringing healthcare closer to the homes of people.

#### Detail about Universal Health Coverage: under Ayushman Bharat

- Primary-Comprehensive Primary Health Care through Health & Wellness Centres (HWCs) and Unmet needs NCDs and chronic disease.
- Referral/Gatekeeping- Follow-up Preventive, Promotive, Curative, Rehabilitative & Palliative Care
- Service Packages
- Health & Wellness Centre
  - Sub Health Centres (SHC) (@5000 in plain areas and 3000 in hilly and tribal areas)
  - Primary Health Centres (PHC) (@30,000) / UPHC (@50,000)
- Medicines and Diagnostics- Establishment of effective Hub and Spoke models for diagnostic services at different levels
- $\circ$  Medicines
  - Essential List of Medicines to be expanded for expanded range of services
  - *CHO to be able to dispense medicines for chronic diseases on the prescription of the Medical Officer*
  - Uninterrupted Availability of medicines to ensure adherence and continuation of care (Eg: HT/DM/ Epilepsy/COPD)
- Population Enumeration
  - List all households/ families and all individuals in the catchment area/Registration of all individuals at the HWC
  - ASHAs conduct household visits for filling family folder and Community based assessment checklists
  - Filled formats are submitted to HWC for records maintenance and digitization by use of CPHC – IT application
  - Unique Health ID to be issued by HWC by the IT application
- $\circ$   $\,$  Community Mobilization and Health Promotion  $\,$ 
  - HWC Convergence with Eat Right Movementz
    - The Eat Right Movement" of Food Safety and Standards Authority of India (FSSAI)- built on two broad pillars "Eat Healthy" and "Eat Safe"
      - Nutrition for first 1000 days of life
      - Dietary risk Factors for NCDs
      - Food Safety
      - 'Eat Right' toolkit designed ,it will start in 2021
      - Convergence of HWC with Swasth Bharat Yatra, India' a Pan-India Cyclothon.
  - Promoting Wellness through Yoga
    - Yoga mainstreamed into the health care delivery system,
    - Close coordination with Ministry of AYUSH/Department of AYUSH at the state and district level. yt

- Pool of Local Yoga Instructors at the HWC level being identified
- Training and certification of local Yoga Teachers to be steered by Department of AYUSH
- o Weekly/monthly schedule of classes for Community Yoga Training at the HWCs
- $\circ\,$  Provision for additional remuneration to in house yoga teacher or in sourced yoga instructor
- Robust IT System to meet diverse needs of different stake holders
  - Comprehensive IT solution integrated with existing applications/ portals (RCH/ NIKSHAY/IDSP/HMIS) to support service delivery and continuum of care for all existing and new package of services envisioned at HWCs.
  - Health ID, Enrollment, Family Folder, CBAC
  - Modular, open, secure Health Platform for scalability, performance and interoperability
  - Job Aids for Service providers and FLWs
  - Follow-ups, Workplans, Dashboards, Awareness and Training material for Health workers.
  - Patients Follow up by FLWs- Use of SMS based service
  - Patient assessment, Examination, Lab investigations, Diagnosis, Treatment PHC level and above
  - Auto-populated drug-list and drug stock dispensed
  - Referral pathway for patient info from SC, PHC and CHC
  - Disease and Program protocols support for MO and SC team; Triage by Nurse at PHC to minimize data entry by MO
  - Dashboards from national level to state, district, PHC, SC and village levels
  - o Applicationsacross different levels -
  - ASHA Mobile App ,
  - SC Tablet App
  - PHC MO Web Portal
  - CHC Portal
  - Admin Portal
  - Health Officials Dashboard
  - Clinical Decision Support System with AIIMS
- Using Technology: Continuum of Care to Capacity Building
  - Telemedicine
  - National Medical College Network facility
  - Create a pan India tele-education, specialist consultation and e-library
  - Telemedicine roll out: AP, Assam, Jharkhand, Karnataka, Meghalaya, Mizoram, Tamil Nadu, Tripura and UP.
  - Initially, between PHC-HWCs and State Hubs and Medical College networks
  - States encouraged to expand to all functional HWCs of 2018-19 by January 2020
  - Extension for Community Healthcare Outcomes ECHO
  - ECHO programs, or "clinics," follow a consistent format.
  - Hub and Spoke model: Fortnightly Video conferences: experts at hub site "meet" with providers at spoke sites
  - Short didactic by experts, followed by Q&A
  - Spoke participants present clinical cases using a standard template
  - Mode: All learn, all teach

Annexure-10.6

# National Ambulance Code by Govt of India in 2014

- 1. National Ambulance code¹³⁰ Dawn of A New Era in Quality of Ambulance Design¹³¹
- 2. Sick and injured are not cargo to which ordinary rules of logistics can be applied. They are perishable and hence they must be evacuated in comfort and provided with all requisite lifesaving support, en route to the medical establishment. The aforementioned lines from the *US Field Ambulance Manual* very beautifully encapsulate the basic principles of transferring patients in ambulances and are true globally. The Indian public healthcare system has in the last decade increased its investment into pre-hospital patient transport with over 20,000 ambulances being inducted in over 30 states/UT's under the National Health Mission. The private healthcare sector was also not far behind and has also augmented its investment in ambulance services. This transformative change in the public healthcare system of the country was accompanied with additional responsibility on healthcare providers of procuring quality ambulances at rational prices a task which may appear simpler than it actually is because of the peculiarities of the operational and regulatory environment.
- 3. To delve deeper, it needs to be understood that all road ambulances are invariably a vehicle first and a medical care environment later. Hence, they primarily fall under the regulatory framework applicable to all vehicles plying on Indian roads viz. Central Motor Vehicle Rules (CMVR) and the Motor Vehicles Act (MVA) as amended from time to time. Rule 126 of CMVR mandates that every manufacturer of motor vehicles shall submit a prototype vehicle tested and as per Section 32 of MVA, there can be no change in particulars mentioned in registration certificate of a vehicle (e.g. seating capacity).
- 4. These regulations posed a unique challenge for ambulance purchasers as majority of the base vehicles of ambulances were usually sold as passenger/goods vehicles and subsequently fabricated and retro-fitted to convert them into ambulances. This in turn meant that after fabrication, either every purchaser needed to get a prototype of the finished product tested as per CMVR or take the risk of violating the regulatory framework by registering the base vehicle and ply an altered one on the roads which often the case was. This also meant that though various automotive standards regarding fire safety, electrical safety, etc., were mandatory for passenger vehicles plying on Indian roads, none were mandatory for retrofitted ambulances.
- 5. Then there were other challenges as automobile components are usually not the same as the ones used by them on a daily basis. A simple corollary is the way we charge our mobile phones in vehicles wherein a car charger is not the same as our routine wall charger. Similarly, in vehicles, air conditioning capacity is not defined in tons, which is often the case in our daily life. Storage spaces in automobiles pose another challenge as unless appropriately latched, the contents would scatter around when the vehicle is in motion while too secure a latching may make storage spaces in-accessible for medical care providers in times of need.
- 6. From the medical care perspective too, ambulances have certain peculiarities which are different from hospital environments which majority of healthcare providers are accustomed to the foremost difference being that while hospitals are stationary, ambulances are mobile. Hence, the medical devices used in ambulances must be motion tolerant, 12/24V DC powered (if electrically powered) and should be securely wall/roof/floor mounted to ensure they do not become a projectile when the vehicle is in

¹³⁰ http://www.nisc.gov.in/PDF/AIS 125.pdf

¹³¹Dr Angel Rajan Singh, Assistant Professor of Hospital Administration and Project Officer, National Cancer Institute, AIIMS

motion or brakes hard. After all, we never have passenger car seats flying in air when the car breaks or standard car accessories falling off in a mobile environment.

- 7. This is so because Automobile Industry Standards (AIS) define the anchorage strength for all standard fitments like seats, fixtures etc. and it is mandatory for automobile manufacturers to comply with them. But the same was never mandatory for ambulances as majority of medical equipment like stretchers, etc. were retro-fitted and equipment specifications never detailed motion specific mounting requirements due to ignorance amongst healthcare providers which was primarily because of the fact that they have not been exposed to such challenges during their training and practice. Similarly, small medical equipment like a bubble type oxygen flowmeter is totally dysfunctional in an ambulance when it is mobile as the bubble keeps bobbling and will never give an accurate reading. To mitigate such challenges in mobile environments, solutions like dial type flowmeter, etc. are easily available in the market but were not prescribed as they are not in wide use in the hospital environment.
- 8. The working group on emergency care setup by Ministry of Road Transport and Highways in 2011 had observed that the real concept of an ambulance is missing in India and recommended that there is a need to formulate the *national ambulance code* with necessary amendments in CMVR. In line with this recommendation, the ministry on May 30, 2013 approved the *national ambulance code* drafted by a multi-disciplinary committee as Automotive Industry Standard 125 (AIS-125) and on September 8, 2016 notified the necessary amendments in CMVR, thereby making compliance with AIS-125 (Part 1) mandatory for all road ambulances manufactured on and after April 1, 2018.
- 9. National Ambulance Code (AIS-125) specifies the constructional and functional requirements of Category M (four wheelers) and L (two and three wheelers) vehicles used for transport and / or emergent care of patients (road ambulance). AIS-125 for the first time in the history of India legally enshrines the definition of a road ambulance as *road ambulance or ambulance is a specially equipped and ergonomically designed vehicle for transportation/emergent treatment of sick or injured people and capable of providing out of hospital medical care during transit/when stationary, commensurate with its designated level of care when appropriately staffed. It further classifies the road ambulances as:* 
  - Type A: Medical first responder. Primarily focused on two wheeler ambulances designed to provide care to patients at the site of medical emergency.
  - Type B: Patient transport vehicle. For transporting patients who are not expected to become emergency patients, for example, patients going for elective diagnostics, etc.
  - Type C: Basic life support ambulance. For transport and care of patients requiring non-invasive airway management/basic monitoring.
  - Type D: Advanced life support ambulance. For transport and care of patients requiring invasive airway management/intensive monitoring.
- 10. The ambulance code also addresses other vehicle specific parameters like seating, electricals, fire safety, stretcher loading angle, etc., with a view to simplify the matters for healthcare providers who are often not well versed in automobile engineering aspects. *With the NAC in place, all the healthcare provider needs to specify for the base ambulance vehicle is that the vehicle should be as per AIS-125 (Part 1).* The code also negates the requirement of cramping the patient compartment with additional seats to meet CMVR M2 category requirements of nine passenger seats as it enables stretchers to be accounted for four passenger seats and also prescribes minimum seating requirements for each category of ambulances.

11. The ambulance code also standardizes the recognition and visibility requirements of ambulances. Special stress has been laid on increasing the conspicuity of ambulances on the road such that these vehicles shall be uniformly identifiable across the country.

# Relevant Extracts of the Guidelines¹³² for Centrally Sponsored Scheme for Establishment of New Medical Colleges attached with existing District/Referral hospitals

The centrally sponsored scheme aims to establish 58 medical colleges by upgrading district/referral hospitals in underserved districts of the country in the first phase of its implementation and 24 hospitals in second phase and 75 in the third phase of the scheme.

Funds will be shared between the Central Government and States in the ratio of 90:10 for NE/special category states and 75:25 for other states to meet the shortfall of human resources in the health care sector of the country.

The objectives of the schemes are as follows:

- To establish 58 medical colleges with intake capacity of 100 in each to increase 5800 seats at the undergraduate level in Government sector.
- To bridge the gap in number of seats available in government and private sector to ensure availability of more MBBS seats for students who cannot afford costly medical education in private sector.
- To mitigate the shortage of doctors by increasing the number of undergraduate seats in the country for equitable health care accessibility across the states.
- To utilize the existing infrastructure of district hospitals for increasing undergraduate seats in a cost-effective manner by attachment of new medical college with existing district/referral hospitals.
- Creation of additional human resource in health sector to meet the health care needs of the growing population

Under the scheme, district/referral hospitals will be selected after consultation with the states after careful identification of presence of no medical college in that district, district hospital having a bed strength of 200 or more and preference will be given to districts in underserved areas.

The scheme will create an additional 10,000 MBBS and 8000 post graduate seats in the country, this will help in reducing the gap between the doctor per 000'population, as per WHO norms, there should be one doctor over 1000 population and in India as per HLEG report one doctor is catering to almost 2000 people, which is double the population recommended by WHO.

#### > Criteria- Criteria for identification of Districts under the Scheme:

The district/referral hospitals to be covered under the scheme would be selected by the Central Government, in consultation with the State governments/UTs, on the basis of following criteria:

- a) District/referral hospitals of the districts where there is no medical college.
- b) District Hospitals/referral hospital with bed strength of 200 or more
- c) Preference would be given to the underserved areas.

#### > Eligibility to Start a Medical College

(a) A State Govt./Union Territory;

¹³²Source: <u>https://main.mohfw.gov.in/sites/default/files/42758936271446789560.pdf</u>

(b) A University;

(c) An autonomous Body promoted by Centralor State Government or under a Statute for the purpose of medical qualification;

(d) A society registered under the Societies Registration Act, 1860 for corresponding Acts in States; or

(e) A public Religious or Charitable Trust registered under theTrust act, 1882 or the WAKFS Act, 1954.

(f) Companies registered under The Company Act, 1956

#### > Qualifying criteria i.e. conditions to be fulfilled for starting a medical college.

(i) Medical education must be one of the objectives of the applicanttrust/registered society.

(ii) A suitable single plot of land measuring not less than 20 acres must be owned and possessed by the applicant or is possessed by the applicant by way of 99 years lease for the construction of the college.

(iii) The applicant must submit the Essentiality Certificate from the concerned State Govt. for establishment of the proposed medical college.

(iv) The Consent of Affiliation from the University concerned.

(v) The applicant owns and manages a hospital of not less than 300 beds with necessary infrastructure facilities capable of being developed into a teaching institution in the campus of the proposed medical college.

(vi) The applicant has not admitted students in the proposed medical college.

(vii) The applicant provides two performances Bank guarantee in favour of MCI for the prescribed sums varying according to the number of admissions, one for the establishment of the college and the other for the hospital.Government Medical Colleges are exempted from submittingperformance Bank guarantees.

(ix) The college shall be set up only in the plot earmarked for that purpose.
## Brief about Heath sector related initiatives of the Govt. of India

## > Ministry of Health and Family Welfare

Health being a State subject, the Central Government supplements the efforts of the State Governments in delivery of health services through various schemes of primary, secondary and tertiary care. Names of such Central Sector and Centrally Sponsored Schemes of the Ministry of Health and Family Welfare are as below¹³³:

#### **Central Sector Schemes**

- 1. Pradhan MantriSwasthya Suraksha Yojana
- 2. National AIDS and STD Control Programme
- 3. Family Welfare Schemes
- 4. Establishment and strengthening of NCDC Branches and Health Initiatives, Inter Sectoral coordination for preparation and control of Zoonotic Diseases and other neglected tropical diseases, Surveillance of Viral Hepatitis, Anti Microbial Resistance
- 5. National Pharmacovigilance Programme
- 6. Development of Nursing Services
- 7. Health Sector Disaster Preparedness and Response and Human Resources Development for Emergency Medical Services
- 8. National Organ Transplant Programme
- 9. Impacting Research Innovation and Technology (IMPRINT) Scheme.
- 10. Swachhta Action Plan (SAP)

#### **Centrally Sponsored Schemes:**

#### A. National Health Mission (NHM)

#### 1. National Rural Health Mission (NRHM):

- i. RCH Flexible Pool including Routine Immunization Programme, Pulse Polio Immunization Programme, National Iodine Deficiency Disorders Control Programme etc.
- ii. Health Systems Strengthening under NRHM
- iii. Flexible Pool for Communicable Diseases
- iv. Flexible Pool for Non-Communicable Diseases, Injury and Trauma
- v. Infrastructure Maintenance
- vi. Forward linkages to NRHM
- vii. Strengthening of State Drug Regulatory System
- viii. Pilot Schemes(Sports medicine, Deafness, Leptospirosis Control, Control of Human Rabies, Medical Rehabilitation, Oral Health, Fluorosis)
- ix. Human Resources for Health
- x. Strengthening National Porgramme Management of the NRHM

#### 2. National Urban Health Mission

#### **3.** Tertiary care Programmes:

- i. National Mental Health Programme
- ii. Capacity Building for Trauma Centres
- iii. National Programme for prevention and control of Cancer, Diabetes, Cardio-vascular Diseases and Stroke
- iv. National Programme for Health Care for the Elderly
- v. National Programme for Control of Blindness
- vi. Telemedicine
- vii. Tobacco Control Programme and Drug De-addiction Programme

¹³³<u>https://pib.gov.in/Pressreleaseshare.aspx?PRID=1542736</u>

## 4. Human Resources for Health and Medical Education

- i. Upgradation /Strengthening of Nursing Services (ANM/GNM)
- ii. Strengthening /Upgradation of Pharmacy School/College
- iii. District Hospital Upgradation of State Government Medical Colleges(PG seats)
- iv. Strengthening Government Medical Colleges(UG seats) and Central Government Health Institutions
- v. Establishing New Medical Colleges(upgrading District Hospitals)
- vi. Setting up of State Institutions of Para-medical Sciences in States and Setting up of College of Para-medical Education.

## B. RashtriyaSwasthyaBimaYojana

## More information about the above Govt. of India initiatives are provided as following:

- 1. Hospitals and diagnostic centers attracted **Foreign Direct Investment** (FDI) worth US\$ 6.72 billion between April 2000 and March 2020, according to the data released by Department for Promotion of Industry and Internal Trade (DPIIT)¹³⁴.
- 2. In August 2019, Microsoft India and Apollo Hospitals Group entered in agreement to set up a National Clinical Coordination Committee for AI-powered Cardiovascular Disease Risk Score API.
- 3. In April 2020, first COVID-19 sample collection mobile lab of the country, namely 'Mobile BSL-3 VRDL Lab', was launched, which can process more than 1,000 samples in a day and enhance country's capabilities in fighting COVID-19.
- 4. On September 23, 2018, Government of India launched **Pradhan Mantri Jan ArogyaYojana (PMJAY)**, to provide health insurance worth Rs 500,000 (US\$ 7,124.54) to over 100 million families every year. The Government has announced Rs 69,000 crore (US\$ 9.87 billion) outlay for the health sector that is inclusive of Rs 6,400 crore (US\$ 915.72 million) for PMJAY in Union Budget 2020-21.

## Key Features of PM-JAY (As per Workshop)

- 1. PM-JAY provides cashless access to health care services for the beneficiary at the point of service, that is, the hospital.
- PM-JAY¹³⁵ envisions to help mitigate catastrophic expenditure on medical treatment which pushes nearly 6 crore Indians into poverty each year.
- 3. It covers up to 3 days of pre-hospitalization and 15 days post-hospitalization expenses such as diagnostics and medicines.
- 4. There is no restriction on the family size, age or gender.
- 5. All pre-existing conditions are covered from day one.
- 6. Benefits of the scheme are portable across the country i.e. a beneficiary can visit any empanelled public or private hospital in India to avail cashless treatment.
- 7. Services include approximately 1,393 procedures covering all the costs related to treatment, including but not limited to drugs, supplies, diagnostic services, physician's fees, room charges, surgeon charges, OT and ICU charges etc.
- 8. Public hospitals are reimbursed for the healthcare services at par with the private hospitals.
- 5. The Government of India is planning to increase public health spending to 2.5 per cent of the country's GDP by 2025.
- 6. In February 2019, the Government of India established a new All India Institute of Medical Sciences (AIIMS) at Manethi, District Rewari, Haryana at a cost of Rs 1,299 crore (US\$ 180.04 million).

¹³⁴<u>https://www.ibef.org/industry/healthcare-india.aspx</u>

¹³⁵https://pmjay.gov.in/about/pmjay

- 7. The Union Cabinet approved setting up of **National Nutrition Mission (NNM)** with a three-year budget of Rs 9,046 crore (US\$ 1.29 billion) to monitor, supervise, fix targets and guide the nutrition related interventions across ministries.
- 8. In Union Budget 2020-21, Rs 35,600 crore (US\$ 5.09 billion) has been allocated for nutrition-related programmes.
- 9. In August 2018, the Government of India approved **Ayushman Bharat-National Health Protection Mission** as a centrally sponsored scheme contributed by both center and state Government at a ratio of 60:40 for all States, 90:10 for hilly Northeastern States and 60:40 for Union Territories with legislature. The center will contribute 100 per cent for Union Territories without legislature.
- 11. Under the **National Health Mission**¹³⁶, the government has launched several schemes like:
- 11.1. **Reproductive, Maternal, Newborn, Child and Adolescent Health** (**RMNCH+A**) programme essentially looks to address the major causes of mortality among women and children as well as the delays in accessing and utilizing health care and services. It also introduces new initiatives like the use of Score Card to track health performance, National Iron + Initiative to address the issue of anemia across all age groups and the Comprehensive Screening and Early interventions for defects at birth, diseases, and deficiencies among children and adolescents.
- 11.2. **RashtriyaBalSwasthyaKaryakram** (**RBSK**) is an important initiative aiming at early identification and early intervention for children from birth to 18 years to cover 4 'D's viz. Defects at birth, Deficiencies, Diseases, Development delays including disability. Early detection and management diseases including deficiencies bring added value in preventing these conditions to progress to its more severe and debilitating form
- 11.3. **The RashtriyaKishorSwasthyaKaryakram -** The key principle of this programme is adolescent participation and leadership, Equity and inclusion, Gender Equity and strategic partnerships with other sectors and stakeholders. The programme enables all adolescents in India to realize their full potential by making informed and responsible decisions related to their health and well-being and by accessing the services and support they need to do so.
- 11.4. The government of India has launched **Janani Shishu Suraksha Karyakaram** to motivate those who still choose to deliver at their homes to opt for institutional deliveries. It is an initiative with a hope that states would come forward and ensure that benefits under JSSK would reach every needy pregnant woman coming to government institutional facility.Since the rate of deaths in the country because of communicable and non-communicable diseases is increasing at an alarming rate, the government has introduced various programmes to aid people against these diseases.
- 11.5. **National AIDS Control Organisation** was set up so that every person living with HIV has access to quality care and is treated with dignity. By fostering close collaboration with NGOs, women's self-help groups, faith-based organizations, positive people's networks, and communities, NACO hopes to improve access and accountability of the services. It stands committed to building an enabling environment wherein those infected and affected by HIV play a central role in all responses to the epidemic at state, district and grassroots level.
- 11.6. **Revised National TB Control Programme** is a state-run tuberculosis control initiative of Government of India with a vision of achieving a TB free India. The program

¹³⁶https://www.oxfamindia.org/blog/15-healthcare-schemes-india-you-must-know-about

provides, various free of cost, quality tuberculosis diagnosis and treatment services across the country through the government health system.

- 11.7. **National Leprosy Eradication Programme** was initiated by the government for Early detection through active surveillance by the trained health workers and to provide Appropriate medical rehabilitation and leprosy ulcer care services.
- 11.8. The Government of India has launched **Mission Indradhanush** with the aim of improving coverage of immunization in the country. It aims to achieve at least 90 percent immunization coverage by December 2018 which will cover unvaccinated and partially vaccinated children in rural and urban areas of India.
- 11.9. In order to address the huge burden of mental disorders and the shortage of qualified professionals in the field of mental health, Government of India has implemented National Mental Health Program to ensure the availability and accessibility of minimum mental healthcare for all in the foreseeable future.
- 11.10.**Pulse Polio** is an immunization campaign established by the government of India to eliminate polio in India by vaccinating all children under the age of five years against the polio virus.
- 11.11.The **Pradhan MantriSwasthya Suraksha Yojana** (**PMSSY**) was announced with objectives of correcting regional imbalances in the availability of affordable/ reliable tertiary healthcare services and also to augment facilities for quality medical education in the country by setting up of various institutions like AIIMS and upgrading government medical college institutions.
- 11.12.Since there are huge income disparities, therefore, the government has launched several programmes in order to support the financially backward class of the country. As about 3.2 crore people in India fall under the National Poverty line by spending on healthcare from their own pockets in a single year. The most important programme launched by the government is **RashtriyaArogya Nidhi** which provides financial assistance to the patients that are below poverty line and are suffering from life-threatening diseases, to receive medical treatment at any government run super specialty hospital/ institution.
- 11.13.**National Tobacco Control Programme** was launched with the objective to bring about greater awareness about the harmful effects of tobacco use and about the **Tobacco Control Laws** and to facilitate the effective implementation of the Tobacco Control Laws.
- 11.14. **Integrated Child Development Service** was launched to improve the nutrition and health status of children in the age group of 0-6 years, lay the foundation for proper psychological, physical and social development of the child, effective coordination and implementation of policy among the various departments and to enhance the capability of the mother to look after the normal health and nutrition needs through proper nutrition and health education.
- 11.15.**RashtriyaSwasthyaBimaYojana** is a government-run health insurance programme for the Indian poor. It aims to provide health insurance coverage to the unrecognized sector workers belonging to the below poverty line and their family members shall be beneficiaries under this scheme.

In India, approximately about 5.8 million people die because of Diabetes, heart attack, cancer etc each year. In other words, out of every 4 Indians, 1 has a risk of dying because of a Non- Communicable disease before the age of 70. According to the World Health Organisation, 1.7 million Indian deaths are caused by heart diseases.

## Ministry of AYUSH

1. National Ayush Mission (NAM)¹³⁷, a centrally sponsored scheme was launched in 2014 with the basic objective of promoting Ayurveda, Yoga, Siddha & Unani and Homoeopathy (AYUSH) medical system through cost effective services, strengthening of educational systems, sustainable availability of ASU&H raw-materials and facilitate the enforcement of quality control of (ASU&H) drugs. The mission envisages flexibility of implementation of programmes leading to sustainable participation of the state governments and that of Union territories. The NAM intends to build on India's unique heritage represented by its ancient systems of medicine like Ayurveda, Yunani, Sidhha, Unani and Homeopathy, the knowledge of preventive and promotive health care.

In order to provide supporting facilities under the mission and to strengthen the AYUSH infrastructure at both attached Central and State levels, financial assistance for setting up of the Programme Management Units (PMU's) was to be provided. The PMU will consist of management and technical professionals both at Central and State level.

For effective monitoring and evaluation of the implementation, a dedicated Management Information System monitoring and evaluation cell will be established at Centre/ State level. Concurrent evaluation of the AYUSH Mission will be carried out to know the implementation progress, scope for improvement and bottlenecks. Third party evaluation after completion of two years of Mission implementation is also planned. The Objectives of NAM were:

- To provide cost effective and impartial AYUSH health care. a)
- To rejuvenate and promote the AYUSH medical systems. h)
- c) To advance educational institutions capable of conveying quality AYUSH education.
- d) To encourage the acceptance of quality standards of AYUSH drugs.
- e) To encourage the availability of the sustained supply of AYUSH raw materials.
  2. Scheme for Extra Mural Research¹³⁸ is designed to encourage R&D in priority areas based on disease burden in alignment to National Health programme. It also aims to utilize the vast research infrastructure available within the country for standardization and validation of classical drugs. This scheme is meant for focused outcome in tandem with the needs of AYUSH sector and also encourages young scholars of AYUSH system, to use their wisdom and energy in the research of AYUSH system on modern scientific parameters. The objectives of Extra Mural Research Scheme are:
  - a) To support Research and development in Extra Mural mode for treatment of prioritized diseases.
  - b) To Standardize/validate and develop scientific evidence for safety, efficacy and quality of AYUSH drugs & therapies.
  - c) To make scientific exploration of AYUSH system with interdisciplinary approaches.
  - d) To achieve need based outcome in priority areas.
  - e) To develop the potential of Human Resource in AYUSH system specially to inculcate aptitude and expertise to AYUSH systems.

## National Medical Commission

¹³⁷National Ayush Mission- Framework For

Implementationhttps://main.ayush.gov.in/sites/default/files/National%20AYUSH%20Mission%20.pdf

¹³⁸https://ccrum.res.in/ViewData/Multiple?mid=1584&mid=1584&https://main.ayush.gov.in/sites/default/file s/Final%20Revised%20Scheme%20Circulated.pdf

Ministry of Health and Family Welfare introduced The National Medical Commission Bill 2019 in Lok Sabha to repeal/annul the Medical Council of India Act of 1956 with an aim to develop and regulate medical institutions, profession and education in the country and to address shortcomings in the process of regulating medical colleges in the country. The bill becomes an Act with the approval of both the houses and the President of India on 08th August 2019.

At the central level, National Medical Commission (NMC) is an regulating body consisted of 25 members (appointed by Cabinet Secretary and five experts nominated by the central government through a search committee) regulating medical education and practice in India and at the state level, state governments will ensure establishing State level Medical Commission with the similar role to NMC within the three years of the act.

NMC has the following functions to perform:

- a) laying down policies for maintaining a high quality and high standards in medical education
- b) laying down policies for regulating medical institutions, medical researches and medical professionals
- c) assessing the requirements in healthcare, including human resources for health and healthcare infrastructure and develop a road map for meeting such requirements
- d) promote, co-ordinate and frame guidelines and lay down policies for the proper functioning of the Commission, the Autonomous Boards and the State Medical Councils.
- e) framing guidelines for determination of fee for up to 50% of the seats in the private medical institutions etc.

The Act has paved the way for the constitution of Medical Advisory Council (MAC) which will act as a primary platform through which the states/union territories can put forth their views and concerns before the NMC. Further, the Council will advise the NMC on measures to determine and maintain minimum standards of medical education and ensuring measures to enhance equitable access to medical education.

NMC will supervise the constitution of various Autonomous Boards like:

- (i) the Under-Graduate Medical Education Board (UGMEB): responsible for formulating standards, curriculum, guidelines, and granting recognition to medical qualifications at the undergraduate level.
- (ii) The Post-Graduate Medical Education Board (PGMEB): responsible for formulating standards, curriculum, guidelines, and granting recognition to medical qualifications at the post graduate level.
- (iii) The Medical Assessment and Rating Board (MARB): power to levy monetary penalties on medical institutions which fail to maintain the minimum standards as laid down by the UGMEB and PGMEB.
- (iv) The Ethics and Medical Registration Board: maintain a National Register of all community health providers, licensed medical practitioners, and regulate professional conduct.

The Act also details out step by step process of conducting entrance examination through National Eligibility-cum-Entrance Test for admission to under-graduate and post-graduate super-specialty

medical education in all medical institutions and national exit test for students to obtain the license for practice.

Source: THE NATIONAL MEDICAL COMMISSION ACT, 2019 (NO. 30 OF 2019), 8th August 2019 <u>https://upload.wikimedia.org/wikipedia/commons/6/69/National_Medical_Commission_Act%2C_2019.pdf</u>

## Annexure D-11.1

## Note on Importance of skilled and educated Manpower

## Background

While, initially, the availability of natural resources such as coal and iron ore were seen as giving a natural advantage, however, countries like Japan, demonstrated that human beings remain central to competitiveness and the creation of wealth in the Industrial Age and even with none of these natural resources, became a major industrial power and the most efficient producer of steel. Japan began its modernisation by enforcing compulsory school education in the early 1870s. Within a generation, the country was fully literate, and it had an industrial base by the early 20th Century. State-funded free schooling and higher education became the norm in the industrialising economies of Europe and America. Over time, human capital found its legitimate place in economic theory as the key driver of economic growth.

## Vocational knowledge

The pre-industrial artisanal economy in India had a unique caste-based division of labour in society. Each caste had a vocation, and the child grew up acquiring the skills of his caste within his family and his community. Over generations, a tradition of excellence became the norm. The caste system, however, was steeply hierarchical. The pursuit of social justice by undoing this hierarchy has been at the core of democratic modernisation in India. Since learning was the preserve of the higher castes, there was a fundamental concept which Mahatma Gandhi recognised — the dignity of labour. In this he led by personal example and insisted on freedom fighters spinning the *charkha* first.

But this problem survives. Every child going through the formal school system now aspires for a white-collar job. It is when he fails in this aspiration that he reconciles himself to a bluecollar job. The curriculum of the school education system is designed to prepare the brighter students for a subsequent university degree, for example, in engineering. The less affluent child has so little that relates to his living environment that he usually leaves education barely literate. He then has to earn a living, but is reluctant to take up the trade of, say, being a weaver or a goldsmith. So, India is producing many times the number of engineers that its economy needs and that too at a great societal cost. But it is producing far fewer skilled workers than required.

## Skill development

The large organised sector has been training its workers and imparting skills successfully. Higher wages and morale in these firms help in attaining global competitiveness. The problem, however, is acute for the rest; the construction industry, small and medium enterprises, the unorganised sector and the self-employed.

Skill development is, however, now in focus with a National Skill Mission and a National Skill Development Corporation within a Ministry of Skill Development with ambitious targets and large budgets. But these impart skills to those who come out of the school system.

It is useful to look at what has worked well elsewhere. Germany is a good example; with higher per hour wage costs, it remains a globally competitive manufacturing economy. It was the largest exporter of manufactured goods till a few years ago. German products command a premium price on technology and quality. In the education system, a student depending goes either into the higher education stream or the vocational stream based on on aptitude and performance in school.

The student in the vocational stream begins by spending 80 per cent of his time in the classroom and 20 per cent working in an enterprise initially, and in the final year, the share is reversed. The vocational school graduate usually has a job at 18 with high wages. He has the option of pursuing technical education on a part-time/full-time basis and moving up his technical hierarchy.

## System rejig

India needs a radical reform of its school education. Mainstreaming of vocational education and skill development within the school system is the way forward. A boy in a village who is not doing well in the standard curriculum should be able to graduate with dignity from his school with elementary mathematics (class 8 level), language and basic computer skills for this digital age as compulsory subjects; and optional subjects such as horticulture, animal husbandry, plumbing, welding or nursing.

Moreover, in these subjects, the knowledge and skill levels should be globally competitive. Then young people at 18 would have skills which are in demand and would find it easier to get jobs. They would also have higher self-esteem and confidence, which are so essential for success. But this is not going to be easy.

The existing educational establishment does not have the capacity to drive this transition. It would also need massive public investment. A new set of vocational teachers for specific trades and skills would need to be trained and appointed. State-of-the-art facilities, including equipment, for such vocational education would need to be put in place.

Without such a sweeping publicly-funded transformation of the school system, India would continue to find it difficult to make its young competitive in the increasingly tough globalised market place. Getting good teachers for vocational training would be difficult. Using retirees, even from overseas, for designing the curricula and training teachers would be worthwhile. This would require large investments. But the returns would be enormous through higher productivity and employability of the young people.

## **Brief about National Education Policy, 2020**

- A. Recently, the Union Cabinet has approved the new National Education Policy (NEP), 2020 with an aim to introduce several changes in the Indian education system from the school to college level.
- The NEP 2020 aims at making "India a global knowledge superpower".
- The Cabinet has also approved the renaming of the Ministry of Human Resource Development to the Ministry of Education.
- The NEP cleared by the Cabinet is only the third major revamp of the framework of education in India since independence.

The two earlier education policies were brought in 1968 and 1986.

## **B.** Key Points

School Education:

- Universalization of education from preschool to secondary level with 100% Gross Enrolment Ratio (GER) in school education by 2030.
- To bring 2 crore out of school children back into the mainstream through an open schooling system.
- The current 10+2 system to be replaced by a new 5+3+3+4 curricular structure corresponding to ages 3-8, 8-11, 11-14, and 14-18 years respectively.
  - It will bring the uncovered age group of 3-6 years under school curriculum, which has been recognized globally as the crucial stage for development of mental faculties of a child.
  - It will also have 12 years of schooling with three years of Anganwadi/ pre schooling.

## **Transforming Curricular & Pedagogical Structure**



- Class 10 and 12 board examinations to be made easier, to test core competencies rather than memorised facts, with all students allowed to take the exam twice.
- School governance is set to change, with a new accreditation framework and an independent authority to regulate both public and private schools.
- Emphasis on Foundational Literacy and Numeracy, no rigid separation between academic streams, extracurricular, vocational streams in schools.
- Vocational Education to start from Class 6 with Internships.
- Teaching up to at least Grade 5 to be in mother tongue/regional language. No language will be imposed on any student.
- Assessment reforms with 360 degree Holistic Progress Card, tracking Student Progress for achieving Learning Outcomes
- A new and comprehensive National Curriculum Framework for Teacher Education (NCFTE) 2021, will be formulated by the National Council for Teacher Education (NCTE) in consultation with National Council of Educational Research and Training (NCERT).
  - By 2030, the minimum degree qualification for teaching will be a 4-year integrated B.Ed. degree.

Higher Education:



- Gross Enrolment Ratio in higher education to be raised to 50% by 2035. Also, 3.5 crore seats to be added in higher education.
- The current Gross Enrolment Ratio (GER) in higher education is 26.3%.
- Holistic Undergraduate education with a flexible curriculum can be of 3 or 4 years with multiple exit options and appropriate certification within this period.
- M.Phil courses will be discontinued and all the courses at undergraduate, postgraduate and PhD level will now be interdisciplinary.
- o Academic Bank of Credits to be established to facilitate Transfer of Credits.
- Multidisciplinary Education and Research Universities (MERUs), at par with IITs, IIMs, to be set up as models of best multidisciplinary education of global standards in the country.
- The National Research Foundation will be created as an apex body for fostering a strong research culture and building research capacity across higher education.

- Higher Education Commission of India (HECI) will be set up as a single umbrella body for the entire higher education, excluding medical and legal education. Public and private higher education institutions will be governed by the same set of norms for regulation, accreditation and academic standards. Also, HECI will be having four independent verticals namely,
  - National Higher Education Regulatory Council (NHERC) for regulation,
  - General Education Council (GEC) for standard setting,
  - Higher Education Grants Council (HEGC) for funding,
  - National Accreditation Council (NAC) for accreditation.
- Affiliation of colleges is to be phased out in 15 years and a stage-wise mechanism to be established for granting graded autonomy to colleges.

• Over a period of time, every college is expected to develop into either an autonomous degree-granting College, or a constituent college of a university.

#### Other Changes:

## **Digital drive**

The new education policy has emphasised the integration of technology in all levels of learning. Some features of the policy:



- An autonomous body, the National Educational Technology Forum (NETF), will be created to provide a platform for the free exchange of ideas on the use of technology to enhance learning, assessment, planning, administration.
- National Assessment Centre- 'PARAKH' has been created to assess the students.
- It also paves the way for foreign universities to set up campuses in India.
- It emphasizes setting up of Gender Inclusion Fund, Special Education Zones for disadvantaged regions and groups.
- National Institute for Pali, Persian and Prakrit, Indian Institute of Translation and Interpretation to be set up.
- It also aims to increase the public investment in the Education sector to reach 6% of GDP at the earliest.

• Currently, India spends around 4.6 % of its total GDP on education.

Ed	Education In India					
-	Со	nstitutional Provisions:				
	0	<b>Part IV</b> of Indian Constitution, <b>Article 45 and Article 39 (f)</b> of Directive Principles of State Policy (DPSP), has a provision for <b>state-funded as well as equitable and accessible education.</b>				
	0	The <b>42nd Amendment to the Constitution in 1976</b> moved education from the State to the <b>Concurrent List.</b>				
		<ul> <li>The education policies by the Central government provides a broad direction and state governments are expected to follow it. But it is <b>not</b> <b>mandatory</b>, for instance Tamil Nadu does not follow the three-language formula prescribed by the first education policy in 1968.</li> </ul>				
	0	The 86 th Amendment in 2002 made education an enforceable right under Article 21-A.				
-	Re	lated Laws:				
	0	Right To Education (RTE) Act, 2009 aims to provide primary education to all children aged 6 to 14 years and enforces education as a Fundamental Right.				
	Go	<ul> <li>It also mandates 25% reservation for disadvantaged sections of the society where disadvantaged groups</li> </ul>				
	0	Sarva Shiksha Abhiyan, Mid Day Meal Scheme, Navodaya Vidyalayas (NVS				

## Way Forward

- A New Education Policy aims to facilitate an inclusive, participatory and holistic approach, which takes into consideration field experiences, empirical research, stakeholder feedback, as well as lessons learned from best practices.
- It is a progressive shift towards a more scientific approach to education. The prescribed structure will help to cater the ability of the child stages of cognitive development as well as social and physical awareness. If implemented in its true vision, the new structure can bring India at par with the leading countries of the world

Chapter-12-Sports & Social Support System

## **Data Annexure**

## **Sports infrastructure scenario of NCR**

Table 12.1.1: 9	Sub-region	wise Sport	s facilities and	Training Ca	apacity in	NCR. 2019
					-p	

<b>.</b> .	No. Sports	(	)wnersh	ip	Training Capacity			
Sub Region	Institutions	Central Govt.	State Govt.	Private	National	International	Others	
NCT Delhi	91	83	8	280	NA	NA	NA	
*Haryana	193	NA	173	20	621	88	7362	
*UP	22	2	18	2	460	212	450	
*Rajasthan	1	NA	1	NA	NA	NA	NA	
NCR	307	85	200	302	1081	300	7812	

Source: NCR Monitoring and Planning Cell, Govt. of NCT Delhi, Govt of Haryana, Govt of UP and Govt of Rajasthan

*Note: NCTD- Excluding Data on Training Capacity

HSR: Excluding Data for Faridabad and Panipat w.r.t Sport facilities and Rohtak, Mahendragarh, Mewat and Palwal districts for training capacity

UPSR: Excluding Data for Hapur district

RSR: Excluding Data for Bharatpur district

#### **Brief facts:**

- a) NCR has more than 300 existing sports training institutions in its premise, with maximum facilities available at Haryana sub region (193 no.).
- b) About 212 international players are being trained in sports facilities available at UP sub region, 88 international players at Haryana sub region sports facilities.
- c) More than 600 players are being trained for national level sports activities at Haryana sub region and 460 players at UP sub region sports facilities.

Sub Region	Type of sports
NCT Delhi	Swimming, Basketball, Badminton, Hockey, Foot ball, Cricket, Athletics, Volley Ball, Netball, Tennis, Boxing, Judo/ Wrestling / Kabaddi , shooting, Archery (All most all kinds of sports facilities)
Haryana	Badminton, Boxing, Hockey, Gymnastics, Athletics, Cricket, Wrestling, Hockey, Volleyball, Cycling, Judo, Basketball, Archery, Football, Kho-Kho, Table Tennis, Handball, Wushu, Kabaddi
UP	Athletics, badminton, kho-kho, volleyball, wushu, cricket, judo, wrestling, taekwondo, swimming, hockey, Judo, Basketball, Wushu, Weightlifting, Kabaddi, Athletics, Volleyball, , Gymnastic, Boxing, Shooting, 10m air pistol shooting, Archery, Volleyball

 Table 12.1.2: Type of sports in NCR

Rajasthan	All Sports Athletics, Boxing, Badminton, Hockey, Swimming, Wrestling, etc.	

Source: NCR Monitoring and Planning Cell, Govt. of NCT Delhi, Govt of Haryana, Govt of UP and Govt of Rajasthan

## India's leading sports colleges in NCR and its CMAs

- 1. Indira Gandhi Institute of Physical Education and Sports Sciences located in Vikaspuri, New Delhi, this institute is under the University of Delhi and offers all categories of teacher training courses in physical education. Bombay Physical Culture Association College of Physical Education (BPCACPE) The college, located in Wadala, Mumbai, was started in the year 1978 with a mission to create qualified teachers in physical education.
- **2.** Amity School of Physical Education and Sports Sciences, Noida affiliated to the Amity University, this college offers courses for teacher trainees in physical education.
- **3. Guru Gobind Singh Sports College, Lucknow** with its list of notable alumni, this residential sports college is deemed one of the best in the country. Located in Guramba, Lucknow, Uttar Pradesh, this college trains its students in football, hockey, athletics, badminton, swimming, and kabaddi. Cricketers Suresh Raina and R P Singh, hockey player Jagbir Singh, runner Indrajeet Patel are some of the famous alumni of this college.
- 4. Netaji Subhas National Institute of Sports, Patiala commonly known as National Institute of Sports (NIS), this is the academic wing of Sports Authority of India (SAI) and Asia's largest sports institute. Located in Patiala, this government college is affiliated to Punjabi University and Baba Farid University of Health Sciences. Housed in Old Motion Bagh Palace, this institute spreads over 286 acres and offers facilities for many sports including wrestling, judo, golf, archery, wushu and football.
- **5.** Lakshmibai National Institute of Physical Education (LNIPE), Gwalior, Established under Government of India sponsorship, this is a deemed University dedicated to promoting sports and physical education. It is located on the Agra-Mumbai Highway at Shakthinagar, Gwalior. The college was instituted in memory of Rani Lakshmibai of Jhansi and an equestrian statue of Rani of Jhansi adorns the campus.

## Raahgiri Campaign

Raahgiri campaign is evolving and expanding to include evenings as well as day time. It's a common platform for campaigning and engaging in important social issues like health, childhood, climate, Govt. and NGOs are also using this platform to reach out to

people to educate them. It is one of the ways to interact with people directly, so that decision makers are always eager to make use of it.

Fundamentals of Raahgiri - Health and Fitness; Road Safety; Sustainable Commute and Social Inclusion

Raahgiri day/night Impacts:

- a) Adopted by more the 70 cities within four years and spread over 17 states.
- b) In total about 1.2 crore people have visited Raahgiri Day and continue to do so.
- c) Sensitization of City Administration lead to infrastructure change in cities. State Level Initiative HVZ City infrastructure Bhopal, Gurugram, Ludhiana and Bhubaneswar

## Case Study – Gurugram

## 1. Background

Raahgiri Day is India's first sustained carfree citizen initiative that was developed to encourage pedestrians, cyclists, and other non-motorized modes. Dedicated stretches of roads are blocked to motorized traffic and allow only pedestrians and cyclists for 4–5 hours every Sunday.

Raahgiri Day has been chosen as one of the 24 most inspiring stories for "Pathways to Green Cities" by the Global Advisory Committee of the Earth Day Network. The Ministry of Urban Development (MoUD/ MoHUA has documented Raahgiri Day as a best practice in urban transportation in Indian cities.¹³⁹

## 2. Key Elements

Several streets in the neighborhood are temporarily pedestrianized to allow residents and visitors to perform and participate in a series of recreational activities.

Street closures are repeated at regular times and locations to establish use patterns.

## 3. Goals

- a) Provide a more pedestrian-friendly space for residents, visitors, and business owners.
- b) Reduce air pollution.
- c) Raise awareness about road safety.
- d) Increase quality of life.
- 4. Issued Addressed
- a) **Road Safety.** More than 140,000 people annually die in India due to road accidents, the majority of whom are pedestrians and cyclists who are not respected on the roads.
- b) **Air Pollution.** According to a WHO report, more than 62,000 premature deaths occur each year in India due to air pollution.

¹³⁹<u>https://globaldesigningcities.org/publication/global-street-design-guide/streets/special-</u> conditions/temporary-street-closures/case-study-raahgiri-day-gurgaon-india/

- c) **Physical Inactivity.** The WHO report also estimates that more than 43,000 premature deaths occur annually in India because of physical inactivity, largely due to unhealthy lifestyle choices.
- d) **Inclusive Development.** Many urban areas are becoming exclusive as there is no formal mechanism to facilitate interaction between different sections of society. The outcome of this segregation is manifested in social unrest.

## 5. Involvement

Raahgiri Day is the result of active contribution by founding partners and citizen groups, media outlets, resident welfare associations (RWA), schools, NGOs, private organizations, recreational groups, and others. These groups immediately connected with the idea, and helped spread the word in their communities.

- **Public Agencies** Ministry of Urban Development, High Court of Punjab and Haryana, Gurgaon Municipal Corporation, Gurgaon Police, Delhi Development Authority, New Delhi Municipal Council, Delhi Police, Bhopal Municipal Corporation
- **Private Group and Partnerships-** Many private institutions, corporations, global brands, media companies, cycling/walking/running groups, dance/ music academies, yoga/aerobics/dance institutes
- Citizen Associations and Unions- Local residents associations, citizen groups
- Nonprofits and Institutions-Raahgiri Foundation [lead] EMBARQ India, Duplays, IAmGurgaon, Pedal Yatri, and Heritage School

## Major Initiatives of Govt. of India and NCR participating State Govt. regarding Sports

## > Govt. of India

## 'Khelo India: National Programme for Development of Sports'

## New scheme formed by merger of earlier schemes

Prior to the launch of Khelo India, sports promotion and development in India was carried out through three separate schemes:

- 1. **Rajiv Gandhi Khel Abhiyan:** Infrastructure in rural areas and encouraging sports through competitions
- 2. Urban Infrastructure Scheme: Development of Infrastructure in urban areas.
- 3. National Sports Talent Search: Identifying sports talent

These three programme were merged into a single central sector scheme 'Khelo India: National Programme for Development of Sports' from the financial year 2016-17. The program is run under the aegis of Union Ministry of Youth & Sports.

#### Identification and nurturing of talent main aim of Khelo India Scheme

One of the key objectives of the scheme is to identify talented athletes from across the country and nurture the talent through guidance and developed infrastructural facilities. In this context, Khelo India has four objectives:

- Conduct structured annual sports competition and encourage Mass participation of youth.
- Identify talent through these competitions.
- Guidance and nurturing of the talent through the existing and new infrastructure
- Creation of Sports infrastructure at various levels.

To facilitate these objectives Khelo India Scheme has four components.

**a.** Competition: Sports competition would be held at Block/District/State and National level.

The competitions are conducted for different age-groups:

- 6-12 years
- 12-18 years
- 18-36 years
- 36-50 years
- Above 50 years

The competitions for above 36 age group are in context of encouraging general health. Physically challenged athletes have a separate set of competitions. The first edition of Khelo India School games were held in New Delhi between 30 January 2018 and 07 February 2018.

A larger event, Khelo India Youth Games was held in Pune, Maharashtra from 09 January to 20 January 2019. The next edition was held in Guwahati, Assam in 2020.

- **b. Sponsorship:** Under Khelo India Scheme, the funding for sports promotion and development has switched from centrally aided scheme to Central Sector Scheme. The State and local authorities would continue to be involved but within the capacity of assistance regarding, identifying land for infrastructure, conducting competitions etc. Another unique aspect of the scheme would be the encouragement for PPP (Public Private Partnership), where in the organizers of the events are free to invite private sponsors to contribute financially and in kind. The funds can be used in creation and upgradation of the sporting facilities.
- c. Talent: As indicated earlier, one of the key purposes of the scheme is to identify sporting talent. Talented sportspersons among the participants form the competitions conducted at District, State and National levels are identified under the age groups of 6-12 and 12-18. These selected candidates are eligible for scholarships or admission into SAI (Sports Authority of India) Centres and Sports Academies. The athletes are selected for Long Term Athlete Development (LTAD) programme, where they would receive training in the accredited academies and SAI centers. The support is in the nature of expert coaches, sports equipment, boarding & lodging, sports kits, competition exposure, educational expenses, medical. Insurance, stipends etc. Sporting talent selected for LTAD receive financial assistance of Rs. 5 lakh per annum. As of July, 2019, about 2,437 individuals had been selected under Talent Search & Development of Khelo India, across 20 sports disciplines.
- **d. Infrastructure:**Prior to Khelo India Scheme, USIS (Urban Sports Infrastructure Scheme) was mandated with the responsibility of creating sports infrastructure. However, this scheme is now merged into the Khelo India Scheme.Under the new scheme, infrastructure is being developed both in the existing SAI Centres as well as identifying new spaces for sports infrastructure. Currently Khelo India provides Infrastructure support for 46 recognized SAI Centres.

To meet the objectives of Khelo India, the entire programme is divided in 12 verticals as mentioned in the below picture.



## **Online Registration for Khelo India**

Athletes and coaches can register for Khelo India, through online registration link. There are three options for registration as new user – Athlete, Coach or Technical Official. About 25 sport disciplines are enlisted apart from disciplines for Para-athletes.

About Rs. 199.31 crores had been released to States/UTs in 2018-19 under Khelo India schemefor sanctioned infrastructure projects and for the conduct of sports competitions. Over the last three years, Uttar Pradesh has received the highest amount with Rs. 59.93 crores, followed by Arunachal Pradesh with Rs. 58.82 crores. Rajasthan received the third highest amount over the three years with Rs. 56.48 crores.

## > NCR participating States

## 1. Haryana

- a) Haryana Sports and Physical Fitness Policy-2015": The vision of this policy reflects government's commitment for increased effectiveness of the sports system and enable Haryana athletes to move to the forefront of international sports.
- b) The Sports Department is creating a wide range of infrastructural facilities in different districts of the state to meet this objective.
- c) There is a special provision for rewarding Olympic Game medalists with cash prizes where gold medalist will get Rs.6.00 crore, silver medalists Rs. 4.00 crore and bronze medalist to get Rs.2.5 crore in singles. Players who participated in the aforesaid games will get Rs.15 lacs for encouragement.
- d) Eklavya Award for Junior Players, Maharana Pratap Award for Men and Rani Laxmibai Award for Female and Guru Vashisht Award for Coaches is in place to promote sports activities.
- e) Play nurseries has been established in all districts to generate interest in sports activities among young boys and girls.

- f) To promote competitiveness among players, "Khel Mahakumb" has been organized. Example: Khel Mahakumb in Karnal District held in 2017 at Karn Stadium.
- g) To promote Kabaddi, several tournaments are taking place. Example: Dept. of Sports and Youth Affairs, Govt. of Haryana organized Pandit Deendayal Upadhyay Kabaddi tournament .
- h) To promote wresting, tournaments are being organized by Dept. of Sports and Youth Affairs, Govt. of Haryana where wrestlers all across the country come to participate. Example: Bharat Kesari Dangal held in 2018.
- i) To promote Yoga, Yoga centers, park cum exercise centers has been established. State level and district level competitions are being held to promote such activities.
- j) Akhil Bharatiya Civil Sewa competition is organized to promote table tennis in the state.
- k) For differently abled person, para Olympics is organized at State and District level.
- 1) Sports Coaching centers has been established at district level
- m) For players who are also students reading in schools, who have achieved recognition at state and national level due to sports activities, cash awards are being provided.
- n) Cash rewards are provided to excellent players who represent at the national and international level.
- o) Haryana Adventure Sports academy has been established to promote adventure sports.
- p) In the office of District Sports and youth affairs at district level, news papers, books and magazines are being bought, so that the coaches and players are updated with the latest developments in this sector.
- q) Old Age pension scheme To support players above 60 years of age . This is for those veteran players who have shown their achievements at National, International and Olympic Level .
- r) Infrastructure Scheme: To promote sports infrastructure in rural areas, 90% is funding is to be done under this scheme by State Government while the remaining 10% is to be provided by the concerned Gram Panhayat.
- s) Maintenance of playfield scheme: This is related to the maintenance of the play grounds and stadiums.
- t) Mass Popularization: Under this scheme, sports equipments are being provided in village schools to promote sports activities etc.
- u) Gymnastic Scheme: To promote gymnastics in the state.

## 2. Uttar Pradesh

- a) Several schemes are being implemented by the Sports Department to provide opportunities to promote sports Programmes and bring about qualitative improvement in the performance of sports persons. The Sports Department is creating a wide range of infrastructural facilities in different districts of the state to meet this objective. These facilities include stadium, multi-purpose sports complex, swimming pool, badminton, tennis and volleyball court, gymnasium hall, fields for games like hockey and football, athletics track etc. As a result of these schemes, there has been considerable expansion in facilities for sports persons and availability of sports establishments.
- b) The Sports Department is working in close coordination with its associate departments lke Education Department, Youth Welfare Department, autonomous sports associations and other sports organizers for training, competitions and implementation of other schemes.

- c) Among training Programmes, there are several result-oriented schemes of sports hostels and Sports College.
- d) Meritorious sports persons that are natives of Uttar Pradesh and have acquired medals in international events like Olympic Games, Asian Games, Commonwealth Games and many more are directly recruited on the post of Gazetted officers in various departments.
- e) There is a special provision for rewarding Olympic Game medalists with cash prizes where gold medalist gets Rs.6.00 crore, silver medalists gets Rs. 4.00 crore and bronze medalist gets Rs.2 crore in singles. Whereas in team games, gold medalist gets Rs. 3 Crores, silver medalists get Rs.2.00 Crores and bronze medalists get Rs.1.00 crore as reward and players who participated in the aforesaid games gets Rs.10 lacs for encouragement.
- f) There is also a special provision for rewarding Common Wealth Game Medallists where gold Medallists gets Rs.50.00 lacs, silver medal gets Rs.30.00 lacs and bronze medal winner gets Rs.15 lacs in singles games. Whereas in team events, gold Medallists gets Rs.30 lacs, silver medallist gets Rs.15 lacs, bronze Medallists gets Rs.10.00 lacs. Along with this Rs.5 lacs reward is given to all participants in aforesaid games for encouragement.
- g) UP Sports Department also take care of the national Padam Shree and Padam Bhushan award winning eminent players and has a special provision of providing monthly financial assistance of Rs.20,000.00 to Arjuna, Dronacharya and Khel Ratan Awardees.
- h) The special provision of Honouring sports persons with Rani Laxmibai Award is now raised from Rs.50,000 to Rs.3,11,000 cash.
- i) UP Sports Department also pays special attention to the diets of the sports players by increasing the diet money of sports persons who are part of the residential sports hostel, sports colleges, central coaching camps and national championships.
- j) To update trainers with efficient sports techniques and skills, refreshment courses are organized by the UP Sports Department from time to time for various disciplines.
- k) Along with these provisions to Honour and encourage wrestlers of the state the sum of money given to wrestlers is now doubled.
- In Special Olympics World Summer Games (USA) 2015, Medallists from Uttar Pradesh who received gold medal were given Rs. 10.00 lacs; silver Medallists were given Rs. 5.00 lacs, whereas bronze Medallists were given Rs. 2.00 lacs as a reward.
- m) Provision of free allocation/ reservation facility of rooms, playground and swimming pools was made for general class sports persons of recognized federations/association and handicapped players for the national/state level competitions.

## 3. Rajasthan

Govt. of Rajasthan is providing opportunities to reputed coaches in its world level sports infrastructure and have also instituted awards like Guru Vashist Award conferred upon Coaches on the basis of their performances. Sports associations are being provided with one time amount to help them organize various levels competitions. Govt. of Rajasthan enacted Rajasthan Sports Act, 2005 with key objective to provide for registration, recognition and regulation of Sports Associations and to facilitate and regulate the activities and affairs of the Sports Associations in the state. It also provide for recognition and regularization of the right to represent the State of Rajasthan and the various Districts in the State. Besides, Rajasthan State Integrated Sports Development Programme -2015 is also under implementation and playgrounds are being developed in every Division/District/Block Headquarters/Gram Panchayat level. State's every district already has a stadium (e.g. Indira Gandhi

Multipurpose Indoor Stadium, Alwar). Major initiatives taken by Govt. of Rajasthan are summarized as under:

- a) "Draft Sports Policy 2013"- The vision of this policy is to develop sports facilities and to provide appropriate opportunities to talented players and to establish Rajasthan as one of the advanced states in the field of sports and also to make Rajasthan recognizable at international level.
- b) Rajasthan Government through Rajasthan State Sports Council came up with Integrated Stadium (Basic Infrastructure) Development Program, 2007 whereby development of playgrounds and development of basic structures of stadiums are being executed.
- c) Construction and upgradation of Stadiums at sub-divisional level.
- d) If any distinguished and capable institute come up with meaningful proposals related to sports related facilities at a particular place, to encourage such initiatives the state government will assist with all possible efforts like land, technical assistance etc.
- e) In all 33 districts and at state level, to identify the promising talents and to nourish them through regular training, efficient trainers have been placed.
- f) District summer training camps: At all district level sports training centers and sub centers every year Rajasthan State Sports council during summer vacation organizes training camps.
- g) Central Residential Summer Training Camps: For those below 17 years of age in Rajasthan, in order to promote sports skills, every year in the month of May – June, 15 days summer central residential sports coaching camp is being organized. This is a program where fully residential facilities are being provided to the players who come here for training purpose. They are provided with residential facilities, food, equipment etc. free of cost.
- h) Talent Search: Rajasthan Government through Rajasthan State Sports Council has initiated talent search program. In this, talented boys and girls between age limit of 12-17 years are being selected, thereby selected players with best performances are provided with proper training and other facilities.
- i) Sports Hostel/ Sports Academies: Establishment of hostels and sports academies to promote sports activities.
- j) Cash Rewards to excellent players who represent at the national and international level.
- k) For such players who won awards at international level are provided free of cost travel in Rajasthan Roadways Buses.
- 1) Revenue Land Internationally famous players, on the basis of their competency level, houses or land is being provided at free/subsidized rates.
- m) Khiladi Pension Yojana: The players of the state who have won medals at International and National level and who have represented at Olympic games and whose age is 40 years or above, are provided with monthly pension. The beneficiaries of this scheme should till 60 years of age (at his place of residence) give training in his game for an hour daily at the local Rajasthan State Sports Council center.
- n) Awards like Khel Ratan, Maharana Pratap, Guru Vashisht award for trainers, Khel Patrakarita award for Sports Journalists are being provided to promote sports activities in the state.

- o) Presently Rajasthan State Sports Council, publishes newsletter related to information regarding sports.
- p) To promote equal opportunities for all, sports competitions are being held every year for female sportspersons at Block, District and State level.
- q) To promote sports in tribal areas, special facilities are being provided. Every year training camps are being organized in such areas to provide special training to talented players. During these camps, talented players of such regions are also looked for, and best performing players are also provided with financial assistance.
- r) Revival of sports which used to be played earlier.
- s) Promotion of traditional games and adventure sports.
- 4. NCT Delhi

Major initiatives taken by Govt. of NCR Delhi include the followings:

- a) Youth Welfare Programme,
- b) Establishment of Delhi School of Sport,
- c) Cash incentive to the Outstanding Players/ Sportsmen and Rajiv Gandhi State Sports Award,
- d) Best Sports Teacher Awards,
- e) Development of Playgrounds, Sports Complex, Swimming Pools, Gymnasium Halls etc.,
- f) Grant-In-Aid to Sports Associations,
- g) Introduction of Scout & Guide Activities in Schools,
- h) National Service Scheme (NSS) CSS,
- i) Promotion of Sports Facility in University Colleges,
- j) Establishment of Sports University in Delhi and Expansion & Improvement of Physical education.

## Social Support infrastructure scenario of NCR

## **Hostel Facilities**

Table 3.1: Sub-region wise hostel facilities in NCR, 2019

Sub Region	Working Men Hostels		Working Women Hostels		Youth Hostels		Other Hostels	
	Number	Capacity	Number	Capacity	Number	Capacity	Number	Capacity
NCT Delhi	NA	NA	20	NA	3	NA	7	1120
*Haryana	1	50	12	522	10	110	1	82
UP	6	796	6	930	1	0	16	931
Rajasthan	NA	NA	NA	NA	NA	NA	NA	NA
NCR	7	846	19	1500	11	110	24	2133

Source: NCR Monitoring and Planning Cells, Govt of NCT Delhi, Govt of Haryana, Govt of Uttar Pradesh

*https://www.yhaindia.org/licensee-youth-hostels.html and for working women hostels- Women and Child Development Department, Government of Haryana

NA-Data not available

## **Old Age Homes**

Table 3.2: Sub-region wise old age homes (both public & private) facility in NCR, 2019

Sub Region	Total no. of old age homes	Capacity of old age homes	Population above 60 years of age (2011)		
		Number	Number		
NCT Delhi	4	228	1147445		
Haryana	18	856	1432707		
UP	6	955	1287041		
Rajasthan	6	NA	464311		
NCR	34	2039	4331504		

Source: NCR Monitoring and Planning Cell, Govt of NCT Delhi, Govt of Haryana, Govt of Uttar Pradesh, *Department of Social Justice and Empowerment, Government of Haryana, India and Census of India 2011 for Population above 60 years of age

Note: HSR: Excluding data for Ch Dadri, Mahendragarh, Mewat, Palwal and Panipat and Sonipat districts

UPSR: Excluding data for Ghaziabad, Bulandshahr, Hapur and Meerut districts

NA-Data not available

# Major Initiatives of Central Govt. &NCR participating State governments regarding Social Support Systems

## > Govt. of India

- I. India is a signatory to the following three UN Conventions:
  - a) Single Convention on Narcotic Drugs, 1961, as amended by the Protocol of 1972 on Narcotic Drugs,
  - b) Convention on Psychotropic Substances, 1971 and
  - c) Convention on Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988.

## II. Relevant Acts:

- a) Narcotics Drugs and Psychotropic Substances (NDPS) Act, 1985 prohibits-Cultivation of coca, opium or cannabis plants without license; Manufacture of narcotic drugs and psychotropic substances without license and for uses other than medical or scientific purposes and Section 71 of the Act empowers the Government to establish centers for identification, treatment, management, education, after-care, rehabilitation etc. of addicts.
- b) **NDPS Policy, 2012** Defines the role of various Ministries/Department along with activities

## III. Drug Control – Agencies involved

- Supply Reduction-Ministry of Home Affairs & Department of Revenue
- Demand Reduction-Ministry of Social Justice & Empowerment
- Harm Reduction-Ministry of Health & Family Welfare

## IV. Magnitude of Substance use in India

- National Level Survey conducted by the Ministry during 2018 for generating estimates on Extent and Pattern of Substance Use in India
- Survey was conducted in 186 Districts
- Data was collected from individuals in 10-75 years of age group
- About 5.4 lakhs individuals were interviewed
- Report released on 18-02-2019
- Lead Agency (i) National Drug Dependence Treatment Centre, (AIIMS, New Delhi) (ii) National Institute of Social Defense
- Main Findings:
  - Alcohol use: 14.6% (16 crore users)
  - Cannabis use: 2.8% (3.1 crore users)
  - Opiom use: 2.1% (2.26 crore users)
  - Sedatives use: 1.08% (1.18 crore users)
  - Inhalants use: 0.7% (77 Lakhs users)
  - Extent, Trend and Pattern of Drug Abuse
    - Alcohol use: 14.6% (16 crore users): Highest using States: Chhattisgarh, Tripura, Punjab, Arunachal Pradesh and Goa
    - Cannabis use: 2.8% (3.1 crore users): Highest using States: Uttar Pradesh, Punjab, Sikkim, Chhattisgarh and Delhi.
  - **Opiod use**: 2.1% (2.26 crore users): Highest using States: Sikkim, Arunachal Pradesh, Nagaland, Manipur and Mizoram.
  - Sedatives use: 1.08% (1.18 crore users): Highest using States: Sikkim, Nagaland, Manipur and Mizoram. States housing large population of sedative users: UP, Maharashtra, Punjab, Andhra Pradesh and Gujarat

## V. Interventions by MSJE

• Supports about 488 Integrated Rehabilitation Centre for Addicts (IRCAs) in the country.

- Media campaign through electronic, print and social media-radio programmes, outdoor publicity etc.
- **Operates a National Toll free Help line no. 1800-11-0031** to help victims of drug abuse and their families.
- National Institute of Social Defence (NISD)- An autonomous body for training, awareness generation and documentation in the field of drug demand reduction.
- 12 Regional Resource and Training Centres (RRTCs)- Field training units and provide technical support to NGOs.

## VI. Scheme - Prevention Of Alcoholism & Substance (Drugs) Abuse

- Implemented since 1985-86
- Financial assistance is provided upto 95% for Integrated Rehabilitation Centre for Addicts (IRCAs)
- Presently supporting approximately 485 IRCAs
- Approximately 1 lakh addicts treated per year.
- Eligible Organizations/Institutions:
  - o District Hospitals, Railway Hospitals, Prisons, Juvenile Homes
  - Registered Societies formed by the State Governments
  - Panchayati Raj Institutions (PRIs), Urban Local Bodies (ULBs), organizations/institutions fully funded or managed by State/ Central Government or a local body
  - A Society registered under the Societies Registration Act, 1860 (XXI of 1860) or any relevant Act of the State Governments/ Union Territory Administrations
  - A Public Trust registered under any law for the time being in force
  - A Company established under Section 25 of the Companies Act, 1956

## • The Grant in aid is provided for running :

- o 15 bedded IRCA- upto Rs. 25,81,800/-
- 30 bedded IRCA- upto Rs 36,56,400/ -
- o 50 bedded IRCA- upto Rs 49,02,000/-
- VII. On-line submission and processing of applications of NGOs from 2014-15. Total districts covered are 306
- VIII. **National Action Plan For Drug Demand Reduction (NAPDDR)-** A National Action Plan for Drug Demand Reduction (2018-2025) has been prepared by the Ministry along with the implementation framework with the following objective-
  - To create awareness about ill effects of drugs abuse and reduce stigmatization of and discrimination against dependents on drugs in order to integrate them back into the society
  - $\circ$  Develop human resources and build capacity for working towards these objectives.
  - $\circ\,$  To facilitate research, training, documentation, innovation and collection of relevant information.
  - Alleviate the consequences of drug dependence amongst individuals, family and society at large.

## IX. Components Admissible for Financial Assistance under NAPDDR

- Preventive Education and Awareness Generation
- Capacity Building
- Treatment and Rehabilitation
- Setting quality standards
- Focused Intervention in vulnerable areas.
- Skill development, vocational training and livelihood support of ex-drug addicts.
- Survey, Studies, Evaluation, research and Innovation on the subjects covered under the Scheme.
- Programs for Drug Demand Reduction by States/Uts.
- Program Management.

• Any other activity or item which will augment/strengthen the implementation of NAPDDR.

## X. Focussed Intervention in Vulnerable Areas

- 131 districts have been identified in the country based on feedback from stakeholders.
- Following two intervention programmes would be carried out in the identified districts:
  - Community based Peer led Intervention (PLI) for Early Drug Use Prevention among Adolescents
  - Youth would be trained as Peer Educators to lead peer led community intervention and implement early prevention education especially for vulnerable adolescents and youth in the community. Referral and linkage to counselling, treatment and rehabilitation services for drug dependents identified in the community would also be provided.

# XI. Components Admissible for Financial Assistance under NAPDDR Outreach and Drop in Centres

- Outreach activities would be conducted in the community for prevention of drug abuse with a special focus on youth who are dependent on drugs.
- ODICs would provide safe and secure drop-in space for drug users in the community.
- Centres shall have the provision of screening, assessment and counselling
- $\circ$  Provision of consultation with doctor for referral and linkage with treatment facility

## > NCR participating State governments

- 1. NCT Delhi Initiatives taken by Department of Social Welfare, Women & Child Development, GNCT Delhi
  - i) **Financial Assistance for the needy** 
    - a) Delhi Pension Scheme to Women in Distress (Widows, Divorced, Separated, Destitute, Abandoned Women)
      - Target Group Women in Distress (Widows, Divorced, Separated, Destitute, Abandoned Women) from the age group of 18 years to lifelong.
      - From September, 2016 onwards the payment through PFMS portal has also been started.
      - The scheme has been launched online on e-district portal from 12/12/2018.
      - An amount of Rs.2500 per month is remitted to the bank accounts of beneficiary through Aadhar based payment (PFMS-Portal /DBT).

Eligibility criteria:

- She has been residing in Delhi for more than 5 years preceding the date of application.
- She has a singly operated account in any bank for receiving the payment
- She is not receiving any pension from Central Government/State Government/MCD and or NDMC or any other source for this purpose.
- Aadhar Number of the applicant is mandatory.
- Income Criteria: Applicant's income should be below Rs. 1 Lakh per annum.
- Total numbers of beneficiaries under Delhi Pension to Women in Distress are 2.48 Lakhs till December 2019.
- Budget Allocated for the Financial Year 2019-20 Rs.745 Crores
- b) Financial Assistance to "Poor Widows for marriage of their Daughters and Orphan Girls"

- To provide Financial Assistance to the poor widows for performing the marriage of their daughter (upto two daughters only).
- To provide Financial Assistance to the Guardian including Homes/Institutions or foster parents of an orphan for her marriage.
- This is one time grant of Rs. 30,000/- through ECS.

## ii) Eligibility Criteria

- The girl for whose marriage the financial assistance is sought should be major on the date of marriage i.e. above 18 years of age.
- The application shall be submitted at least 60 days before or after the date of marriage.
- Her family's annual income does not exceed than Rs.60000/- (Rs. Sixty Thousand only)
- Under the Financial Assistance to Poor widows for performing the marriage of their daughters and Orphan girls Scheme, **1436 cases** have been sanctioned till October 2019.
- Budget Allocated for the Financial Year 2019-20 Rs.13 Crores

## c) Old Age Assistance (Old Age Pension)

- Financial Assistance of Rs.2000/- per month is provided to persons of 60-69 years .
- Rs.2500/- to persons belonging to SC/ST/Minority category in the age group of 60-69 years.
- Rs.2500/- per month to persons 70 years and above (all category).
- Applicants have to be resident of Delhi for at least 5 years, having income below Rs.1 Lakh per annum (both husband and wife included).
- Old Age Assistance Scheme has got 4.65 Lakhs beneficiaries with allocated budget of Rs1244 crore

# d) Financial Assistance to Persons with Special Needs (Disability Pension) @ Rs. 2500/- per month provided to

- Beneficiaries of all ages, if disability is 40% and above and
- Resident of Delhi for at least 5 years, having family income below Rs.1 Lakh per annum.
- 21 disability categories are covered as identified in Rights of Persons with Disabilities Act 2016
- Financial Assistance to Persons with Special Needs has benefited 93475 with allocated fund of Rs. 255 cr.

## e) Delhi Family Benefit Scheme (DFBS)

- One time assistance of Rs.20,000/- is provided in the event of death of primary breadwinner.
- Age of breadwinner should be between 18 to 60 years at the time of death.
- Applicant should be resident of Delhi for minimum 05 years having family income below Rs.1 Lakh per annum.
- Delhi Family Benefit Scheme has 5686 beneficiaries and 13.7cr

## f) Delhi Ladli Scheme, 2008

- Launched on 01.01.2008 for empowerment of girl children.
- Financial assistance in the form of term deposits of Rs.11,000/- if born in hospital or Rs.10,000/- if born at home at the time of registration and Rs.5,000/- each, after reaching five milestones i.e. Class I, VI, IX, XI & XII.
- Having family income below Rs.1 lakh per annum from all sources.
- Residence in Delhi for last three years.
- No. of Beneficiaries since inception of the scheme i.e. 2008 ~ 10.17 Lakhs (approx.) **Objectives**
- To control female foeticide and to improve sex ratio.
- To promote education among the girls and reduce school drop-out rate of girl students.
- To provide security to girl students for their higher education.

- The scheme provides benefits to two surviving girl children per family.
- Budget for 2019-20 Rs.100 Crores.

## g) Pradhan Mantri Matru Vandana Yojana (PMMVY)

- Providing partial compensation for the wage loss in terms of cash incentives so that the woman can take adequate rest before and after delivery of the first living child.
- The cash incentive provided would lead to improved health seeking behaviour amongst the Pregnant Women and Lactating Mothers (PW&LM).

#### iii) Target beneficiaries:

• All first time pregnant Women and lactating mothers, excluding PW & LM who are in regular employment with the Central Government or the State Governments or PSUs or those who are in receipt of similar benefits under any law for the time being in force.

#### **Benefits under PMMVY:**

- Cash incentives in three instalments through PMMVY CAS Portal link with PFMS.
- First instalment of Rs.1000/- at the time registration at AWC.
- Second instalment of Rs.2000/- after six month of pregnancy.
- Third instalment of Rs.2000/- after child birth registration and immunization. **Current Status of the scheme :** 
  - No. of beneficiaries covered since 1/1/2017 136640 till 09/01/2020.

#### iv) Institutions under Section 41 of Juvenile Justice Act, 2015

- 23 Government run Child Care Institutions (notified)
  - 02 After Care Homes
  - 09 NGO run Open Shelters
  - 82 NGO run Child Care Institutions
- 11 Specialized Adoption Agencies (including one Govt. run Children Home notified recently as Adoption Agency)

## v) Statutory Bodies under Juvenile Justice Act, 2015

- 06 Juvenile Justice Boards
- 10 Child Welfare Committees.

## National Action Plan for Drug Demand Reduction (NAPDDR)

The Ministry of Social Justice and Empowerment has formulated and is implementing a **National Action Plan for Drug Demand Reduction (NAPDDR)** for **2018-2025.** 

- a) The Plan aims at reduction of adverse consequences of drug abuse through a multipronged strategy.
- b) The activities under the NAPDDR include awareness generation programmes in schools/colleges/Universities etc.
- c) The Ministry has also initiated establishing of **Outreach and Drop in Centres (ODIC)** to conduct outreach activities in the community for prevention of drug abuse with a special focus on youth.
- d) The Ministry has also approved the proposal of **National Drug Dependence Treatment Centre**, All India Institute of Medical Sciences (NDDTC, AIIMS) for providing financial assistance for establishment of Addiction Treatment Facilities at 125 **Govt. Hospitals** in phase manner for **over a period of three years.**

State Department may benefit from financial Assistance under the program for the following Components:

- a) Preventive Education and Awareness Generation; Capacity Building; Treatment and Rehabilitation; Setting quality standards; Focused Intervention in vulnerable areas
- b) Skill development, vocational training and livelihood support of ex-drug addicts.
- c) Survey, Studies, Evaluation, research and Innovation on the subjects covered under the Scheme.
- d) Programs for Drug Demand Reduction by States/UTs.; Program Management.
- e) Any other activity or item which will augment/strengthen the implementation of NAPDDR.

#### **Key Highlights**

- i). The action plan mainly focuses on preventive education, awareness generation, counselling, treatment and rehabilitation of drug-dependent people, besides training and capacity-building of service providers through the collaborative efforts of the Centre, state and NGOs.
- ii). Under it, the Ministry has planned several measures, including coordination with implementing agencies for controlling the sale of sedatives, painkillers and muscle relaxant drugs and checking the online sale of drugs through stringent monitoring by a cyber cell.
- iii). The plan also includes awareness generation through social, print, digital and online media and engagement of celebrities, besides strengthening the national toll-free helpline for drug prevention.
- iv). It also includes holding awareness generation programmes at schools, colleges, universities, workplaces and for police functionaries, paramilitary forces, law enforcement agencies, judicial officers and Bar council among others.
- v). It also calls for persuading principals, directors, vice chancellors of educational institutions to ensure that no drugs are sold within or anywhere nearby the campus.

- vi). Besides this, increasing community participation and public cooperation in the reduction of demand by involving Panchayati Raj institutions, Urban Local Bodies, Nehru Yuva Kendra Sangathan and other local groups like Mahila Mandals and self-help groups is also being planned under the plan.
- vii). The plan also includes identification of vulnerable areas based on survey, skill development, vocational training and livelihood support of ex-drug addicts through National Backward Classes Finance and other Development Corporations and continuous research on drug use pattern.
- viii). As a part of the plan, a module for re-treatment, ongoing treatment and post-treatment of addicts of different categories and age groups will be developed and database on substance use will be maintained.
- ix). The ministry, in collaboration with the National Drug Dependence Treatment Centre (NDDTC) under the AIIMS, is also conducting a national survey on the extent and pattern of substance abuse.

## Chapter-13-Safety, Security & Disaster Management

## VULNERABILITY AND RISK ASSESSMENT OF NCR

#### I. Vulnerability and Risk Assessment of The Region Due To Natural Hazards

#### A. Earthquake

Six historical earthquakes of magnitude 5.5 to 6.8 are known to have occurred in NCR and its surrounding area since 1720 AD, as detailed in Table 1.1.

# Table 1.1: List of Historical Earthquakes of Magnitude 5.5 to 6.8 Occurred in NCR and its Surrounding Area since 1720 AD

SI. No		Epicenter					
110.	Date	°N	°E	М	Remarks		
1	15.07.1720	28.37	77.10	6.5	It was described by Oldham (1883) in which walls of the fortress and many houses in Delhi were destroyed. It was followed by 4 to 5 aftershocks per day for 40 days and occasional shocks for 4 to 5 months.		
2	01.09.1803	27.50	77.70	6.8	It was recorded, felt in very large area and was responsible for damage to buildings in which 23 persons were killed in Bulandshahar and some were injured in Delhi. Damage to the Qutub Minar in Delhi during this earthquake has also been reported by some researchers.		
3	16.01.1842	27.00	78.00	5.5	-		
4	10.10.1956	28.15	77.67	6.7	-		
5	27.08.1960	28.20	77.40	6.0	It was reported felt at Delhi, Kanpur and Jaipur. Minor property damages and injuries to about 50 persons were reported from Delhi.		
6	15.08.1966	28.67	78.93	5.8	-		

Source: India Meteorological Department, Ministry of Earth Science
The seismic vulnerability of built environment of NCR need to be examined vis-a-vis high frequency ground motions due to events endemic to faults of Peninsular Domain capable of producing earthquake of magnitude around 6.5 to 6.7 and also due to frequency content of attenuated events with source zone in thrust domain of Himalayas capable of producing earthquake of magnitude around 8.0.

National Capital Region falls in Seismic Zone IV of the Seismic Zoning Map (BIS IS 1893, Part 1:2002) of the country. This makes the area liable to experience MSK intensity of 'VIII' and is considered as High Risk Zone. Such intensity may cause severe damages to the structures of different types. Some of them are listed below:

	Box 1
Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph.
2.5 to 5.4	Often felt, but only causes minor damage.
5.5 to 6.0	Slight damage to buildings and other structures.
6.1 to 6.9	May cause a lot of damage in very populated areas.
7.0 to 7.9	Major earthquake. Serious damage.

- 8.0 or Great earthquake. Can totally destroy.
   Type A- Houses constructed with stone, rural structures, community brieds the lepicenter may suffer destruction causing gaps in walls, collapse of parts of buildings, loosing of cohesion of part of buildings and collapse of inner walls.
- Type-B- Building constructed with ordinary bricks, large blocks, natural stone and prefabricated type buildings may suffer heavy damage causing large & deep cracks in walls.
- Most buildings of Type-C i.e. RCC buildings may have small cracks in walls, fall of large pieces of plaster, slipping off tiles, cracks/fall in chimneys, etc.
- *Fright and panic is caused among people.*

The approximate area subjected to damaging intensities MSK, VIII and VII in five earthquakes of magnitude around 6.5 occurred in different part of the country are as given in Table 1.2.

region					
ake	ıde	mate Area (I=VI) in sq. km.	II) mate Area (I=VII) in sq. km.	approximate area intensity VII & VIII i km.	under in sq.
1967	6.5	130	430	560	
hi, 1991	6.6	700	1300	2000	
Latur) 1993	6.3	420	930	1350	
r, 1997	6.0	455	1930	2385	
. 1999	6.3	75	845	920	

Table 1.2Damage by Earthquakes of MSK* Intensities VIII &VII of Magnitude 6 to 6.6 occurred in Himalaya and Peninsular region

Source: India Meteorological Department, Ministry of Earth Science.

* Medvedev-Sponheuer-Karnik (MSK) scale has 12 intensity degrees expressed in Roman numerals starts from I (Not perceptible) to XII (Very catastrophic)

The whole urban development in the region must be checked for safety against a probability of occurrence of seismic intensity "VIII" and upgraded for required seismic resistance in buildings and infrastructure as found necessary to withstand minimum Peak Ground Acceleration value of 0.24g.

- The Seismic Hazard Microzonation (SHM) provide basic input for further study of Seismic Hazard and Risk Microzonation (SHRM) and is one of the important tools for disaster mitigation planning for urban areas, as it can minimize disaster impacts of an earthquake. Seismic Hazard and Risk Microzonation provides
  - (a) Probabilistic estimate of earthquake hazard at each microzone on earthquake shaking,
  - (b) Extent of likely damage to built environment (dwellings, community structures, lifelines, industrial structures, monuments and heritage structures) and define damage ratio and people living in structures susceptible to damage,
    - (c) Measures for retrofitting of existing structures to render them safe and
  - (d) Specific guidelines for designing and construction of earthquake resistant structures in different microzones.

Seismic Hazard microzonation is basically determination of frequency dependent transfer function due to impedance contrast between bedrock and overlying soil at the site and will

		Box2
Zone V	MSK IX or more	Very High Damage Risk Zone All surface and underground structures completely destroyed.
Zone IV	MSK VIII	High Damage Risk Zone Waves may be seen on very soft ground. Older structures partially collapse or sustain considerable damage
Zone III	MSK VII	Serious damage to older buildings, masonry chimneys collapse. Small landslides.
20ne 11	less	Low Damage hisk 20ne

bedrock and overlying soil at the site and will " Visible damage. to masonry provide site specific parameters for design of buildings. This would be helpful for identifying areas of structures, cracks in plaster. low and high hazard zone, suitable area for different types of constructions i.e. Low and high rise, etc. Isolated cracks on the ground. Thus this study will be helpful for micro level planning of urban agglomeration.

#### B. Floods

The main causes of floods are heavy rainfall, inadequate capacity of rivers to carry the high flood discharge, inadequate drainage to carry away the rainwater quickly to streams/rivers, flash floods occur due to high rate of water flow as also due to poor permeability of the soil. Vulnerability to floods is caused by the high population density, widespread poverty, unemployment, illiteracy and enormous pressure on land. One of the reasons for damage of property and life by floods is development of slums/ unauthorized construction in High Flood Level area. Flood results in the outbreak of serious epidemics specially, malaria and cholera, simultaneously, scarcity of water. To manage these serious issues, NDMA has prepared guidelines on Management of Floods wherein measures for preparedness, prevention, mitigation in the pre-flood stage and on prompt and effective response, relief and recovery during and post flood stages have been focused. Importance on non-structural measures besides structural measures is emphasized in the guidelines. Setting of basin-wise organizations for flood management and also for setting up a National Flood Management Institute for training, education and research are suggested in the guideline.

As per the Flood Atlas of India prepared by Central Water Commission, only small portion towards the south-east in Delhi is unprotected flood prone area (about 1.7% or 25 sq.km.) and considerable area (about 5% or 74 sq.km.) in the north-eastern parts which is protected by earthen embankments. Flood levels in Yamuna cross the danger level almost every year and people living in low lying areas behind the 'bunds' (embankments) are forced to evacuate to the top of the bunds or on road sides at higher elevations. The flow and the expected flood levels of the river Yamuna at Delhi is forecast by the Central Water Commission through hydrological and hydraulic observations on the upstream, particularly taken at Hathnikund headworks about 130 km upstream from where two canals take off from the Yamuna, one on its left bank Western

Yamuna Canal (WYC) and the other on the right bank Eastern Yamuna Canal (EYC). Since the Hathnikund Barrage/headworks and the two canals have limited capacity, in the event of heavy precipitation in the catchment area of Yamuna and its tributaries, the river downstream comes in spate, overflowing its banks and flooding the adjoining low lying areas. Also great damage is caused to areas deep inside the region because of the back flow in the drains which is otherwise meant to discharge excess water into the river. In addition, heavy precipitation within the region causes local flooding of streets and localities on a large scale. In recent years even moderate rainfall has resulted in local floods. Main reason for these local floods is high rate of runoff from urban areas which have been continuously growing at a very rapid rate. This problems of local floods is expected to aggravate in NCR because, almost the entire area is likely to get urbanized leaving very little scope for open and soft landscape surfaces, which help in absorbing runoffs and soften the impact of floods.

#### C. High Winds

The macro-level wind speed zones of India have been formulated and published in IS:875 (parts) - 1987 titled "Indian Standard Code of Practice for Design Loads (other than earthquakes) for Building and Structures, Part 3, Wind Loads". As regards to wind hazard, design wind speed in the entire region is 47 m/s (169 km/h) as per IS:875 (Part 3), which could be reached only occasionally in what

is called 'Andhi' (wind storm). However, the NCR area falls in Very high damage risk zone B (Vb = 50m/s). The structures in this region should be designed keeping in view the above wind speed. In such events, weak houses of thatch, sheets etc. and those with sloping roofs using thatch, tiles, AC sheets and Corrugated Galvanized Iron (CGI) sheet roofs, which are not fully anchored and integrated, will suffer damage.

During the summer season, extreme positive departures from the normal maximum temperature result in a heat wave. The flow of hot waves is also known as 'loo'. Generally heat

waves is also known as 'loo'. Generally heat 44 m/s (158.4 km/h) Moderate Damage Risk Zone -A waves develop in the north-western parts of India and from this area they progress to neighbouring states. Table 15.3 gives the number of heat waves observed in the NOR participating states Risk Zone -B 1911-2009: 33 m/s (118.8 km/h) Low Damage Risk Zone

<i>Six basic wind speeds</i> 55, 50, 47, 44, 39 and 3	Vo' considered for zoning, namely 33 m/s as follows:
55 m/s (198 km/h)	Very High Damage Risk Zone A
50 m/s (180 km/h)	Very High Damage Risk Zone B
47 m/s (169.2 km/h)	High Damage Risk Zone

Box 3

Table: 1.3Heat waves occurred during 1911-2009 in NCR

Sl. No.	State		Epochs (eve	ents)	
		1911-67	1968-77	1978-99	2000-2009
1.	Delhi,	-	1	4 (*49)	17
2.	Haryana			12 (*37)	
3.	Uttar Pradesh	105	6	23 (*686)	-
4.	Rajasthan	27	3	42 (*1625)	14

Source: IMD Disastrous weather Events Annual Report; EMDAT

* Number of heat waves followed by the total no. of deaths within bracket.

The Table 1.3 indicates that the Rajasthan and Uttar Pradesh are more affected by heat waves. Prolonged severe heat wave condition may cause serious problems to water supply, moisture stress in the soil and adversely affect agriculture. When an area is affected by severe heat wave and also followed by delayed onset of monsoon, then the situation becomes more miserable for the inhabitants because of water scarcity and delay in sowing operations. The casualties due to heat waves were found maximum in Rajasthan followed by Uttar Pradesh, Haryana and Delhi. It may also be noted that loss of human lives in a region due to heat waves is not only depend on the number of waves spells but also on the socio-economic condition of the people.

This wind scenario does not cover the risk of tornado, which is a seldom case in respect of its occurrence, intensity and path, and is extremely difficult to deal with in general hazard risk studies. Also, in any one wind storm, it is unlikely that the whole or a large part of Delhi will be affected at once, and neither is there any possibility of a disastrous consequence from this hazard.

## II.Vulnerability and Risk Assessment Of The Region Due To Man Made Hazards

Rapid urbanization and industrialization are forced to adopt new approaches for Socio-economic development. Increased density population and mixed occupancy, construction of high rise buildings having multi activities, roads, industries are the major development activities which causes Man made hazards like fire, Chemical, Biological, Radiological, and Nuclear(CBRN) hazards, road accidents, etc.

		Box 4
Wind m/sec	Speed,	Typical Possible Movement
30-35		Roof sheets fixed to battens fly
35-40		Small aircrafts take off speed
40-45		Roof tiles nailed to battens fly
45-50		Garden walls blow over
50-55		Unreinforced brick walls fail
55-60		Major damage from flying debris
60-65		75 mm thick concrete slabs fly

### A. Fire Hazard

Fire hazards in NCRcan be attributed to

following main reasons:

- Non-implementation of fire safety norms as part of building bye-laws.
- Encroachment, overcrowded and haphazard growth affect the movement and timely approachability of fire tenders in emergency.
- Inadequate safety measures in the electrical installation
- Sub-standard wiring and over loading of electrical system.
- JJ clusters constructed with highly flammable material and some constructed with very toxic materials like plastics, polyethylene sheets, bamboo, soft wood etc. without proper access for fire tenders.
- Storage of flammable/explosive material in the vicinity of populated area and hazardous commercial activities;
- Inadequate pumping facilities hamper fire fighting and control of fire.
- Inadequate availability of special fire fighting equipments with local bodies especially for high rise multistoried buildings, where it is a prerequisite.

A comprehensive study of the vulnerability due to fire hazards in the region and in different areas of fast growing towns should be taken up and adequate safety provisions be made for future planning of NCR and improvement in the quality of electrical cabling, wiring and distribution systems should be made.

# **B.** Chemical, Biological, Radiological, and Nuclear (CBRN) Hazard The incidents in Nuclear Facilities in NCR are given in Table 1.4:

Table:	1.4	Incidents	in	Nuclear	Facilities	s in NCR
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Date & Month	Place	Event
31 Mar 1993	Bulandshahr, Uttar Pradesh,	A fire occurred in Turbine building which is not a part of reactor system. This resulted in damage of the steam turbine blades. The reactor was brought to safe shutdown state. The unit was restarted after Regulatory approval.
April, 2010	Mayapuri, Delhi	In a radiological accident, an irradiator was sold to metal scrap dealer. The dealer dismantled the irradiator which caused release of radioactive source resulting the exposure to a worker in the shop lead to one fatality.

Source: Report on Disaster Management in India, prepared by Ministry of Home Affairs

 Table 1: Status of Constitution of District Disaster Management Authority, District Disaster Management Plan,

 Emergency Operation Centre and Emergency Response Centre in NCR

Sl. No.	Sub Region	District	Status of District Disaster Management Authority (DDMA)	Status of District Disaster Management Plan (DDMP)	Emergency Operation Centre (EOC)	Emergency Response Centre (ERC)	Single Number Dialing facility for Emergency (e.g. UP 100)
			Not Constituted)	(Prepared/ not Prepared)	not established)	not established)	
1	Delhi	Delhi	Constituted	Prepared	Established	Established	1077
2		Bhiwani	Constituted	Prepared	Not Established	Not Established	Yes
3		Charkhi Dadri	Constituted	Prepared	Not Established	Not Established	No
4	-	Faridabad					
5		Gurugram	Not Constituted	Prepared	Not Established	Established	Yes
6		Jhajjar	Constituted	Prepared	NA	Established	Yes
7		Jind	Constituted	Prepared	Established	Established	No
8	Harvana	Karnal	Constituted	In Progress	Established	Established	Yes
9		Mahendragarh	Constituted	Prepared	Established	Established	
10		Mewat	Constituted	Prepared	Not Established	Not Established	
11		Palwal	Constituted	Prepared	Established	Established	Yes
12		Panipat					
13		Rewari	Constituted	Not Prepared	Not Established	Not Established	Yes
14	-	Rohtak	Constituted	Prepared	Established	Established	No
15		Sonipat	Constituted	Prepared	Not Established	Not Established	No
16		Baghpat	Constituted	Prepared	Established	Established	No
17	Uttar	Bulandshahr	Constituted	Prepared	Established	Established	100
18	Pradesh	Gautam Budh Nagar	Constituted	Prepared	Established	Established	No
19		Ghaziabad	Constituted	Prepared			

		Hapur					100, 9454418758 101, 9854418759, 9454418383
20			Constituted	Prepared	Established	Established	0122-2312100
		Meerut			Not	Not	
21			Constituted	Prepared	Established	Established	1077
22		Muzaffarnagar	Constituted	Prepared	Established	Established	101 and 100
23		Shamli	Constituted	Prepared	Established	Established	1077
24		Alwar	Constituted	Prepared	Established		
25	Rajasthan	Bharatpur	Constituted	Prepared	Established	Established	1077 05644-220320
Source:	NCR Planning	g and Monitoring	g Cell, UP, Harya	na, Rajasthan, v	website of the I	Disaster Managen	nent, Relief & Civil
Defence	Department, C	ovt. of Rajasthan					

### Table 2: Status of Incorporation of Disaster Management provisions in Master/Development Plans and Building Bye-Laws

Sl. No.	Sub Region	District	Status of Incorporation of Disaster Management provisions in Master/ Development Plans	Status of Incorporation of Disaster Management provisions in Building Bye- Laws
1	Delhi	Delhi	Yes	Yes
2		Bhiwani		
3		Charkhi Dadri	Yes	Yes
4		Faridabad		
5		Gurugram		
6		Jhajjar	No	No
7	Haryana	Jind	Yes	The building constructed by PWD (B&R) are based on approved drawing prepared by O/o Chief Architect Chandigarh and the drawing are prepared keeping in consideration all the disaster management provisions such as fire escape provision etc and building bye laws are adhered to.
8		Karnal	The various provisions relating to disaster management have been incorporated in the DDMP (2018-19) by way of making necessary tie up with all the line /concerned agencies /NGO's and their representatives at various level as and when needed in the preparation of DDMP.	Are provided as per Building bye Laws.
9		Mahendragarh	Not Applicable	Not Applicable
10		Mewat	Not to be done by the department of town & country planning	To be done by the concerned department like HSVP corporation etc.

11		Palwal	Instructions are being issued while approving the building plan	Already incorporated in Haryana Building code-2017
12	-	Panipat		
13	-	Rewari		
14		Rohtak	Incorporated in Building Code 2017	Incorporated in Building Code 2017-18
15		Sonipat		
16		Baghpat	No	Provisions of Earthquake Resistant buildings are there in Building Bye Laws 2008
17		Bulandshahr	No	Provisions of Earthquake resistant Building are there in Building Bye Laws-2008
18		Gautam Budh Nagar		
10		01 1 1	Incompared	In a sum a material
19		Ghaziabad	Incorporated	Incorporated
20	Uttar Pradesh	Hapur		Provisions of Earthquake Resistant Building are there in Building By laws 2008
20 21	Uttar Pradesh	Hapur Meerut	Yes, incorporated in Building by laws	Provisions of Earthquake Resistant Building are there in Building By laws 2008 Provision made in building bye laws 2008 (As Amended 2011&2016) and Amendment 2017
19       20       21       22	Uttar Pradesh	Ghaziabad Hapur Meerut Muzaffarnagar	Yes, incorporated in Building by laws	Provisions of Earthquake Resistant Building are there in Building By laws 2008 Provision made in building bye laws 2008 (As Amended 2011&2016) and Amendment 2017 Structural safety natural hazard protection of buildings provisions in building bye-laws 2008, 2016, 2017 are effective.
19       20       21       22       23	Uttar Pradesh	Ghaziabad Hapur Meerut Muzaffarnagar Shamli	Yes, incorporated in Building by laws Master plan is not applicable	<ul> <li>Provisions of Earthquake Resistant Building are there in Building By laws 2008</li> <li>Provision made in building bye laws 2008 (As Amended 2011&amp;2016) and Amendment 2017</li> <li>Structural safety natural hazard protection of buildings provisions in building bye-laws 2008, 2016, 2017 are effective.</li> <li>Structural safety natural hazard protection of buildings provisions in building bye-laws 2008, 2011, 2016, 2017 are effective.</li> </ul>
19       20       21       22       23       24	Uttar Pradesh	Ghaziabad Hapur Meerut Muzaffarnagar Shamli Alwar	Yes, incorporated in Building by laws Master plan is not applicable	<ul> <li>Provisions of Earthquake Resistant Building are there in Building By laws 2008</li> <li>Provision made in building bye laws 2008 (As Amended 2011&amp;2016) and Amendment 2017</li> <li>Structural safety natural hazard protection of buildings provisions in building bye-laws 2008, 2016, 2017 are effective.</li> <li>Structural safety natural hazard protection of buildings provisions in building bye-laws 2008, 2011, 2016, 2017 are effective.</li> </ul>

Source: NCR Planning and Monitoring Cell, UP, Haryana, Delhi Master Plan.

Table 3:	Sub Region	Wise population	a served by each	h fire station in NCI	R
		The second secon			

Sl. No.	Sub Region	No. of major fire stations	Population	Population per fire station
1	Delhi	61	16787941	275212
2	Haryana*	39	12202331	312880
3	Uttar Pradesh	31	18719180	603845
4	Rajasthan	14	6222641	444474
	Total	145	53932093	409103

* Excluding Gurugram, Karnal, Panipat districts

Source: Census of India 2011, DFS, GNCTD; NCR Planning and Monitoring Cell UP, Haryana, Govt. of Rajasthan





Source: https://economictimes.indiatimes.com/news/politics-and-nation/how-to-transform-public-safety-inindia/articleshow/48235446.cms?from=mdr





### **National Centre of Excellence**

- Major Objectives of National CoE are:
- a) Ecosystem of Cyber Security Technology Development and Entrepreneurship
- b) Translating R&D to Security Product
- c) Making Technology Stack of Security Products contemporary & cutting edge
- d) Investment Ecosystem for Security Entrepreneurship
- e) Market adoption of developed products
- f) India- Destination for R&D & Product Development
- ➤ Three Pillars of National CoE are:
- a) Technology-Use Cases, technology stacks, research, protocols and standards, Productization &
- b) Incubation-Product Development, Incubation (Onboarding), Mentoring & Guiding, Market Readiness, Investment
- c) Market Development:Pilots, Testing & Benchmarking,Implementation & Integration,Monetization & Licensing,Industry Connect & Campaigns,Adoption & Procurement

### Centre for Cybercrime Investigation Training & Research (CCITR)

- > Objectives are:
  - a) To build capacity of police, prosecution, judiciary in handling technology investigations.
  - b) Create standards operation procedures in cybercrime investigation
  - c) Research related to legal, technical and procedural aspects of cybercrime investigation
  - d) Improving the investigation and prosecution of cybercrime cases.
- ➢ Goals are:
  - a) To support the Police, Prosecution & Judiciary in handling technology investigations and develop capabilities.
  - b) Development of SOPs in Cyber Crime Investigations.
  - c) Provide help and guidance to local police in independently handling Cybercrimes.
  - d) Training & Certification for Police staff in the core areas like Cyber Security and Cyber forensics.
  - e) To perform Research in Digital forensics and Cybercrime investigation related policy issues.
  - f) Collaboration with national & international organizations working in Digital Forensics domain in building expertise.

### National Cyber Security Policy 2013- a brief

The National Cyber Security Policy 2013 prepared in consultation with all relevant stakeholders, user entities and public aims at:

- (1) Facilitating the creation of secure computing environment
- (2) Enabling adequate trust and confidence in electronic transactions and

(3) Guidingstakeholders' actions for the protection of cyberspace.

The National Cyber Security Policy document outlines a roadmap to create a framework for comprehensive, collaborative and collective response to deal with the issue of cyber security at all levels within the country.

### > The need to protect information:

National Cyber Security Policy 2013 should be seen as about **protecting of information**, such as personal information, financial/banking information, sovereign data etc.

- a) Information empowers, and in order to empower people with information, we need to secure the information/data.
- b) There is a need to distinguish between data which can freely flow and data which needs to be protected.
- c) The "National Cyber Security Policy" has been prepared in consultation with all relevant stakeholders, user entities and public.
- d) This policy aims at facilitating the creation of secure computing environment and enabling adequate trust and confidence in electronic transactions and also guiding stakeholders actions for the protection of cyberspace.
- e) The National Cyber Security Policy document outlines a roadmap to create a framework for comprehensive, collaborative and collective response to deal with the issue of cyber security at all levels within the country.
- f) The policy recognises the need for objectives and strategies that need to be adopted both at the national level as well as international level

#### > The objectives and strategies outlined in the National Cyber Security Policy

- 1. Articulate our concerns, understanding, and priorities for action as well as directed efforts.
- 2. Provide confidence and reasonable assurance to all stakeholders in the country (Government, business, industry and the general public) and global community, about the safety, resiliency and security of cyberspace.
- 3. Adopt a suitable posturing that can signal our resolve to make determined efforts to effectively monitor, deter and deal with cyber crime and cyber attacks.
- Salient features of the National Cyber Security Policy 2013. In brief, the National Cyber Security Policy covers the following aspects:
- a) A vision and mission statement aimed at building a secure and resilience cyberspace for citizens, businesses and Government.
- b) Enabling goals aimed at reducing national vulnerability to cyber attacks, preventing cyber attacks & cyber crimes, minimising response & recovery time and effective cybercrime investigation and prosecution.
- c) Focused actions at the level of Govt., public-private partnership arrangements, cyber security related technology actions, protection of critical information infrastructure and national alerts and advice mechanism, awareness & capacity building and promoting information sharing and cooperation.
- d) Enhancing cooperation and coordination among all the stakeholder entities within the country.
- e) Objectives and strategies in support of the National Cyber security vision and mission.

- f) Framework and initiatives that can be pursued at the Govt. level, sectoral levels as well as in public-private partnership mode.
- g) Facilitating monitoring key trends at the national level such as trends in cyber security compliance, cyber attacks, cyber crime and cyber infrastructure growth
- Need for NCSS 2020¹⁴⁰India was one of the first few countries to propound a futuristic National Cyber Security Policy 2013(NCSP 2013). Since the adoption of NCSP 2013, the technologies, platforms, threats, services and aspirations have changed tremendously. The transformational Digital India push as well as Industry 4.0 is required to be supported by a robust cyberspace. However, Cyber intrusions and attacks have increased in scope and sophistication targeting sensitive personal and business data, and critical information infrastructure, with impact on national economy and security. The present cyber threat landscape poses significant challenges due to rapid technological developments such as Cloud Computing, Artificial Intelligence, Internet of Things, 5G, etc. New challenges include data protection/privacy, law enforcement in evolving cyberspace, access to data stored overseas, misuse of social media platforms, international cooperation on cybercrime & cyber terrorism, and so on. Threats from organised cybercriminal groups, technological cold wars, and increasing state sponsored cyber-attacks have also emerged. Further, existing structures may need to be revamped or revitalised. Thus, a need exists for the formulation of a National Cyber Security Strategy 2020.

**Formulation** The Indian Government under the aegis of National Security Council Secretariat through a well-represented Task Force is in the process of formulating the National Cyber Security Strategy 2020 (NCSS 2020) to cater for a time horizon of five years (2020-25).

Vision Proposed vision is to ensure a safe, secure, trusted, resilient and vibrant cyber space for our Nation's prosperity.

**Pillars of Strategy** We are examining various facets of cyber security under the following pillars: -

a. Secure (The National Cyberspace)

- b. Strengthen (Structures, People, Processes, Capabilities)
- c. Synergise (Resources including Cooperation and Collaboration)

### > Cyber Security related updates:

- A National and sectoral 24X7 mechanism has been envisaged to deal with cyber threats through **National Critical Information Infrastructure Protection Centre (NCIIPC)**.
- Computer Emergency Response Team (CERT-In) has been designated to act as a nodal agency for coordination of crisis management efforts. CERT-In will also act as an umbrella organisation for coordination actions and operationalization of sectoral CERTs.
- A mechanism is proposed to be evolved for obtaining strategic information regarding threats to information and communication technology (ICT) infrastructure, creating scenarios of response, resolution and crisis management through effective predictive, prevention, response and recovery action

¹⁴⁰https://ncss2020.nic.in/

### **Indian Cyber Crime Coordination Centre (I4C)**

MHA has rolled out a scheme 'Indian Cyber Crime Coordination Centre (I4C)' for the period 2018-2020, to combat cyber crime in the country, in a coordinated and effective manner. The scheme has following seven components:

- a) National Cybercrime Threat Analytics Unit.
- b) National Cybercrime Reporting Portal.
- c) Platform for Joint Cybercrime Investigation Team.
- d) National Cybercrime Forensic Laboratory Ecosystem.
- e) National Cybercrime Training Centre.
- f) Cybercrime Ecosystem Management Unit.
- g) National Cyber Research and Innovation Centre.

### Functions:

The I4C will assist in centralising cyber security investigations, prioritise the development of response tools and bring together private companies to contain the menace.

#### **Objectives**:

- 1. To act as a nodal point in the fight against cybercrime
- 2. Identify the research problems/needs of LEAs and take up R&D activities in developing new technologies and forensic tools in collaboration with academia / research institutes within India and abroad
- 3. To prevent misuse of cyber space for furthering the cause of extremist and terrorist groups
- 4. Suggest amendments, if required, in cyber laws to keep pace with fast changing technologies and International cooperation
- 5. To coordinate all activities related to implementation of Mutual Legal Assistance Treaties (MLAT) with other countries related to cybercrimes in consultation with the concerned nodal authority in MHA

### Measures To Enhance Women Safety¹⁴¹

- Government approved Amendments in Criminal Laws in April 2018, inter-alia providing:
  - Stringent punishment for the offence of rape including death penalty if victim is a woman below 12 years
  - Investigation in rape cases within two months, and trial within two months of filing charge sheet
  - Anticipatory bail not permitted in case of rape of a minor (less than 12 years) or in case of gang rape
  - o Advance notice of 15 days to Prosecutor before Court decides bail
  - Appeal against trial court order to be decided within six months
- Measures related to MHA
  - Database on sexual offenders
  - Special forensic kits & training on evidence handling
  - o Setting up special forensic units in States/UTs
- Measures to be implemented by other Ministries
  - Setting up Fast Track Special Courts
  - Strengthening Prosecution machinery
  - o One-Stop Centre for each district
- The mandates given by the MHA involves increased use of IT, forensic sciences and crime statistics in delivery of criminal justice system.
- Woman Safety Division, MHA
  - a) Genesis & Mandate of Women Safety Division
    - MHA set up a new "Women Safety" division on May 28, 2018 with the primary mandate to
    - o Strengthen Measures for Safety of Women in the country
    - Instil a Sense of Security in Women
    - To be achieved through speedy and effective administration of justice in a holistic manner and by providing a safer environment for women
  - b) Mandate of Women Safety Division
    - Tasked with measures to tackle crimes against women and other vulnerable sections of the society (children, SC, ST, & elderly), as also prison reforms and anti-human trafficking
    - Responsible for policy formulation, planning, coordinating, conceptualizing and implementing projects/ schemes to assist States/ UTs to achieve this objective
- Important initiatives of Government to improve Women Safety are
  - i) Investigation Tracking System For Sexual Offences (ITSSO) -being used by all NCR states
    - An analytics tool for States to track & monitor progress in investigations in sexual offence cases using database on crime and criminals
    - From the granularity of FIR to an aggregate of State Database
    - Available to all States & Union Territories

¹⁴¹Shri Anil Subramaniam, Women Safety Division, MHA, GoI

- ii) National Database On Sexual Offenders (NDSO)
  - India is 9th country in the world to have a Sex Offenders Registry
  - Database derived from authenticated prison information system
- iii) Augment DNA Analysis
  - a) State-of-the-art DNA Analysis Centre operationalized at CFSL Chandigarh
  - b) Guidelines for collection of sexual assault evidence for Investigation Officers (IOs) and Medical Officers (MOs), notified-Also available on mobile
  - c) Training imparted to 6921 MOs, IOs and Prosecutors (BPR&D and NIC&FS)
  - d) 3120 Sexual Assault Evidence Collection Kits (SAECK) distributed to States/UTs 12000 more being distributed
- iv) Modernisation of FSLs in State/UTs
  - a) Rs. 108.00 crore has been approved in Modernisation of Police Forces scheme for 26 States for FSL upgradation
  - b) Rs. 131.09 crore approved under Nirbhaya Fund for strengthening DNA analysis and Cyber forensic facilities in 13 States/UT- Maharashtra, UP, Tamil Nadu, West Bengal, MP, HP, J&K, Punjab, Rajasthan, Mizoram, Manipur, Tripura and Delhi
- v) Emergency Response Support System
  - a) A single internationally recognized number 112 for all emergency services
  - b) Available through call, panic button in mobile phone, 112 India mobile App, email, website
  - c) 24/7 Computer Aided Dispatch of Field Resources
  - d) SHOUT facility to women through 112 India mobile App
  - e) ERSS has commenced in 28 States/UTs (The Delhi Police launched the single emergency helpline number '112' for immediate assistance in September 2019. Now, instead of '100, 101 and 102', the Delhi residents can just use '112.'.
- vi) 112 India Mobile App
  - a) One India, One Safety App, especially for Women
  - b) For both Android & iOS users
  - c) OTP based Registration for users and volunteers
  - d) 'SHOUT' feature to nearest volunteers and pre-registered emergency contacts in times of distress for quick response
- vii) Safe City Projects
  - a) Eight cities identified in Phase-I for implementation at a cost of ₹ 3080.16 Cr (Ahmedabad, Bengaluru, Chennai, Delhi, Hyderabad, Kolkata, Lucknow & Mumbai)
  - b) Projects developed by police in consultation with municipal bodies and other stakeholders
  - c) Involves mapping of crime hot-spots, creation of on-ground assets/ resources & behavior change programs to strengthen safety of women
  - d) Safe City Implementation Monitoring portal launched to map & track deployment of assets
- viii) Some examples of assets in Safe City Projects
  - a) Infrastructure & Resources such as Abhayam Vans, Modern Pink Toilets, Smart Street Lighting.
  - b) Technology Drone Surveillance
  - c) Social Outreach Community Outreach Programs on Safety Measures, Legal Literacy, Youth Connect, Self Defence Training etc.
  - d) IT initiatives- CCTNS
    - Crime and Criminal Tracking and Networks system (CCTNS) is data platform for police
    - Against approved project target of 14,306 police stations, 16,098 covered-214 over the last one year
    - Deployment underway in 833 Police Stations in Bihar (831) and Odisha (2) (to be completed by Dec 2020)

- Presently 28 Crore crime records available including 6.86 Crore FIRs
- 100% FIRs being digitally recorded in 15,007 Police stations. The Crime and Criminal Tracking Network and Systems (CCTNS), which was introduced in 2009, has data related to more than eight crore cases. FIRs logged in a pan-India police network CCTNS, which would enable investigators from any state to access data on crimes and criminals in real time.

### Assistance of Centre for Development of Advanced Computing (C-DAC)

NASSCOM has done futuristic work with various Governments including Govt. of Haryana. In NCR, working with Gurgaon Development Authority for safety and security of women. Also working the Ministry of electronics and information technology (MeitY) and NASSCOM, have joined the battle against Covid-19. Two start-ups incubated i.e. DronaMaps and BlinkIn to combat challenges posed by the deadly coronavirus that has claimed thousands of lives globally. DronaMaps has developed a live dashboard to track COVID-19 patients and their activities, and is working with Haryana and Punjab Governments. While BlinkIn from CoE Bengaluru has provided remote tech support to install air handling units at the COVID-19 field hospital in Wuhan at a time when the city was locked down.

Centre for Development of Advanced Computing (C-DAC) is scientifically assisting Ministry of IT and working in various recent technologies to design and develop the separate computer Param Series of nine computers.

#### **Technical Expertise of C-DAC**

- a) High Performance Computing
- b) Artificial Intelligence & Multilingual Computing
- c) Professional Electronics
- d) Health Informatics
- e) Cyber Security & Cyber Forensics
- f) Software Technologies
  - e-Governance / Geo-informatics
  - Block chain Technologies
- g) 5G, IoT, SDN, Edge Computing
- h) Education and Training

Objectives of Safe City Project Planning include the following, where technical assistance could be taken from C-DAC:

- a) Augment Citizen/women safety in public places roads, parks, markets, outside schools, colleges, metro/railway stations, ISBTs, etc. through CCTV surveillance. (Technology-enabled force-multiplier)
- b) Use Video Monitoring and Analytics Facial Recognition, person tracking, ANPR, etc. for speedy and effective emergency response to women in distress. (Technology-assisted policing)

### **Delhi Police initiatives**

- 1. <u>Emergency Response Support System (ERSS-112)</u> Vision of MHA, Govt. of India, to provide a single emergency response number '112' across the country:
- a) An automated system to handle different distress signals from citizens (voice, panic messages, email, web, 112 SOS App sms etc.), on a central platform
- b) Provides distributed dispatch facility of Police, Ambulance, Fire etc.

### 2. Objective of ERSS-112 project

- a) Establishing state of art ERSS-112 Control Room and infrastructure.
- b) Integrated handling of all type of calls like Police Assistance, Medical & Fire.
- c) Further improving response time of PCR Van to the caller location.
- d) Elimination of manual handling of calls & Proper accounting of events and action.
- e) Proper manpower & vehicle tracking and management.
- f) Providing online maintenance to the system and achieving best Minimum Breakdown Recovery (MBR).
- g) Achieving excellence in smart policing.

### 3. Other projects of Operation & Communication unit

- a) Safe City Project being developed in New PHQ building.
- b) Cyber Highway Project at old PHQ Building
- c) C4i (Integrated Command Control & Coordinator Center) at old PHQ Building.
- d) In 2009 Delhi Police having only 07 District but now it has been increased up to 15 District and till 2041 it will be more than 40 DCRs with Anti Drone system because of automation in material delivery.
- e) High Priority Calls Escalated in C4i, on Terrorist Attack, Explosion, Communal Riots, Murder, Dacoity, Rape, Robbery, Carjacking, Fire Major, Attempt to Murder, Snatching, Kidnapping
- f) Himmat a women safety mobile application.

### **UP Police Management System**

- i) UP Emergency Management System was earlier known as UP-100. Now it is 112 our response time is 10.4 minutes. Modern control room is located in Lucknow.
- ii) UP- 112 project was approved in December, 2015 inaugurated in November, 2016. On 7th january.2017 it was implemented in all 75 Districts of UP.
- iii) Objective of UP EMS-112. 24x7 assistance to citizens of UP. Anyone may reach 112 and all calls go through PRI lines call process. Communication Officer (CO) greets and voice gets recorded and stored, CO closes non-actionable calls, raise actionable to Despatch Officer(DO) through CAD software. DO will transfer high priority calls to Senior Despatch Officer (SDO). They have 500 SOPs and data recovery centre in Lucknow and Baghpat.
- iv) Transform police citizen interface where citizens are not required to go to police station. Daily feedback of 9500 calls is recorded. All calls have been recorded. Citizens can upload photographs, videos, documents of crime.
- v) UP Police has 3200 PRV cars. They have issued petro cards for each PRV. Digital mapping has been done for village boundaries and jurisdiction of police station.
- vi) UP police also uses GIS mapping of cities. Also developed ROIP radio over internet protocol. It is also available in Hindi language with CAD implementation.
- vii) Business intelligence tool is also used. Trend analysis and productivity analysis can be done. They can integrate it with Indian calendar.
- viii) 108 ambulance services is also integrated with UP-112
- ix) Citizen can avail services of Fire services through UP-112
- x) Citizen emergency app for missing persons. They have case monitoring police app for supervisor and officers and also have intranet dashboard from state level to police station level.
- xi) Integration with GRP. Prayagraj is small city command and control centre, 112 India app is also integrated with UPSRTC buses.
- xii) UP police has also launched SAVERA for senior citizens.

### Chapter-14-Tourism & Heritage

### Annexure-D-14.1

### World Heritage Sites, Centrally & State Protected monuments/ sites in NCR

Table 14 1 1.	World Heritage	Sites within	NCR and within	close provimit	v to NCR
1 apre 14.1.1.	wonu nenage	Siles within	NCK and within	close proximit	y to ner

W	orld Heritage Site in	Year	Location	Significance
N	CR			
1.	Keoladeo National Park	1985	Bharatpur, Rajasthan	Popular for man-made Wetland Bird Sanctuary, Hostspot for Ornithologists and Siberian Cranes.
2.	Humayun's Tomb	1993	Delhi	Popular for precursors to the Taj mahal and Mughal Architecture. It constitutes a Tomb, a Pavilion, Water Channels and a Bath. Built-in 1570, it has long-standing cultural significance because it was the first garden-tomb to be constructed in India.
3.	Qutub Minar and its Monuments	1993	Delhi	Qutub Minar, Alai Darwaza, Alai Minar, Qubbat-ul-Islam Mosque, Tomb of Iitunish, and Iron Pillar
4.	Red Fort Complex	2007	Delhi	Popular for Shahjahanaabad, Persian, Timuri and Indian Architectural Styles, Red Sandstone Architecture, Moti Masjid
W	orld Heritage Site arou	nd NCI	R	
1.	Agra Fort	1983	Agra, U.P.	16th-century Mughal monument. Fortress of red sandstone. It comprises the Jahangir Palace and the Khas Mahal, built by Shah Jahan; audience halls, such as the Diwan-i-Khas
2.	Taj Mahal	1983	Agra, U.P.	This is one of the Seven Wonders of the World.
3.	Fatehpur Sikri	1986	Agra, U.P.	Built during the second half of the 16 th century by Emperor Akbar, Fatehpur Sikri or 'The City of Victory,' also served as the capital of the Mughal empire for a short time period. It contains an array of monuments and temples, including one of the largest mosques in India, the Jama Masiid

4. Jantar Mantar	2010	Jaiour	Built in the early 18th century, Jantar Mantar is designed to observe astronomical positions with the naked eye. A set of 20 main instruments are installed in this site to make accurate observations.
5. Hill Forts of Rajasthan	2013	Rajasthan	This site includes six majestic forts situated in Chittorgarh, Kumbhalgarh, Sawai Madhopur, Jaisalmer, Jaipur and Jhalawar, all situated in the state of Rajasthan
6. Jaipur City	2019	Rajasthan	Walled city of Jaipur, famous for its grid plan-based architecture and buildings constructed with the pink facade

Source: Incredible India Portal, Ministry of Tourism

Table 14.1.2- Sub Region Wise Number of Centrally & State Protected Monuments, 2019

Sl. No.	Sub Region	Centrally Protected	State Protected
1	Delhi	174	19
2	Haryana	66	9
3	Uttar Pradesh	31	4
4	Rajasthan	24	38
Total NCR		295	70

Source: https://asi.nic.in/alphabetical-list-of-monuments-agra-circle/, https://asi.nic.in/protected-monuments-inuttar-pradesh/, RP 2021, SRP of Haryana, Report of Heritage Conservation Committee and Department of Archaeology, GNCT Delhi, https://asi.nic.in/protected-monuments-in-haryana/



Number of Centrally and State Protected Monuments in NCR

Table 14.1.3: Number of Monuments and Conservation areas listed by INTACH, 2019

Sub Regions	Haryana	Rajasthan	Delhi	Total
Monuments	334	85	1,208	1,627
Conservation Areas	0	0	26	26

Source: Indian National Trust for Arts and Culture Heritage.

Indian National Trust for Arts and Cultural Heritage (INTACH) has also listed 1,627 monuments and 26 conservation areas in the region that need to be protected. As much as 74 percent unprotected monuments are located in Haryana Sub-region. State wise details are given in Table 1.3 above. These heritage sites need to be identified and marked for appropriate protection.

Sub-region wise detail of man-made Heritage sites is provided below. There are many unprotected monuments, those monuments, which have not yet been identified as culturally valuable, but may be good examples of cultural/historical heritage, that is being slowly obliterated in traditional urbanscape. This is because neither of the Centre/State Archaeological Protection Acts recognizes them as possessing heritage value. These areas may or may not contain individual buildings, which qualify for protection, but when considered as an ensemble, they represent valuable heritage worthy of conservation. Definition of Monuments and related regulations, provided in the definition part.

Sl. No.	Name of the monument / site	Location
1	Bastion, where a wall of Jahan panah meets the wall of	Adchini
	Rai Pithora fort.	
2	Ramp and gateway of Rai Pithora's Fort	Adchini
3	Marble Tomb reputed to be that of Newab	Aliganj
	BahadurJawid Khan	
4	Lal Bangla	Babarpur(Kaka Nagar)
5	Khair-ul-Manzil	Babarpur Bazipur( Kakanagar)
6	Kos Minar or Mughal Mile stone	Babarpur Bazipur( Kakanagar)

Table 14.1.4 – ASI Protected Monuments in NCT Delhi, 2019

Sl. No.	Name of the monument / site	Location
7	The Moti Gate of Shershah, Delhi	Babarpur Bazipur( Kakanagar)
8	Begampuri Masjid	Begampur
9	Phool Chadar aquduct near Najafgarh Jhil aquduct	Chaukri Mubarakabad
10	Lal Gumbad	Chirag Delhi
11	Tomb of Bahlol Lodi	Chirag Delhi
12	Ajmeri Gate	Bazar Ajmeri Gate
13	Alipur Cemetery	Delhi-Alipur Camping group.
14	Ashoka'a pillar	Ferozabad(Ferozshah Kila or
		Vikram Nagar Colony)
15	Bara Khamba Cemetry	Imperial City
16	Chauburji	Ridge near Hindura Hospital
17	Eremo Cementry	Kishanaganj Railway Stn.
18	Delhi fort or Lal Qila, Naubat Khana, Diwan-i-am,	Red fort
	Mumtaz Mahal' Rang Mahal, Baithak, Maseu Burj,	
	diwan-i-Khas' Moti Masjid, sawan Bhadon ,Shah	
	Burj, Hammam with all surrounding including the	
1.0	gardens, paths, terraces and water courses.	
19	Delhi Gate	Daryaganj
20	Enclosure containing the grave of Lt. Edwards and	North Ridge near flag Staff tower,
0.1	others, murdered in 1857.	Civil Lines.
21	Enclosure wall with Tomb of Najaf Khan	Safdarjang Fly over
22	Flag Staff Tower	400 yards North of Cheuburji
22	Tenden Mandan	Mosque
23	Jantar Mantar	Connaught place
24	Kashmeri Gate and portion of the City Wall on either	Kashmeri Gate
	side of the Kashineri Gate of the side and of the	
	and including the water Bastions at the Northern corner	
	of the wall and also including the dith outside the City	
	wall where this is exposed	
25	Kotla Ferozabad with the remaining walls, bastions	Two furlangs east of jail and three
20	and gateways and gardens, the old Mosque, and well	furlangs due south of S.E. Corner of
	and all other ruins buildings it contains.	Shahjahanabad, Delhi.
26	Lal Darwaza, the northern gate of the outer walls of the	Three furlang due south of Delhi
	Delhi of Shershah.	Gate
27	Lothian Road Cemetery	Kashmeri Gate
28	The Mosque	Qudsia Garden
29	Mutiny telegraph Memorial	In front of Old Telegraph Building,
		Kashmeri Gate,
30	Nicholson (Or Kashmeri Gate) Cemetery	Kashmeri Gate
31	Nicholson statue and its platform and the surrounding	Outside Kashmeri Gate
	gardens paths and enclosure wall.	
32	Old Baoli immediately to the west of Hindu Rao's	On the ridge, Delhi
	House.	
33	The Old Entrance Gateway of the Garden.	Qudsia Delhi
34	The Pirghaib to the north and near Hindu Rao's House	On the ridge, Delhi
35	Portion of City wall near which Brij Jahn Nicholson	On the ridge, Delhi
	was mortally Wounded on 14th Sept., 1857.	

Sl. No.	Name of the monument / site	Location
36	The Punjabi gate in the Roshanara bagh	Opposite Municipal Board school,
		Subji Mandi
37	Purana Quila (Inderpat) or Delhi With all its walls	Two miles south of the Delhi Gate
	Arcades, gateways and Bastions, gardens, the Mosque	of Shahjahanabad, Delhi
	of Sher Shah (Kila Kohna Masjid). The Sher Mandala	
20	and entrances to Subteranean passages.	
38	Rajpur (Mutiny cemetery)	Old Rajpur Cantonment, North
20		Distt.
39	The remaining gateways of the old Magazira with their	The post office, Delni
40	Sher shah's gate with the adjoining curon walls and	Opposite purene Oile immediately
40	Bastions and the remains of the double line of structure	North-east of the Khairul Manazil
	to its front	Mosque
41	Site of Siege battery Known as the Sammy House	300 Yards East of mutiny memorial
	Battery bearing the following Inscriptions Battery ,	
	Sammy house, Major Remington Tank, RA	
	Commanding armament 89 pounds. To command	
	ground near Mori Bastion.	
42	Site of siege Battery with inscription.	East of the Hospital in police Line
43	Site of siege Battery with inscription.	Compound of Curzon House
44	Site of siege Battery with inscription.	In the garden near south west
		entrance to Delhi Club Ground
45	Sunehri Masjid near Delhi Fort	Delhi Fort
40	nond of Capi. Mac. Barnauothers who fall in an attack	Kishan Ganj
47	Tomb of Ghiasuddin Khan	Tughlagabad
47	Tomb of Roshanara Baradari	Sabzi Mandi
49	Tomb of Razia Begum in Mohalla Bulbuli Khana	Shahiahanabad
50	Tomb of Safdariang (Mirza Muqim Mansur Ali Khan)	Lodhi Road, New Delhi
	with all the enclosure walls, gateways, gardens and the	
	mosque on the eastern side of the garden.	
51	Tripolia Gateways	Delhi-Karnal Road
52	Uggar Sain's Baoli	Near Jantar Mantar
53	Tomb of Darya Khan	Kidwai Nagar East
54	Baoli at Ghiaspur	Nizammuddin
55	Tomb of Mirza Muzaffer, Chota Batasha No. 153,	Nizammuddin
50	Ghiaspur	Ni
50	Tomb of Mirzo Muzoffer Dara Datasha No. 151	Nizammuddin
57	Ghiaspur	Nizammuddin
58	Tomb of Nizamuddin Aulia Ghiaspur No. 197	Nizammuddin
59	Unknown tomb Ghiaspur 153.	Nizammuddin
60	i. The tomb of Ferozshah ii. Domed Building to the	Hauz Khas
	west of No.1 iii. Dalan between 12 iv. Domed Building	
	its court to the south of No. 3, v. Dalans and all ruined	
	Buildings to the north of no. 1 and existing upto No.10	
	vi. Five Chhatris to the case of No. 1 No.5 vii. Old	
	Gate to the north of No.6 viii. Three Chhatris to the	

Sl. No.	Name of the monument / site	Location
	north-west of No.7 ix. Ruined courtyard and its Dalans	
	with the Domed building to the north-west to the No.8	
	x. Old wall running east from No.4 xi. 2.23 Acres of	
	land surrounding the above monuments and bounded	
	on the North by house of Chhange and Mehra Chand	
	sons of Hansram and house of Uderam, son of Kusha	
	South Ghairmunkan Resta East By village site	
	belonging to village community house of Nots Zadar	
	sons of Jai Singh Chhamar and field Nos. 338 331	
	belonging to Naider and others West By field no. 185	
	belonging to Udaram, son of Kusal Jat and field No.	
	186 belonging to Jagins and Sajawal Rajput, No. 195	
	Ghairmunkin Johar, common of Jats and Musalmans	
	and filed no. 196, Ghairmunkin Pall.	
61	Bag-i-Alam Gumbad with a Mosque	Humayunpur
62	Kali Gumti	Humayunpur (Hauz Khas)
63	Tefewala Gumbad	Humayunpur Deer Park (Hauz
<u></u>		Khas)
64	Arab Sarai	Patti, Ghiapur in Hauz Inderpat
65	The Gate way of Arab Sarai facing North towards	Near Arab Sarai Village
((	Purana Qila	Norm Anal. Come Village
00	tomb of Humanun	Near Arab Sarai Village
67	Demoining Cotonnayoun	Near Arab Sarai Villaga
07	Ruhalima	Near Arab Sarar Village
68	Lakhar wal Gumbad (Tomb)	Indernat Estate (Sunder Nurserv)
00	Lakhar war Gumbad (10mb)	Near Delhi Public School Mathura
		Road Nizamuddin
69	Sunderwala Buri	Inderpat Estate (Sunder Nursery)
70	Sunderwala Mahal	Inderpat Estate (Sunder Nursery)
71	Bijay Mandal, neighbouring domes, buildings and	In village Kalusarai (Sarvapriya
	dalan to north of Begumpur	Vihar)
72	Old Lodi Bridge with approaches	Near tomb of Sikander Lodi,
		Khairpur
73	Mosque with the dalans and courtyard and the Bara	Khairpur
	Gumbaj (the domed entracne to the mosque)	-
74	The tomb of Mohammed Shah known as Mubarak	Khairpur
	Khan- Ka-Gumbaz	
75	Tomb of Sikander Lodi with its enclosure wall and	Khairpur
	bastions, gates compound	
76	Unknown tomb with blue tiles decoration known as	Khairpur
	Shisha Gumbad	
77	Bandi or Poti ka Gumbad III-280	Kharera village between Hauz Khas
		and Qutab road
78	Biran-Ka-Gumbad-282	Kharera village between Hauz Khas
		and Qutab road
79	Biwi or Dadi-ka-Gumbad-281	Kharera village between Hauz Khas
		and Qutab road

Sl. No.	Name of the monument / site	Location
80	Chor Minar No. 289 Vol III	Kharehra (Hauz Khas Enclave)
81	Choti Gunti	Kharehra village Green Park
82	Idgah of Kharehra No. 287, Vol III	Kharehra village Hauz Khas Enclave
83	Nili Mosque	Kharehra village Hauz Khas Enclave
84	Sakri Gumti-284	Kharehra village Green Park
85	Khirkee Masjid	Village Khirkee
86	Satpula-III –216	Village Khirkee
87	Tomb of Usuf-Quttal	At Khirkee in field no.81 min,
		Property of Shamlat deh.
88	Jahaz Mahal	Mehrauli
89	Shamsid Tallab together with platform entrance gates.	Mehrauli
90	Moti Masjid	Mehrauli
91	Old Palace of Bahadur Shah II alias Lal Mahal in	Mehrauli
	Mehrauli	
92	Bara Khamba-285	Kherera village tombs between Hauz
		Khas, Qutab raod
93	The Qutab Archaeological area as now fenced in,	Mehrauli
	including the Mosque, Iron Pillar, Minar of Qutab-din,	
	unfinished Minar, all colonnads, screen arches, tomb of	
	Altmash, college, buildings of Aluddin, Tomb of Imam	
	Zamin and all carved stoens in the above area with	
	gardens, pains and water channels, and all gateways	
	above area	
9/	Tomb of Adam Khan (Rest House)	Mehrauli
95	Tomb and Moscue of Maulana Jamali Kamali	Mehrauli
96	Wall mosque	Mehrauli
97	Walls of Lal Kot and Rai Pithora's fort from Sohan	Mehrauli Kh. No. 1783, 1765, 1766
71	Gate to Adam Khan's tomb including the ditch where	1767
	there is an outer wall	1770, 1772, 1773, 1798 1764
98	Walls of Lal Kot and Rai Pithora's fort at the point	Near Jamali Kamali's Mosque
	where they meet together	Mehrauli Kh. No. 1754, Loddho
		Sarai Kh.No. 86,87
99	Wall of Rai Pithora's fort including gateways and	Mehrauli
	bastions	
100	Gates and walls of Mubarakpur, Kotla in village	Village Mubarakpur, Kotla
	Mubarakpur	
101	Moti-ki-Masjid	Behind south extension Part II.
102	Inchla Wali Gunti	village Mubarakpur, Kotla
103	Kala Gumbad	village Mubarakpur, Kotla
104	Tombs of Bade-Khan, and Mubarakpur Kotla, Kotla	village Mubarakpur, Kotla
105	Tombs of Chote Khan, Mubarakpur	Kotla
106	Tomb of Mubarik in Mubarakpur, Kotla	village Mubarakpur, Kotla
107	Mosque attached to Mubarak shah Tomb	village Mubarakpur, Kotla
108	Tomb of Bhura Khan	village Mubarakpur, Kotla
109	Tin Burji Walla Gumbad	Mohammed pur village II, 304
110	Unnamed tomb	Mohammed pur village, 305
111	Baoli	Munirka II. 318.

Sl. No.	Name of the monument / site	Location	
112	Munda Gumbad	Munrika 302.	
113	Unnamed Mosque	Munirka 314.	
114	Unnamed Tomb	Munirka 313.	
115	Unnamed Tomb	Munirka 315.	
116	Unnamed Tomb	Munirka 316.	
117	Unnamed Tomb	Munirka 317.	
118	i.Unnamed Mosque	Munirka 321, Munirka 322	
	ii.Unnamed Tomb		
119	Wajir pur- ki-Gumbad	Munirka 312.	
120	The Afsah-walla-ki-Masjid situated outside the west	Nizammudin	
	gate of Humayun's tomb with its dalans and paved		
	court bounded on the east by Humayun's tomb on the		
	west by Abadi Arab Sarai on the north by road and		
	Khasra No. 252 and on the south by Abadi Arab Sarai		
121	Bara Khamba outside north entrance to shrine	Nizammudin	
122	Bara Pulah bridge near Nizammudin	South of Nizammudin	
123	Chausath Khamba and tomb of Mirza Nizammudin	Nizammudin	
	Aziz-ka-Kokaltash		
124	Grave of Jahanara Begum	Nizammudin	
125	Grave of Mohammed Shah	Nizammudin	
126	Grave of Mirza Jahangir	Nizammudin	
127	Humayun's tomb, its platforms, garden, enclosure	Nizammudin	
	walls and gateways Khasra No. 258 bounded on the		
	east by Khasra No.180181244 of Miri Singh and on		
	west by Kh. No. 268253 on the north by Khasra No.		
	266, on the south by Kh No. 245 of Miri Singh Kh. No.		
100	248 249 of Sayyed Monummad	Ni-ommedia	
128	Nha Gumbad outside the south corner of the enclosure	Nizammudin	
	01 Humayan's tomb (Kh. No. 212) bounded on the east		
	hy Kh No. 182 on the west by Humayun's tomb on		
	the north by Kh. No. 181 on the south by Kh. No. 244		
	of Miri Singh		
129	Nili Chhatri or Subz Burz	Nizammudin East	
130	Tomb of Afsar-wala immediately near to the south of	Nizammudin	
100	Afsar-wala-ki-Masiid		
131	Tomb of Atgah Khan	Nizammudin	
132	The tomb of Isa Khan with its surrounding enclosure	Nizammudin	
	walls and turrest garden gateways and mosque (Kh.		
	No. 281 ) bounded on the east by Arab Sarai Kh.		
	No.236 on the west by Kh. No. 283 graveyard of Piare		
	Lal and K.No.		
	283 of Bddon on the north by Kh. No. 236 of Pandit		
	Brij Vallabh and on the south by Arab Sarai Kh. No.		
	238.		
133	Tomb of Khan-i-Khana	Nizammudin	
134	Tomb with three domes near Rly.Station	Nizammudin	
135	Sikargah Kushak-II -327	Old Kushak Village	

Sl. No.	Name of the monument / site	Location
136	Gateways of Badli-Ki-Sarai	Village Pipalthala
137	Tomb of Sheikh Kaburuddin also known as Rakabwala	Malviyanagar
	Gumbad in field no.84 min. situated at sarai Shah 31	
	property of Thoks Shahpur and Adhehini	
138	Ruined line of walls, bastions gateways of siri Kh. No.	Shahpur Jat
	88, 265 447 at village Shahpur Jat	
139	Internal buildings of Siri Mehammadi wali-Kh. No. 14	Shahpur Jat
	Shahpur Jat Bul-Bul-Ki-Kh. No. 256 Shahpur Jat	
	Makhdum ki Kh. No. 255 Shahpur Jat Baradari	
	Snanpur Jat Motiyan wala dome Snanpur Jat Inana	
140	Nai ka kot	Tughlagahad Kotla
140	Tomb of Chivasuddin Tughlagahad walls and	Tughlagahad
141	hastions gates and cause way including the tomb of	i uginaqabad.
	Dad Khan	
142	Tomb of Mohammed Tughlagabadshah	Badarpur Zail
143	Walls of old city of Tughlagabad.	Badarpur Zail
144	Walls, gateways bastions and internal buildings of both	Tughlagabad.
	inner and outer citadels of Tughlagabad fort	- uginaque au
145	Walls, gate and bastions of Adilabad (Mohammadbad)	Tughlaqabad.
	and causeway leading there to from Tughlaqabad.	
146	The Tomb	Wazirabad
147	The mosque	Wazirabad
148	Neighboring Bridge	Wazirabad
149	Mound known as Jaga Bai comprise in part of survey	Jamia nagar
	plot no. 167	
150	Ashoka rock Edict	East of Kailash colony
151	Mandi Mosque	Ladho Sarai
152	Rajon-ki-Bain with Mosque and Chhatri	Ladho Sarai
153	Badun Gate	Ladho Sarai
154	Gateway of Lal kot	Ladho Sarai
155	Gateway of Rai Pithoria's fort	Ladno Sarai
156	Walls of Rai Pitnora's fort and Janan Panan at the	Hauz Kani add Lado Sarai
157	Tomb of Sultan Ghari	Nalikpur Kohi
157	Baoli known as diving wall locally known as (Candak-	Mehrauli
150	ki-baoli)	Weinaun
159	Enlosure containing the tomb of Shah Alam Bahadur	Mehrauli
107	Shah. Shah Alam to and Akbar Shah II	
160	Houz Shamsi with central red stone pavilion situated at	Mehrauli
	Mehrauli in field No. 157-81, 1586-97, 1614 1624	
161	Iron Pillar Hindu	Mehrauli
162	Anceint Mosque	Palam
163	Sheesh Mahal	Shalimar Garden Village Hyderpur
164	Ashokan Pillar	On the Ridge between Hindu Rao
		Hospital
165	Sarai Shahji	Malaviya Nagar
166	Azim Khan Tomb	Lado Sarai

Sl. No.	Name of the monument / site	Location
167	Mazar of Sheikh Muhammad Ibrahim Zauq	ChindBagh, Kadam Sherif,
		Paharganj, Delhi
168	Fortification Wall Asad Burj, Water gate, Delhi Gate,	Red Fort, Delhi
	Lahori Gate, Jahangiri Gate, Chhattra Bazar, Baoli	
169	Fortification walls, Gates, Bastions and Ancient	Bela Road
	Buildings of Salimgarh Fort	
170	Portion of the City Wall of Shahajanabad	Ansari Road
171	Sat Narain Bhawan	Sat Narain Bhawan, Delhi Sadhora
		Khurd, Dina
		Nath Marg, Roshanara Road, New
		Delhi.
172	Balban Khan's Tomb Jamli Kamali	Lado Sarai, Mehrauli, Delhi
173	Unknown Tomb in the vicinitty of Jawahar Lal Nehru	Pragati Vihar, New Delhi
	Stadium	
174	Mazar of Mirza Ghalib	Nizammudin

Source: https://asi.nic.in/alphabetical-list-of-monuments-delhi/

Table 14.1.5 - Protected Monuments in UP Sub Region, 2019

S. No.	District	Location	Centrally Protected (Number)	State Protected (Number)
	1	2	3	4
1		At the junction of Meerut-Delhi road	Cemetery at the junction of Meerut – Delhi Road	
2		Sardhana	<ul><li>i) Begum's Palace, (ii) Roman Catholic Church</li><li>(iii) Tombs or Sardhana Cemetery</li></ul>	i)
3	Meerut	Hastinapur	Mound known as Ulta Khera and the mound or Raghunathji	Baleshwarnath Temple (ii)
4		Servara	Two mounds (Kheras) named Khorkali and Jalapar	Mahal
5		Meerut	i) Andhra Court, a high brick fortress supposed to have been built by Mahi, (ii) Cemetery of the Meerut racecourse, (iii) Tomb of Shah Peer	
6	Ghaziabad	Paragana put, Mustafabad	Raja Karan ka khera	
7		Ahar	Several large tumuli (Kheras) in and about Ahar.	
8	Bulandshahr	Chandok	Ruins of an old temple known as Chandrani-ka- Mandir	
9		Bulandshahr	Balai Kot or Upper Fort	
10			Large mound known as Moti Bazaar	

S. No.	District	Location	Centrally Protected (Number)	State Protected (Number)
	1	2	3	4
11			Two cemeteries	
12			Ahirpura mound or lesser temple mound	
13		Indor	Kundanpura mound or the great temple mound	
		Indor	Lofty mound with a small village perched on the	
14			east northeastern side of it.	
15		Shikarpur	Khera or mound called Talapatnagari or Myaji Khera	
16		Dankaur	Masonry tank and ancient temple	
17		Bamnauli	Ancient mound at Kasuri	
18	Baghpat	Alamgirpur	Mound known as Parasu Ram ka Khera	
19		Barnawa	Mound known as Lakha Mandap	
20	Gautam Buddh Nagar	Gulistanpur	Archaeological Site Remains comprised in Survey Plot Nos. 736, 738/2, 738/3 parts of Survey Plot Nos. 737, 738/ 1 and 738 / 1 and 738 / 4 as shown in the site plan	
21		Majhera	Octagonal Wall	
22		Majhera	Tomb of Diwan Saiyed Mohammad Khan	i) Mausoleum of Baba
23	Muzaffarnagar	Majhera	Tomb of Saiyed Umar Nur Khan	Garibnath (ii)
24	24	Majhera	Tomb of Saiyed Saif Khan and his mother	Makbara,
25		Majhera	Tomb Saiyed Hussain also called Sayed Chajju Khan	Bantikheda
26	Shamli	Jinhana	Mosque and Tomb of Shah Abdul Razak and his four sons	

Source: https://asi.nic.in/alphabetical-list-of-monuments-agra-circle/, https://asi.nic.in/protected-monuments-inuttar-pradesh/

Table 14.1.6 - Protected Monuments in Rajasthan Sub Region, 20	)19
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S. No.	District	Location	Centrally Protected	State Protected
	1	2	3	4

S No	District Location Centrally Protected		State Protected	
5. 110.	1	2	3	4
	Alwar	Rajgarh	2 (Bhangarh, Nil kanth Maha Dev)	2 (Rajgarh ka Kila, Badgujron ki Prachin Prasad, )
1		Alwar		6 (Rajpradad, Bala Kila, Musi Maharani ki Chhatri, Krishna Kund, Tripoliya, Fathe Jaung Gumbad)
		Tijara		4 (Bhrithari Gumbad, Khanjado ki Kabra, Kila Indore, Pathan ki Kabra)
2		Bayana	7 (Akbar's Chhatri, Ancient Fort with its monuments, Jahangir's Gateway, Jhajri, Lodhi's Minar, Saraj Sad-ul-lah, Usha Mandir)	3 (Kale Khan Ka Makbara, Cggatri of twelve pillars, Cenotaphs in the way of Vijay Mandir Garh)
	Bharatpur	Bharatpur	5 (Fateh Burj near Anah Gate, Fort walls gate and approach Bridge at the Chowburja and Ashtadhatu Gate, Jawahar Burj and Ashtadhatu Gateway, Moat surrounding the fort wall)	2 (Kishori Mahal's complete premises, Choburza/Gadhi Khernkaran)
		Brahmawad	2 (Idgah, Islam Shah's gate)	
		Deeg	3 (Deeg Bhawans, Looted Gun, Marble Jhoola)	2 (Kila, Prachin Prasad Chhatta)
		Kaman	1 (Chaurasi Khamba Temple)	10 (Karneshwar Mahadev Ka Mandir, Akbar ke Kos Chinha, Lal Darwaja, Ancient Well, Well of Dharamraj, Shri Krishan Ke paad and Gau Charan Chinha Khasra No. 1 & 198, Temple of Kedar Nath, Bhojan Thalian and two Katore, Cave of Bhaurnasur and Swing, Prachin Prasad)
		Malah	1 (Ancient Mound)	
		Noh	2 (Ancient Mound, Colossal Image of Yaksha)	
		Rupbas	1 (Lal Mahal)	1 (Baldevji Ka Mandir)
		Weir		2 (Kila, Prasad Tatha Vatika)
		Satwas		1 (Temple of Surya)
		Sahsan		1 (Muslim Kabren and Sahale Khan

S. No.	District	Location	Centrally Protected	State Protected
	1	2	3	4
				ki Kabren)
		Gangour Soti		1 (Cenotaphs of Holkar)
		Kumher		2 (Jal Mahal, Prachin Prasad)
		Nadbai		1 (Mohammad Gauri ke Senapati ki Chhatri)

Source: Govt. of Rajasthan and SRP for Bharatpur

### Table 14.1.7- Protected Monuments in Haryana Sub Region, 2019

S. No.	District	Centrally Protected	State Protected
	1	2	3
1	Gurugram		Shishmahal, Dehra Temple
2	Mahendragarh	NA	Mosque of Pir Turkman and Tomb, Tripolia Gateway, Tomb of Shah Nizam, Chor Gombaj, Shobha Talav, Chatta Rai Bal Mukund Das, Throne of Mirza Ali Jaan and Baori

Source: https://asi.nic.in/protected-monuments-in-haryana/

Table	14.1.8-	Maior	Museums	in NCR
I ubic	14.1.0	major	mascants	mnon

Museum Name	Location	Specialty
1. National	Janpath, Delhi	Boasting of over 200,000 works of foreign and
Museum of		Indian art, this museum covers more than 5,000
India,		years of worldwide rich cultural heritage.
		It is home to a plethora of departments such as
		archaeology, manuscripts, pre-history archaeology,
		paintings, arms and armour and much more
2. National	Jaipur House,	Being a premier art gallery under the Ministry of
Gallery of	Shershah	Culture, Government of India; The National Gallery
Modern Art	Road, Delhi	of Modern Art is one of the world's largest modern
		art museums to visit in Delhi with more than 14, 000
		works by renowned and reputed Indian and foreign
		artists of worldwide fame.
3. National	Pragati	One of the largest crafts museums in Delhi NCR.
Handicrafts and	Maidan,	Museum is home to over 35, 000 distinctive pieces
Handlooms	Bhairon Marg,	of craft; all of which reflect the amazing skills and
Museum	Delhi	craftsmanship of Indian craftsmen via embroidery,

			paintings, textiles and clay, wood and stone craft items.
4.	National Rail Museum	Chanakyapuri, Delhi	Focusing mainly on India's rail heritage, the National Rail Museum has both outdoor and indoor exhibits with a toy train ride which allows visitors to cover the entire museum on regular days. Home to a fascinating collection of more than 100 real size exhibits of the Indian Railways, one can find displays of static and working models, historical photographs, antique furniture and signalling equipment in this best museum in Delhi.
5.	National Museum of Natural History ¹⁴²	Tansen Marg, New Delhi	An institution devoted to environmental education, displays a life size model of dinosaur in front of the museum. It introduces the visitors to natural history and ecology, having a large collection of stuffed animals and birds.
6.	Gandhi Smriti	5 Tees January Marg, Delhi	Previously known as Birla House or Birla Bhawan, Gandhi Smriti is a museum in Delhi dedicated to Mahatma Gandhi. It is the very place where Mahatma Gandhi spent the last few months of his life and was then assassinated.
7.	Nehru Memorial Museum & Library	Teen Murti Bhawan, Delhi	This institution aims to preserve, recollect and reconstruct history during India's struggle for independence. More than 2, 50, 000 printed books, 1, 50, 000 photographs and 8, 000 audio tapes reveal information on Nehru and the Indian freedom movement in this museum in Delhi NCR.
8.	National Science Centre	Pragati Maidan, Bhairon Marg, Delhi	National Science Centre is part of NCSM or National Council of Science Museums and is the first and best museum in Delhi under this council. The entire exhibit spans over 4 floors and is extremely popular amongst students. Six permanent halls hold interesting exhibits which are a must-visit for all.
9.	National Philatelic Museum		This museum is immensely popular and interesting. Operated by the Department of Post, the National Philatelic Museum is known for its amphitheatre, library and display of postage stamps. An area has also been dedicated for people to view artists at work. It has Post-independence era stamps & Philatelic workshops.
10	. Metro Museum	Patel Chowk Metro Station, Delhi	This is one of the best museums in Delhi which is also quite unique in nature. It is South Asia's first modern metro museum which showcases the Delhi

¹⁴² Source: <u>http://letusgoto.com/2017/02/28/museums-in-delhi/</u>
		Metro along with the genesis, journey and history of DMRC or Delhi Metro Rail Corporation in details.
11. Supreme Court Museum	Tilak Marg, Supreme Court, Delhi	The main aim of this museum in Delhi NCR is to preserve, display and protect extremely rare manuscripts, files, photographs, objects, artefacts and manuscripts which depict the nation's Justice Delivery System's legal growth and heritage.
12. Sangeet Natak Akademi Museum	Rabindra Bhawan, Delhi	Amongst all museums in Delhi, this one aims to preserve and promote performing arts in the nation and along with maintaining a museum, it also houses a gallery of musical instruments. Visitors can witness the rich heritage of performing arts from all over the nation.
13. Tribal Museum	Thakkar Bapa Smarak Sadan, Delhi	It showcases the diverse and fascinating tribal culture of the nation and aims to preserve some of its rare insights and artefacts. You will get a complete glimpse of the tribal way of life here along with several murals on the walls.
14. National Children's Museum	Kotla Road, Delhi	This is a unique educational museum in Delhi especially for children and is home to a plethora of jewellery, toys, dolls and musical instruments. It mainly aims to enhance creativity amongst children of all ages and also holds regular workshops and classes on creative arts.
15. Indian Air Force Museum	Palam, Delhi	This museum features a gallery containing historic memorabilia, photographs, personal weapons and uniforms of the Indian Air Force since its inception years ago. Visitors can also view a small aircraft, large aircraft and Air Force inventory here.
16. Shankar's International Dolls Museum	Nehru House, Delhi	Museum in Delhi was set up by K. Shankar Pillai, a political cartoonist. Home to around 6,500 dolls from more than 80 countries, this is a popular Museum amongst children and adults alike.
17. Sanskriti Museums ¹⁴³	Mehrauli- Gurgaon Road, Anand Gram, Delhi	This museum is actually a set of three museums in Delhi which are the Textile Museum, Museum of Indian Terracotta and Museum of 'Everyday Art'. The diverse showcase of Indian Textile heritage and several objects related to terracotta art, figures and sculptures can be found in the first 2 museums respectively. In the last museum, visitors will find daily household objects being turned into pieces of art.

¹⁴³ Source: **25 OF THE MUST-VISIT MUSEUMS IN DELHI -** <u>https://www.treebo.com/blog/museums-in-delhi/#respond</u>

18. Archaeological	Red Fort,	Set inside the Red Fort, the Department of
Museum &	Delhi	Archaeology runs this museum. Built as an honour
Indian War		to soldiers who'd been part of WWI, this war
Memorial		memorial cum museum now houses dioramas and
Museum		weaponry including guns, swords and khurkis. The
		last two galleries are super-impactful, showing the
		use of modern technology in war, which
		includes telephones, radios and periscopes.
		The Archaeological museum also has objects from
		the Mughal period on show.

#### Museums development project(s) already proposed by the Govt. of India:

- 1. Budget 2020-21 has proposed five archaeological sites to be developed as iconic sites with on-site Museums. These should be completed in next 3 years. The proposed museums sites amongst other also include **Hastinapur** (UP) in NCR and another **Rakhigarhi** (**HR**)-**Hisar** at close proximity to NCR.
- 2. Guidelines for Museums adopted by ASI in 2013 should be practiced for Museum Development for all site museum of ASI:
  - a. Research and Dissemination
  - b. Preservation and Conservation
  - c. Interpretation and Presentation
  - d. Education and Outreach
  - e. Visitor Services and Amenities
  - f. Administration and Management

## Annexure-D-14.2

 Table 14.2.1: Percentage Shares and Rank of Different States/UTs in Domestic and Foreign Tourist

 Visits, During 2018

S.	State/UT	2018	(R)	Percentag	e Share	Rank 2	2018
No.		Domestic	Foreign	Domestic	Foreign	Domestic	Foreign
1	Andaman & Nicobar Island	498279	15242	0.03	0.05	31	28
2	Andhra Pradesh	194767874	281083	10.50	0.97	4	16
3	Arunachal Pradesh	512436	7653	0.03	0.03	30	30
4	Assam	5856282	36846	0.32	0.13	22	26
5	Bihar	33621613	1087971	1.81	3.77	14	9
6	Chandigarh	1538796	39681	0.08	0.14	25	25
7	Chhattisgarh	19329501	14399	1.04	0.05	16	29
8	Dadra & Nagar Haveli	609435	1608	0.03	0.01	29	34
9	Daman & Diu	898824	5694	0.05	0.02	28	32

#### <u>Annexure</u>—Draft Chapter for RP-2041 for NCR: Environment

10	Delhi *	29114423	2740502	1.57	9.49	15	4
11	Goa	7081559	933841	0.38	3.23	21	10
12	Gujarat	54369873	513113	2.93	1.78	9	12
13	Haryana	4888952	73977	0.26	0.26	23	23
14	Himachal Pradesh	16093935	356568	0.87	1.23	18	14
15	Jharkhand	35408822	175801	1.91	0.61	13	17
16	J&K	17076315	139520	0.92	0.48	17	20
17	Karnataka	214306456	543716	11.55	1.88	3	11
18	Kerala	15604661	1096407	0.84	3.80	19	8
19	Lakshadweep	10435	1313	0.00	0.00	36	35
20	Madhya Pradesh	83969799	375476	4.53	1.30	8	13
21	Maharashtra *	119191539	5078514	6.43	17.59	5	2
22	Manipur	176109	6391	0.01	0.02	33	31
23	Meghalaya	1198340	18114	0.06	0.06	27	27
24	Mizoram	76551	967	0.00	0.00	35	36
25	Nagaland	101588	5010	0.01	0.02	34	33
26	Odisha	15208540	110818	0.02	0.38	20	21
27	Puducherry	1616660	141133	0.09	0.49	24	19
28	Punjab	44595061	1200969	2.40	4.16	11	7
29	Rajasthan	50235643	1754348	2.71	6.08	10	5
30	Sikkim	1426127	71172	0.08	0.25	26	24
31	Tamil Nadu	385909376	6074345	20.80	21.04	1	1
32	Telengana	92878329	318154	5.01	1.10	6	15
33	Tripura	414388	102861	0.02	0.36	32	22
34	Uttar Pradesh	285079848	3780752	15.37	13.09	2	3
35	Uttarakhand	35609650	151320	1.92	0.52	12	18
36	West Bengal	85857365	1617105	4.62	5.60	7	6
	Total	1854933384	28872384	100.00	100.00		

Source: State/ Union Territory Tourism Departments. (R): Revised, * Figure of 2017 repeated for 2018

Source: India Tourism Statistics, 2019





# Figure 14.2.1: Percentage Shares and Rank of Different States/UTs in Domestic and Foreign Tourist Visits, During 2018

Source: India Tourism Statistics, 2019

Table 14.2- Sub Region Wise number of Domestic and Foreign Tourists in 2010, 2015 and 2	Table	e 1	4.2-	Sub	Region	Wise	number	of.	Domestic	and H	Foreign	$T_{c}$	ourists	in	2010.	2015	and	20	18	3
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Sl. No.	Sub Region	D	Oomestic Touri	st	Foreign Tourist			
	U U	2010	2015	2018	2010	2015	2018	
1	Delhi	13558000	25258000	29114000	1893000	2379000	2740000	
2	Haryana	3980296	4406612	3865848	79340	193264	150690	

3	Uttar Pradesh	11636725	15918855	14911638	38474	52467	61335
4	Rajasthan	153426	196190	276826	21870	11234	12801
Τα	otal NCR*	29328447	45779657	48168312	2032684	2635965	2964826

*Excluding Bharatpur

Source: Website of Ministry of Tourism, Government of India for Delhi State only/ DTTDC , NCR Cell, Uttar Pradesh, Govt. of Rajasthan, Statistical Abstract Haryana 2009-10,2014-15,2017-18





#### Number of Foreign Tourists in NCR







Sub Region Wise Foreign Tourists

- 1. In NCR, between 2010 to 2015 there has been an increase in domestic tourists from 293 lakhs to 457 lakhs. In other words, it increased to 164 lakhs. However, the rise is not much between 2015 to 2018. An increase of 24 lakhs only has been observed. The same has also been reflected in the above figure of domestic tourists in NCR which shows that a steep increase has been observed between 2010 to 2015, however the increase is gentle between 2015 to 2018.
- 2. In NCR, between 2010 to 2015 there has been an increase in foreign tourists from 20 lakhs to 26 lakhs. In other words, it increased to 6 lakhs. However, the rise is not much between 2015 to 2018. An increase of 3 lakhs only has been observed. The same has also been reflected in the above figure of foreign tourists in NCR which shows that a steep increase has been observed between 2010 to 2015, however the increase is gentle between 2015 to 2018.
- 3. In Delhi, an increase in the trend of both domestic and foreign tourists have been observed.
- 4. In Haryana Sub Region, there has been an increase in number of domestic tourists between 2010 to 2015, however a declining trend has been observed between 2015 to 2018. It reduced from 44 lakhs in 2015 to 39 lakhs in 2018. Even in case of foreign tourists, the number got declined from 1.9 lakhs to 1.5 lakhs between 2015 to 2018. Hence, a declining trend in number of domestic and foreign tourists has been observed in this sub region.
- 5. In Uttar Pradesh Sub Region, an increase in number of domestic tourists have been observed between 2010 to 2015. However, a decline in the same have been observed between 2015 to 2018. It was 159 lakhs in 2015 which got reduced to 149 lakhs in 2018. In other words, between 2015 and 2018, there has been a decline of 10 lakh domestic tourists. In UP Sub Region, an increasing trend in case of foreign tourists have been observed between 2010 to 2018. The number got increased from 38,000 in 2010 to 61,000 in 2018.
- 6. In Rajasthan Sub Region, an increasing trend in number of domestic and foreign tourists have been observed between 2010 to 2018.

Annexure-D-14.3

# Key Issues & Challenges related to development of Heritage, Culture & Tourism activities in NCR

Despite having 1000-1500 monuments in and around Delhi, with places like Zahaaj Mahal, Jharna Mahal having 1000 years of history, they are not getting enough visitors. This potential is still to be exploited. Further, despite impressive range of its superb cultural, natural, and spiritual endowments and sharp increase in tourist arrivals in recent years, the region's share of world tourism remains insignificant. Major issues related to development of the sector are identified are as under:

- 1) **Connectivity Problems:** NCR's connectivity is limited and focal to NCT Delhi, thus acting as a constraint to tourism growth in the region. There is only one major domestic and international airport at New Delhi thus restricting the air access within the NCT Delhi. The road connectivity to the destinations within the NCR is limited to the State and National Highways but not as effective last mile connections to the specific sites. In order to provide easy and quick access to these destinations within NCR, a tourist specific multi-modal transit facility should be planned ranging from Heli-services, NCR cab services, Tourist coach services, dedicated tourist suburban railway trains, etc.
- 2) **Inadequate Destination Infrastructure:** Utilities and civic services, such as water, sanitation and solid waste management are inadequate and do not provide safe and attractive environments for visitors. Lack of visitor information and interpretation facilities is limiting proper interpretation of the NCR's cultural heritage. There is an urgent need to improve the infrastructure and services in these sites most of which are National and State protected monuments.
- 3) Lack of Product Identity: The cultural and natural edifices/resources in the region seriously lack any product identity or brand identity. The experience of the visitors and tourists to these sites are fragmented. There are no blueprints for integration and management plan for the tourism resources of NCR. The delineation of theme based destination, circuit, trail and night halts need to be executed to determine the tourist experience and movement pattern within these sites in the region.
- 4) Weak Heritage Protection and Destination Management: The regions' enormous potential for tourism development is further constrained by inadequate institutional capacity and human resources of sector agencies to plan, develop, protect, and manage these cultural and natural heritage destinations and deliver quality tourist experiences.
- 5) Lack of Host Community Participation: The heritage sites in the region offer great potential for diversifying and spreading tourism benefits in the region. It is observed that there is a lack of tourism-related skills among the local populations and weak supply chain linkages between the local economy and tourism. Though there are immense opportunities to promote inclusive tourism and community tourism products in and around these cultural and

natural sites through infrastructure development and special efforts for mobilizing communities to engage them in the tourism economy.

- 6) **Inappropriate Land-use and Circulation Patterns:** The current designated land uses in and around most of these sites of NCR have non compliant land-uses which dominate the character of the place. These land usage and the resulting services in return have started generating negative impact on the historic environment of the place. These development need to be regulated according to indigenous site conditions. Site to site assessment of its character and influence zones will determine the parameters of future development.
- 7) **Limited Private Participation:** Currently the private sector provides hospitality services, including accommodation, retail, and tour operations. Investments to improve connectivity and destinations, which are identified in close consultation with the industry, will induce private investments in complementary hospitality services.
- 8) **Synergy between Participating State Governments' Policies:** Policies of NCR participating States promote sustainable and inclusive development. Most of the tourism strategy documents of these participating State Governments affirm the need for the regional and cross state border tourism promotion, but it is imperative to develop a regional policy for better management and governance.
- 9) Regional Cooperation in Tourism: The participating State Governments and State tourism departments jointly need to carve out a niche market with tapping of potential synergies of tourism endowments available in the region. The participating tourism nodal agencies need to work together and promote tourism in the region. There is the need of convergence of individual state tourism strategies/policies/development plans and adopt a single framework for operation of tourism activities within the NCR.
- 10) **Towards Joint Development of Infrastructure:** There is a need for NCR participating States commitment to joint development of infrastructure along defined multi-state circuits that combine complementary state assets into marketable regional tourism products.
- 11) **Commitments for Tourism Development:** The vision of NCR tourism goals requires commitments from the participating states mainly focused on protection, development planning and promotion of the natural and cultural resources available in the NCR.

Annexure-D-14.4

# Schemes & Initiatives of Government of India, Tourism & Hospitality Skill council and NCR participating States

- A). Brief of Schemes & Initiatives of Government of India and Tourism & Hospitality Skill council
- India's built heritage are well-protected by Article 49 of the Constitution: "It shall be the obligation of the State to protect every monument or place or object of artistic or historic interest, (declared by or under law made by Parliament) to be of national importance, from spoliation, disfigurement, destruction, removal, disposal or export, as the case may be." Further, Article 51 A (f) states: "It shall be the duty of every citizen of India to value and preserve the rich heritage of our composite culture; and (g) to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures."¹⁴⁴
- 2) According to the Ancient Monuments and Archaeological Sites and Remains Act 1958, "Ancient Monument means any structure, erection or monument, or any tumulus or place of interment, or any cave, rock-sculpture, inscription or monolith, which is of historical, archaeological or artistic interest and which has been in existence for not less than 100 years and includes – remains of an ancient monument, site of an ancient monument, such portion of a land adjoining the ancient monument as may be required for fencing or covering in or otherwise preserving the monument and the means of access to, and convenient inspection or, an ancient monument." The protection of the heritage sites in India is overseen by the Archaeological Survey of India, which functions under the Ministry of Culture. The Ancient Monuments and Archaeological Sites and Remains Act 1958, updated as The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 provides for the protection of heritage sites, monuments, archaeological sites, sculptures and other objects which have historical value and importance.¹⁴⁵
- 3) The 'Adopt A Heritage: Apni Dharohar, Apni Pehchaan¹⁴⁶, scheme launched on 27th September, 2017 is a collaborative effort by Ministry of Tourism, Ministry of Culture and Archaeological Survey of India (ASI), State/UTs Governments and envisages development and maintenance of tourist amenities at heritage sites and making them tourist friendly, to enhance tourism potential and cultural importance in a planned and phased manner. The project primarily focuses on providing basic amenities that include cleanliness, public conveniences, safe drinking water, ease of access for tourists, signages, illumination, Wi-fi etc.

https://www.orfonline.org/research/protecting-indias-built-heritage-against-natural-disasters-50592/#_edn1
 Ehtesham Patel, Conservation of Heritage Sites in India - <a href="https://www.ijeat.org/wp-">https://www.ijeat.org/wp-</a>

content/uploads/papers/v6i5/E5080066517.pdf

¹⁴⁶ <u>https://pib.gov.in/newsite/PrintRelease.aspx?relid=186491</u>

No fund is given by Ministry of Tourism. The Project envisages involvement of Private/Public Companies / Organizations and Individuals to adopt Monuments, Natural Heritage Sites and other Tourist Sites in the country, primarily under CSR.

The Memorandum of Understanding (MoU) signed specifies installation of one signage at the monument indicating that monument has been adopted by respective firm/organization.

Providing basic facilities/amenities (e.g. drinking water, toilet blocks, facilities for physically challenged, pathways, cultural notice boards/signage, vehicle parking, cloak rooms, etc.) to tourists visiting centrally protected monuments and sites are the regular activities which the Archaeological Survey of India undertakes. Improvement and upgradation of these public facilities/amenities is a continuous process. Basic public facilities are available at all World Heritage Sites and ASI's ticketed monuments, as also at majority of those protected monuments that are visited by a large numbers of tourists. Further, Archaeological Survey of India has identified 100 monuments as "Adarsh Smarak" for upgradation of existing facilities/amenities like Wi-Fi, cafeteria, interpretation centre, brail signage, modern toilets etc. on the basis of actual requirement and feasibility on case to case basis.

4) The National Heritage City Development and Augmentation Yojana (HRIDAY)¹⁴⁷, a central sector scheme of the Government of India, was launched on 21st January 2015 with the aim of bringing together urban planning, economic growth and heritage conservation in an inclusive manner & with the objective of preserving the heritage character of the City. Under the Scheme, twelve cities namely, Ajmer, Amritsar, Amaravati, Badami, Dwarka, Gaya, Kanchipuram, Mathura, Puri, Varanasi Velankanni, Warangal have been identified for development. The mission period of HRIDAY scheme ended on 31st March, 2019.

The Scheme has supported development of core heritage linked civic infrastructure projects which includes revitalization of urban infrastructure for areas around heritage, religious, cultural and tourism assets of the cities. Scheme emphasized on the accessibility, security, safety, livelihood, cleanliness and faster service delivery in the heritage cities. The initiatives include development of water supply, sanitation, drainage, waste management, approach roads, footpaths, street lights, tourist conveniences, electricity wiring, landscaping and such citizen services. However, the scheme ended in 2019 and none of NCR cities were part of the scheme, it would be imperative to consider guidelines of the scheme to develop some selected historical areas on similar lines. The main objective of HRIDAY is to preserve character of the soul of heritage city and facilitate inclusive heritage linked urban development by exploring various avenues including involving private sector. Specific objectives are:

- a) Planning, development and implementation of heritage sensitive infrastructure
- b) Service delivery and infrastructure provisioning in historic city core areas.
- c) Preserve and revitalize heritage wherein tourists can connect directly with city's unique character.

¹⁴⁷ Source: HRIDAY Guidelines - <u>http://mohua.gov.in/upload/uploadfiles/files/Guidelines%20HRIDAY.pdf</u>

- d) Develop and document a heritage asset inventory of cities natural, cultural, living and built heritage as a basis for urban planning, growth and service provision & delivery.
- e) Implementation and enhancement of basic services delivery with focus on sanitation services like public conveniences, toilets, water taps, street lights with use of latest technologies in improving tourist facilities/amenities
- f) Local capacity enhancement for inclusive heritage-based industry
- g) Create effective linkages between tourism and cultural facilities and also the conservation of natural and built heritage
- h) Urban heritage adaptive rehabilitation and maintenance, including appropriate technologies for historic buildings retrofitting
- i) Establish and manage effective public private partnership for adaptive urban rehabilitation.
- j) Development and promotion of core tangible economic activities to enhance avenues of livelihoods amongst stakeholders. This would also include necessary skill development amongst them including making public spaces accessible and developing cultural spaces
- k) Making cities informative with use of modern ICT tools and making cities secure with modern surveillance and security apparatus like CCTV etc.
- 1) Increase accessibility i.e. physical access (roads as well as universal design) and intellectual access (i.e. digital heritage and GIS mapping of historical locations/ tourist maps and routes).
- m) Under this scheme 100 percent funding coming from Central Government. The scheme broadly focuses on four theme areas i.e. Physical Infrastructure, Institutional Infrastructure, Economic Infrastructure & Social Infrastructure for reviving and revitalizing the soul of Heritage City. The projects can be funded directly or through support from other stakeholders including private sector, however broad indicative list of components under HRIDAY is mentioned below, which can further be refined based on the need of the city under broad theme areas

#### 5) Pilgrimage Rejuvenation and Spirituality Augmentation Drive (PRASAD)¹⁴⁸

- 1. Introduced in 2015, the Pilgrimage Rejuvenation and Spiritual Augmentation Drive (PRASAD) is a government scheme that focuses on identifying and developing the pilgrim sites across the country to enrich the religious tourism experience.
- 2. It was launched by Union Ministry of Tourism and to implement the PRASAD scheme a Mission Directorate has been set up in the Ministry.
- 3. It aims at integrated development of pilgrimage destinations in planned, prioritised and sustainable manner to provide complete religious tourism experience.
- 4. The scheme has following Objectives:
  - a) Harness pilgrimage tourism for its direct and multiplier effect upon employment generation and economic development.
  - b) Enhance tourist attractiveness in sustainable manner by developing world class infrastructure in the religious destinations.

¹⁴⁸ Source: PRASAD Scheme Guidelines - <u>http://tourism.gov.in/sites/default/files/Scheme%20Guidelines_8.pdf</u>

- c) It also seeks to promote local art, culture, handicraft, cuisine, etc.
- 5. The development of infrastructure under PRASAD Scheme includes the development of lighting and illumination with renewable energy sources, eco-friendly modes of transport, first aid centres, drinking water, waiting rooms, toilets, parking, craft bazaars/souvenir shops / haats / cafeteria, rain shelters, telecom facilities, internet connectivity etc.
- 6. Development of basic tourism facilities like road, rail and water transport, last-mile connectivity, like Information and interpretation centers, Money exchanges and ATMs
- Funding: Under it, Ministry of Tourism provides Central Financial Assistance (CFA) to State Governments for promoting tourism at identified destinations. For components within public funding under this scheme, Central Government will provide 100% fund. For improved sustainability of project, it also seeks to involve Public Private Partnership (PPP) and Corporate Social Responsibility (CSR) as well.
- 6) Swadesh Darshan: Scheme for Integrated Development of Theme-Based Tourist Circuits in the Country. Ministry of Tourism, Government of India is making sincere efforts to increase the number of foreign tourists visiting India. To address issues like Quality infrastructure, sustainable development and awareness about the tourist spots various schemes like Swadesh Darshan, etc. has been launched. This scheme is envisioned to synergise with other Government of India schemes like Swachh Bharat Abhiyan, Skill India, Make in India etc. with the idea of positioning the tourism sector as a major engine for job creation, driving force for economic growth, building synergy with various sectors to enable tourism to realise its potential.

An illustrative list of components that would be eligible for Central Financial Assistance under the scheme is given below:

**a. Tourism Related Services:** • Development of Passenger Terminals (Road, Rail, Water Transport and Air) • Tourism Facilitation Centers with Toilet facility, cloak rooms, ATMs/ money exchange, waiting areas, Information desk/kiosk, parking spaces, shopping kiosks/ areas, cafeteria, drinking water outlets/ATMs etc. • Wayside Amenities with emergency vehicle breakdown, repair and refuel facilities. • Helipads, Heliports, Airstrips, Ropeways required for tourists in the circuits • First Aid Centers (including Indian Medicines System) • Informatory / Directional signage • Comprehensive Solid waste management • Wi-Fi connectivity and development informative push - apps for tourism destinations • CCTV cameras and other security equipment and installations • Equipment for land, water, air based adventure tourism activities including safety gear, rescue equipment.

**b.** Tourism Related Infrastructure: • Improvement of last mile connectivity leading to tourist sites/destinations • Restoration/ conservation of a historic structure/ monument • Construction of craft haats/bazaars/ souvenir shops/cafeteria • Construction of open air theatres/amphitheaters • Construction of nature trails, watch towers, rain shelters, gazebos etc. • Shoreline development of natural water bodies such as rivers, lakes, streams. • Illumination of monuments/heritage structures • Site development infrastructure such as water supply, sewerage, drainage, electricity and roads/pathways, parking for Buses, 2/4 wheelers/ caravans etc. • General site development such as earth filling, landscaping

(including trees, shrubs), water fountains, fencing, lighting, seating /shelters, garbage bins etc. • Equipment for tourism activities such as sound & light show, water sports, adventure sports, etc. • Any other activity directly related to tourism and required for development of the identified circuit. • Tourism Facilitation Centers with Toilet facility, cloak rooms, ATMs/ money exchange, waiting areas, Information desk/kiosk, parking spaces, shopping kiosks/ areas, cafeteria, drinking water outlets/ATMs etc. • Standalone toilet blocks are to be developed along with various stakeholders. • Wayside Amenities with appropriate parking facilities • Comprehensive Solid waste management • Wi-Fi connectivity and development of informative push - apps for tourism destinations • CCTV cameras and other security equipment and installations.

**c. Tourism Mapping, Management & Online Presence:** • GIS based tourism inventory management • Tangible and Intangible tourism product documentation and data base

**d. Capacity Development, Skill Development & Knowledge management:** • Special courses to address the skill gap at the destinations covered under the scheme. • Short duration skill development training program in association with other schemes of GOI. • Special courses to address the skill gap at the destinations covered under the scheme.

- a) Covering pilgrimage and heritage sites.
- b) Idea was to have proper accessibility, better facility in pilgrimage sites.
- c) Address issues of lack of safety and security, accessibility, awareness, cleanliness to provide open space, to make it more organised.
- d) Examples of Swadesh Darshan scheme included:
  - Heritage circuit in Rajkot (showcases life of Gandhiji),
  - Entire illumination of the pink city, Jaipur,
  - o Himalaya Circuit,
  - o Spiritual Circuit in Padma Swami Temple, Kerala,
  - Sikh circuit,
  - Ramlinga circuit
  - North East Circuit,
  - o Tribal Circuit, Chhattisgarh, and
  - Desert Circuit in Rajasthan.
  - Andhra Pradesh under coastal circuit with cottages at Kakinada beach then Marina beach in Chennai.
  - Sound and light show in Dal lake, Jammu Kashmir.
- A). To have sustainable model, all the infrastructure that are developed are using new technology, Bio toilets, less carbon points, and which requires less maintenance.
- B). Focus is development of ecosystem in & around the site which directly or indirectly helps the local community.

#### **C).** Development of Iconic Tourists sites.

- 17 sites are developed across the country including 3 sites in Delhi (i.e Humayun's tomb Red Fort, Qutub Minar)
- looking for overall change in experiences for tourist in terms of infrastructure, facilities, branding, events so that when people spend more time while visiting these places

#### **D**). Development of Infrastructure

- Developing special tourist zones with 300 acres of land parcels based on smart cities models. State government to come up with proposals for public infrastructures, covering proper electricity, water supply, connectivity, and also bring private investment.
- 7) Scheme for "Safeguarding the Intangible Cultural Heritage and Diverse Cultural Traditions of India" India has a vast basket of living and diverse cultural traditions, traditional expressions, intangible cultural heritage comprising masterpieces which need institutional support and encouragement with a view to addressing areas critical for the survival and propagation of these forms of cultural heritage. Though, such preservation efforts are being carried out in a scattered form, a need is being felt to have an institutionalized and centralized Scheme for concerted efforts in the direction of professionally enhancing awareness and interest in Intangible Cultural Heritage (ICH), safeguarding, promoting and propagating it systematically.

For this purpose, the Ministry of Culture has formulated a Scheme titled "Scheme for Safeguarding the Intangible Heritage and Diverse Cultural Traditions of India", with the objective of reinvigorating and revitalizing various institutions, groups, individuals, identified non-MOC institutions, non-government organisations, researchers and scholars so that they may engage in activities/ projects for strengthening, protecting, preserving and promoting the rich intangible cultural heritage of India.

The Scheme will cover all recognized domains of ICH such as oral traditions and expressions, including language as a vehicle of the intangible cultural heritage, Performing arts, Social practices, rituals and festive events, Knowledge and practices concerning nature and the universe, traditional craftsmanship etc.

- 8) **Museum Grant Scheme**¹⁴⁹ to provide financial assistance for setting up of new Museums by State Governments and Societies, Autonomous bodies, Local Bodies and Trusts registered under the Societies Act, to strengthen and modernize the existing museums at the regional, state and District level, digitization of art objects in the museums across the country for making their images/catalogues available over the website and for capacity building of Museum professionals.
- 9) **Pension and Medical Aid to Artistes**¹⁵⁰ meant for improving the financial and socioeconomic status of the old artistes and scholars who have contributed significantly in their specialized fields of arts, letters etc. in their active age or are still contributing in the field of arts, letters etc. but due to old age they have to lead a miserable life or are in penury condition. The Scheme also envisages to provide medical aid facility to these Artistes and his/her spouse by covering them under a convenient and affordable Health Insurance Scheme of the Government for treatment of diseases involving hospitalization through an identified network of health care providers. This Scheme has following two provisions/components:-

¹⁴⁹ <u>http://indiaculture.nic.in/museum-grant-scheme</u>

¹⁵⁰ http://www.indiaculture.nic.in/scheme-pension-and-medical-aid-artistes

(A).National Artistes Pension Fund and

(B).National Artistes Medical Aid Fund

- 10) "Certificate of Excellence" Scheme for Museum Professionals¹⁵¹ The objective of the Scheme is to acknowledge the achievements made by the employees of the Museums in order to encourage them to work hard in the pursuit of excellence.
- 11) **Tourism & Hospitality Skill council** (THSC) formed in 2014, is autonomous Society by CII, and hence an Industry body created of and for the Industry, to acts as standard Platform to Connect Industry, Government, Skill Partners and Students.
  - THSC works under the leadership and ambit of Ministry of Skill Development and Entrepreneurship. Its Vision is to create a robust industry aligned eco system by promoting Hospitality and tourism sector skill development, benefitting millions in India to get respectable employment opportunities for serving the customers and other stake holders
  - Sub Sectors of THSC; include hotels, tourism, food services, facilities management and cruise liners
  - Benefit working/Collaborating with THSC
    - Apprenticeship Program under NAPS.
    - o Students would get Government Recognized Skill Certificate on NSQF level.
    - Industry approved National Standards (Qualification Packs) and Curriculum.
    - Placements Opportunity with best in Industry.
    - Training of Trainer (TOT) program aligned to Ministry of Skill Development guidelines and certified by NSDC.
    - Assessment through Online application with minimum intervention of the Assessor.
    - Employees with no certification can get Skill Certified under Recognition of Prior Learning (RPL). **Recognition of Prior Learning**

#### • Benefits to Employer / Establishments

- Apprenticeship will reduce attrition rate as you Train your staff according to your job role.
- Apprenticeship reduces your manpower cost in long run as it gives you better returns.
- No ESI / No PF obligations for keeping apprentices in your establishments.
- Once Apprentice is trained, their future manpower needs will be fulfilled within organisation.
- Employer will get 25% of prescribed stipend subject to a maximum of Rs. 1500/- per month per apprentice to all apprentices with the employers. Online submission of reimbursement is available on portal. Also can avail benefits up-to **7500/- for BTP** per apprentice for fresher candidates.
- Achievement of THSC include:
  - Tourism and Hospitality Skills Council was mandated to conduct India Skills competition from 2016 to promote skills in five trades (1) Cooking (2) Confectionery & Patisserie (3) Restaurant (4) Bakery (5) Hotel Reception

¹⁵¹ <u>http://www.indiaculture.nic.in/certificate-excellence-scheme-museum-professionals</u>

- The aim is to develop young talent as a skill pan India. This is the only platform on a national level for young generation to get exposed to job opportunities and learn skills required in the hotel and restaurant and hospitality industry.
- 0

#### **B).** Brief of Initiatives of NCR participating States

#### a) Heritage and Tourism in Haryana- A brief

- Objectives of the Heritage Tourism Policy are to position Tourism as a State priority and identify it as a growth engine for employment generation. Cultural Heritage is a major economic activity and a catalyst for employment generation and is projected to grow even faster in the 21st Century.
- State aims at harnessing the direct and multiplier effects of tourism in employment generation in an environmentally sustainable manner. The **effort would be to promote untapped areas of Heritage, Ecological, Rural Tourism** in order to promote large scale employment opportunities while protecting environment and culture.
- Broadly, the policy document attempts to provide constructive value in diverse fields such as to :
  - Promote Heritage tourism as a major engine of economic growth and capitalize potential of sustainable tourism for economic and employment generation.
  - Promote Haryana as a tourist destination to take advantage of the global travel exchange and to develop untapped potential of Haryana.
  - Acknowledge the critical role of private sector in development of tourism with government working as proactive facilitator and catalyst.
  - Enhance the infrastructure of heritage in grass root level i. e. emphasis on local art, craft, ethno archaeological traditions to involve local community, artisans, and professionals.
  - Enhance professional excellence in training human resources and providing infrastructure for Human Resource Development.
  - Developing sustained and effective marketing strategy and plan.
- The Department of Archaeology & Museums, Haryana has an array of sections that sustain and promote the archaeological heritage of Haryana. State protected monuments are being maintained under "The Punjab Ancient Historical Monuments and Archaeological Sites and Remains Act, 1964."
  - Department has 6 plan schemes that include
    - Archaeological Excavation/Exploration Programme
    - Publication/Publicity Programme (Site information brochures, Collection catalogues and similar souvenirs that can be used as promotional media and education aids for different groups, plan to publish Atlas of Harappan sites in Haryana, Coffee table book on Heritage Sites in Haryana and research related books that will cater to researchers, tourists, students, educators and academicians alike)
    - Protection/Preservation & Development of Ancient Monuments/Sites
    - Preparation of Plaster Casts and Antiquities (objects carefully selected from the collection of artefacts representing the vast history of art of Haryana and replicas are made manually with great skill. Beside this the replicas are

prepared for display in exhibitions and to give to other museums and different DC offices in free of cost.Department has proposed creation of Heritage Corners in various Schools across the State in order to sensitize youth to the Precious Heritage that is irreplaceable)

- Setting up of Archaeological Museum (ongoing projects include Site Museum and Interpretation Centre at Rakhigarhi; State Archaeological Museum, Panchkula)
- Setting up of Zonal Museum
- The Department is also initiating the project to upgrade the Museums under its protection. At present there are six zonal museums namely (a) Jahaj Kothi, Hisar;
   (b) Jayanti Archaeological Museum, Jind ; (c) Guru Tegbahadur Samarak Museum, Barh Khalsa, Rai, Sonepat ; (d) Guru Govind Singh Martial Art Museum at Kapalmochan, Yamuna Nagar ; (e) Deen Bandhu Sir Chhotu Ram Smarak Museum, Rohtak ; (f) Battle of Panipat Museum, Panipat.
- Heritage Tourism started in Haryana in 1970s, with the concept of highway tourism, as we have very good amenities alongside the highways. E.g travel from Delhi to Ambala, one finds shops at Murthal Dhaba, which are often frequented by people from Delhi. Now moved from highway tourism to heritage tourism. Krishna circuit is being looked after by Kurukshetra Development Board. (place with circumference of 48 *kose with visitors taking* parikrama of these sites). Area can be developed as Mahabharata circuit as it is the place where epic battle of Mahabharata was fought on the land of Haryana.
- Tourism Department and Department of Archaeology & Museums are into development of Saraswati river valley civilization where paleo channels are visible in satellite imageries whereas earlier due to tectonic movement river shifted the course. The point is called *Aadi badri* counterpart of Haridwar. *Saraswati River* flows from Himalaya to Haryana towards Rajasthan and falls to Arabian sea. It is believed that sages use to do meditation here and wrote all the four *vedas*. Archaeology excavation are going on alongside of the river and many antique pieces has been excavated and are kept on display in national Museum. *Rakhigarhi* and *Kunal* are two such sites in Haryana.
- Government is planning to build regional connectivity at Hisar which is hub of heritage site.
- Few more rail Lines are planned in PPP mode with partnership with Indian railways and Government of India.
- b) Heritage and Tourism in NCT Delhi A brief
- Delhi Tourism Department is focusing on this aspect by **initiating series of festivals**. Idea is to tell stories of lesser known monuments and create spark so that more people visit these places.
- List of festivals organized include
  - *Mehrauli* as *Phool Walon Ki Sair* it started in18th century during *Mugals t*ime.
  - o Jahaaz mahal beside beautiful lake shamshi lake.

- In Mehrauli, we have Dargah of Sufi *hazarat kutubdin mukhtyar kakib*, the first sufi saint who visited the Delhi
- o Mohammad Qutub sahib's dargaah then Hazrat Roshan chirag at Chiraag Delhi
- Dargah of Hazrat Nizammudidn.
- *Mehruli Mansoon festival* which includes cultural program, arts and craft mela and heritage walk. And **Archival walk** which displays many information about
- *Shahpur Jat festival*, Shahpur is a designer village. It has got lot of boutique.it is a Khilji and Tughlak era places
- *Hauz Khas festival* is in pipeline
- Other **initiatives** taken up by Delhi Tourism Department are as under:
  - To **popularise Neighbourhood monuments** so that neighbourhood community can be benefitted by it.
  - To have **food joints with local delicacies**.
  - We are also working on **reviving Hop on Hop Off** (HOHO) service.
  - Concept of **adoption of monument**. Corporate entity is taking care of one monument and they have interpretation centre.
  - Walk guide for *Mehrauli* and archaeological park.
  - Involving local community in local eateries, old houses are also open for visits as they have collection of little things like coins etc. (similar arrangements existing in old Delhi which is run by few NGOs)
  - Parks and garden are used as cultural programme for raga performances.
  - "MLA fund for cultural performances" MLAs has been given a fund of Rs. 25 lakhs to organise cultural programmes of their preferences or as per the desire of the people of respective constituency.
  - Delhi Tourism department has extensively conserved many lesser known monuments which were encroached by local people.
  - In Delhi Archives, a lot of information and photographs of all the famous monuments and lesser known monuments are available. All this information is available on website and can be browsed by any interested person.
  - **Mobile based app to be launched soon** where people can have information about any monument, and it will have inbuilt calendar about the events that Tourism department has planned.
  - **Darashaw libaray has been conserved** and plans to have archaeological Museum as we have many artifacts to display. Even railway department in Malkhana has many things to display
  - **Museum of partition** in line with museum of partition of Amritsar is another project Delhi Tourism is working on.
  - Major initiatives taken by Department of Archaeology, GNCTD regarding conservation of Monuments included:
    - Baoli at sector 12, Dwarka

- Tomb & Enclosure Wall (behind Mehrauli Bus Terminus)
- Azimganj Sarai, Delhi Zoo
- Gol gumbad
- Chemical Cleaning at Tomb of MOHD. Quli Khan
- Bara lao ka gumbad
- Bijri Khan's Tomb
- Mutiny Memorial
- Tomb Lado sarai

#### c) Rajasthan Tourism Scenario

- o Foreign Tourist Visits (2018)- 17.54 Lacs
- Domestic Tourist Visits (2018)- 502.36 Lacs
- Share of Trade and Tourism in State GDP- 14.02%
- Number of classified & unclassified Hotels & PG Houses (as on 31.03.2019)- 3296
- o Number of Total Rooms (as on 31.03.2019)- 65,902
- New Tourism Projects approved in 2018-19- 167
- o Forts & Palaces-19
- o Bharatpur has 15 monuments and tourists spots out of which 08 has been curated
- Luxury Train- Palace on Wheels (POW)
- Fairs & Festivals- 13 Internationally known festivals- Pushkar Fair, Desert Festival, Holi Festival, Kite Festival, Camel Festival
- Time bound
  - Single Window Clearance for Film Shooting under Rajasthan Film Shooting (Amendment) Regulations, 2016
- Heritage Hotels in Rajasthan
- Old palaces converted by owners into Heritage Hotels as early as later part of 1950's (Rambagh Palace Hotel in Jaipur, Lake Palace in Udaipur and Umaid Bhawan in Jodhpur were the first of these hotels )
- Conversion of **old Forts, Palaces and Havelis into Heritage Hotels** on a large scale began in 90's . Strengths of Heritage Hotels:
  - Quality accommodation and Royal experience to tourists
  - Theme Wedding Destinations
  - Exotic sets for Film Shooting
  - Every Heritage Hotel is a Unique Experience
  - Ethnic Culinary Experience
- Diverse Experience Safaris, Eco Tourism, Heritage Walks, Local Culture, Traditional Art forms etc.
- Marketing Major Activities
- Advertising and Media Campaign
  - Preparation of Creative and promotional material TV Commercials, Radio Jingles, Print / Outdoor ad Creatives, Digital Banners
  - Selection of Media, Preparation of Media Plan and Execution of Media Campaign
  - Release of Advertisements related to Fairs and Festivals through SAMVAD (DIPR)

- PR and Media Coordination
- Social Media Promotion
- Participation in Travel & Tourism related Exhibitions, Marts, Road Shows
  - Each year Deptt. participates in about 40 Domestic and 6 7 Overseas Travel Marts
  - Coordination with Trade Associations like IATO, FICCI, CII, HRAR, RATO, ADTOI, IHHA, HAJ, FHTR and others for events such as Great Indian Travel Bazaar (GITB), Rajasthan Domestic Travel Mart (RDTM), etc.

#### **Chapter-15-Environement**

### Annexure-D-15.1

#### Sustainable Development Goals (SDGs) Blueprint for Achieving a Better and Sustainable Future for All

The Sustainable Development Goals  $(SDGs)^{152}$  are the blueprint to achieve a better and more sustainable future for all. They address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. The 2030 Agenda for Sustainable Development (2030 Agenda), with 17 SDGs and 169 targets, is a plan of action for people, planet and prosperity. The SDGs are universal, transcend borders and apply across the workplace, marketplace and community. The SDGs are deeply interconnected – progress on one goal can have a significant impact on progress in meeting others.

SDGs evolve through repeating three steps: prioritize, act, and learn. Leadership evolves, as organization & society responds to change by repeating a three-step process depicted i.e: first, it prioritizes actions on the SDGs; second, it acts on these priorities; and third, it learns from its impact on the SDGs to improve its own and help others improve their actions, re-prioritize and thus start the cycle over again. Leadership on the SDGs is defined relative to the performance of others and the changing business environment.



¹⁵²https://www.un.org/sustainabledevelopment/sustainable-development-goals/ and

https://d306 pr 3 pise 04 h. cloud front.net/docs/publications% 2 FB lue print-for-Business-Leadership-on-the-SDGs.pdf



Goal description	Target	Description	Indicator
1 End poverty in all its forms everywhere.	1.1	By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day.	1.1.1 Proportion of the population below the international poverty line, by sex, age, employment status, and geographical location (urban/rural)
	1.2	By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.	1.2.1 Proportion of population living below the national poverty line, by sex and age
			1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions
	1.3	Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work injury victims, and the poor and the vulnerable
	1.4	By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial	1.4.2 Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure
		services, menuding micromance.	1.4.1 Proportion of population living in households with access to basic services

## SDGs - Goals, targets and indicators

Goal description	Target	Description	Indicator
	1.5	By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.	1.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
			1.5.2 Direct disaster economic loss in relation to global gross domestic product (GDP)
			1.5.3 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
			1.5.4 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
	1.a	Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed	1.a.1 Proportion of domestically generated resources allocated by the government directly to poverty reduction programmes
		poverty in all its dimensions.	1.a.2 Proportion of total government spending on essential services (education, health and social protection)
			1.a.3 Sum of total grants and non-debt-creating inflows directly allocated to poverty reduction programmes as a proportion of GDP

Goal description	Target	Description	Indicator	
	1.b	Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender sensitive development strategies, to support accelerated investment in poverty eradication actions.	1.b.1 Proportion of government recurrent and capital spending to sectors that disproportionately benefit women, the poor and vulnerable groups	
2 End hunger, achieve food security and	2.1	By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.	<ul><li>2.1.1 Prevalence of undernourishment</li><li>2.1.2 Prevalence of moderate or severe food insecurity</li></ul>	
improved nutrition and promote sustainable agriculture.	2.2		in the population, based on the Food Insecurit Experience Scale (FIES)	
	2.2	By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age	
			<ul> <li>2.2.2 Prevalence of malnutrition (weight for height &gt;+2 or &lt;-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)</li> </ul>	
	2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including	2.3.1 Volume of production per labour unit by classes of farming/pastoral/ forestry enterprise size	
		through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.	2.3.2 Average income of small-scale food producers, by sex and indigenous status	

Goal description	Target	Description	Indicator
	2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.	2.4.1 Proportion of agricultural area under productive and sustainable agricultural practices
	2.5	By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed.	<ul> <li>2.5.1 Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities</li> <li>2.5.2 Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction</li> </ul>
	2.a	Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries.	<ul> <li>2.a.1 The agriculture orientation index for government expenditures</li> <li>2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector</li> </ul>
	2.b	Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round.	2.b.1 Agricultural export subsidies
	2.c	Adopt measures to ensure the proper functioning of food	2.c.1 Indicator of food price anomalies

Goal description	Target	Description	Indicator
		commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.	
3 Ensure healthy	3.1	By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births.	3.1.1 Maternal mortality ratio
lives and promote well- being for all at all ages	lives and romote well- ing for all at all ages. 3.2 3.3		3.1.2 Proportion of births attended by skilled health personnel
un uges.		By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce	3.2.1 Under-five mortality rate
		neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births.	3.2.2 Neonatal mortality rate
		By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water- borne diseases and other communicable diseases.	3.3.1 Number of new HIV infections per 1,000 uninfected population by sex, age and key populations
			3.3.2 Tuberculosis incidence per 100,000 population
			3.3.3 Malaria incidence per 1,000 population
			3.3.4 Hepatitis B incidence per 100,000 population
			3.3.5 Number of people requiring interventions against neglected tropical diseases

Goal description	Target	Description	Indicator
	3.4	By 2030, reduce by one third premature mortality from non- communicable diseases through prevention and treatment and promote mental health and well- being.	3.4.2 Suicide mortality rate
			3.4.1 Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease
	3.5	Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.	3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance use disorders
			3.5.2 Harmful use of alcohol, defined according to the national context as alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol
	3.6	By 2020, halve the number of global deaths and injuries from road traffic accidents.	3.6.1 Death rate due to road traffic injuries
	3.7	By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes.	3.7.1 Proportion of women of reproductive age (aged 15-49) who have their need for family planning satisfied with modern methods
			3.7.2 Adolescent birth rate (aged 10-14 year; aged 15- 19 years) per 1,000 women in that age group
	3.8	Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all.	3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious

Goal description	Target	Description	Indicator
			diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)
			3.8.2 Proportion of population with large household expenditures on health as a share of total household expenditure or income
	3.9	By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.	3.9.1 Mortality rate attributed to household and ambient air pollution
			3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)
			3.9.3 Mortality rate attributed to unintentional poisoning
	3.a	Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate.	3.a.1 Age-standardized prevalence of current tobacco use among persons aged 15 years and older
	3.b	Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide	3.b.1 Proportion of the target population covered by all vaccines included in their national programme
		access to affordable essential medicines and vaccines, in	3.b.2 Total net official development assistance to

Goal description	Target	Description	Indicator
		accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of	medical research and basic health sectors
		developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.	3.b.3 Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis
	3.c	Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States.	3.c.1 Health worker density and distribution
	3.d	Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.	3.d.1 International Health Regulations (IHR) capacity and health emergency preparedness
4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.	4.1	By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.	4.1.1 Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex
	4.2	By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education.	4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex
			4.2.2 Participation rate in organized learning (one year before the official primary entry age), by sex

Goal description	Target	Description	Indicator
	4.3	By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex
	4.4	By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
	4.5	By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict affected, as data become available) for all education indicators on this list that can be disaggregated
	4.6	By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.	4.6.1 Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex
	4.7	By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment
	4.a	Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all.	<ul><li>4.a.1 Proportion of schools with access to (a) electricity; (b) the Internet for pedagogical purposes;</li><li>(c) computers for pedagogical purposes; (d) adapted</li></ul>

Goal description	Target	Description	Indicator
			infrastructure and materials for students with disabilities; (e) basic drinking water (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)
	4.b	By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.	4.b.1 Volume of official development assistance flows for scholarships by sector and type of study
	4.c	By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States.	4.c.1 Proportion of teachers in: (a) pre-primary; (b) primary; (c) lower secondary; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country
5 Achieve gender equality and empower all women and girls.	5.1	End all forms of discrimination against all women and girls everywhere.	5.1.1 Whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex
	5.2	Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation.	5.2.1 Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of

Goal description	Target	Description	Indicator
			violence and by age
			5.2.2 Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence
	5.3	Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation.	5.3.1 Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18
			5.3.2 Proportion of girls and women aged 15-49 years who have undergone female genital mutilation/cutting, by age
	5.4	Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate.	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location
	5.5	Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.	5.5.1 Proportion of seats held by women in national parliaments and local governments
			5.5.2 Proportion of women in managerial positions
	5.6	Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the	5.6.1 Proportion of women aged 15-49 years who make their own informed decisions regarding sexual

Goal description	Target	Description	Indicator
Programme of Action of the Population and Developmen Action and the outcome doc conferences.		Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review	relations, contraceptive use and reproductive health care
	conferences.	5.6.2 Number of countries with laws and regulations that guarantee full and equal access to women and men aged 15 years and older to sexual and reproductive health care, information and education	
	5.a	Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws.	5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and b) share of women among owners or rights-bearers of agricultural land, by type of tenure
			5.a.2 Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control
	5.b	Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.	5.b.1 Proportion of individuals who own a mobile telephone, by sex
	5.c	Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment
6 Ensure availability	6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all.	6.1.1 Proportion of population using safely managed drinking water services

Goal description	Target	Description	Indicator
and sustainable management of water and sanitation for all.	6.2	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
	6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.	6.3.1 Proportion of wastewater safely treated
			6.3.2 Proportion of bodies of water with good ambient water quality
	6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.	6.4.1 Change in water-use efficiency over time
			6.4.2 Level of water stress: freshwater witdrawal as a proportion of available freshwater resources
	6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.	6.5.1 Degree of integrated water resources management implementation (0-100)
			6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation
	6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.	6.6.1 Change in the extent of water-related ecosystems over time
	6.a	By 2030, expand international cooperation and capacity- building support to developing countries in water- and sanitation-related activities and programmes, including water	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-
Goal description	Target	Description	Indicator
------------------------------------------------------------------------------------------------	--------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
		harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies.	coordinated spending plan
	6.b	Support and strengthen the participation of local communities in improving water and sanitation management.	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management
7 Ensure access to affordable, reliable, sustainable and modern energy for all.	7.1	By 2030, ensure universal access to affordable, reliable and modern energy services.	7.1.1 Proportion of population with access to electricity
			7.1.2 Proportion of population with primary reliance on clean fuels and technology
	7.2	By 2030, increase substantially the share of renewable energy in the global energy mix.	7.2.1 Renewable energy share in the total final energy consumption
	7.3	By 2030, double the global rate of improvement in energy efficiency.	7.3.1 Energy intensity measured in terms of primary energy and GDP
	7.a	By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
	7.b	By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries,	7.b.1 Investments in energy efficiency as a percentage of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to

Goal description	Target	Description	Indicator
		small island developing States and landlocked developing countries, in accordance with their respective programmes of support.	sustainable development services
8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.	8.1	Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries.	8.1.1 Annual growth rate of real GDP per capita
	8.2	Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour- intensive sectors.	8.2.1 Annual growth rate of real GDP per employed person
	8.3	Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.	8.3.1 Proportion of informal employment in non- agriculture employment, by sex
	8.4	Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation,	8.4.1 Material footprint, material footprint per capita, and material footprint per GDP
		in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.	8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
	8.5	By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities

Goal description	Target	Description	Indicator
		of equal value.	8.5.2 Unemployment rate, by sex, age and persons with disabilities
	8.6	By 2020, substantially reduce the proportion of youth not in employment, education or training.	8.6.1 Proportion of youth (aged 15-24 years) not in education, employment or training
	8.7	Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms.	8.7.1 Proportion and number of children aged 5-17 years engaged in child labour, by sex and age
	8.8	Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious	8.8.1 Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status
		employment.	8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status
	8.9	By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.	8.9.1 Tourism direct GDP as a proportion of total GDP and in growth rate
			8.9.2 Proportion of jobs in sustainable tourism industries out of total tourism jobs
	8.10	Strengthen the capacity of domestic financial institutions to	8.10.1 (a) Number of commercial bank branches per

Goal description	Target	Description	Indicator
		encourage and expand access to banking, insurance and financial services for all.	100,000 adults and (b) number of automated teller machines (ATMs) per 100,000 adults
			8.10.2 Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider
	8.a	Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries.	8.a.1 Aid for Trade commitments and disbursements
	8.b	By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization.	8.b.1 Existence of a developed and operationalized national strategy for youth employment, as a distinct strategy or as part of a national employment strategy
9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human wall being with a focus on affordable and equitable access	9.1.2 Passenger and freight volumes, by mode of transport
		for all.	9.1.1 Proportion of the rural population who live within 2 km of an all-season road
	9.2	Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances,	9.2.1 Manufacturing value added as a proportion of GDP and per capita
		and double its share in least developed countries.	9.2.2 Manufacturing employment as a proportion of total employment

Goal description	Target	Description	Indicator
	9.3	Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets.	9.3.1 Proportion of small-scale industries in total industry value added
			9.3.2 Proportion of small-scale industries with a loan or line of credit
	9.4	By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.	9.4.1 CO2 emission per unit of value added
	9.5	Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of	9.5.1 Research and development expenditure as a proportion of GDP
		research and development workers per 1 million people and public and private research and development spending.	9.5.2 Researchers (in full-time equivalent) per million inhabitants
	9.a	Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States.	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure
	9.b	Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities.	9.b.1 Proportion of medium and high-tech industry value added in total value added

Goal description	Target	Description	Indicator
	9.c	Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020.	9.c.1 Proportion of population covered by a mobile network, by technology
10 Reduce inequality within and among countries.	10.1	By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average.	10.1.1 Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population
	10.2	By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.	10.2.1 Proportion of people living below 50 per cent of median income, disaggregated by age, sex and persons with disabilities
	10.3	Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard.	10.3.1 Proportion of population reporting having personally felt discriminated against or harassed within the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law
	10.4	Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.	10.4.1 Labour share of GDP, comprising wages and social protection transfers
	10.5	Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations.	10.5.1 Financial Soundness Indicators
	10.6	Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more	10.6.1 Proportion of members and voting rights of developing countries in international organizations

Goal description	Target	Description	Indicator
		effective, credible, accountable and legitimate institutions.	
	10.7	Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies.	10.7.1 Recruitment cost borne by employee as a proportion of yearly income earned in country of destination
			10.7.2 Number of countries with migration policies that facilitate orderly, safe, regular and responsible migration and mobility of people
	10.a	Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements.	10.a.1 Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff
	10.b	Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes.	10.b.1 Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)
	10.c	By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent.	10.c.1 Remittance costs as a percentage of the amount remitted
11 Make cities and human settlements inclusive, safe, resilient and	11.1	By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing
	11.2	By 2030, provide access to safe, affordable, accessible and	11.2.1 Proportion of the population that has

Goal description	Target	Description	Indicator
sustainable.		sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.	convenient access to public transport, by sex, age and persons with disabilities
	11.3	By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.	11.3.1 Ratio of land consumption rate to population growth rate
			11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically
	11.4	Strengthen efforts to protect and safeguard the world's cultural and natural heritage.	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)
	11.5	By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus	11.5.1 Number of deaths, missing people, and persons affected by disaster per 100,000 people
		on protecting the poor and people in vulnerable situations.	11.5.2 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters

Goal description	Target	Description	Indicator
	11.6	By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities
		By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.	11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)
	11.7	By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities.	11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months
			11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities
	11.a	Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.	11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city
	11.b	By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the	11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
		holistic disaster risk management at all levels.	11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in

Goal description	Target	Description	Indicator
			line with national disaster risk reduction strategies
11 Make cities and human settlements inclusive, safe, resilient and sustainable.	11.c	Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.	11.c.1 Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials
12 Ensure sustainable consumption and production patterns.	12.1	Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.	12.1.1 Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or target into national policies
	12.2	By 2030, achieve the sustainable management and efficient use of natural resources.	12.2.1 Material footprint, material footprint per capita and material footprint per GDP
			12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP
	12.3	By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.	12.3.1 (a) Food loss index and (b) food waste index
	12.4	By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and	12.4.1 Number of Parties to international multilateral environmental agreements on hazardous, and other chemicals that meet their commitments and

Goal description	Target	Description	Indicator
		significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.	obligations in transmitting information as required by each relevant agreement
			12.4.2 Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment
	12.5	By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.	12.5.1 National recycling rate, tons of material recycled
	12.6	Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.	12.6.1 Number of companies publishing sustainability reports
	12.7	Promote public procurement practices that are sustainable, in accordance with national policies and priorities.	12.7.1 Number of countries implementing sustainable public procurement policies and action plans
	12.8	By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.	12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment
	12.a	Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.	12.a.1 Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies

Goal description	Target	Description	Indicator
	12.b	Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.	12.b.1 Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools
	12.c	Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account their specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities.	12.c.1 Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels
13 Take urgent action to combat climate change and its	13.1	Strengthen resilience and adaptive capacity to climate- related hazards and natural disasters in all countries.	13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population
impacts.			13.1.2 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030
			13.1.3 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies
	13.2	Integrate climate change measures into national policies, strategies and planning.	13.2.1 Number of countries that have communicated the establishment or operationalization of an

Goal description	Target	Description	Indicator
			integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)
	13.3	Improve education, awareness- raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.	13.3.1 Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula
			13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions
	13.a	Implement the commitment undertaken by developed- country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate fund through its capitalization as soon as possible.	13.a.1 Mobilized amount of United States dollars per year between 2020 and 2025 accountable towards the \$100 billion commitment
	13.b	Promote mechanisms for raising capacity for effective climate change-related planning and management in least	13.b.1 Number of least developed countries and small

Goal description	Target	Description	Indicator
		developed countries, including focusing on women, youth and local and marginalized communities.	island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities
14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development.	14.1	By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	14.1.1 Index of coastal eutrophication and floating plastic debris density
	14.2	By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.	14.2.1 Proportion of national exclusive economic zones managed using ecosystem-based approaches
	14.3	Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels.	14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations
	14.4	By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science- based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.	14.4.1 Proportion of fish stocks within biologically sustainable levels
	14.5	By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and	14.5.1 Coverage of protected areas in relation to

Goal description	Target	Description	Indicator
		based on the best available scientific information.	marine areas
	14.6	By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.	14.6.1 Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing
	14.7	By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.	14.7.1 Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries
	14.a	Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.	14.a.1 Proportion of total research budget allocated to research in the field of marine technology
	14.b	Provide access for small-scale artisanal fishers to marine resources and markets.	14.b.1 Degree of application of a legal/regulatory/ policy/institutional framework which recognizes and protects access rights for small-scale fisheries
	14.c	Enhance the conservation and sustainable use of oceans and	14.c.1 Number of countries making progress in

Goal description	Target	Description	Indicator
		their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want.	ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nation Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources
15 Protect, restore and	15.1	By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater	15.1.1 Forest area as a proportion of total land area
promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.		mountains and drylands, in line with obligations under international agreements.	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type
	15.2	By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.	15.2.1 Progress towards sustainable forest management
	15.3	By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land- degradation-neutral world.	15.3.1 Proportion of land that is degraded over total land area
	15.4	By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.	15.4.1 Coverage by protected areas of important sites for mountain biodiversity
			15.4.2 Mountain Green Cover Index

Goal description	Target	Description	Indicator
	15.5	Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity, and, by 2020, protect and prevent the extinction of threatened species.	15.5.1 Red List Index
	15.6	Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed.	15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits
	15.7	Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.	15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked
	15.8	By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species
	15.9	By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.	15.9.1 Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020
	15.a	Mobilize and significantly increase financial resources from all sources to conserve and sustainable use biodiversity and ecosystems.	15.a.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems
	15.b	Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation.	15.b.1 Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems

Goal description	Target	Description	Indicator
	15.c	Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.	15.c.1 Proportion of traded wildlife that was poached or illicitly trafficked
16 Promote peaceful and inclusive	16.1	Significantly reduce all forms of violence and related death rates everywhere.	16.1.1 Number of victims of intentional homicide per 100,000 population, by sex and age
societies for sustainable development, provide access to			16.1.3 Proportion of population subjected to (a) physical violence, (b) psychological violence and (c) sexual violence in the previous 12 months
build effective, accountable and inclusive institutions			16.1.2 Conflict-related deaths per 100,000 population, by sex, age and cause
at all levels.			16.1.4 Proportion of people that feel safe walking alone around the area they live
	16.2	End abuse, exploitations, trafficking and all forms of violence against and torture of children.	16.2.1 Percentage of children aged 1-17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month
			16.2.2 Number of victims of human trafficking per 100,000 population, by sex, age group and form of exploitation
			16.2.3 Proportion of young women and men aged 18-

Goal description	Target	Description	Indicator
			29 years who experienced sexual violence by age 18
	16.3	Promote the rule of law at the national and international levels and ensure equal access to justice for all.	16.3.2 Unsentenced detainees as a proportion of overall prison population
			16.3.1 Proportion of victims of violence in the previous 12 months who reported their victimization to competent authorities or other officially recognized conflict resolution mechanisms
	16.4	By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime.	16.4.2 Proportion of seized, found or surrendered arms whose illicit origin or context has been traced or established by a competent authority in line with international instruments
			16.4.1 Total value of inward and outward illicit financial flows (in current United States dollars)
	16.5	Substantially reduce corruption and bribery in all their forms.	16.5.1 Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe by those public officials, during the previous 12 months
			16.5.2 Proportion of businesses that had at least one contact with a public official and that paid a bribe to a public official, or were asked for a bribe by those public officials during the previous 12 months

Goal description	Target	Description	Indicator
	16.6	Develop effective, accountable and transparent institutions at all levels.	16.6.2 Proportion of the population satisfied with their last experience of public services
			16.6.1 Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar)
	16.7	Ensure responsive, inclusive, participatory and representative decision-making at all levels.	16.7.1 Proportions of positions in national and local institutions, including (a) the legislatures; (b) the public service; and (c) the judiciary, compared to national distributions, by sex, age, persons with disabilities and population groups
			16.7.2 Proportion of population who believe decision- making is inclusive and responsive, by sex, age, disability and population group
	16.8	Broaden and strengthen the participation of developing countries in the institutions of global governance.	16.8.1 Proportion of members and voting rights of developing countries in international organizations
	16.9	By 2030, provide legal identity for all, including birth registration.	16.9.1 Proportion of children under 5 years of age whose births have been registered with a civil authority, by age
	16.10	Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.	16.10.1 Number of verified cases of killing, kidnapping, enforced disappearance, arbitrary detention and torture of journalists, associated media

Goal description	Target	Description	Indicator
			personnel, trade unionists and human rights advocates in the previous 12 months
			16.10.2 Number of countries that adopt and implement constitutional, statutory and/or policy guarantees for public access to information
	16.a	Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime.	16.a.1 Existence of independent national human rights institutions in compliance with the Paris Principles
	16.b	Promote and enforce non- discriminatory laws and policies for sustainable development.	16.b.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law
17 Strengthen the means of implementation and revitalize the global partnership for sustainable development.	17.1	Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue	17.1.1 Total government revenue as a proportion of GDP, by source
		collection.	17.1.2 Proportion of domestic budget funded by domestic taxes
	17.2	Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of ODA/GNI to developing countries, and 0.15 to 0.20 per cent of ODA/GNI to least developed	17.2.1 Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development (OECD) Development Assistance

Goal description	Target	Description	Indicator
		countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries.	Committee donors' gross national income (GNI)
	17.3	Mobilize additional financial resources for developing countries from multiple sources.	17.3.2 Volume of remittances (in United States dollars) as a proportion of total GDP
			17.3.1 Foreign direct investments (FDI), official development assistance and South-South Cooperation as a proportion of total domestic budget
	17.4	Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress.	17.4.1 Debt service as a proportion of exports of goods and services
	17.5	Adopt and implement investment promotion regimes for least developed countries.	17.5.1 Number of countries that adopt and implement investment promotion regimes for least developed countries
	17.6	Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.	17.6.2 Fixed Internet broadband subscriptions per 100 inhabitants, by speed
			17.6.1 Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation

Goal description	Target	Description	Indicator
	17.7	Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.	17.7.1 Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies
	17.8	Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.	17.8.1 Proportion of individuals using the Internet
	17.9	Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South- South and triangular cooperation.	17.9.1 Dollar value of financial and technical assistance (including through North-South, South- South and triangular cooperation) committed to developing countries
	17.10	Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda.	17.10.1 Worldwide weighted tariff-average
	17.11	Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020.	17.11.1 Developing countries' and least developed countries' share of global exports
	17.12	Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating	17.12.1 Average tariffs faced by developing countries, least developed countries and small island developing States.

Goal description	Target	Description	Indicator
		market access.	
	17.13	Enhance global macroeconomic stability, including through policy coordination and policy coherence.	17.13.1 Macroeconomic Dashboard
	17.14	Enhance policy coherence for sustainable development	17.14.1 Number of countries with mechanisms in place to enhance policy coherence of sustainable development
	17.15	Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development.	17.15.1 Extent of use of country-owned results frameworks and planning tools by providers of development cooperation
	17.16	Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries.	17.16.1 Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the sustainable development goals
	17.17	Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resources strategies of partnerships.	17.17.1 Amount of United States dollars committed to (a) public-private partnerships and (b) civil society partnerships
	17.18	By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high- quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other	17.18.1 Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics

Goal description	Target	Description	Indicator
		characteristics relevant in national contexts.	17.18.2 Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics
			17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding
17.19 By 2030, build on e measurements of pr complement gross of	By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical	17.19.1 Dollar value of all resources made available to strengthen statistical capacity in developing countries	
		capacity-building in developing countries.	17.19.2 Proportion of countries that (a) have conducted at least one population and housing census in the last 10 years; and (b) have achieved 100 per cent birth registration and 80 per cent death registration

Source: https://sdg.humanrights.dk/en/goals-and-targets?page=4

# **Snapshot of NCR Environment**

<b>Table 1.1:</b>	<b>Total Geographical</b>	Area and area under	Forest in the sub region
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Sub Region	Geographical area (sq. km)	Percentage to of total geographical area	Area under forests (sq. km)	Area under forest (%)
NCT Delhi	1483	2.61	195.44 (13.18)	5.99
Haryana	25203.91	44.44	1277.89(5.07%)	39.17
Uttar Pradesh	16584	29.24	361.92(2.18%)	11.09
Rajasthan	13447	23.71	1426.93 (10.61%)	43.74
NCR	56717.91	100.00	3262.18(5.75%)	100.00

Source: India State of Forest Report 2019, Forest Survey of india

<b>Table 1.2:</b>	<b>District-wise total</b>	geographical	area and area	under fores	t in the sub	o region
		a a 1				

Sub Region	Districts	Geographical area (sq. km)	Percentage of total geographical area	Area under forests (sq. km)	Area under forest (%)
	North West	443	29.87	18.04	9.23
	North	61	4.11	4.58	2.34
	North East	62	4.18	3.99	2.04
	East	63	4.25	3.75	1.92
NCT Delhi	New Delhi	35	2.36	16.47	8.43
	Central	21	1.42	4.94	2.53
	West	130	8.77	6.85	3.50
	South West	421	28.39	52.19	26.70
	South	247	16.66	84.63	43.30
	Sub Region	1483		195.44	
	Bhiwani	3283.23	13.03	317.13	24.82
	Charkhi Dadri	1369.78	5.43	0.35	0.03
Harvana	Faridabad	742.9	2.95	70	5.48
1 Iur y unu	Gurugram	1258	4.99	89	6.96
	Jhajjar	1834	7.28	33.71	2.64
	Jind	2702	10.72	4.58	0.36

Sub Region	Districts	Geographical area (sq. km)	Percentage of total geographical area	Area under forests (sq. km)	Area under forest (%)
	Karnal	2520	10	77.21	6.04
	Mahendragarh	1899	7.53	173.42	13.57
	Mewat	1507	5.98	236.21	18.48
	Palwal	1359	5.39	4.38	0.34
	Panipat	1268	5.03	41.53	3.25
	Rewari	1594	6.32	90.63	7.09
	Rohtak	1745	6.92	45.94	3.59
	Sonipat	2122	8.42	93.81	7.34
	Total	25203.91		1277.89	
	Baghpat	1321	7.97	17.06	4.71
	Bulandshahr	4512	27.21	165.12	45.62
	G B Nagar	1282	7.73	20	5.53
	Ghaziabad	1179	7.11	25.22	6.97
Uttar Pradesh	Hapur	660	3.98	-	0
	Meerut	2559	15.43	68.41	18.9
	Muzaffarnagar	4008	24.17	66.11	18.27
	Shamli	1063	6.41	-	0
	Sub Region	16584	100	361.92	100
	Alwar	8380	62.32	1196.66	83.86
Rajasthan	Bharatpur	5067	37.68	230.27	16.14
	Sub Region	13447	100.00	1426.93	100.00
NCR	Total	56717.91		3262.18	

Source: India State of Forest Report 2019

# Table 1.3: District-wise change in area under forest in the sub region (2011-2019)

Sub Region		2011		2015		2019	
	Districts	Area	Area in %	Area	Area in %	Area	Area in %
NCT Delhi	North West	16.49	9.36	17.04	9.03	18.04	9.23
	North	4.81	2.73	4.53	2.40	4.58	2.34

Sub		2011		2015		2019	
Region	Districts	Area	Area in %	Area	Area in %	Area	Area in %
	North East	4.1	2.33	3.97	2.10	3.99	2.04
	East	2.99	1.70	3.28	1.74	3.75	1.92
	New Delhi	16.31	9.26	17.25	9.14	16.47	8.43
	Central	5.05	2.87	5.14	2.72	4.94	2.53
	West	6.33	3.59	6.82	3.61	6.85	3.50
	South West	41.8	23.72	48.6	25.75	52.19	26.70
	South	78.32	44.45	82.14	43.51	84.63	43.30
	Sub Region	176.2	100.00	188.77	100.00	195.44	100.00
	Bhiwani	3.13	0.36	3.13	0.33	3.17	0.5
	Charkhi Dadri	0.34	0.04	0.34	0.04	0.34	0.0
	Faridabad	-		70	7.49		0.0
	Gurugram	88.96	10.28	88.97	9.52	88.96	13.1
	Jhajjar	33.71	3.90	33.71	3.61	33.71	4.9
	Jind	4.57	0.53	4.57	0.49	4.57	0.7
	Karnal	75.9	8.77	75.25	8.05	77.21	11.3
Haryana	Mahendragarh	173.42	20.04	173.42	18.56	173.42	25.5
	Mewat	208.97	24.15	208.97	22.36	23.62	3.5
	Palwal	4.37	0.51	4.37	0.47	4.37	0.6
	Panipat	41.52	4.80	41.52	4.44	41.52	6.1
	Rewari	90.62	10.47	90.62	9.70	90.62	13.3
	Rohtak	45.94	5.31	45.94	4.92	45.94	6.7
	Sonipat	93.8	10.84	93.8	10.04	93.8	13.8
	Total	865.25	100	934.61	100	681.25	100
	Baghpat	25.208	6.09	0	0	12.604	3.14
	Bulandshahr	77.366	18.69	77.366	19.888	77.266	19.248
Uttar	G B Nagar	17.828	4.307	17.931	4.609	17.931	4.467
Pradesh	Ghaziabad	7.513	1.815	7.513	1.931	7.513	1.872
	Hapur	10.257	2.478	10.257	2.637	10.257	2.555
	Meerut	143.728	34.722	143.903	36.992	143.799	35.823

Sub Region	Districts	2011		2015		2019	
		Area	Area in %	Area	Area in %	Area	Area in %
	Muzaffarnagar	122.592	29.616	122.592	31.514	122.592	30.54
	Shamli	9.45	2.283	9.45	2.429	9.45	2.354
	Sub Region	413.942	100	389.012	100	401.412	100
	Alwar	901.88	96.91	721.74	75.46	721.74	75.46
Rajasthan	Bharatpur	28.73	3.09	234.74	24.54	234.74	24.54
	Sub Region	930.61	100.00	956.48	100.00	956.48	100.00
NCR	Total	2386.01		2468.87		2234.58	

Source: NCR Monitoring and Planning Cell, Govt of Haryana, Govt of Uttar Pradesh, Govt of Rajasthan For Delhi- India State Forest Report 2011, 2015 and 2019 and * District Statistical Abstract.

# **Table 1.4: National Ambient Air Quality Standards**

Pollutant	Time Weighted average	Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)
Sulphur Dioxide (SO2), µg/m3 24	Annual*	50	20
Nitrogen Dioxide (NO2), µg/m3 24	Annual*	40	30
Particulate Matter (size less than 10 µm) or PM10µg/m3	Annual*	60	60
PM 2.25			

Source: National Ambient Air Quality Standards Central Pollution Control Board Notification New Delhi, the 18th November, 2009.

Table 1.5: AAO	) monitoring static	ns and Status o	of Ambient air	quality in N	[CR area
Tuble Liet Inty	2 monitoring static	no una otatuo (	I I IIII JICIIC UII	quanty min	CIL ui cu

Sub region	District	Location of Stations	2019			
			SO ₂	NO ₂	$PM_{10}$	
		Jahangirpuri	24.00	25.00	26.00	
NCT Delhi	North West	Ashok Vihar	21.10	50.26	246.71	
		Rohini	21.25	48.49	213.69	

Sub region	District	Location of Stations		2019	
Subregion	District		SO ₂	NO ₂	PM ₁₀
		Wazirpur	16.43	39.21	231.45
		Bawana	17.98	68.33	277.89
	North	Alipur	15.22	40.21	239.28
		Narela	26.38	52.93	195.66
	North East	Sonia Vihar	16.53	40.64	223.02
	Fast	Patparganj	13.21	36.41	210.67
	Last	Anand Vihar	4.59	20.32	179.25
	New Delhi	National Stadium	15.20	82.00	269.00
	Central	Pusa	14.23	59.45	193.03
	Central	Mandir Marg	15.89	64.27	209.00
	West	Mundka	7.96	51.57	200.00
	VY CBL	Punjabi Bagh	19.35	35.34	288.48
		Najafgarh	21.95	64.24	200.00
	South West	Dwarka	16.07	34.79	150.05
		R K Puram	23.54	40.83	289.10
	South	Nehru Nagar	10.04	58.09	212.00
		Sri aurobindo marg	20.67	48.95	206.57
		JLN Stadium	10.24	35.30	168.12
		Dr. Karni Singh Shooting Range	21.75	66.85	205.43
		Okhla	15.66	34.90	181.00
	Shahdara	Vivek Vihar	12.30	38.14	202.04
	Shanuara		20.09	37.82	220.76
	Total		16.87	46.97	209.53
	Bhiwani		15.46	27.89	172.87
	Charkhi Dadri		7.97	46.07	169.62
Harvana	Faridabad		6.51	22.25	313.97
manyana	Gurugram		9.65	17.66	212.04
	Jhajjar		28.39	14.35	212.6
	Jind		6.33	12.57	141.54

Sub region	District	Location of Stations	2019		
Subregion	Distilet		$SO_2$	NO ₂	$PM_{10}$
	Karnal		25.82	39.7	223.18
	Mahendragarh		6.39	15.71	145.51
	Mewat		6.05	19.92	233.42
	Palwal		18.89	12.54	278.91
	Panipat		35.61	16.57	234.97
	Rewari		13.79	26.7	0
	Rohtak		10.7	15.66	0
	Sonipat		7.93	3.6	0
	Total		14.249286	20.799286	167.045
		Begum Bridge	10.6	74.4	221.8
	Baghpat	Kesarganj	7.3	43.2	193.1
		CMO Office (CAAQMS)	29.9	34.7	260
	Bulandshahar	UPPCB, F-5, Yamuna Puram, Bulandshahr	28.3	38.7	204
	Guatam Buddh Nagar*	CNH Industrial India Pvt, Ltd, (New Holland Tractors (P) Ltd), Plot No-3, Udyog Kendra, Greater Noida	15.56	24.66	314.57
		Honda Siel Power Product Ltd, Plot No-5, Sec-41, Ecotech-1, Greater Noida	17.33	25.86	280.86
Uttar Pradesh		(Online Continuous Air Ambient Monitoring System) Sharda University, Knowledge Part-III, Greater Noida	56	62	178
		(Online Continuous Air Ambient Monitoring System) Balak Intercollage, Knowledge Part-V, Greater Noida	10	25	146
		Amity University			
		Sec-1*			
		Sec-116*			
		Amko Export BS Road GZB	21.34	46.25	227.43
	Ghaziabad	Atlas Sahibabad GZB	24.51	51.35	272.5
		Vinoba Bhave Park Lohia nagar Gzb	14.29	47.99	183.37

Sub region	District	Location of Stations		2019	
Subregion	District	Location of Stations	SO ₂	NO ₂	PM ₁₀
		Khora Colony Gzb	14.05	24.35	188.29
		Gyan Khand4, Indirapuram Gzb	32.18	77.33	281.75
		Loni Nagar Palika loni Gzb	24.63	47.33	321
		Vasundhara sec-16, Gzb	27.2	80.78	257.75
		District Combined hospital Sanjay nagar Gzb	21.48	74.88	260.5
		Sri Nagar Colony, Park Lane, Railway Road, Hapur (U.P.)*	0	0	0
	Hapur*	Jindal Pipes Ltd, 22nd Milestone, Delhi-Hapur Road, Jindal Nagar (U.P.)*	0	0	0
		New Collectorate, Hapur (Continuous Ambient Air Quality monitoring system - started from Sept. 2018)			
		Begum Bridge	8.87	72.74	196.5
	Meerut	Kesarganj	6.71	43.13	176.15
		CMO Office (CAAQMS)			
	Muzaffarnagar	CAAQMS Station at S.D. Degree College, Bhopa Road, Muzaffarnagar	198.25	36.68	233.85
		Sahara Pariwar Office, Kamal Cinema Building	233.85	39.8	237.31
		Lekhpal Bhawan, Tehsil Sadar Campus	237.31		
	Shamli	Shamli			
	Total		45.202609	44.142273	210.6695 5
Rajasthan	Alwar	RO Building, RSPCB,8/43-44 NEB Housing Board, Alwar (station code 372)	10.2	34.1	159
		RIICO Pump house, MIA, Alwar (station code -219)	13.6	37.4	176
		Gaurav Solvex, MIA,Alwar (station code 373)	14.1	40.2	219
		R.O Building	29.0	57.6	296

Sub region	District Location of	Location of Stations		2019	
~~~~~			SO ₂	NO ₂	<b>PM</b> ₁₀
	UIT Guest House Uttam Strips (Orient Syntex) (Station started from October-2016)		26.5	59.5	270
			30.7	52.4	239
	Bharatpur	Regional Office Building, RO, RSPCB, Bharatpur	7.36	24.66	184
		RIICO Office Building, RIICO Industrial Area, Bharatpur	7.36	25.24	243
		Khadi Gramoday Samiti, Near Heeradas Bus Stand, Bharatpur	7.88	26.3	224
	Total		16.30	39.71	223.33

Source: For Delhi- NCR Cell Govt. of Delhi & Delhi Pollution Control Committee, For Haryana- Haryana State Pollution Control Board website, For UP-NCR Monitoring and Planning Cell. Govt of Uttar Pradesh and *http://www.uppcb.com/air_quality, and For Rajasthan NCR Monitoring and Planning Cell, Govt of Rajasthan.

Table 1.6: Annual Mean Concentration of PM10 in NCR area

Region/ Sub-Region	2017	2018	2019
NCT-Delhi	225.20	267.98	209.53
Haryana			167.05
Uttar Pradesh	134.32692	197.9965	210.6695
Rajasthan	177.89	216.11	223.33
NCR	179.14	227.36	202.64

Figure 1.1: Annual Mean Concentration of PM10



Table 1.7: Annual Mean	Concentration	of PM10 in	NCR area
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Region/ Sub-Region	2017	2018	2019
NCT-Delhi	22.23	18.51	16.87
Haryana			14.25
Uttar Pradesh	15.468	17.6835	18.51
Rajasthan	9.62	12.70	16.30
NCR	15.77	16.30	16.48

Figure 1.2: Annual Mean Concentration of SO2



Table 1.8: Annual Mean Concentration of NO2 in NCR area

Region/ Sub-Region	2017	2018	2019
NCT-Delhi	63.00	50.26	46.97
Haryana			20.80
Uttar Pradesh	38.297	38.126	44.14

Rajasthan	28.97	32.04	39.71
NCR	43.42	40.14	37.91



Figure 1.3: Annual Mean Concentration of NO2

Note on Aravali Range in NCR

Delhi Ridge is the last leg of the Aravali Range, which traverses south to Delhi from Gurgaon and terminates at Central Delhi. The Aravalis have been divided into three areas in NCR delineating their sensitivity to development namely; The Delhi Ridge, Aravalis at Gurgaon & Faridabad and Aravalis at Alwar.

i. The Delhi Ridge - The Ridge in Delhi is actually an extension of the Aravali hills that enter Gurgaon from south and sprawls towards Delhi. The Ridge has been divided into four zones (Table 14.4).

S. No.	Zone	Area (in ha)	Features
1	Southern Ridge	6200	Outside the city limits.
2	South Central Ridge	626	Encompasses Mehrauli area
3	Central (or New Delhi) Ridge	864	Within the city limits, just north of Dhaula Kuan
4	Northern (or Old Delhi) Ridge	87	The smallest section, lies between Civil Lines and the University of Delhi.
	Total	7777	

Table 1.9	: Classification	of Delhi	Ridge

Source: www.delhi.gov.in

ii. Aravalis at Gurgaon & Faridabad, Haryana – The major portion of forest areas in Aravali section of Gurgaon and Faridabad in Haryana sub-region, mainly passing through agricultural fields or wastelands.

iii. Aravalis at Alwar - The Aravali makes its appearance in the Alwar district from the northeast in Tijara subdivision and runs southward. The hilly ranges enclose between the fertile valleys and alluvial plains.

A) Acts, Notifications and Court Directives on Aravali

Aravali Notification, 1992 - The Ministry of Environment & Forests vide *Aravali* notification dated 7th May, 1992, have restricted certain developmental activities in the specific areas of NCR. The list of process and operations prohibited in specified area of Aravalli Range are given in the Aravalli Notification issued by Ministry of Environment and Forest on 7th May 1992. A copy the Notification is at **Anenxure-D-1.2.1**.

B)Environment Master Plan for Aravali, 1999 – In compliance with the MoEF directive, the Rajasthan State Pollution Control Board prepared and published the **Environmental Master Plan of Alwar District in 2011 (EMP Alwar 2011).** The Environmental Master Plan of Alwar recommends comprehensive measures for protection of Aravalis in Alwar district. Besides, the Master Plan also recommends, Tehsil wise detailed conservation measures. EMPfor other districts in NCR have not yet been prepared.

Sub Region	District	Protected Areas Name	
NCT Delhi	South Delhi	Asola Bhatti Wildlife Sanctuary	
	Sub-Total		1
	Gurugram	Sultanpur National Park	
	Gurugram & Faridabad	Asola Bhatti Wildlife Sanctuary	
Harvana	Rewari	Nahar Wildlife Sanctuary	
	Ihaijar	Bhindawas Wildlife Sanctuary	
	Shujju	Khaparwas Wildlife Sanctuary	
	Sub-Total		5
	G B Nagar	Okhla Bird Sanctuary	
Uttar Pradesh	Meerut	Hastinapur Wildlife Sanctuary	
	Sub-Total		2
	Alwar	Sariska Tiger Reserve	
Rajasthan	Bharatpur	Keoladeo Wildlife Sanctuary/ National Park,	
		Bandh Baretha Wildlife sanctuary	
	Sub-Total		3
NCR	Grant Total		11

Table 1.10	: Protected	Areas in	NCR
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Source: Eco-Sensitive Zones (ESZ) Division of MoEF&CCletter dated 16.12.2020 and <u>http://moef.gov.in/rules-and-regulations/esz-notifications-2/</u>
Rajasthan

- 1.0 Rajasthan sub region's Alwar district has various industrial clusters and industry types. These include (i) MIA, Alwar (ii) RIA, Neemrana (iii) Bhiwadi -Phase I to V (ii) Kehrani (iii) Chopanki (iv) Pathredi (v) Sare Khurd (vi) Khushkhera(vii) Tapukara (viii) Karoli. Rajasthan State Industrial Development and Investment Corporation (RIICO) is instrumental in developing these industrial areas since 1975. Further, there are about 3000 nos. units in Alwar district. Prominent of these are automobile manufacturing (Hero Motocorps, Honda Motorcycle & Scooters, Honda Cars), glass manufacturing (Saint Gobain), cement manufacturing (Shree Cement), soft drink (pepsi), breweries (Sab Miller India, United breweries, Carlsberg Ltd., winsome, Mahaou India) wires and cable manufacturing, stainless steel sheet manufacturing (Patta- Patti), Pharmaceuticals, Automobile parts, Iron melting industries (induction furnaces), Pesticides, laminate sheet manufacturing, chemicals, Mineral grinding units etc. Regarding, Monitoring of Ambient Air Quality (Manual & Continuous), there are 3 manual monitoring stations in Alwar, 3 stations at Bhiwadi and 3 stations at Bharatpur, established in residential, commercial and industrial areas to know ambient air quality parameters PM 10, SO2 and NO2.
- 2.0 Status of Common Effluent Treatment Plant (CETP) at Bhiwadi
- 2.1 CETP of capacity 09 MLD (90 Lac liters/ day) is operational at Bhiwadi. The industries established at RIICO industrial area, Bhiwadi (Phase-I to V) are connected to the CETP. The CETP is based on Primary (Physico-Chemical) secondary (Biological) and Tertiary (Activated carbon and pressure sand filter) Treatments. The waste water from industries is discharged in open drains leading to the CETP.
- 2.2 To avoid mixing of rain water and domestic water with the industrial waste water, it is planned to lay down closed conveyance system (Pipeline) in the Industrial Area Bhiwadi from individual industries to the CETP. To utilize the CETP treated water by the industries themselves reverse pipeline (i.e. from CETP to the individual industry) to be provided. Also, it is planned to upgrade the existing treatment facility at the CETP by providing Reverse Osmosis (RO) System for 06 MLD, so that the treated water can be used in the process itself by the member industries. The RIICO Ltd had prepared DPR of the above project. The Central Govt. has sanctioned required fund for the project, approx 145 crores recently. The RIICO Ltd is the State Implementing Agency (SIA) for the Project. This project is likely to be implemented in next 02 years.

Aravali Notification 1992

MINISTRY OF ENVIRONMENT & FORESTS

NOTIFICATION

New Delhi, the 7th May 1992

(Under Section 3(1) and 3(2) (v) of the Environment Protection) Act, 1986 and rule 5 (3) (d) of the Environment (Protection) Rules, 1986 restricting certain activities in specified area of Aravalli Range, which are causing Environmental Degradation in the Region.

S.O. 319 (E) - Whereas a Notification under section 3 (1) and section 3 (2) (v) of the Environment (Protection) Act, 1986 (29 of 1986) inviting objections against restricting certain activities in specified area of Aravalli Range which are causing Environmental Degradation in the Region was published in the Gazette of India, Part II-Section 3 Sub-section (ii) vide S. O. 25 (E) dated 9th January, 1992;

And whereas all objections received have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2), of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), read with rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby prohibits the carrying on of the following process and operations, except with its prior permission, in the areas specified in the Table appended to this Notification:

- Location of any new industry including expansion modernisation;
- (ii) (a) All new mining operations including renewals of mining leases.

(b) Existing mining leases in sanctuaries/national Park and areas covered under Project Tiger and/or

(c) Mining is being done without permission of the competent authority.

- (iii) Cutting of trees;
- Construction of any clusters of dwelling units, farms houses, sheds, community centres, information centres and any other activity connected with such construction (including roads a part of any infrastructure relating thereto);
- (v) Electrification (laying of new transmission lines).

- 2. Any person who desires to undertake any of the above mentioned processes or operations in the said areas, shall submit an application to the Secretary, Ministry of Environment and Forests, New Delhi, in the attached application form (Annexure) specifying, inter alia, details of the area and the proposed process or operation. He shall also furnish an Environment Impact Statement and an Environmental Management Plan along with the application and such other information as may be required by the Central Government for considering the application.
- 3. The Central Government in the Ministry of Environment and Forests shall, having regard to the guidelines issued by it from time to time for giving effect to the provisions of the said Act, grant permission within a period of three months from the date of receipt of the application or where further information has been asked for from the applicant, within a period of three months from the date of the receipt of such information, or refuse permission within the said time on the basis of the impact of the proposed process or operation on the environment in the said area.
- For seeking permission under this Notification, an application in the prescribed form (see Annexure), duly filled in, may be submitted to the Secretary, Ministry of Environment and Forests, Paryavaran Bhavan, CGO Complex, Lodi Road, New Delhi.

[No. 17/1/91-PL/IA] R. RAJAMANI, Secy.

TABLE

Areas where carrying on of processes and operations without permission is prohibited

- (i) all reserved forests, protected forests or any other area shown as "forest in the land records maintained by the State Government as on the date of this notification in relation to Gurgaon District of the State of Haryana and the Alwar District of the State of Rajasthan.
- (ii) All areas shown as: -
 - (a) Gair Mumkin Pahar, or
 - (b) Gair Mumkin Rada, or
 - (c) Gair Mumkin Behed, or
 - (d) Banjad Beed, or
 - (e) Rundh.

in the land records maintained by the State Government as on the date of this notification in relation to Gurgaon district of the State of Haryana and the Alwar district of the State of Rajasthan.

- (iii) all areas covered by notifications issued under section 4 and 5 of the Punjab Land Preservation Act, 1900, as applicable to the State of Haryana in the district of Gurgaon up to the date of this Notification.
- (iv) all areas of Sariska National Park and Sariska Sanctuary notified under the Wildlife (Protection) Act, 1972 (53 of 1972).

ANNEXURE

APPLICATION FORM

- 1. (a) Name & address of the project proposed:
 - (b) Location of the project: Name of the Place: District, Tehsil: Location Map:
 - (c) Alternate sites examined and the reasons for the site proposed:
- 2. Objectives of the project:
- (a) Land Requirement: Agriculture land: Other (specify):
 - (b) (i) Topography of the area indicating gradient, aspect & altitude.
 - (ii) Erodability classification of the proposed land.
 - (c) Pollution sources existing within 10 km. Radius.
 - (d) Distance of the nearest National Park/Sanctuary/Biosphere Reserve/Monuments/heritage site/Reserve Forest:
 - (e) Rehabilitation plan for Quarries/borrow areas :
 - (f) Green belt plan.
 - (g) Compensatory afforestation plan.
- 4. Climate & Air Quality*:
 - (a) Wind rose at site:
 - (b) Max. /Min./Mean annual temperature.

- (c) Ambient air quality data:
- (d) Nature & concentration of emission of SPM, Gases (CO, CO₂, SO₂, NO_x etc.) from the project:
- 5. ** (a) Water balance at site surface and ground water availability and demand:
 - (b) Lean season water availability:
 - (c) Water source to be tapped with details of competing users (Rivers, lake, Ground, Public supply):
 - (d) Water Quality:
 - (e) Changes observed in quantity and quality of water in the last 15 years and present charging and extraction details:
 - (f) (i) Quantum of waste water to be released with treatment details:
 - (ii) Quantum & Quality of water in the receiving water body:
 - Quantum of waste water to be released on land and the type of land:
- Solid Wastes:
 - (a). Nature & quantity of solid wastes generated:
 - (b). Solid waste disposal method:
- Noise & vibrations:
 - (a) Sources of noise & vibrations:
 - (b) Ambient noise level:
 - (c) Noise & vibration control measures proposed:
 - (d) Subsidence problem, if any, with control measures:
- Power requirement indicating source of supply; complete environmental details to be furnished separately, if captive power unit proposed:
- 9. Total abour force to be deployed with details of:
 - Endemic health problems in the area.
 - Health care system proposed:
- 10. (a) Number of families and population to be displaced :
 - (b) Rehabilitation Master Plan:
- 11. Risk assessment report:
- 12. (a) Environmental Impact Assessment Report :
 - (b) Environmental Management Plan: Prepared as per Guidelines of MEF issued from time to time.
 - (c) Detailed Feasibility Report:
 - Proposal for diversion of Forestland under Forest (Conservation) Act, 1980 including Benefit Cost analysis.

 Recommendations of the State Pollution Control Board and/or the State Department of Environment & Forests.

> Signature of the Applicant Along with name, date and full Postal address.

*Data may be obtained from India Meteorological Department and State Pollution Control Board.

**Ground water Board and the Irrigation Deptt. May be contacted for data.

N.B.

- A. Item Nos. 3(c), 4, 5, 6, 7, 8, 9, 10, 12 (b) and 12 (c) are not applicable to cutting of trees.
- B. Item Nos. 3(c), 4, 7, 11 are not applicable to construction of cluster of dwelling units, farm sheds, community centre and any other activity connected with such construction including roads.
- C. Item Nos. 3(b), 3(c) (3e), 3(f), 4, 5, 6, 7, 9, 12(a) & 12(b) are not applicable to electrification.
- D. All items to be furnished in case of mining, industry, thermal power, transport projects.
- E. Notwithstanding the above, any item(s) considered not applicable may be so indicated along with reasons.

Brief of Draft National Forest Policy¹⁵³-2018

The MoEF&CC released the draft National Forest Policy in 2018. The basic thrust of the draft Policy is for conservation, protection, and management of forests along with addressing other issues associated with forest and forest management.

Key features of the policy

- 1) The policy proposes to restrict schemes and projects which interfere with forests that cover steep slopes, catchments of rivers, lakes, and reservoirs, geologically unstable terrain and such other ecologically sensitive areas
- 2) The draft policy suggests that the ecologically sensitive catchment areas shall be stabilized with suitable soil and water conservation measures, and also by planting suitable trees and grass-like bamboo
- 3) It also suggests setting up of two national-level bodies—National Community Forest Management Mission(CFM) and National Board of Forestry (NBF)—for better management of the country's forests.
- 4) The draft mentions that NBF needs to be headed by the central minister in charge of forests.
- 5) The draft policy calls for state boards of forestry headed by state ministers in charge of forests to be established for ensuring inter-sectoral convergence, simplification of procedures, conflict resolution, among other things.
- 6) Public-Private Participation: The Draft policy stated that Public-private participation models will be developed for undertaking afforestation and reforestation activities in degraded forest areas and forest areas available with forest development corporations and outside forests
- 7) Harmonization of policies and Laws: The new draft also says efforts will be made to achieve harmonization between policies and laws like the Forest Rights Act (FRA) 2006
- 8) As far as community forest resources management under Forest Rights Act is concerned, the new policy will address the same under participatory forest management and the same will be addressed through the proposed community forest management mission the draft said
- 9) It also suggested for the strengthening of the participatory forest management approach for which a National Community Forest Management (CFM) Mission will be launched.
- 10) On the issue of finances required for management of forests, the draft stated that the compensatory afforestation fund which is being transferred to the states would be a major source of funds for taking up afforestation and rehabilitation works in degraded forest areas as well as for bringing new areas under forest and tree cover.
- 11) The objective of the proposed policy is to safeguard the ecological and livelihood security of people, of present and future generations, based on sustainable management of the forests for the flow of ecosystem services.
- 12) The Policy continues with the target of having 33% of India's geographical area under forest and tree cover and in the hills and mountainous regions, the aim will be to maintain two-thirds of the area under forest and tree cover.
- 13) The policy also calls for "promotion of trees outside forests and urban greens", while stating that it will be taken up in "mission mode".

¹⁵³Source: PIB & Livemint

- 14) With respect to forest fires, it states that adequate measures would be taken to safeguard ecosystems from forest fires, map the vulnerable areas and develop and strengthen early warning systems and methods to control fire, based on remote sensing technology and community participation.
- 15) It emphasized on integrating climate change concerns into forest management while noting that forests acts as a natural sink of carbon dioxide thereby assisting in climate change mitigation.
- 16) The policy also stressed that wildlife-rich areas and corridors outside protected areas would be identified and maintained for ensuring ecological and genetic continuity.
- 17) Human-Wildlife Conflict: To tackle rising human-wildlife conflict, the draft outlined short-term and long-term actions. It mentions that quick response, dedicated teams of well equipped and trained personnel, mobility, strong interface with health and veterinary services, rescue centres, objective and speedy assessment of damage and quick payment of relief to the victims would be at the core of the short-term action. Monitoring and management of the population of wildlife would be adopted on a long-term basis within and outside forests for maintaining the balance.

Major Causes and Effects of Noise Pollution

Causes of Noise Pollution

There are many sources of noise pollution, but here are some of the main ones¹⁵⁴:

- 1) Traffic noise Traffic noise accounts for most polluting noise in cities. For example, a car horn produces 90 dB and a bus produces 100 dB.
- 2) Air traffic noise There are fewer aircraft flying over cities than there are cars on the roads, but the impact is greater: a single aircraft produces 130 dB.
- 3) Construction sites Building and car park construction and road and pavement resurfacing works are very noisy. For example, a pneumatic drill produces 110 dB.
- 4) Catering and night life Bars, restaurants and terraces that spill outside when the weather is good can produce more than 100 dB. This includes noise from pubs and clubs.
- 5) Animals Noise made by animals can go unnoticed, but a howling or barking dog, for example, can produce around 60-80 dB.



Source: The World Hearing* "Ranking compiled with data from Mimi Hearing Technologies GmbH, WHO and SINTEF (2018).

Effects of Noise Pollution

As well as damaging hearing by causing- deafness, constant loud noise can damage human healthin many ways, particularly in the very young and the very old. Here are some of the main effects of noise pollution:

1) Physical - Respiratory agitation, racing pulse, high blood pressure, headaches and, in

¹⁵⁴ https://www.iberdrola.com/environment/what-is-noise-pollution-causes-effects-solutions

case of extremely loud, constant noise, gastritis, colitis and even heart attacks.

- 2) *Psychological Noise can cause attacks of stress, fatigue, depression, anxiety and hysteria in both humans and animals.*
- 3) Sleep and behavioural disorders Noise above 45 dB stops you from falling asleep or sleeping properly. Remember that according to the World Health Organization it should be no more than 30 dB. Loud noise can have latent effects on our behaviour, causing aggressive behaviour and irritability.
- 4) Memory and concentration Noise may affect people's ability to focus, which can lead to low performance over time. It is also bad for the memory, making it hard to study.
- Human ears need more than 16 hours' rest to make up for two hours of exposure to 100 dB.

Chapter-16-Digital Infrastructure

Annexure-D-16.1

Domains for Smart Applications



Source: McKinsey Global Institute, McKinsey & Company, report on "Smart Cities: Digital Solutions for a More Livable Future, 2018

Annexure-D-16.2

Government Initiatives towards development of Digital Infrastructure & facilities

A). Govt. of India Initiatives

1. **Digital India Program -** The Digital India programme was launched in 2015. The program has now moved from the planning phase towards execution and significant progress has been made in implementation of the various initiatives. The DI programme is focused on fulfilling three vision areas through 9 "pillars" or focus areas, which lay down objectives in areas such as skill development, e-governance, mobile / broadband connectivity, etc. These 9 pillars are supplemented by initiatives that are operating at various levels. All the initiatives have been launched and are in various phases of implementation while significant progress has been achieved on some of these initiatives, such as Smart Cities, Jandhan, PAHAL, etc.¹⁵⁵. Details of various initiatives of the Central Government and NCR States are provided hereunder.



Figure 1: Overview of the Digital India Programme

2. Aadhaar Enabled Payment System (AEPS)¹⁵⁶ is a bank led model which allows online interoperable financial inclusion transaction at PoS (MicroATM) through the Business correspondent of any bank using the Aadhaar authentication. It is a payment service empowering a bank customer to use Aadhaar as his/her identity to access his/ her respective Aadhaar enabled bank account and perform basic banking transactions like balance enquiry, cash deposit, cash withdrawal, remittances through a Business Correspondent.¹⁵⁷

Figure 2: Mission Mode Projects (MMPs) under Digital India¹⁵⁸

¹⁵⁵<u>https://www2.deloitte.com/content/dam/Deloitte/in/Documents/technology-media-telecommunications/in-tmt-digital-india-unlock-opportunity-noexp.pdf</u>
¹⁵⁶http://npci.org.in/home.aspx

 ¹⁵⁷https://digitalindia.gov.in/di-initiatives

¹⁵⁸ Report On Digital India: Unlocking the trillion dollar opportunity



- 3. **Digidhan Abhiyaan -** The initiative plans to enable citizens and merchants to undertake real time digital transactions through the DIGIDHAN Bazaar. Through organizing DigiDhan Mela's across the country, it aims to handhold users in downloading, installing and using various digital payment systems for carrying out digital transactions.¹⁵⁹
- 4. **MYGOV** It is a unique first-of-its-kind participatory governance initiative involving the common citizen at large. The idea of MyGov brings the government closer to the common man by the use of online platform creating an interface for healthy exchange of ideas and views involving the common citizen and experts with the ultimate goal to contribute to the social and economic transformation of India¹⁶⁰. MyGov facilitate the following:
 - a) Blogs-Stay Updated MyGov activities
 - b) Innovate Crowd sourcing solutions for issues of national importance
 - c) Volunteer-Enable citizens enrollment for volunteering activities
 - d) eGreetings- Contemporary & eco-friendly method of sharing greetings
 - e) e-Sampark- Mechanism to connect Govt. directly with citizens
 - f) Do-Perform Online and on-ground Tasks
 - g) Discuss-Participate in Groups and Open Discussions

¹⁵⁹<u>https://digidhan.mygov.in/</u>

¹⁶⁰http://mygov.in

- h) Polls /Survey-Make your opinion count
- i) Survey- To seek public opinion on important issues
- j) Quiz- Learning with pleasure
- 5. **National Mission on Education using ICT** (Information and Communication Technology) (NMEICT) has been envisaged as a Centrally Sponsored Scheme to leverage the potential of ICT, in teaching and learning process for the benefit of all the learners in Higher Education Institutions in any time any where mode. It is a landmark initiative of the Ministry of Human Resource Development to address all the education and learning related needs of students, teachers and lifelong learners.¹⁶¹
- 6. **NREGA-SOFT** it envisions implementing e-Governance across State, District and three tiers of Panchayati Raj Institutions. It empowers the common man using the information technology as a facilitator. NREGAsoft provides information to citizen in compliance with the right to information Act (RTI Act). It makes available all the documents like Muster Rolls, registration application register, job card/employment register/muster roll issue register, muster roll receipt register which are hidden from public otherwise.¹⁶²
- 7. **OPENFORGE** OpenForge is the Government of India's platform for open collaborative development of e-governance applications. Through this platform, the government wants to promote the use of open source software and promote sharing and reuse of e-governance related source code. OpenForge objectives are: (a)To provide a platform for maintaining code repositories and version control for government source code; (b) To promote a culture of open collaborative application development between public agencies and private organizations, citizens and institutions; (c) To reduce development cycles and fasten the rollout of e-governance applications in the country; (d) To deliver e-governance services and solutions of higher quality and security through increased transparency and mass peer review; (e) To reduce e-governance project cost and bring down total cost of ownership through a system of reuse, remixing and sharing. ¹⁶³
- 8. **PAHAL (DBTL)** aims to reduce diversion and eliminate duplicate or bogus LPG connections. The scheme was earlier launched in 2013 and was modified in 2015. Under the PaHaL scheme, LPG cylinders are sold at market rates and entitled consumers get the subsidy directly into their bank accounts. This is done either through an Aadhaar linkage or a bank account linkage.¹⁶⁴
- 9. **PAYGOV INDIA** A National Payment Service platform has been envisaged for a common e-Governance infrastructure that will offer end-to-end transactional experience for a citizen which includes accessing various services through internet with payment gateway interface for online payments. Ministry of Electronics and Information Technology along with NSDL Database Management Ltd (NDML) created a common infrastructure that can be used by Center/States/Departments to offer various services through their National / State portals with a facility to make online payment using net

¹⁶¹<u>http://www.nmeict.ac.in/#</u>

¹⁶²<u>http://www.nrega.net/ict/</u>

¹⁶³https://openforge.gov.in/

¹⁶⁴<u>http://petroleum.nic.in/dbt/index.php</u>

banking, credit cards and debit cards.¹⁶⁵

- 10. **Pradhan Mantri Gramin Digital Saksharta Abhiyaan(PMGDISHA)** is a scheme to make six crore persons in rural areas, across States/UTs, digitally literate, reaching to around 40% of rural households by covering one member from every eligible household by 31st March, 2019. It aims to bridge the digital divide, specifically targeting the rural population including the marginalized sections of society like Scheduled Castes (SC) / Scheduled Tribes (ST), Minorities, Below Poverty Line (BPL), women and differently-abled persons and minorities.¹⁶⁶
- 11. **Smart Cities -** Government of India launched the Smart Cities Mission in June 2015. Its objective is to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities. The Smart Cities Mission is meant to set examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country.¹⁶⁷
- 12. National Programme on Artificial Intelligence It focuses on project implementation, applied research on AI and mission projects of Central Government, State Government. The priority areas are:
 - a) **Indian Languages-**Text to text ,speech to text and text to speech, speech to speech conversion.
 - b) **Agriculture-**Double Farmers Income, Prediction of crop yield, precision farming scalable, Distributed Healthcare-crops & Animals
 - c) Health- Ayushman Bharat-Double resources, Halving costs, low cost medical screening/Diagnostics solutions.
 - d) Education-Intelligent tutoring system, Scalable and reliable evaluation system
 - e) Finance-Detection of Financial frauds prediction of bad loans/NPA
 - f) Transportation-smart traffic management, Indian Navigational system
 - g) Urban Development -Smart city operations, Swachh Bharat Mission
 - h) Cyber security-Automated response to cyber attacks and cyber forensics
- 13. **Meity's Start-up Hub (MSH):** MSH acting as a hub and ensure synergies among all Start-up related activities and incentives. Having 04 Incubation centres located at Electroprenur park at Delhi University; Electronics incubator at IITM Kerala; Incubation centre on Medical Electronics at IIT Patna; and Fabless Chip Design incubation centre at IIT Hyderabad and 27 TIDE 1.0 centres. Further, Nine (09) Centre of Excellence at Gurugram, Vishakhapatnam, Gandhi Nagar, Fintech at Chennai, CoE in Big Data, AVG & IoT at Mohali, Tactile Grapics at IIT Delhi, NASSCOM-ERNET, IPR at Pune.
- 14. **Targeted Public Distribution System (TPDS)** Under the TPDS, the States were required to formulate and implement foolproof arrangements for identification of the poor

¹⁶⁵<u>http://paygovindia.gov.in/</u>

¹⁶⁶https://www.pmgdisha.in/

¹⁶⁷<u>http://smartcities.gov.in/content/</u>

for delivery of foodgrains and for its distribution in a transparent and accountable manner at the FPS level. The scheme, when introduced, was intended to benefit about 6 crore poor families for whom a quantity of about 72 lakh tonnes of food grains was earmarked annually.¹⁶⁸

- 15. **Pradhan Mantri Jan-Dhan Yojana (PMJDY)** is a National Mission on Financial Inclusion encompassing an integrated approach to bring about comprehensive financial inclusion of all the households in the country. The plan envisages universal access to banking facilities at least one basic banking account in every household, financial literacy, access to credit, insurance and pension facility. The initiative envisages channeling all Government benefits (from Centre / State / Local Body) to the beneficiaries' accounts and pushing the Direct Benefits Transfer (DBT) scheme of the Union Government.¹⁶⁹
- 16. **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** -is the flagship scheme of Ministry of Skill Development & Entrepreneurship (MSDE). The objective of this Skill Certification Scheme is to enable a large number of Indian youth to take up industry-relevant skill training that will help them in securing a better livelihood. Individuals with prior learning experience or skills will also be assessed and certified under Recognition of Prior Learning (RPL).¹⁷⁰
- 17. **Visvesvaraya PhD Scheme for Electronics and IT-** One of the key goals of the Scheme is to encourage working professionals and non-PhD faculty members to pursue PhD in the ESDM & IT/ITES sectors as part-time candidates. It is envisioned that having part-time PhD students is likely to encourage the Industry-Academia interaction, help in the alignment of the R&D efforts between them and bring value to the country.¹⁷¹
- 18. Accessible India Campaign and Mobile App Sugamya Bharat Abhiyaan or Accessible India Campaign is a nation-wide flagship campaign for achieving universal accessibility that enables people with disabilities to gain access for equal opportunity, live independently and participate fully in all aspects of life in an inclusive society. The campaign targets at enhancing the accessibility of built environment, transport system and Information and communication ecosystem. The mobile application is a crowd sourcing platform to comprehensively obtain information on inaccessible places across the country. The mobile application is available on IOS, Android and Windows platform and can be downloaded from the respective App Stores.¹⁷²
- 19. AGRIMARKET APP mobile application has been developed with an aim to keep farmers abreast with the crop prices and discourage them to carry-out distress sale. Farmers can get information related to prices of crops in markets within 50km of their own device location using the AgriMarket Mobile App. This app automatically captures the location of the farmers using mobile GPS and fetches the market prices of crops which fall within the range of 50km. The prices of agri commodities are sourced from the

¹⁶⁸<u>http://dfpd.nic.in/</u>

¹⁶⁹<u>http://pmjdy.gov.in/</u>

¹⁷⁰<u>http://www.pmkvyofficial.org/Index.aspx</u>

¹⁷¹http://phd.medialabasia.in/

¹⁷²http://accessibleindia.gov.in/content/

Agmarknet portal. Currently, the apps is available in English and Hindi languages.¹⁷³

- 20. **BHIM (BHARAT INTERFACE FOR MONEY)** an app that makes payment transactions simple, easy and quick using Unified Payments Interface (UPI). It enables direct bank to bank payments instantly and collect money using a Mobile number or Payment address. Bharat Interface for Money app is currently available on Android and it is downloadable from Google Playstore, for smart phones¹⁷⁴.
- 21. CRIME AND CRIMINAL TRACKING NETWORK & SYSTEMS (CCTNS) a plan scheme conceived in the light of experience of a non-plan scheme namely Common Integrated Police Application (CIPA). CCTNS aims at creating a comprehensive and integrated system for enhancing the efficiency and effectiveness of policing through adopting of principle of e-Governance and creation of a nationwide networking infrastructure for evolution of IT-enabled-state-of-the-art tracking system around 'Investigation of crime and detection of criminals'.¹⁷⁵
- 22. **CROP INSURANCE MOBILE APP** Crop insurance mobile app can be used to calculate the insurance premium for notified crops based on area, coverage amount and loan amount in case of loanee farmer. It can also be used to get details of normal sum insured, extended sum insured, premium details and subsidy information of any notified crop in any notified area.¹⁷⁶
- 23. **DIGITAL AIIMS** The first step in the Digital AIIMS project was taken in January 2015 with the creation of an effective linkage between AIIMS, Unique Identification Authority of India (UIDAI) and the Ministry of Electronics and Information Technology (MeiTY). A unique health identification number for every patient visiting AIIMS was generated on an Aadhar platform. The Unique Health Identification Number gave every Patient visiting AIIMS a Digital Identity.¹⁷⁷
- 24. **E-PANCHAYAT** e-Panchayat is an e-Governance initiative for the rural sector providing comprehensive software solution attempting automation of Gram Panchayat functions. It is a platform for panchayat representatives to connect with rest of the world, which aims to bring out the local voices by empowering the local communities to showcase and share local social, cultural and economic practices, stories and challenges.¹⁷⁸
- 25. **E-GRANTHALAYA** it is an Integrated Library Management Software developed by National Informatics Centre,(NIC), Department of Electronics & Information Technology. The application is useful for automation of in-house activities of libraries and to provide various online member services. The software provides built-in Web OPAC interface to publish the library catalogue over Internet. The software is UNICODE Compliant, thus, supports data entry in local languages.¹⁷⁹

26. EBIZ-is being implemented by Infosys Technologies Limited (Infosys) under the

¹⁷³http://mkisan.gov.in/downloadmobileapps.aspx

¹⁷⁴http://www.bhimupi.org.in/

¹⁷⁵http://www.ncrb.gov.in/BureauDivisions/CCTNS/cctns.htm

¹⁷⁶http://mkisan.gov.in/downloadmobileapps.aspx

¹⁷⁷<u>http://ehospital.nic.in/ehospital/</u>

¹⁷⁸<u>http://epanchayat.in/</u>

¹⁷⁹http://egranthalaya.nic.in/

guidance and aegis of Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce & Industry, Government of India. The focus of eBiz is to improve the business environment in the country by enabling fast and efficient access to Government-to-Business (G2B) services through an online portal. This will help in reducing unnecessary delays in various regulatory processes required to start and run businesses.¹⁸⁰

- 27. e-District- a Mission Mode Project (MMP) is envisaged to strengthen the district administration of the States by providing ICT support to the participating departments and district administration in terms of providing centralized software application for selected category of citizen services and training for staff of the departments with a view to improve delivery of the citizen services being rendered by these departments. Services developed under e-District project would be delivered through various delivery channels like: · Direct access by Citizens through e-District portal as a registered user. · Existing Atal Jana Snehi Kendra's / B1 / K1 service centres. Common Service Centres (upto Grama Panchayat Level.¹⁸¹
- 28. **E-Hospital** a Hospital Management Information System (HMIS) for internal workflows and processes of hospitals. This one-stop solution helps in connecting patients, hospitals and doctors on a single digital platform. The application is developed based on the global healthcare standards like HL7, SNOMED-CT, ICD10 and LOINC, and Meta Data and Data Standards (MDDS) published by the Ministry of Health & Family Welfare (MoHFW). e-Hospital is made available to Central Government/ State Government/ Autonomous/ Cooperative hospitals on cloud through SaaS (Software as a Service) model.¹⁸²
- 29. **EMSIPS** The electronic MSIPS (e-MSIPS) Application System enables online submission and scrutiny of applications submitted to Ministry of Electronics and Information Technology (MeitY) under the Modified Special Incentive Package Scheme (MSIPS) and Electronics Manufacturing Cluster (EMC) schemes. All registered users can submit their applications in the system, using the forms designed for the same. The system will enable online scrutiny of applications and online generation of responses to the applicant. The applicants can view the response in the system.¹⁸³
- 30. **ENAM** National Agriculture Market (NAM) is a pan-India electronic trading portal which networks the existing APMC (Agriculture Produce Marketing Committee) mandis to create a unified national market for agricultural commodities. The NAM Portal provides a single window service for all APMC related information and services. This includes commodity arrivals and prices, buy and sell trade offers and provision to respond to trade offers, among other services. While material flow (agriculture produce) continues to happen through mandis, an online market reduces transaction costs and information asymmetry.¹⁸⁴
- 31. **E-OFFICE** The eOffice product aims to support governance by ushering in more effective and transparent inter and intra-government processes. The vision of e-Office is

¹⁸⁰ https://www.ebiz.gov.in/home/

¹⁸¹https://edistrict.gov.in/

¹⁸² http://ehospital.nic.in/ehospital/

¹⁸³https://digitalindia.gov.in/di-initiatives?page=1

¹⁸⁴http://www.enam.gov.in/NAM/home/index.html

to achieve a simplified, responsive, effective and transparent working of all government offices. The Open Architecture on which eOffice has been built, makes it a reusable framework and a standard reusable product amenable to replication across the governments, at the central, state and dis trict levels. The product brings together the independent functions and systems under a single framework.¹⁸⁵

- 32. **E-PATHSHALA** Developed by NCERT, e-Pathshala showcases and disseminates all educational e-resources including textbooks, audio, video, periodicals and a variety of other print and non-print materials through website and mobile app. The platform addresses the dual challenge of reaching out to a diverse clientele and bridging the digital divide (geographical, socio-cultural and linguistic), offering comparable quality of e-contents. All the concerned stakeholders such as students, teachers, educators and parents can access e-books through multiple technology platforms i.e. mobile phones (android, iOS and Windows platforms), and tablets (as e-pub) and on web through laptops and desktops (as flipbooks).¹⁸⁶
- 33. E-PROCUREMENT PORTAL (CPP) The Central Public Procurement portal of the Government of India facilitates all the Central Government organizations to publish their Tender Enquiries, Corrigendum and Award of Contract details. The primary objective of this portal is to provide a single point access to the information on procurements made across various central government organizations.¹⁸⁷
- 34. **ESAMPARK** e-Sampark is a mechanism to connect the government directly with citizens across India by running mailer, outbound dialing and SMS campaigns. The platform is used for sharing informational and public service messages. The concept of e-Sampark has been introduced to establish proactive communication by digitization of campaigns. The multi-faceted platform facilitates not only seamless communication between the government and citizens, but also maintains a database of contacts of the nodal officers, representatives and citizens. In addition, users can also view the previous campaigns conducted.¹⁸⁸
- 35. **ETAAL** Electronic Transaction Aggregation & Analysis Layer (eTaal) is a web portal for dissemination of e-transactions statistics of the National and the State level e-governance projects including Mission Mode Projects. It receives transaction statistics from web based applications periodically on near real time basis. eTaal presents quick analysis of transaction counts in tabular and graphical form to give quick view of transactions done by various e-Governance projects.¹⁸⁹
- 36. **EVISA-** The Ministry of Tourism supported the initiative regarding the implementation of Tourist Visa on Arrival enabled with Electronic Travel Authorisation (ETA) (renamed as e-Tourist Visa) strongly and committed all support to Ministry of Home Affairs and Ministry of External Affairs and Ministry of Civil Aviation for implementing this programme. The e-tourist visa enables the prospective visitor to apply for an Indian Visa from his/her home country online without visiting the Indian Mission and also pay the

¹⁸⁵<u>https://eoffice.gov.in/</u>

^{186&}lt;u>http://epathshala.nic.in/</u>

¹⁸⁷<u>https://eprocure.gov.in/eprocure/app</u>

¹⁸⁸ https://sampark.gov.in/

¹⁸⁹<u>http://etaal.gov.in/</u>

visa fee online.¹⁹⁰

- 37. **FARMER PORTAL** The portal is envisaged to make available relevant information and services to the farming community and private sector through the use of information and communication technologies, to supplement the existing delivery channels provided for by the department. Farmers' Portal is an endeavour in this direction to create one-stop-shop for meeting all informational needs relating to Agriculture, Animal Husbandry and Fisheries sectors production, sale/storage of an Indian farmer. With this Indian Farmer will not be required to sift through maze of websites created for specific purposes.¹⁹¹
- 38. **FERTILISER MONITORING SYSTEM (FMS)** The FMS software monitors movement of various fertilizers at various stages in their value chain. The website provides information on fertilizer companies dealing with these fertilizers, the rate of concession on each fertilizer, its MRPs and product wise / state wise details of dispatch and receipts of fertilizers at different destinations across the country.¹⁹²
- 39. **GOODS AND SERVICE TAX NETWORK (GSTN)** The GST System Project is a unique and complex IT initiative. It is unique as it seeks, for the first time to establish a uniform interface for the tax payer and a common and shared IT infrastructure between the Centre and States. The portal envisions becoming a trusted National Information Utility (NIU) which provides reliable, efficient and robust IT Backbone for the smooth functioning of the Goods & Services Tax regimen enabling economic agents to leverage the entire nation as One Market with minimal Indirect Tax compliance cost.¹⁹³
- 40. **KISAN SUVIDHA -** Kisan Suvidha is an omnibus mobile app developed to help farmers get relevant information instantly. The app provide information on various details such as weather, market prices, seeds, fertilizers, pesticides, agriculture machinery, dealers, agro advisories, plant protection and IPM practices etc. Other unique features like extreme weather alerts, market prices of commodity in nearest area and the maximum price in state as well as in India have been added to empower farmers in the best possible manner.¹⁹⁴
- 41. **Knowledge Management System(KMS)** Digital India Program envisions to 'Transform India into a Digitally Empowered Society and Knowledge Economy'. To spearhead this vision, Knowledge Management Portal has been created to establish a culture where knowledge is captured, shared, created and reused. It provides a platform to leverage the transformation of data to knowledge by systematically aligning with the organizational goals and strategy.¹⁹⁵
- 42. **MASSET -** mAsset is a mobile based tool that act as a supplement application to capture details, such as photo and Geo-coordinates of the Assets into National Asset Directory (NAD). Additionally, this application is also used to capture the details of Asset (Category, sub-category, name of the Asset, Photo & Geo-coordinates) which are not

¹⁹⁰https://indianvisaonline.gov.in/visa/tvoa.html

¹⁹¹<u>http://farmer.gov.in/</u>

¹⁹²http://www.urvarak.co.in/

¹⁹³http://www.gstn.org/index.php

¹⁹⁴http://www.kisaansuvidha.com/

¹⁹⁵https://kms.negd.in/

available in the NAD application. NAD is one of the applications developed under Panchayat Enterprise Suite under e-Panchayat Mission Mode Project.¹⁹⁶

- 43. **MCA21** Ministry of Corporate Affairs (MCA), Government of India, has initiated the MCA21 project, which enables easy and secure access to MCA services in an assisted manner for corporate entities, professionals, and general public. The MCA21project is designed to fully automate all processes related to enforcement and compliance of the legal requirements under the Companies Act, 1956. The project further seeks to achieve inter-operability with the National e-Governance Services Delivery Gateway (NSDG), which will help extend MCA services to businesses via multiple front-end delivery channels, and which will also help provide other value-added services over and above the base services offered by MCA21¹⁹⁷.
- 44. **MKISAN** Kisan SMS Portal has been conceptualised to give a quantum leap in coverage of farmers and geographical area in a timely, specific, holistic and need based knowledge dissemination among the farmers by leveraging the power of mobile telephony in such a way that all sectors use this platform to not only reach out to the farmers but also to address their concerns and queries.¹⁹⁸
- 45. **MRAKTKOSH** The web-based mechanism interconnects all the Blood Banks of the State into a single network. The Integrated Blood Bank MIS refers the acquisition, validation, storage and circulation of various live data and information electronically regarding blood donation and transfusion service. Such system is able to assemble heterogeneous data into legible reports to support decision making from effective donor screening to optimal blood dissemination in the field.¹⁹⁹
- 46. **National Career Service Portal -** A national ICT based portal has been developed, primarily to connect opportunities with the aspirations of the youth. This portal facilitates registration of job seekers, job providers, skill providers, career counsellors, etc. Additionally, it provides job matching services in a highly transparent and user-friendly manner. These facilities along with career counselling will be delivered by the portal through multiple channels like career centers, mobile devices, CSCs, etc.²⁰⁰
- 47. National Urban Innovation Stack²⁰¹ NUIS is an initiative of the Ministry of Housing and Urban Affairs with a vision to provide a horizontal learning and knowledge sharing platform for exchange between cities, practitioners, academia, researchers and technologists. Its goal is to evolve a comprehensive framework to visualize and articulate the government's urban sector missions such as Smart Cities, AMRUT, Housing for All, HRIDAY and Swachh Bharat. NUIS encourages collaborative solutions and crowdsourcing of ideas for the urban sector, resulting in an eco-system which will promote and support co-creation at a national and global scale. It is developed by NIUA.

¹⁹⁶<u>http://assetdirectory.gov.in/</u>

^{197&}lt;u>http://www.mca.gov.in/</u>

¹⁹⁸http://mkisan.gov.in/

¹⁹⁹http://www.eraktkosh.in/

²⁰⁰https://www.ncs.gov.in/

²⁰¹https://www.nuis.in/index-aboutus.html

The NUIS will provide anytime-anywhere access to government services, delivering realtime updates while ensuring a KPI based service delivery. With the increased availability of open data, Citizens can collaborate with their government with higher trust and with increased frequency. It will also empower field level officials and the government will be able to drive and monitor national urban policy and practice in a focused manner by leveraging NUIS²⁰².India Urban Data Exchange (IUDX) Architecture is illustrated as below:



Figure 4: India Urban Data Exchange (IUDX) Architecture

²⁰²https://www.firstpost.com/india/govt-to-establish-national-urban-and-innovation-stack-for-smart-cities-totackle-implementation-challenges-at-the-ground-level-6480381.html

E-Governance or E-Services in NCR States

48. Rajasthan E-Governance core components

- a) IT Infrastructure: Core components like RSDC, RajNet, RajMegh etc. to host & disseminate IT enabled services
- b) Common Platforms: IT platforms like eSign, Sewa Dwaar, Rajdharaa etc. to enable application development
- c) Common Software: Ready to use applications like eProcurement, RAAS, RPP, SSO etc. for faster service delivery
- d) Public Interface for Service delivery: G2C Applications like SWCS, ePDS, eMitra etc. for effective delivery of citizen services
- e) Office Automation: G2G applications like Raj-Kaj, RajERP, FMDSS etc. for efficient resource utilization
- f) Startup Ecosystem: Facilities like iStart and Rajasthan stack to foster startup culture in the State
- g) Jan Soochna Portal
- RajComp Info Services Ltd. (RISL) becomes CA (Certification Authority) making Rajasthan First State in India to provide SSL and e-Sign Services to other States and the public by its own.

49. E-Services in NCT Delhi

Currently, Delhi has **E-District portal with 126 services**. Delhi has also initiated **door to door series. 1067** is the number for the end user. Delhi also has E-SLA (service level agreement) so that delivery is given on time; Delhi Govt. is dealing with 44 departments. Stakeholders of NCR should be much more than that. Also, Haryana has launched 600 services. All NCR sub-regions should develop a common platform common platform which will be the key driver and through this common platform sharing of data will be an important factor.

- A). **HIMMAT APP -** Himmat is an initiative by Delhi police especially for women. Himmat is an emergency service, comprised of an android emergency application, which can send a distress call or emergency message to Delhi Police officials and specified contact or group in an emergency situation faced by a woman. The Police personnel will get these SOS alerts and locations on a portal and as a sms on their mobile phones as well.²⁰³
- B). TATPAR Delhi Police-Flagship Apps and services with following key features:
 - a) One click navigation to the nearest jurisdictional Police Station
 - b) One click navigation to the nearest jurisdictional Traffic pit(where vehicles are parked after being towed)
 - c) App for filing of e-FIRs for theft of property and motor vehicles
 - d) SOS Emergency service. Receive immediate support from Delhi Police
 - e) Senior Citizen app registration and its services

²⁰³http://54.169.6.175/#

- f) Traffic app Services, Advisories and real time alerts
- g) Special app with services for Women and child safety

50. E-Services in Uttar Pradesh

- Online Delivery of Services: e-District is the mission mode project to ensure the delivery of high volume citizen centric services using multiple delivery channels such as Directly through internet, Common Service Centers (CSC) mobile app etc. in efficient & transparent way.
- 2) UP was the first State in country to successfully rollout e-District scheme in 6 pilot districts (including two NCR districts - Gautam Budh Nagar, Ghaziabad, Sultanpur, Sitapur, Gorakhpur and Rae Bareli) of UP. Later UP becomes first State in country to successfully rollout e-District scheme in all the 75 Districts of the State.
- 3) Presently 226 high volume citizen centic services of 31 state departments are being provided.
- 4) Looking at the overwhelming response of the citizens, GoUP is in the process to increase more citizen centric services under this scheme.
- 5) More than about 17.11 crores citizens have been benefited.
- 6) eSathi- as a online citizen centric services portal has been created to enable a single platform for various Government to citizen services.
- 7) Services Delivered through e-District Portal Uttar Pradesh is one of the priority. List of citizen centic services, being offered are provided on this link:<u>http://upite.gov.in/StaticPages/OnlineServices.aspx</u>

51. E-Services in Haryana

- 1) Measures Taken by Department of Electronics and communication, Govt. of Haryana for New Technology Hub in Gurugram:
 - a) HARTRON Multi Skill Development Centre (HMSDC) was established with 35000 Sq. Ft to boost Startup Ecosystem
 - b) 3 Incubators "NASSCOM 10K Startup Warehouse", "IAMAI-GoH Mobile 10X Hub" and "Center of Excellence for IOT"
 - c) 40+ Startups incubated
 - d) United Nations Technology Innovation Lab (UNTIL) is ready to Kick-Off with emphasis on Women Empowerment.
 - e) HARTRON's Multi-skill Development Centre facilities can be extended
 - f) Future Technologies adoption through Technology Hub Creation can be done
 - g) Measures Taken by Department for E-Waste Disposal management Centre of Excellence in Gurugram and Creating CoE for e-Waste Management
 - h) Current status: There is no CoE to create physical infrastructure for :
 - o Research Activities
 - Innovations
 - Technology Specializations
 - Creating re-usable components

- Develop skilled resources for e-waste management
- 2) Brief of E-Services in Haryana is as follow:
- 1. **CM Window** (<u>http://cmharyanacell.nic.in/</u>): CM Window is the public grievance portal for registering the grievance by any citizen of Haryana.
- 2. ANTYODAYA-SARAL Portal (<u>http://saralharyana.gov.in</u> /) : Aligning with Digital India's vision of faceless, paperless and cashless service/scheme delivery model, Antyodaya-SARAL aims totransform citizen service delivery in Haryana through complete digitization of over 380+ services. The vision for Antyodaya-SARAL is a unified platform to deliver and track Government-to-Citizen (G2C) services/schemes across the state.
- 3. Haryana e-Seva Scheme for Common Service Centres/ Atal Seva Centre: The Common Services Centers (CSC), also called as Atal Seva Kendras in Haryana have been established in most of Gram Panchayats with the services i.e. G2C, Business to Citizen, Financial Inclusion, Education, Agriculture, Health Services, Digitize India, Digi Pay.
- 4. **e-Bhoomi** (<u>https://ebhoomiharyana.org.in/#no-back-button</u>): e-bhoomi Haryana portal is a landmark initiative of Government of Haryana to transform the way land is procured in Haryana for public purposes. It will help preventing distress sale of land by offering State Government as the potential buyer.
- 5. **e-Tendering** (<u>https://etenders.hry.nic.in/nicgep/app</u>): e-Tendering web is providing the services i.e. tenders by locations, tenders by organization, tenders by classification and tender's status, etc.
- 6. **e-Disha** (<u>https://edisha.gov.in/</u>): e-Disha portal is providing the services i.e. SC, BC, SBC, Resident/Domicile, Income, Rural, Marriage Certificate, registration of land, sanction of mutation of land, copy of land record, etc.
- 7. **E-Tourism** (<u>https://haryanatourism.gov.in/</u>): Haryana tourism web is providing the service i.e. accommodation booking, fair & festival, upcoming events and tourism hub, etc.
- 8. Property Tax & Fire Tax

(<u>https://online.ulbharyana.gov.in/eforms/PropertyTax.aspx</u>): The link provides the facilities of filling the property tax & fire tax.

- 9. **e-Ticketing** (<u>https://hartrans.gov.in/ors/</u>): Haryana Roadways provide the Online reservation (e Ticket) service to the passengers.
- 10. **Haryana Enterprise Promotion Portal** (<u>https://investharyana.in#/</u>): Haryana's ongoing efforts to adopt a revolutionary mechanism to help simplify procedures and facilitate ease in doing business with the State supported by state-of-the-art Technology Platform.
- 11. e-GRAS (<u>https://egrashry.nic.in/</u>): Online Government Receipts Accounting System (e-GRAS) is an e-Governance initiative of Government of Haryana under Mission Mode Project category and is part of Integrated Financial Management System, e-GRAS facilitates collection of tax/non tax revenue in both the made online as well as manual.



Source: UIDAI and https://www.bankbazaar.com/aadhar-card/benefits-of-aadhar-card-govt.html

Brief on development of Digital Infrastructure in NCR

- The role of technology was acknowledged in the Regional Plan-2021 (RP-2021) however, it was limited up to Telecommunication sector, recognizing that provision of effective and efficient Telecom facilities across NCR had immense significance to promote growth and balanced development in the entire region. Policies and proposals of Telecommunications Chapter of the RP-2021 and it implementation was reviewed by NCRPB in conjunction with an Expert Study Group, constituted under TRAI with members from Department of Telecommunications (DoT), Govt. of India, Ministry of Electronics & Information Technology (MeitY) and National Institute of Electronics & Information Technologies (NIELIT).
- Review Report emphasised that in order to achieve three prolonged missions i.e. Connect India, Propel India and Secure India, under the Government of India 'Nation Digital Communication policy 2018'²⁰⁴ deployment of vast amount of digital infrastructure is required in urban as well as rural areas of NCR and in order to meet different schemes, initiatives and ambitious projects of the Government of India such as Digital India, Smart Cities and BharatNet, it is essential that the infrastructure being developed as a part of the Regional Plan should be digitally ready.
- Details of digital infrastructure crated within NCR till, 2019 are given in following tables:

State/ District		No. of Wireline Connections (DELs)	No. of Wireline Broadband Connections	No. of Wireless Broadband Connections	No.of PCOs	No. of VPTs
Union Territory of Delhi	Whole NCT of Delhi	19,49,012	12,25,950	1,90,90,492	47,389	0
	Bhiwani	2,388	2,914	7,27,648	4	19
	Faridabad	46,832	55,717	19,09,426	266	21
	Gurgaon	3,15,205	1,52,997	27,98,375	77	5
Harvana	Jhajjar	611	1,236	5,06,144	0	16
i i ui y unu	Jind	7,555	4,012	5,85,808	66	124
	Karnal	11,109	11,152	8,24,520	14	20
	Mahendregarh	7,364	2,897	3,93,786	108	25
	Mewat	1,198	712	1,96,472	6	0

Table 1.1: Details of telecommunication infrastructure crated within NCR, 2019

²⁰⁴http://dot.gov.in/sites/default/files/Final%20NDCP-2018_0.pdf

State/ District		No. of Wireline Connections (DELs)	No. of Wireline Broadband Connections	No. of Wireless Broadband Connections	No.of PCOs	No. of VPTs
	Palwal	4,262	1,938	2,97,285	75	13
	Panipat	7,507	11,961	8,48,104	20	2
	Rewari	11,994	4,762	2,81,173	97	20
	Rohtak	9,374	5,128	6,46,839	0	28
	Sonepat	11,938	5,228	8,61,591	195	172
	Total	4,37,337	2,60,654	1,08,77,171	928	465
	Alwar	15,869	6,129	17,19,773	93	36
Rajasthan	Bharatpur	4,490	1,104	8,34,329	0	0
	Total	20,359	7,233	25,54,102	93	36
	Baghpat	2,251	534	3,56,818	87	25
	Bulandshahr	3,234	1,278	8,60,770	33	448
	Gautam Buddha Nagar	63,219	6,241	18,25,853	122	53
Uttar	Ghaziabad	50,953	79,961	29,31,994	557	48
Pradesh	Hapur	3,531	1,499	3,38,878	138	28
	Meerut	26,292	17,688	15,53,543	207	97
	Muzaffarnagar	7,230	3,304	10,89,331	36	83
	Shamli	2,468	865	2,32,996	15	71
	Total	1,59,178	1,11,370	91,90,183	1,195	853
Source: TRA	AI, 2019	1	1	1	1	

Table	1 2. Number	of BTs and their	connectivity Status	s over Ontical Fiber	across NCR-2019
I auto	1.2. Number	or D is and then	connectivity Status	s over Optical Pibel	across INCK-2017

S	State/ District	No of BTSs	No of BTS connected over Optical Fiber
Union Territory of Delhi	National Capital Territory of Delhi	12,821	4,946
Haryana	Bhiwani	1,090	273
	Faridabad	1,401	661
	Gurgaon	2,864	968
	Jhajjar	907	207
	Jind	1,072	362
	Karnal	1,155	284
	Mahendregarh	779	204

St	ate/ District	No of BTSs	No of BTS connected over Optical Fiber
	Mewat	569	134
	Palwal	717	196
	Panipat	1,106	320
	Rewari	947	267
	Rohtak	993	286
	Sonepat	1,374	377
	Total	14,974	4,539
Rajasthan	Alwar	2,253	680
	Bharatpur	1,191	289
	Total	3,444	969
Uttar Pradesh	Baghpat	675	166
	Bulandshahr	1,655	357
	Gautam Buddha Nagar	2,112	854
	Ghaziabad	2,234	920
	Harpur	641	145
	Meerut	2,117	634
	Muzaffarnagar	1,391	308
	Shamli	475	120
	Total	11,300	3,504
Source: TRAI, 20	19	1	

State/ District No of Block HQs		No of		No. of	BHQs	connecto	ed with	Fiber			No. of E	BHQs co	onnected	with Fi	ber (in %	6)
		Block HQs	BSNL	Bharti Airtel	Idea	Rcom	RJio	ТАТА	Vodafone	BSNL	Bharti Airtel	Idea	Rcom	RJio	ТАТА	Vodafone
Union Territory of Delhi	NCT of Delhi			N	ot Appl	icable					1	N	ot Applic	cable		
Haryana	Bhiwani	7	7	7	7	5	6	0	6	100%	100%	100 %	71%	86%	0%	86%
	Faridabad	3	2	3	0	3	2	1	0	67%	100%	0%	100%	67%	33%	0%
	Gurgaon	4	4	4	3	4	4	1	2	100%	100%	75%	100%	100 %	25%	50%
	Jhajjar	6	5	6	3	3	4	0	2	83%	100%	50%	50%	67%	0%	33%
	Jind	8	7	7	4	4	7	0	5	88%	88%	50%	50%	88%	0%	63%
	Karnal	8	6	7	5	5	6	1	5	75%	88%	63%	63%	75%	13%	63%
	Mahendregarh	8	6	8	4	2	6	0	4	75%	100%	50%	25%	75%	0%	50%
	Mewat	7	5	7	5	3	5	0	6	71%	100%	71%	43%	71%	0%	86%
	Palwal	6	5	6	2	1	5	0	4	83%	100%	33%	17%	83%	0%	67%
	Panipat	6	5	5	3	3	5	0	2	83%	83%	50%	50%	83%	0%	33%
	Rewari	6	5	5	2	3	3	0	3	83%	83%	33%	50%	50%	0%	50%
	Rohtak	5	5	5	5	2	5	1	3	100%	100%	100 %	40%	100 %	20%	60%
	Sonepat	8	8	8	5	4	6	0	6	100%	100%	63%	50%	75%	0%	75%

Table1.3: Status of BHQ connectivity with Fiber Cables across NCR, 2019

No of			No. of BHQs connected with Fiber								No. of BHQs connected with Fiber (in %)					
State	/ District	Block HQs	BSNL	Bharti Airtel	Idea	Rcom	RJio	ТАТА	Vodafone	BSNL	Bharti Airtel	Idea	Rcom	RJio	ТАТА	Vodafone
Haryana	Total	82	70	78	48	42	64	4	48	85%	95%	59%	51%	78%	5%	59%
Rajasthan	Alwar	14	13	12	6	7	13	1	4	93%	86%	43%	50%	93%	7%	29%
	Bharatpur	10	9	9	5	4	8	0	5	90%	90%	50%	40%	80%	0%	50%
Rajasthan	Total	24	22	21	11	11	21	1	9	92%	88%	46%	46%	88%	4%	38%
Uttar Pradesh	Baghpat	6	0	5	3	3	6	0	4	0%	83%	50%	50%	100 %	0%	67%
	Bulandshahr	16	14	12	7	7	15	0	7	88%	75%	44%	44%	94%	0%	44%
	Gautam Buddha Nagar	4	4	4	1	3	4	1	2	100%	100%	25%	75%	100 %	25%	50%
	Ghaziabad	4	4	4	1	4	3	0	1	100%	100%	25%	100%	75%	0%	25%
	Harpur	4	1	3	3	1	4	0	1	25%	75%	75%	25%	100 %	0%	25%
	Meerut	12	3	12	4	3	12	0	5	25%	100%	33%	25%	100 %	0%	42%
	Muzaffarnagar	9	8	9	3	5	9	0	4	89%	100%	33%	56%	100 %	0%	44%
	Shamli	5	2	5	4	1	5	0	3	40%	100%	80%	20%	100 %	0%	60%
Uttar Pradesh	Total	60	36	54	26	27	58	1	27	60%	90%	43%	45%	97%	2%	45%
Source: TRAI,	2019			•		•		•			•	•	÷			

Sub-region	District Name	Functional CSC as on 31st March,20				
		Rural	Urban	Total		
Delhi		0	1830	1830		
Uttar Pradesh	1. Bulandshahr	555	439	994		
	2. Baghpat	232	135	367		
	3. Meerut	458	517	975		
	4. Ghazipur	1046	281	1327		
	5. Hapur	251	115	366		
	6. Muzaffarnagar	542	331	873		
	7. Gautam Buddha Nagar	189	245	434		
	8. Shamli	299	210	509		
Haryana	1. Sonipat	352	227	579		
	2. Mewat	478	124	602		
	3. Bhiwani & Charkhi Dadri	678	254	932		
	4. Mahendragarh	379	117	496		
	5. Rewari	333	98	431		
	6. Gurgaon	219	322	541		
	7. Karnal	503	212	715		
	8. Jhajjar	310	139	449		
	9. Palwal	314	166	480		
	10. Jind	389	229	618		
	11. Panipat	274	229	503		
	12. Faridabad	190	414	604		
	13. Rohtak	182	166	348		
Rajasthan	1. Alwar	398	192	590		
	2. Bharatpur	244	187	431		
Total		8815	7179	15994		

Table 1.4: Common Service Centres (CSC) in NCR, 2019

Source: MeitY, 2019

Type of Service Name of Services			Type of Service	Name of Services			
0	S2C Services (Central Government)						
Aadhaar Service	e-KYC			Learn English - Silver Plan			
	Authentication			NIELIT Courses			
				CSC Skill Centre			
	PAN card			Course Registration			
	Passport			Online Admission			
	Swachh Bharat Abhiyan			Telecentre Entrepreneur Course			
	PM Awas Yojana			NIELIT Facilitation Centre			
	Soil Health Card			Tally Software Registration			
	Pradhan Mantri Fasal Bima Yojna		Educational Services	Basic Computer Course			
On Digital Seva Portal	PDS			Sarkari Pariksha			
	FSSAI License Application			Course on GST			
	FSSAI Registration Certificate			English Speaking Course			
	Birth/ Death Certificate			Tally Kaushal Praman Patra			
	Digitized Cadastral Map (FMB)			Tally Certification with Flash Content			
	DigiLocker			Learn English - Gold Plan			
	IRCTC ticket Booking			Tally Self Learning Manual			
				IIT/JEE/BITSAT/NEET Preparation			
Income Tax	GST Return			CAD Registration			

Table 1.5: Services Being offered on "Digital Seva Portal" under Common Service Centres (CSC) scheme

Type of Service	Name of Services	Type of Service	Name of Services		
Return	TDS Return		Scholarships		
	DSC		Super 30 Books		
	LLP Registration		ITI Registration		
			Online Multimedia School		
	Voter Registration Form-6				
	Deleation of Name Form-7	Tolo Low	Tele-Law		
Election	Modificatios or Corrections Form-8, 8A	Tele-Law	eLegal Consultancy		
	Voter PVC Card Print				
	Modification to Voter details		Telemedicine		
			Allopathic		
	Navy Recruitment		Ayurrvedic		
Employment Service	Job Seekers Registration	Health Services	Homeopathy		
	Application Form Submission		JAN Aushadhi		
	State Govt. Service		Diagnostic Services		
e-District /SSDG	Haryana eDistrict Services (170)		Health Homeo		
	Sarthi	Financial Services			
Other G2C Services	E-Challan		Opening of saving Bank Account		
	eStamp	Banking Services (26 Banks)	Opening of Current Bank Account		
			Fixed Account		
Type of Service	Name of Services		Type of Service	Name of Services	
---	-----------------------------------	--	-----------------	--	
Type of Service Labour Service B2C Services Tour & Travels FMCG Distribution	Labour Services			Recurring Account	
Labour Service	Labour Certificate			Loan (Overdraft/ Retail)	
Type of Service 1 Labour Service 1 B2C Services 1 Four & Travels 5 \$ 5 \$ 5 \$ 1 \$ </td <td>Labour Registration</td> <td></td> <td></td> <td>Deposit</td>	Labour Registration			Deposit	
Type of Service I Labour Service I B2C Services I				Cash Withdrawal	
B2C Services				Remittance / Fund Transfer	
	Flight Ticket (4)			IMPS Transactions	
Labour Service B2C Services Tour & Travels FMCG Distribution	Bus Ticket			Balance Enquiry	
	e- Recharge (Mobile &DTH) (9)			Mini Statement	
	SBIePay Maharashtra Transport			Card Transaction- Rupay, Visa, Master	
	SBIePay Maharashtra eGRAS			Pradahn Mantri Jeevan Jyoti Bima Yojna	
	SBIePay Maharashtra Nursing			Pradhan Mantri Surakhsa Bima Yojna	
	Rashtrapathi Bhavan Museum Ticket			Atal Pension Yojna	
				Mobile/ Aadhar Seeding	
	Patanjali Products			NPA Recovery	
	IFFCO				
FMCG Distribution	iball Products			Life Insurance (New)	
	Samsung Products		Insurance (38)	Life Insurance (Renewal)	
	HP & Crompton Greaves			General Insurance	
				RAP Registration	

Type of Service	Name of Services	Type of Service	Name of Services
	Sale & purchase of seeds farmer equipments		
e-Commerce	VLE Bazar	Pansian	National Pension Scheme (NPS)
	KISANeSTORE		Swavalamban Contribution
	FASTAG Issuance (3)		Withdrawal
	FASTAG Purchase	AEPS Services	Deposit
FASTag (3)	FASTAG Topup		Remittance
	FASTAG Service	Utility Services	
	Mahindra Home Loan EMI		BBPS Mobile Postpaid
			BBPS DTH
	New Connection		BBPS Landline Postpaid
WiFi Choupal	ISP Billing	System (109)	BBPS Electricity
	Top-up		BBPS Broadband Postpaid
			BBPS Water
	Electricity Bill Payment (18)		BBPS Gas
Other Utility	Electricity new Connection		
services	Water Supply/ Sewer Connection (3)	Sanitary Napkin	Sanitary Napkin Unit
	New Meter Connection	LED	Ujala - EESL
	- ·		Do It Yourself LED Kit

Source: RP-2021Review Report 2019 on Telecommunication.

Table 1.6: Status of implementation of Indian Telegraph Right of Way (RoW) Rules in NCR States

Major Clauses of RoW 2016 Policy	NCT Delhi	Haryana	Rajasthan	Uttar Pradesh
Whether State level Policy issued after issue of RoW Rules 2016	No	Yes	Yes	Yes
One time Fees @ Rs 10,000 for Mobile Towers & Rs 1,000 / km for OFC	No	No	Yes	Yes
Single Window Clearance	No	Yes	Yes	Yes
Online Application Process	No	Yes	Yes	Yes
Timeline for Clearance - 60 days / Deemed approval	Yes, but as per old policy	Yes (45 days deemed approval)	yes	Yes (45 days deemed approval)

Source: RP-2021Review Report 2019 on Telecommunication.

Drone Law & Policy Developments in India²⁰⁵

The regulatory framework for drones was issued by the Directorate General of Civil Aviation ("DGCA") on August 27, 2018 by way of Civil Aviation Requirements (CAR), Section 3 - Air Transport Series X, Part I, Issue I ("Drone Regulations") for legalizing and regulating the operation of drones for civil use in India. To liberalize the regime further and tap the potential uses of drones especially for commercial purposes, the Ministry of Civil Aviation constituted a drone task-force under the chairmanship of Hon'ble Minister of State for Civil Aviation. Accordingly, on the basis of the recommendations of the task force, the Drone Ecosystem Policy Roadmap²⁰⁶ was released by the Ministry of Civil Aviation on January 15, 2019. Subsequently, several new initiatives were launched by the authorities focused towards capacity building of the drone ecosystem in 2019 and this trend continues in 2020. Some of the initiatives are summarised as under:

1) Invitation by DGCA for expressions of interest to conduct experimental BVLOS operations:

On May 13, 2019 the DGCA had invited an expression of interest from consortia's willing and able to conduct experimental beyond visual line of sight ("BVLOS") operations of remotely piloted aircrafts or drones in Indian airspace. By allowing companies to provide proof of concept for the use of drone technology, the authorities adopted an evidence-based regulatory approach which can potentially transform the drone industry by paving the way for regulations allowing more enhanced operations by drones. From delivery of consumer products to delivery of medical supplies to surveillance of traffic, construction sites etc., companies from all spheres applied to conduct such experimental operations under the supervision of the DGCA for development of new regulations for this growing industry. As per reports, a total of 34 applications were received by the DGCA but only seven companies viz. Zomato, Swiggy, Tata Advanced Systems, Honeywell, Zipline, Dunzo and Redwing, were shortlisted to provide additional technical details regarding their BVLOS application. However, this willingness shown by the DGCA and other concerned authorities to incorporate use of drones in the civil aviation ecosystem of the country was welcomed by all.

2) National Counter Rogue Drone Guidelines

In 2019, the Ministry of Civil Aviation ("MoCA") also released the National Counter Rogue Drone Guidelines²⁰⁷ ("NCRD Guidelines") with an aim to address the perceived law and order and national security issues that are anticipated due to unregulated and unchecked operation of drones. The NCRD Guidelines aims to bring out the various counter rogue drone measures and guidelines that can be deployed to address the relevant threats in an effective manner. The scope of the NCRD Guidelines includes:

²⁰⁵https://www.mondaq.com/india/aviation/885694/drone-law-policy-developments-in-india-welcoming-drones-in-2020

²⁰⁶http://www.nishithdesai.com/fileadmin/user_upload/pdfs/NDA%20Hotline/190121_H_R_DRONE-ECOSYSTEM-POLICY-ROADMAP.PDF

²⁰⁷<u>https://www.civilaviation.gov.in/sites/default/files/Counter rogue drone guidelnes NSCS.pdf</u>

- a) Laying out guidelines for assessing the drone threat
- b) Creating awareness about the various technologies involved in handling drone threat
- c) Ready reckoner for anti-drone measures
- d) Understanding multi-dimensionality of drone threats

3) Website launched for granting permission for aerial photography/ remote sensing survey

On January 6, 2020, the Ministry of Defence ("MoD") launched No Objection Certificate ("NOC") web portal <u>www.modnoc.ncog.gov.in</u> for undertaking aerial survey with the final permission of DGCA. The portal will be used by various vendors engaged by state governments/public sector undertakings/autonomous bodies in seeking NOC from MoD.

Through this initiative, the MoD will be able to reduce the time usually taken in issuing NOC and will ensure expeditious disposal of applications for carrying out aerial survey and/ or remote sensing surveys.

4) One-time opportunity for voluntary disclosure of unregulated drones

Several instances of unmanned aircrafts or drones being operated in Indian airspace, without complying with the Drone Regulations, have come to the notice of the Government. To facilitate the identification of such unregulated and non-compliant drones, the MoCA has issued a public notice dated January 13, 2020 providing a one-time opportunity for their voluntary disclosure. This requirement of voluntary disclosure is applicable on all drones, which includes models, prototypes, toys, radio-controlled aircraft, autonomous and remotely piloted aircraft systems etc. Additionally, such drones can be enlisted without having to comply with the No-Permission No-Takeoff (NPNT) requirement.

As per the notice, persons in possession of such non-compliant drones can submit the required information/ voluntary disclosure through an online portal as available on <u>https://digitalsky.dgca.gov.in/</u>. The drone enlistment form for voluntary disclosure has two parts. After uploading the drone owner's information, the owner will receive an Ownership Acknowledgement Number ("OAN"). Using the OAN, the owner will upload the drone-related information and will receive a Drone Acknowledgement Number ("DAN"). Each drone will require a fresh enlistment. Since a drone owner may have multiple drones, the owner shall use same OAN to enlist all drones owned by him. A separate DAN will be issued for each drone. However, the DAN or OAN will not confer any right to operate drone(s) in India, without fulfilling the requirements under the Drone Regulations. It is pertinent to note that the ownership of drone(s) in India without a valid DAN or OAN shall invite penal actions as per applicable law.

Annexure-D-16.5

The National Digital Communications Policy²⁰⁸, 2018 - Brief

- 1. The National Digital Communications Policy, 2018 seeks to unlock the transformative power of digital communications networks to achieve the goal of digital empowerment and improved well being of the people of India; and towards this end, attempts to outline a set of goals, initiatives, strategies and intended policy outcomes. It also re-designation of the Telecom Commission as the "Digital Communications Commission".
- 2. The National Communications Policy aims to accomplish the following Strategic Objectivesby 2022:
 - a) Provisioning of Broadband for All
 - b) Creating 4 Million additional jobs in the Digital Communications sector
 - c) Enhancing the contribution of the Digital Communications sector to 8% of India's GDP from 6% in 2017
 - d) Propelling India to the Top 50 Nations in the ICT Development Index of ITU from 134 in 2017
 - e) Enhancing India's contribution to Global Value Chains
 - f) Ensuring Digital Sovereign
- 3. Features of National Digital Communications Policy It envisages three Missions:
 - I. **Connect India:** Creating Robust Digital Communications Infrastructure.

²⁰⁸ Source; NDCP, 2018 < <u>https://dot.gov.in/sites/default/files/Final%20NDCP-2018_0.pdf</u>>

- 1. National Broadband Mission (Rashtriya Broadband Abhiyan)- Provide Universal broadband connectivity at 50Mbps to every citizen by 2022.
- 2. BharatNet- Provide 1 Gbps connectivity to all Gram Panchayats of India by 2020 and 10 Gbps by 2022.
- 3. GramNet Connecting all key rural development institutions with 10 Mbps upgradeable to 100 Mbps.
- 4. NagarNet Establishing 1 Million public Wi-Fi Hotspots in urban areas.
- 5. JanWiFi Establishing 2 Million Wi-Fi Hotspots in rural areas.
- 6. Enable 100 Mbps broadband on demand to all key development institutions including all educational institutions by 2022.
- 7. Fibre First Initiative to take fibre to the home, to enterprises and to key development institutions in Tier I, II and III towns and to rural clusters.
- 8. Establishment of a National Digital Grid by National Fibre Authority.
- 9. Strengthening Satellite Communication Technologies in India by reviewing SATCOM policy, making available new spectrum bands, streamlining administrative processes for assignment and allocations, clearances and permissions related to satellite communication systems, etc.
- 10. Ensuring Customer Satisfaction, Quality of Service and effective Grievance Redressal by establishing Telecom Ombudsman, framing a comprehensive policy to encourage the adoption of environmental and safety standards and incentivising the use of renewable energy technologies in the communications sector.
- II. **Propel India:** Enabling Next Generation Technologies and Services through Investments, Innovation and IPR generation.
 - 1. Attract investments of USD 100 Billion in the Digital Communications Sector, expand IoT ecosystem to 5 Billion connected devices, accelerate transition to Industry 4.0 by 2022.
 - 2. Creation of innovation led Start-ups in Digital Communications sector.
 - 3. Creation of Globally recognized IPRs (Intellectual Property Rights) in India.
 - 4. Development of Standard Essential Patents (SEPs) in the field of digital communication technologies.
 - 5. Train/ Re-skill 1 Million manpower for building New Age Skills.
- III. Secure India: Ensuring Sovereignty, Safety and Security of Digital Communications.
 - 1. Establish a comprehensive data protection regime for digital communications that safeguards the privacy, autonomy and choice of individuals and facilitates India's effective participation in the global digital economy.
 - 2. Ensure that net neutrality principles are upheld and aligned with service requirements, bandwidth availability and network capabilities including next generation access technologies.
 - 3. Develop and deploy robust digital communication network security frameworks.
 - 4. Build capacity for security testing and establish appropriate security standards.

- 5. Address security issues relating to encryption and security clearances.
- 6. Enforce accountability through appropriate institutional mechanisms to assure citizens of safe and secure digital communications infrastructure and services.

Annexure-D-16.6

Sector wise Smart infrastructure/applications

Smart infrastructure	Illustration
1. Mobility	
1.1. Autonomous vehicles	Vehicles outfitted with sensors and software to operate themselves; full self-driving capability (level 4) is achieved when human intervention is not expected to take control at any point.
1.2. Bike sharing	Public-use bicycles, either in docking hubs or free-floating to provide an alternative to driving, public transit, and private bike ownerships. This option can bridge the first-mile / last-mile segment when public transit does not take a commuter from door to door.
1.3. Car sharing	Access to short-term car use without full ownership; can be round- trip (station-based), one-way (free-floating), peer-to-peer, or fractional
1.4. Congestion pricing	Fees for private car usage in certain areas, during times of peak demand, or both.
1.5. Demand-based micro transit	Ride-sharing services with fixed routes, fixed stops, or both, often supplementing existing public transit routes. Algorithms use historical demand to determine routes, vehicle size, and trip frequency. May include options to reserve seats.
1.6. Digital public transit payment	Digital and touchless payment systems in public transportation that allow for prepayment and faster boarding. Includes smart cards and mobile payments.
1.7. E-hailing (private and pooled)	Real-time ordering of point-to-point transportation through a mobile device. Pooled e-hailing involves matching separately called rides with compatible routes dynamically to increase vehicle utilization (that is, local optimization of real-time demand)
1.8. Integrated multimodal information	Real-time information about price, time, and availability of transportation options across many modes.
1.9. Intelligent traffic signals	Improvement of overall traffic flow through dynamic optimization of traffic lights and speed limits, leading to higher average speeds on roads and less frequent stop-and-go conditions. Includes traffic light pre-emption technology, which gives priority to emergency vehicles,

Smart infrastructure	Illustration
	public buses, or both.
1.10. Parcel load pooling	Online matching of demand for deliveries with the available supply
	of trucking capacity. By maximizing vehicle utilization, fewer trucks
	make a greater number of deliveries.
1.11. Predictive	Sensor-based monitoring of the condition of public transit and related
maintenance of	infrastructure (such as rails, roads, and bridges) so that predictive
transportation	maintenance can be performed before breakdowns and disruptions
infrastructure	occur.
1.12. Real-time public	Real-time information about arrival and departure times for public
transit information	transportation modes, including informal bus systems
1.13. Real-time road	Real-time navigation tools for choosing driving routes, with alerts for
navigation	construction, detours, congestion, and accidents. Largely applies to
	those driving alone or in a car pool.
1.14. Smart parcel lockers	On-site drop boxes at locations where people can pick up packages
	using individual access codes sent to their mobile devices
1.15. Smart parking	Systems that guide drivers directly to available spaces; can also
	influence demand through variable fees
2. Security	
2.1. Body-worn cameras	Wearable audio, video, or photographic recording systems, typically
	used by police officers to record incidents and police operations.
2.2. Crowd management	Technology to monitor and, where necessary, direct crowds to ensure
	safety.
2.3. Data-driven building	The use of data and analytics to focus inspections on buildings with
inspections	the greatest potential risks (for example, prioritizing commercial
	buildings for fire code inspections and homes for lead inspections).
2.4. Disaster early-warning	Technology designed to predict and mitigate the effects of natural
systems	disasters such as hurricanes, earthquakes, floods, and wildfires
2.5. Emergency response	The use of analytics and technology to optimize emergency response
optimization	call processing and field operations, such as the strategic deployment
	of emergency vehicles.
2.6. Gunshot detection	Acoustic surveillance technology that incorporates audio sensors to
	detect, locate, and alert police agencies to gunfire incidents in real
	time.
2.7. Home security systems	Security systems that monitor homes and alert users, emergency

Smart infrastructure	Illustration
	response services, or both to unusual activity
2.8. Personal alert applications	Applications that respond to emergencies by alerting emergency response services, loved ones, or both. Devices (such as personal safety wearables, car crash detectors, and fall alert systems) may transmit location and voice data.
2.9. Predictive policing	The use of big data and analytics (including social media monitoring) to predict where and when crimes are likely to happen with greater precision. These systems are used to deploy police patrols and target prevention efforts.
2.10. Real-time crime mapping	Technology used by law enforcement agencies to map, visualize, and analyze crime incident patterns. Information and intelligence gathering serves as a management tool for allocating resources effectively and creating accountability among officers.
2.11. Smart surveillance	Intelligent monitoring to detect anomalies based on visual feeds including facial recognition, smart closed-circuit TVs, and license plate recognition.
3. Healthcare	
3.1. Data-based public health interventions for maternal and child health	The use of analytics to direct highly targeted health interventions for at-risk populations (in this case, identifying expectant and new mothers to drive educational campaigns about pre- and post-natal care)
3.2. Data-based public health interventions for sanitation and hygiene	The use of analytics to direct highly targeted interventions, such as understanding where to increase rainfall absorption capacity or collecting crowd sourced data on gaps in sanitation systems.
3.3. First aid alerts	Technologies that alert bystanders trained in CPR (<i>Cardiopulmonary Resuscitation</i>) so that cardiac arrest victims receive prompt and critical care
3.4. Infectious disease surveillance	Data collection, analysis, and response to prevent spread of infectious and epidemic diseases. Includes awareness and vaccine campaigns (for example, for HIV / AIDS).
3.5. Integrated patient flow management systems	Real-time hardware and software solutions that provide visibility into where patients are in the system to improve hospital operations and coordinate utilization on a city or multiple-facility level

Smart infrastructure	Illustration
3.6. Lifestyle wearables	Wearable devices that collect data on lifestyle and activity metrics
	and inform the wearer; may promote exercise or other aspects of a
	healthy lifestyle
3.7. Online care search and	Tools that assist in selecting payers and providers with financial and
scheduling	clinical transparency.
3.8. Real-time air quality	Sensors to detect and monitor the presence of air pollution (outdoor,
information	indoor, or both) in real time. Individuals can view the information
	online or on a personal device and choose to modify their behavior
2.0 Demote retient	The collection and transmission of national data for analysis and
5.9. Remote patient	intervention by a health care provider in another location (for
monitoring	example monitoring vitals or blood glucose readings) Includes
	medication adherence technologies that assist nations in taking
	medications as recommended by their healthcare provider.
3.10. Telemedicine	Virtual patient and physician interaction through audiovisual
	technology
4. Energy	
4.1. Building automation	Systems that optimize energy and water use in commercial and
systems	public buildings by leveraging sensors and analytics to manually or
	automatically eliminate inefficiencies. Includes optimized lighting
	and HVAC as well as features such as access / security control and
	parking information
4.2. Distribution	Different types of smart grid technologies, including Fault detection,
automation systems	isolation, and recovery (FDIR), M&D, Volt/Var, and substation
	automation, to optimize energy efficiency and the stability of the
1.2 Dynamia alastricity	power grid.
4.5. Dynamic electricity	and reduce electricity generation cost. By reducing peak demand
pricing	cities can reduce the number of power plants that operate during peak
	hours
4.4. Home energy	Optimization of home energy consumption using smart thermostats,
automation systems	programmable and remote controllable electronic devices (smart
	home), and standby electricity control.
4.5. Home energy	Tracking of residential electricity consumption with feedback

Smart infrastructure	Illustration
consumption tracking	delivered to the user via mobile app, email, or text to increase user
	awareness and encourage conservation. Also allows utility companies
	to measure electricity use remotely.
4.6. Smart streetlights	Connected and sensor-equipped energy-efficient streetlights
	(including LED) that optimize brightness and reduce maintenance
	needs. Smart streetlights can be equipped with speakers, gunshot
	detection sensors, and other features to enhance functionality
4.7. Smart metering	Tracking and controlling energy consumption
5. Water	
5.1. Leakage detection and	Remote monitoring of pipe conditions using sensors, and control of
control	pump pressure to reduce or prevent water leakage. The early
	identification of leaks can prompt follow-up actions from relevant
	city departments and utility companies.
5.2. Smart irrigation	Optimization of irrigation using analysis of information such as local
	weather, soil conditions, plant type, and so forth to eliminate
5.2 NL /	unnecessary watering
5.3. water consumption	Feedback (via mobile app, email, text, and so forth) on a resident's
tracking	water consumption to increase awareness and reduce consumption.
	smart water meters allow utility companies to measure consumption remotely, reducing labor costs for manual mater reading. It also
	enables the potential for dynamic pricing
5.4 Water quality	Real-time monitoring of water quality (in mains rivers oceans and
monitoring	so forth) with alerts delivered to the public via channels such as
monitoring	mobile app email text or website This warns the public against
	consuming or coming into contact with contaminated water and
	prompts cities and utilities to follow up promptly
6. Waste	
6.1. Digital tracking and	Digitally enabled pay-as-you-throw systems; includes feedback (via
payment for waste	mobile app, email, text, and so forth) delivered to users to increase
disposal	awareness and reduce waste.
6.2. Waste collection route	The use of sensors inside trash bins to measure trash volume and
optimization	direct the routes of garbage trucks. This application keeps garbage
	trucks from travelling to trash bins with little waste volume.
7. Economic development	and housing

Smart infrastructure	Illustration
7.1. Digital business	Digitized process (such as an online portal) for businesses to obtain
licensing and	operating licenses and permits
permitting	
7.2. Digital business tax	Channel for businesses to complete tax filing online
filing	
7.3. Digital land-use and	Digitization and automation of the application process for land-use
building permitting	and construction permitting, reducing approval time and increasing
	transparency.
7.4. Local e-career centers	Online platforms for posting jobs openings and candidate profiles;
	may use algorithms to match compatible candidates with available
7.5 0 1	jobs. Reduces job-nunting time and increases net new employment.
7.5. Online retraining	Lifelong learning opportunities delivered in digital format, especially
programs	unemployed of at fisk of becoming
7.6 Open adaptrol	Complete detabase of land percels in the sity, open to the publicy
database	anables a more afficient land market by creating transparency of
database	available land and lowering the cost of land parcel registration
77 Peer-to-peer	Digital marketplaces where individual hosts can list and rent out
accommodation	short-term accommodations
platforms	short term accommodations.
7.8. Personalized education	The use of student data to identify individuals who need additional
	attention or resources; potential to tailor learning environments for
	individual students
8. Engagement and comm	unity
8.1. Digital citizen services	Digitization of citizen-facing government administrative services
	such as income tax filing, car registration, or applying for
	unemployment benefits. Includes digitization of the user journey as
	well as back-end support functions as needed.
8.2. Local civic	Public engagement in city affairs through digital apps. May include
engagement	reporting nonemergency nuisances and maintenance needs (for
applications	instance, reporting broken streetlights via a app), giving input on
	policy decisions, participating in digital city initiatives (such as open
	data nackations), and interaction with city officials and departments
	on social networks.

Smart infra	structure	Illustration						
8.3. Local platforms	connection	Websites or mobile apps that help people connect with and potentially meet others in their community. May be used to find people with similar interests and hobbies, to connect with neighbours, and so on						

Source: Adopted from Mckinsey Global Institute research, 2018

Annexure-D-17.1

NCR Housing Scenario

Table 2.1: Sub-Region/ District wise Demand and Supply Gap of Houses, 2011 Census

Sl.No.	Sub- region	District	Urban/Rural/Total	Total Number of Households acc to HH Series	Total no. of census houses available	Total Occupied houses	No. of houses primarily used for residential purpose	Total no of Vacant houses	Total Dilapidated Houses	Total Dwelling Units available (5+6-7)	Housing demand/ excess (8-2)
		1		2	3	4	5	6	7	8	9
	NOT		Urban	32,61,423	44,81,133	39,90,998	31,01,095	4,90,135	90,477	35,00,753	2,39,330
1	NC I Delhi	All Districts	Rural	79,115	1,24,422	1,01,866	75,234	22,556	2,980	94,810	15,695
			Total	33,40,538	46,05,555	40,92,864	31,76,329	5,12,691	93,457	35,95,563	2,55,025
2		Bhiwani	Urban	63,051	99,235	88,442	60,053	10,793	2,759	68,087	5,036
			Rural	2,45,761	3,57,047	3,27,818	2,17,566	29,229	13,134	2,33,661	-12,100
			Total	3,08,812	4,56,282	4,16,260	2,77,619	40,022	15,893	3,01,748	-7,064
3		Jind	Urban	57,523	89,665	81,748	52,782	7,917	1586	59,113	1,590
	Haryana		Rural	1,87,059	2,78,335	2,60,848	1,33,949	17,487	9267	1,42,169	-44,890
			Total	2,44,582	3,68,000	3,42,596	1,86,731	25,404	10853	2,01,282	-43,300
4		Karnal	Urban	90,548	1,35,920	1,24,034	86,468	11,886	2,341	96,013	5,465
			Rural	1,94,003	2,92,682	2,76,027	1,68,739	16,655	9,543	1,75,851	-18,152
			Total	2,84,551	4,28,602	4,00,061	2,55,207	28,541	11,884	2,71,864	-12,687

Sl.No.	Sub- region	District	Urban/Rural/Total	Total Number of Households acc to HH Series	Total no. of census houses available	Total Occupied houses	No. of houses primarily used for residential purpose	Total no of Vacant houses	Total Dilapidated Houses	Total Dwelling Units available (5+6-7)	Housing demand/ excess (8-2)
5		Mahendragarh	Urban	23,290	44,216	38,445	22,121	5,771	643	27,249	3,959
			Rural	1,45,235	2,23,726	2,01,238	1,29,000	22,488	4,489	1,46,999	1,764
			Total	1,68,525	2,67,942	2,39,683	1,51,121	28,259	5,132	1,74,248	5,723
6		Panipat	Urban	1,05,466	1,53,804	1,39,175	98,721	14,629	3,039	1,10,311	4,845
			Rural	1,14,922	1,73,502	1,58,593	94,822	14,909	4,781	1,04,950	-9,972
			Total	2,20,388	3,27,306	2,97,768	1,93,543	29,538	7,820	2,15,261	-5,127
7		Sonipat	Urban	89,372	1,33,576	1,20,552	84,327	13,024	3,070	94,281	4,909
			Rural	1,80,286	2,83,858	2,57,431	1,51,650	26,427	8,446	1,69,631	-10,655
			Total	2,69,658	4,17,434	3,77,983	2,35,977	39,451	11,516	2,63,912	-5,746
8		Rohtak	Urban	87,427	1,31,739	1,17,172	82,787	14,567	2,343	95,011	7,584
			Rural	1,15,506	1,75,203	1,60,739	95,307	14,464	5,483	1,04,288	-11,218
			Total	2,02,933	3,06,942	2,77,911	1,78,094	29,031	7,826	1,99,299	-3,634
9		Jhajjar	Urban	49,060	78,328	68,192	46,680	10,136	2,201	54,615	5,555
			Rural	1,34,340	2,11,816	1,89,621	1,18,822	22,195	6,543	1,34,474	134
			Total	1,83,400	2,90,144	2,57,813	1,65,502	32,331	8,744	1,89,089	5,689
10		Rewari	Urban	42,867	69,305	60,649	40,443	8,656	1,049	48,050	5,183
			Rural	1,26,261	1,99,449	1,79,795	1,08,431	19,654	4,124	1,23,961	-2,300
	1		Total	1,69,128	2,68,754	2,40,444	1,48,874	28,310	5,173	1,72,011	2,883
11		Gurgaon	Urban	2,32,629	3,81,988	3,04,432	2,24,323	77,556	9,115	2,92,764	60,135

Sl.No.	Sub- region	District	Urban/Rural/Total	Total Number of Households acc to HH Series	Total no. of census houses available	Total Occupied houses	No. of houses primarily used for residential purpose	Total no of Vacant houses	Total Dilapidated Houses	Total Dwelling Units available (5+6-7)	Housing demand/ excess (8-2)
-			Rural	88,013	1,41,703	1,21,180	80,118	20,523	2,860	97,781	9,768
			Total	3,20,462	5,23,691	4,25,612	3,04,441	98,079	11,975	3,90,545	70,083
12		Mewat	Urban	19,759	36,237	32,163	18,901	4,074	940	22,035	2,276
			Rural	1,37,261	1,87,398	1,80,003	1,31,459	7,395	12,329	1,26,525	-10,736
			Total	1,57,020	2,23,635	2,12,166	1,50,360	11,469	13,269	1,48,560	-8,460
13		Faridabad	Urban	2,92,751	3,82,981	3,53,146	2,77,693	29,835	7,136	3,00,392	7,641
			Rural	60,315	87,700	82,239	56,304	5,461	2,619	59,146	-1,169
			Total	3,53,066	4,70,681	4,35,385	3,33,997	35,296	9,755	3,59,538	6,472
14		Palwal	Urban	40,645	63,090	56,812	38,390	6,278	1,465	43,203	2,558
			Rural	1,27,165	1,86,069	1,75,519	1,17,698	10,550	7,990	1,20,258	-6,907
			Total	1,67,810	2,49,159	2,32,331	1,56,088	16,828	9,455	1,63,461	-4,349
			Urban	11,94,388	18,00,084	15,84,962	11,33,689	2,15,122	37,687	13,11,124	1,16,736
	Haryana S	ub-Region	Rural	18,56,127	27,98,488	25,71,051	16,03,865	2,27,437	91,608	17,39,694	-1,16,433
			Total	30,50,515	45,98,572	41,56,013	27,37,554	4,42,559	1,29,295	30,50,818	303
15		Meerut	Urban	3,00,446	4,22,303	3,85,936	2,78,748	36,367	6,314	3,08,801	8,355
	Litton		Rural	2,68,299	3,81,520	3,61,247	2,14,353	20,273	10,922	2,23,704	-44,595
	Pradesh		Total	5,68,745	8,03,823	7,47,183	4,93,101	56,640	17,236	5,32,505	-36,240
16		Baghpat	Urban	44,279	69,991	62,928	40,196	7,063	1,393	45,866	1,587
			Rural	1,62,811	2,46,055	2,25,152	1,29,969	20,903	5,249	1,45,623	-17,188

Sl.No.	Sub- region	District	Urban/Rural/Total	Total Number of Households acc to HH Series	Total no. of census houses available	Total Occupied houses	No. of houses primarily used for residential purpose	Total no of Vacant houses	Total Dilapidated Houses	Total Dwelling Units available (5+6-7)	Housing demand/ excess (8-2)
			Total	2,07,090	3,16,046	2,88,080	1,70,165	27,966	6,642	1,91,489	-15,601
17		Ghaziabad (including Hapur)	Urban	5,87,116	8,36,316	7,31,539	5,58,431	1,04,777	10,325	6,52,883	65,767
			Rural	2,42,727	3,55,407	3,28,581	2,10,778	26,826	8,729	2,28,875	-13,852
			Total	8,29,843	11,91,723	10,60,120	7,69,209	1,31,603	19,054	8,81,758	51,915
18		G.B. Nagar	Urban	2,07,099	3,38,935	2,62,991	2,01,814	75,944	2,603	2,75,155	68,056
			Rural	1,09,179	1,70,835	1,52,154	98,641	18,681	2,597	1,14,725	5,546
			Total	3,16,278	5,09,770	4,15,145	3,00,455	94,625	5,200	3,89,880	73,602
19		Bulandshahar	Urban	1,43,934	2,21,628	2,01,985	1,35,496	19,643	3,993	1,51,146	7,212
			Rural	4,38,742	6,58,449	6,08,417	3,62,701	50,032	18,733	3,94,000	-44,742
			Total	5,82,676	8,80,077	8,10,402	4,98,197	69,675	22,726	5,45,146	-37,530
20		Muzaffarnagar (incl. Shamli)	Urban	2,00,330	2,96,104	2,73,801	1,89,079	22,303	6,440	2,04,942	4,612
			Rural	4,81,057	6,73,746	6,40,013	4,24,491	33,733	22,133	4,36,091	-44,966
			Total	6,81,387	9,69,850	9,13,814	6,13,570	56,036	28,573	6,41,033	-40,354
			Urban	14,83,204	21,85,277	19,19,180	14,03,764	2,66,097	31,068	16,38,793	1,55,589
UP Sub-Region		Rural	17,02,815	24,86,012	23,15,564	14,40,933	1,70,448	68,363	15,43,018	-1,59,797	
		Total	31,86,019	46,71,289	42,34,744	28,44,697	4,36,545	99,431	31,81,811	-4,208	
21	Rajasthan	Bharatpur	Urban	85,521	1,29,697	1,17,482	80,596	12,215	2,019	90,792	5,271
			Rural	3,38,086	4,79,437	4,61,383	3,24,212	18,054	15,982	3,26,284	-11,802

Sl.No.	Sub- region	District	Urban/Rural/Total	Total Number of Households acc to HH Series	Total no. of census houses available	Total Occupied houses	No. of houses primarily used for residential purpose	Total no of Vacant houses	Total Dilapidated Houses	Total Dwelling Units available (5+6-7)	Housing demand/ excess (8-2)
			Total	4,23,607	6,09,134	5,78,865	4,04,808	30,269	18,001	4,17,076	-6,531
22		Alwar	Urban	1,23,647	2,12,967	1,78,362	1,19,789	34,605	1,964	1,52,430	28,783
			Rural	5,05,266	7,82,294	7,32,426	4,91,193	49,868	18,181	5,22,880	17,614
			Total	6,28,913	9,95,261	9,10,788	6,10,982	84,473	20,145	6,75,310	46,397
		Set and a	Urban	2,09,168	3,42,664	2,95,844	2,00,385	46,820	3,983	2,43,222	34,054
	Kajastnan	Sub-region	Rural	8,43,352	12,61,731	11,93,809	8,15,405	67,922	34,163	8,49,164	5,812
		Total	10,52,520	16,04,395	14,89,653	10,15,790	1,14,742	38,146	10,92,386	39,866	
NCR		Urban	61,48,183	88,09,158	77,90,984	58,38,933	10,18,174	1,63,215	66,93,892	5,45,709	
		Rural	44,81,409	66,70,653	61,82,290	39,35,437	4,88,363	1,97,114	42,26,686	-2,54,723	
			Total	1,06,29,592	1,54,79,811	1,39,73,274	97,74,370	15,06,537	3,60,329	1,09,20,578	2,90,986

Source : Housing Census Data Tables, Census of India, 2011

Sub Region	District	Population 2011	Slum Population 2011	% of slum population to District Population
NCT Delhi	-	167,87,941	17,85,390	10.6
Haryana	14	164,27,524	10,31,946	6.3
Uttar Pradesh	8	187,19,180	14,61,565	7.8
Rajasthan	2	62,22,641	43567	0.7
NCR	24	581,57,286	43,22,468	7.4

Table 2	2: District	Population	and Slum	Population	in NCR,	2011
					,	

Source: Census of India, 2011

Table 3: City/ town wise slum population in NCR - 2011

Sr. No.	Sub-region/ City/ Town	Slum-	Slum-2011			
511100		No. of HH	Total slum Popu.			
1	NCT Delhi	3,67,893	17,85,390			
HARYAN	A State	3,32,697	16,62,305			
2	Nilokheri (MC)	144	756			
3	Taraori (MC)	1338	6842			
4	Indri (MC)	742	3817			
5	Karnal (M Cl + OG)	9481	47802			
6	Nissing (MC)	208	1092			
7	Assandh (MC)	1334	6836			
8	Gharaunda (MC)	2933	15112			
9	Panipat (M Cl + OG)	2369	11438			
10	Samalkha (MC + OG)	2172	10748			
11	Gohana (MC)	1439	7489			
12	Ganaur (MC)	1725	9244			
13	Sonipat (M Cl + OG)	19033	98508			
14	Kharkhoda (MC)	561	2967			
15	Narwana (M Cl)	4232	21925			
16	Uchana (MC)	275	1375			
17	Jind (M Cl)	15319	79433			
18	Julana (MC)	960	5171			

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RAJAST	HAN State	3,94,391	20,68,000
Haryana	sub-region (Sub-Total)	2,06,644	10,31,946
48	Hodal (MC)	1306	8196
47	Hathin (MC)	326	2077
46	Palwal (M Cl + OG)	1876	10373
45	Faridabad (M Corp.)	45900	215053
44	Punahana (MC)	277	1790
43	Ferozepurjhirka (MC)	1837	11665
42	Nuh (MC)	419	2473
41	Taoru (MC)	2017	11205
40	Sohna (MC)	1111	6037
39	Farrukhnagar (MC)	602	3113
38	Gurgaon (M Corp. + OG)	30888	144805
37	Pataudi (MC)	59	326
36	Hailey Mandi (MC)	800	4063
35	Bawal (MC)	551	3304
34	Rewari (M Cl)	12113	61600
33	Narnaul (M Cl)	212	1094
32	Ateli (MC)	62	370
31	Mahendragarh (MC)	1440	7554
30	Jhajjar (MC)	2286	11943
29	Bahadurgarh (M Cl)	12917	63933
28	Sampla (MC)	795	4120
27	Kalanaur (MC)	1376	7325
26	Rohtak (M Cl)	8113	40779
25	Maham (MC)	755	3761
24	CharkhiDadri (MC)	5123	26107
23	Loharu (MC)	769	4356
22	Siwani (MC)	889	4657
21	Bhiwani (M Cl)	3670	18688
20	Bawanikhera (MC)	1408	7258
19	Safidon (MC)	2482	13366

49	Tijara (M)	105	577
50	Khairthal (M)	62	376
51	Alwar (M Cl + OG)	682	3799
52	Rajgarh (M)	97	480
53	Nagar (M)	60	337
54	Nadbai (M)	76	393
55	Bharatpur (M Cl + OG)	5561	31341
56	Weir (M)	1021	6264
Rajasthar	n sub-region (Sub-Total)	7,664	43,567
UTTAR F	PRADESH State	10,66,363	62,39,965
57	Noida (CT)	11510	49407
58	Kairana (NPP)	1731	11134
59	Karnawal (NP)	171	1205
60	Sardhana (NPP)	1497	9994
61	Phalauda (NP)	618	3982
62	Hastinapur (NP)	500	2522
63	Mawana (NPP)	1391	8860
64	Meerut (M Corp.)	92034	544859
65	Tikri (NP)	497	3089
66	Doghat (NP)	595	3835
67	Baraut (NPP)	3859	23558
68	Baghpat (NPP)	826	5264
69	Agarwal Mandi (Tatiri) (NP)	66	415
70	Aminagar Sarai (NP)	115	652
71	Khekada (NP)	2329	15359
72	Patala (NP)	314	1865
73	Niwari (NP)	408	2636
74	Modinagar (NPP)	8223	43995
75	Faridnagar (NP)	421	2606
76	Muradnagar (NPP)	726	5394
77	Loni (NPP)	19169	107800
78	Ghaziabad (M Corp.)	63742	333962

NCR (Gra	and Total)	8,37,780	43,22,468
94 Uttar Pra	desh sub-region (Sub-Total)	2 55 579	4128
93	Snanpur (NP) Kondhla (NDD)	235	4129
02	Shahayar (ND)		1121
92	Dibai (NPP)	1023	6018
91	Siana (NPP)	1784	11582
90	Gulaothi (NPP)	93	677
89	Bulandshahr (NPP + OG)	9639	57367
88	Sikandrabad (NPP)	5209	31129
87	Jewar (NP)	1317	9280
86	Jahangirpur (NP)	421	2394
85	Rabupura (NP)	764	4877
84	Dankaur (NP)	392	2384
83	Bilaspur (NP)	307	1875
82	Dadri (NPP)	1938	10781
81	Hapur (NPP)	14832	91964
80	Pilkhuwa (NPP)	5351	31952
79	Dasna (NP)	1767	11633

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Source: Census of India, 2011

 Table 4: Existing status of the Pradhan MantriAwasYojna(PMAY) at city/town level in NCR (As on April 2019)

Sub	Distri	Total number of Dwelling	Househol ds	Number of Dwelling Units under-	Number of Dwelling Units proposed	Households to be benefited from		
Kegion	ct	Units construct ed	benefited *	under- constructi on	to be constructe d*	DUs under- constructi on*	DUs proposed	
NCT Delhi	-							
Haryana	14	2,094	986	820	12,726	28,950	0	

Pradesh Rajasthan	8	35,723	43,061	36,314	62,375 5,792	46,700	90,690
NCR	24	43,810	50,463	38,181	80,893	76,697	100,858

Source: NCR Monitoring and Planning Cell, Govt of Haryana, Government of Uttar Pradesh, Govt of Rajasthan and *PMAY (U) website.

Annexure-D-17.2

Defining Affordable Housing

- 1) There is no clear-cut definition of the term "affordable", as it is a relative concept. Even, "affordability" as a concept is very generic and could have different meanings for different people of differences in income levels.
- 2) Different agencies and countries have defined "affordable housing" as the economic potential of an individual to buy a house. In USand Canada, a commonly accepted guideline for affordable housing is that the cost of housing should not be more than 30% of a household's annual income, including taxes and insurance for owners and utility costs. If for a home, the monthly carrying costs that include not only the loan factors repayment. but also other including property taxes. paymentsofbasicutilitiessuchaswater, electricity, cookingfuel, etc. and basic services such as internet, cable, etc. exceed 30-35% of monthly household income, the housing could be considered unaffordable for that household. However, this figure provides only a base of housing affordability; the definition of affordability varies according to a household's individual circumstances.
- 3) Even in India, the Reserve Bank of India (RBI) had tweaked the affordable housing definition in July 2014. According to RBI the cost of a house now could be INR 6.5 million and INR 5 million in the metrosandnon-metros, respectively, to be qualified as affordable housing. The RBI also said that it will periodically review the definition of affordable housing, on account of inflation.
- 4) The task force on promoting Affordable Housing of MHUPA (now MoHUA)had defined affordable housing as "Affordable housing refers to any housing that meets some form of affordability criterion, which could be income level of the family, size of the dwelling unit or affordability in terms of EMI size or ratio of house price to annual income" (refer **Table 1** below). While the first two parameters are independent of each other, the third is a dependent parameter that can be correlated to income and property prices. Income levels help in differentiating among people with expenditure potential, the size of units assist in maintaining a minimum level of liveablespace.
- 5) Another important facet of the affordable housing definition is that all of them ideate a universal definition across the vast country of India. The country does not only have urban areas of different stature, but also the income levels are different across the country. The prominent developer in Indian affordable housing context, Value and Budget Housing Corporation (VBHC) offers 1 BHK units under INR 1.6 million in Bengaluru and INR 1.8 million in Vasind (Mumbai), while the location of Mumbai project is 40 minutes' drive from Thane. The definition of affordable housing varies from place to place whereas it may vary for different projects in the city also.

Income Categories	Size	Income Criteria	Affordability
EWS	 21-27 sqm of carpetarea EWS maximum area couldbe between 25.2 and 30.8 sqm if subsidies are tied tothem 	The maximum Household Income for the EWS and LIG category are recommended to be	The Task Force recommended that the desirable goal of a house

Table 1: Definitio	on of Affordable	Housing
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Income Categories	Size	Income Criteria	Affordability
LIG	 28-40 sqm of carpetarea maximum area for LIG couldbe between 36.9 and 45.1 sqm if subsidies are tied tothem 41-60 sqm of carpetarea 	INR 8,000 and INR 16,000 per month and since many households in this category do not haveregular monthly income an annual income of INR 100,000 for EWS and INR 200,000/- for LIG households could also be used	price to income multiple that should be pursued for Affordable Housing projects should be 5
MIG			

Source: Task force on Promoting Affordable Housing, MHUPA (now MoHUA), 2012

Further, definition of Affordable Housing suggested by JLL and REIS in 2016 is as under:

Income Categories	Minimum Volume of Habitation	Provision of Basic Amenities	Cost of the House	Location of the House
EWS	 250 sq ft carpetarea 2,250 cu ft internalvolume 	 sanitation, adequate water supply and power 	 cost of the house such that EMI does not exceed 30- 	 located within 20 km of a major workplace
LIG	 300–600 sq ft carpet area 2,700–5,400 cu ft internal volume 	 provision of community spaces and amenities such as parks, schools 	40% of net monthly income of the buyer • reasonable	hub (could be suburban hubs as well) in the city • adequately
MIG	 600–1,200 sq ft carpet area 5,400– 10,800 cu ft internal volume 	and healthcare facilities, either within the project or in the neighbourhood, depending upon the size and location of the housing project	maintenance costs	connected to major public transport system

Source: JLL Research and REIS, 2016

Annexure-D-17.3

Brief of Major Initiatives taken by the Govt. of India and NCR participating States for Housing

Recent years have been years of reforms in the industry with an increased focus on transparency and customer centricity by both, policy makers and developers. The regulatory framework has helped regain the trust in the industry. Further, the systematic implementation of the government reforms will definitely help in rekindling consumer sentiment, which will eventually push the growth of residential segment in the coming decades.

A). Initiatives of Govt. of India

- 1. Housing policies in India have come a long way since the 1950s; initially the policies were welfare centric which later on dwelled to be economic-centric policies. The role of government has also seen a shift from being provider to being the facilitator of housing. Dividing the policies in India into four phases as the first phase comprising of first two decades (1950s to 1970s) where the policies were taking shape that focused more upon integrating all sections of the society. The second phase (1970s to mid-1980s), shifting the focus to economically weaker section (EWS) of the society. The third phase (1980s to 2000s), focusing more on physical provision of housing as well as housing finance mechanisms. The last phase (2000s to present) shifting the role of government as facilitator of housing.
- 2. Schemes like Environmental Improvement of Urban Slums (EIUS) Scheme, National Slum Development Programme (NSDP), Valmiki Ambedkar Awas Yojana (VAMBAY), Basic Service for Urban Poor (BSUP) and Integrated Housing & Slum Development Program (IHSDP) under Jawaharlal Nehru National Urban Renewal Mission (JnNURM), Rajiv Awas Yojana (RAY), Interest Subsidy Scheme for Urban Poor (ISHUP)/Rajiv Rinn Yojana (RRY) etc. has been implemented to ensure greater home ownership. Below are some of the major schemes implemented by Govt of India to reduce the demand of housing in the country:
- 2.1.Jawaharlal Nehru Urban Renewal Mission (JNNURM): The major reform came with the onset of JNNURM, 2005. The program was launched with an objective to improve state of infrastructure in cities. The two sub-missions under JNNURM are Basic Services for Urban Poor (BSUP) designed to upgrade and improve the existing conditions of slums by giving them access to basic amenities like water and sanitation, health care and education etc. The second part is Integrated Housing and Slum Development Program (IHSDP), designed to tackle the poor housing for urban slum dwellers as per 2001 Census. The scheme has been replaced by Atal Mission for Rejuvenation and Urban Transformation (AMRUT) in 2015.
- 2.2.**Pradhan Mantri Awas Yojana (Urban)-PMAY (U):**Mission launched on 25th June 2015 with a mission to provide housing for all in urban areas by year 2022 and to address the issue of affordable housing in urban areas. The Mission provides Central Assistance to the implementing agencies (Urban Local Bodies, Development Authorities, Housing Boards etc.) through States/Union Territories (UTs) and Central Nodal Agencies (CNAs) for providing houses to all eligible families/ beneficiaries against the validated demand for houses for about 1.12 cr. The Mission has been implemented through four verticals giving option to beneficiaries, ULBs and State Governments. These four verticals are as:

- a) In Situ-Slum Redevelopment (rehabilitation of Slum Dwellers with participation of private developers using land as a resource)
- b) Affordable housing through Credit linked subsidy (promotion of Affordable Housing for weaker section through Credit linked subsidy)
- c) Affordable Housing in Partnership with Public & Private sectors
- d) Subsidy for beneficiary-led individual house construction



- 2.3.**Pradhan Mantri Awas Yojana (Gramin)- PMAY-G:** Rural housing programme, as an independent programme, started with Indira Awaas Yojana (IAY) in January 1996 addressed towards the housing needs in the rural areas. However, due to lack of transparency in selection of beneficiaries, low the quality of the house and lack of technical supervision etc. IAY has been re-structured into Pradhan Mantri Awaas Yojana –Gramin (PMAY-G) from 1st April 2016 under housing for All'' by the scheme 2022. PMAY-G aims at providing a pucca house, with basic amenities, to all houseless householder and those households living in kutcha and dilapidated house, by 2022. The immediate objective is to:
 - a) cover 1.00 crore household living in kutcha house/dilapidated house in three years from 2016-17 to 2018- 19.
 - b) minimum size of the house has been increased to 25 sq.mt (from20sq.mt) with a hygienic cooking space.
 - c) unit assistance of Rs. 1.20 lakh in plain and Rs 1.30 lakh in hilly states, difficult areas and IAP district.
 - d) assistance for construction of toilet shall be leveraged though convergence with SBM-G, MGNREGS or any other dedicated the source of funding.

- e) convergence for piped drinking water, electricity connection, LPG gas connection etc. different Government programmers are also to be attempted under PMAY -G.
- 2.4.As of July 2019, 8.36 million houses have been sanctioned under the "Housing for All" initiative across the nation and construction for 4.9 million units has begun and 2.6 million units of which have been completed, making it highly possible to achieve the 10 million houses target by 2022. Projected subsidy disbursement during 2019-22 for the same is projected to be Rs. 1 trillion.
- 2.5. National Urban Rental Housing Policy (2015): Ministry of Housing and Urban Affairs (MoHUA) had constituted a Task Force on Rental Housing (TFRH) to provide recommendations for formulating national urban rental housing policy of 2015. National Urban Rental Housing Policy (2015) was formulated with the vision to create a vibrant, sustainable and inclusive rental housing market in India. The policy targets the shelter for the homeless, social rental housing, need based rental housing (for migrants, working men. students etc.) and market based rental housing (employees of ULBs/State/PSUs/NGOs etc.)The broad objectives of the NURHP, 2015 are:
 - a) To create adequate rental housing stock by promoting Social Rental Housing (SRH) with direct or indirect support from Government (State) with special focus on affordability of vulnerable groups and urban poor.
 - b) To promote Shelter facilities for the most vulnerable groups within the homeless population.
 - c) To promote Social Rental Housing for urban poor as a viable alternative housing option.
 - d) To promote Need Based Rental Housing (short/mid/long term basis) for specific target groups such as migrant labour, single women, single men, students (any other target group as defined by the State) who have the ability to pay only up to a certain amount of monthly rent
 - e) To promote Market Driven Rental Housing (MDRH may or may not be eligible for direct benefits from government)
 - f) To promote Private Rental Housing (PRH) as an interim measure towards aspirational home buyers.
 - g) To enable Institutional Rental Housing (Hostels/PGs/dormitories) for working class with special focus on low earning employees working with Government/PSUs/Corporate houses/Industries/NGOs etc (any other category as defined by the State Government from time to time).
 - h) To remove legal, financial and administrative barriers for facilitating access to tenure, land, finance and technology.
 - i) To enable formalization/regularization of Rental Housing on pan India basis through adoption of Model Tenancy Act, 2015 of Ministry of HUPA.
 - j) To facilitate fund flow from government and private sector through innovative financial Instruments to incentivise rental housing.
 - k) To promoting Public-Private Partnership (PPP) to construct, manage, maintain and operate rental housing stock (Cooperative societies, Neighborhood Associations, Resident Welfare, Associations etc.).
- 2.6.National Urban Housing and Habitat Policy (NUHHP), 2007: NUHHP 2007 has been formulated keeping in view the changing socio-economic parameters of the urban areas

and growing requirement of shelter and related infrastructure. Identified 'Affordable Housing for All' as a key focus area to address concerns that could potentially impede sustainable urban development. The National Housing and Habitat Policy (NUHHP), 2007 envisaged that the States would prepare a State Urban Housing and Habitat Policy and also a State Urban Housing & Habitat Action Plan to o achieve the housing policy objectives through institutional, legal & regulatory reforms, fiscal concessions, financial sector reforms. The major objectives of the policy are:

- a) facilitating accessibility to serviced land and housing for EWS and LIG
- b) land assembly, development and disposal to be encouraged by both private and public sectors
- c) forging strong partnerships between public, private and cooperative sectors
- d) creating adequate housing stock both on rental and ownership basis
- e) using technology to modernise and enhance energy and cost efficiency, productivity and quality
- 2.7.Real Estate (Regulation and Development) Act, 2016 (RERA Act): is considered as one of the landmark legislations. Its objective is to address grievances of buyers and to bring transparency and accountability in country's real estate sector. This is in line with the vast and growing economy of India as in future many people will be investing in real features estate sector. Following are the main of this legislation: 1) According to the new law, the developer can't make any changes to the plan without the written consent of the buyer. This provision will not allow the developer to increase the cost of their projects.

2) The law ensures that realty project is completed in time. If delayed, then the developer will have to pay interest on the amount paid by the buyer. 3) Registration is mandatory for all commercial and residential real estate projects where the land is over 500 square metres or includes eight apartments & which are underconstruction.

4) As per the new act, every phase of apartment will be considered a standalone real estate project, and separate registration needs to be obtained for each project.5) It is compulsory for a state to establish a State Real Estate Regulatory Authority as per the new act. Buyers could approach this body for redressal of their grievances.6) The property will have to be sold to buyers based on carpet area and not on super built-up area which will become illegal under the new law.

7) Failing to register a property will attract a penalty up to 10% of the project cost and a repeated violation could send the developer in jail.

8) As per the new law, the developer will have to place 70% of the money collected from a buyer in a separate escrow account to meet the construction cost of the project. This will keep a check on developers who divert the buyer's money to start a new project, instead of finishing the one for which money was collected & also ensure that the respective project is completed in time.

9) If the buyer finds any shortcomings in the project then buyer can contact the developer in writing within one year of taking possession.

10) The law has a provision of a maximum jail term of three years with or without a fine, for a developer who violates the order of the appellate tribunal of the RERA.

B). Initiatives of NCR participating States

Annexure forNCR RP-2041 - Draft Approach Paper – Regional Land Use

In various sub-regions of the NCR, the policies and programmes for housing and slum improvement implemented by the respective state governments were as follows :

a) Haryana Sub Region - The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was implemented in Faridabad town. Under this Mission, the Sub Mission of Basic Services for the Urban Poor (BSUP) was implemented. Further, the Integrated Housing and Slum Development Programme (IHSDP) was also implemented in the towns of Dadri, Rewari and Jhajjar. For improving the slums, the Rajiv Awas Yojana (RAY) was implemented in Faridabad, Gurgaon, Rohtak and Panipat. Another programme called the Rajiv Rinn Yojana (RRY) was implemented for urban poverty alleviation so that the urban poor/slum dwellers could improve their living standard. Also, the National Urban Livelihoods Programme (NULM) was also launched in various towns of the state. Many night shelters have been constructed in various towns. Affordable Housing in Partnership (AHIP) was also initiated in Faridabad for rehabilitation of slum dwellers in affordable housing units on a PPP mode. The TCP Department of Haryana has modified its policy for allotment of land/flats to the EWS in the licensed colonies developed by the private colonizers so that its misuse could be checked. All the EWS plots developed by the private colonisers were to be handed over to the Haryana Housing Board at a predetermined rate for allotment to the EWS by the Board.

The Government of Haryana also initiated an Urban Homeless Policy Haryana 2011, Affordable Housing Policy and Slum in-situ Rehabilitation Policy for improving the housing situation in the state. The Government of Haryana has also been implementing the Pradhan Mantri Awas Yojana (PMAY) as well as the Deen Dayal Jan Awas Yojana (DDJAY). Under DDJAY, 2 lakh houses were to be constructed in the low and medium potential towns of the state.

The state of Haryana has experienced a rapid increase in urban population over time, nearly 35 percent of the State's population resides in urban centers as per 2011. However, 25 percent of the urban population of Haryana lives in slums (BPL survey,2007). The key initiatives taken by Haryana government for housing sector was earmarking of 25% of the budget for the urban poor in all ULBs and earmarking of 25% of the gross area for EWS Housing under the land pooling scheme of ULBs. The state government also enforced a condition of allotting 20% of the number of plots in the colony to EWS category of persons having a family income up to the prescribed limit. This condition was enforced while granting a license for development of any residential colony by a private developer under Haryana Urban Development and Regulations of Urban Areas Act 1975.

In the case of Haryana sub-region, the HUDA has been a major player in the shelter provision process, mostly through plotted developments in various towns. Further, partnerships with developers in terms of licenced colonisation has been a major contributor. However, both these forms of shelter provision have been catering to the upper income groups only. It is only in the recent past that the Government of Haryana has come out with a policy for Affordable Housing so as to down market housing products. A large number of affordable housing projects have started to come up in the Haryana sub-region of the NCR.

Haryana has policies to address the issue of affordable housing and adequate transport infrastructure has also been planned. Deen Dayal Yojna is for affordable plot development. Government came up with 05 acre of land bank and hoping to get a good response. Haryana also has the Affordable Group Housing with cost ranging from 18-22 lakhs. The broad aspects of land planning and development for Haryana are as under:

- a) T&CP Department of Haryana prepared the land uses and regulates by way of licensing and granting change of land use permissions. The infrastructure part in such planned areas created by HUDA (HSVP).
- b) Required land acquisition is done by Urban Estate Department.
- c) ULB Department is are different from T&CP.
- d) Particular areas are declared as a Controlled area as per the State Act and it is mandatory for the Government to prepare Development Plan of that area within one year. The draft plan is prepared by town planners then submitted to Government and thereafter technical comments requested from concerned District Level Authorities. After it is passed by the District Level Committees, it is sent to State Level Committees chaired by the Hon'ble Chief Minister, and thereafter put up for suggestions and objections from the public. And then finally it is approved. When the Development Plan is in place the licensing is done by the T&CP Department.
- e) There are some areas where individual want to have change of land use for their individual land. There are different policies for the change of category of land. In agriculture land land use is restricted, as only some category of educational institutions on particular approach road is allowed.
- b) Uttar Pradesh Sub Region The RAY and IHSDP have been implemented in the state of Uttar Pradesh. The Government of Uttar Pradesh has enacted several policies viz. State Housing Policy 2009, State Housing Policy for EWS and LIG, 2011, State Housing Policy for Urban Villages, 2011, Manyavar Shri Kanshiramji Shahari Garib Awas Yojana and the Manyawar Shri Kanshiramji Shahari Dalit Bhulya Basti Samagra Vikas Yojana. These have been implemented in various towns of the state. In addition, in order to encourage investments from the private sector, several township policies have been initiated viz. Integrated Township Policy 2005, Hi-Tech Township Policy 2007 and the New Township Policy 2009. In addition, the development authorities and the UPHDB have also been providing housing for various sections of the society.

In the UP sub Region, the UPHDB as well as the private developers have been prime players in providing housing. Several state and central government policies have also been implemented. Many PPP models have also emerged here. Several townships with private real estate developer participation have been launched in the state of Uttar Pradesh, particularly in the NCR sub region.

c) **Rajasthan Sub Region** – In the state of Rajasthan, several central and state government policies have been implemented. The RAY was implemented in the city of Alwar which is a part of the Rajasthan sub region. The Government also enacted a Rajasthan Slum Development Policy in the year 2012 under which basic civic and social infrastructure and amenities and housing including rental housing and transit housing was to be provided. Under Integrated Housing and Slum Development Programme (IHSDP), slum dwellers were to be provided shelter and basic infrastructure. Besides construction of houses, infrastructure development including

roads, drains, toilets, sewerage systems, street lights, water supply lines, etc. were to be provided. Another programme called the Mukhya Mantri Shahari BPL Awas Yojana was launched by the Government of Rajasthan in the year 2012-13. Under this scheme, 1 lakh BPC families were to be benefitted by providing subsidy for construction of houses. In terms of night shelters for the homeless, 3 night shelters were constructed in the town of Alwar. The Rajasthan Housing Board has been constructing houses for the EWS and LIG and has added a substantial number of dwelling units.

As per the Habitat policy of Rajasthan, more than 80% of housing shortage is for EWS and LIG catogries. State Urban Agenda for Rajasthan is also prepared having provisions for the vision of making the state a slum free state in five years. This was proposed to be achieved by using the TDR tool and reserving 10-15% of developed land area or 20-25% of FAR whichever is more for EWS and LIG.Various provisions made for increasing the land supply by land acquisition through settlement/negotiation, the Government of Rajasthan made following options: i) If the land is surrendered by the owner free of cost to Government, the owner gets maximum 20% residential and 5% commercial developed area in the same scheme. ii) If it is not possible to allot land in the same scheme area the owner gets cash in compensation. The state government also introduced incentives as low registration fee for registration of properties and incentives for registration the property in name of women in the household²⁰⁹.

In the Rajasthan sub-Region, the RHB has been the major player for housing development. In addition, the urban local bodies have also been playing a major role in implementing various housing policies of the state as well as the central government. Private real estate developers also have a crucial role to play in supplying housing in various towns. Rajasthan also has several variations of PPP models for developing housing.

As regard Housing, Rajasthan Township Policy 2010 is in force in the State including Rajasthan sub-region. Also, a new policy has been prepared after review of existing policy and incorporating learnings from the past experiences, feedback from various stakeholders and new policy initiatives by the Government of India. This policy is named as "Chief Minister's Jan Avas Yojna-2015"

d) **NCT Delhi:**Due to difficulty in land acquisition, open land pooling model has been adopted in Delhi. The owners/group of owners can pool land parcels of any size for development as per prescribed norms and guidelines based on sectors as delineated in ZDPs. The Land Pooling Policy for Delhi mandates that each sector will have a 60:40 ratio with 60% of the land to be developed by Land owners/consortium for residential, commercial, partly Public Semi Public (PSP) land uses and 40% of the land to be used for various city level infrastructure requirements including roads, greens, PSP facilities, development of utilities i.e. water, sewerage, electricity etc. with involvement of private sector.

Concept of TDR based development is also another option for the areas where land acquisition is difficult. In Delhi first TDR based project has been announced at Karkardoma project, where good housing schemes are proposed.

²⁰⁹https://www.pdpu.ac.in/downloads/SPM-JEM2020Chapter4.pdf

Another model for development, adopted was Redevelopment Model. Core areas of Delhi are getting older day by day and about 40% of the housing demand can be catered within Delhi by redevelopment. Redevelopment for cities like Delhi can have two important things first is to have an optimal mix of volunteer redevelopment and mandatory redevelopment. The second important component will be incentivizing the redevelopment.

Annexure-D-17.4

FEW LAND SUPPLY MODELS IN INDIA²¹⁰

Different States in India have formulated Land Supply Models Keeping in focus the land requirements for urban poor. Some of the Models are as below:

1) T.P. Scheme (The Gujarat Model)

- a) In India, the Bombay Town Planning Act of 1915 allowed the use of LPR in the form of Town Planning Schemes (TPS) in the erstwhile Bombay Presidency. Later, it became the basis of the TPS enabling act in Gujarat - the Gujarat Town Planning and Urban Development Act (GTPUDA), 1976.
- b) The Town Planning Scheme is being followed as an alternative method to assemble the land for urban development activities in a faster and financially affordable manner without taking recourse to compulsory acquisition of land. Town Planning Scheme (TPS) is in operation in some of the states of Indian Union in the form of plot reconstitution. It is an area planning technique patterned on the concept of land readjustment.
- c) Gujarat adopted the Town Planning Scheme (TPS) to expedite the process of land development, which was constrained by the then existing method of land acquisition and development as it was both time consuming and expensive because of legal problems and the heavy compensation the local authorities has to pay to land owners. To overcome such difficulties the state adopted the technique of land pooling (followed in Eastern Asia by Japan, South Korea and Taiwan), whereby irregular plots of land are pooled together, serviced and reconstituted into systematic plots before returning a proportion of improved land to the owners. It was believed that with less of financial transactions, this technique of land owners, the method involved a kind of community participation in which the judgment of the owners was sought at all stages of development.
- d) The TPS process does not settle land ownership disputes; it just transfers them to the newly reconstituted plot, thereby not holding up the TPS approval process. As a result, TPS has become the predominant urban expansion tool in all the major cities in Gujarat. For example, Ahmedabad Urban Development Authority (AUDA) has prepared over 109 schemes and Ahmedabad Municipal Corporation (AMC) has prepared about 61 schemes in the last 4 decades.
- e) Apart from Gujarat and Maharashtra, a few other states, notably Andhra Pradesh, Karnataka, Punjab and Kerala have TPS-enabling legislation, albeit with little use of the mechanism. Instead of using TPS, Punjab only permits conversion of large parcels of agricultural land to urban use. For example, a 100 hectare agricultural land may be allowed conversion if 45% is used for public facilities and infrastructure, and the remaining 55% for residential use.

2) Land readjustment / poolingModel

²¹⁰http://www.ijirset.com/upload/2014/september/37 Study.pdf
Land re-adjustment is a process whereby a public authority assembles numerous small parcels of raw land without paying compensation to the owners. The authority then subdivides such assembled lands for urban use returning most of the building sites to the original owners in proportion to the value of their land contribution and permitting them the right of alienating such sites. The authority retains a portion of the assembled lands, applying them partly to provide civic amenities such as roads, parks and gardens or schools, and the remainder land for public sale to recover the cost of development. Thus, land re-adjustment acts as tool to achieve unified control over large areas of land and as an instrument of financing public service installations in the process of planned urban growth.

3) Guided Urban Development Model

The concept of Guided Urban Development (GUD) emerged in response to ad hoc, uncontrolled urban development with no regard to infrastructure services. It also aims to secure a limited availability of urban land for economically weaker sections. GUD had been applied in Chennai under the World Bank-assisted Tamil Nadu Urban Development Project by Chennai Metropolitan Development Authority (CMDA). The objectives of the scheme are as follows:

- a) Ensure provision of serviced plots for low income families at affordable prices (approximately 75% of total plots to be reserved for EWS / LIG); and
- b) Provide incentives to the land owner / private developer to participate in the provision of low income shelter by guaranteeing fair return on investments (profit of 20-30%).

4) Joint Development Model

Under a legislative act in the state of Haryana, certain planned areas are designated to allow private developers to assemble parcels of land. The act provides for the licensing of private developers to purchase land directly from land owners and develop such lands for residential purpose according to the conditions, which include:

- a) Reservation of 20% of the developed residential plots for EWS and LIG category and their allotment as per prices and norms set by HUDA (Haryana Urban Development Authority);
- b) Sale of another 25% plots on no profit no loss basis; and
- c) Remaining 55% plots to be priced and sold directly by the developer. Initially, the model started with the plotted development, but over time it has shifted to apartments. The joint development approach has been extensively applied in Gurgaon.

The Haryana Development and Regulation of Urban Area Act (HDRUAA), 1985 provide for certain planned areas to be specially designated to allow private developers to assemble parcels of land. In designated areas, the act provides for the licensing of private developers to assemble land directly from landowners and develop such land for residential purposes according to stipulation which include (financial contributions to the development authority for attributable off-site infrastructure costs); and the reservation of a portion of the developed land for lower-income housing to be allotted through the development authority. Haryana State, with the enactment of the Act (HDRUAA) in 1975, became the only State in India to formally involve the corporate private sector in the acquisition, development, and disposal of urban land. The act and its 1981 bylaws stipulate that private developers must first apply for a license from the State Director of Town Planning, stating the details of the land. The land must be within a township/city development scheme, which has been prepared by the Haryana Urban Development Authority (HUDA) and sanctioned by the State. The developer must also prove that he is bonafide and "has a good track record". The license granted has mandatory provisions, such as:

- a) The developer must pay external development charges to HUDA on a gross area basis (net m2 bases for water) to cover the off-site infrastructure costs.
- b) The developer must reserve an additional 25 percent of created plots to be sold on a "no-profit no-loss" basis.
- c) The developer must pay other servicing/administrative costs to HUDA on a net m2 bases.
- d) The developer must build certain community facilities and / or provide land for such free of charge.
- e) The developer must put 30 percent of the proceeds of land sales into a separate account to be used for development.
- f) The developer must maintain the completed colony for five years.
- g) The developer must return any excess profit to the state (a ceiling of 15 percent profit on total project costs is imposed).
- h) To ensure compliance with these conditions the developer must take out a bank guarantee in favour of HUDA.

5) Transfer of Development Rights (TDR) Model

- a) In determining the 'fair price of land' to be acquired, Governments generally try to rely on the past records of sales transactions. These are rarely reported or recorded correctly since transaction taxes are high and the role of 'black money' in the economy is large. Today, Local Bodies or the State Governments do not have adequate funds to acquire the necessary land even at the recorded low rates. A pragmatic solution to this problem could be the use of 'Transfer of Development Rights'. The Urban Development Plans Formulation and Implementation (UDPFI) Guidelines, MOUD, Government of India (1996), define Transfer of Development Rights (TDRs) as, 'Development Right to transfer the potential of a plot designated for a public purpose in a plan, expressed in terms of total permissible built space calculated on the basis of Floor Space Index or Floor Area Ratio allowable for that plot, for utilization by the owner himself or by way of transfer by him to someone else from the present location to a specified area in the plan, as additional built up space over and above the permissible limit in lieu of compensation for the surrender of the concerned plot free from all encumbrances to the Planning and Development Authority'. Mumbai is the first city in India, which has adopted the TDR concept in a regulated manner as an alternative mechanism for land acquisition for providing the essential amenities in accordance with the development plan proposal, for slum redevelopment and urban renewal through reconstruction of dilapidated buildings.
- b) Under the TDR concept, the development potential of a plot of land partly or fully reserved for public purpose can be separated from the land itself and be made available to the owner of the land by way of TDR in the form of Floor Space Index. Such award entitles the owner a Development Right Certificate (DRC), which he may himself use or transfer to another person. If the FSI granted cannot be used on the

land not covered by acquisition, the landowner is free to use the additional FSI on the lands located in other parts of the city. This way the exorbitant costs of acquisition of urban land for public purpose can be met by a system of compensation in kind rather than in cash.

6) Accomodation Reservation Model²¹¹

The land owner can develop the facility for which the land is reserved (such as a library), hand it over to the Mumbai Municipal Corporation (BMC) free of cost and then utilize the development right equivalent to the full permissible FSI for his own purpose. In case of Mumbai, this measure is likely to succeed as land prices are several times higher than construction cost. But where land prices are not that high or are less than construction cost such a measure is unlikely to succeed.

²¹¹https://www.ijser.org/researchpaper/Urban-Land-Management-and-Planning.pdf

Annexure-D-17.5.1

Built to Rent Model²¹²

- 1. To qualify as a Build to Rent scheme, all the following criteria must be met:
 - a) the development, or block or phase within the development has at least 50 units
 - b) the homes are held as Build to Rent under a covenant for at least 15 years
 - c) a claw-back mechanism is in place to recoup additional affordable housing contributions in the event of the covenant being broken
 - d) all the units are self-contained and let separately
 - e) there is unified ownership and unified management of the development
 - f) longer tenancies (three years or more) are available to all tenants. These should have break clauses for renters, which allow the tenant to end the tenancy with a month's notice any time after the first six months
 - g) the scheme offers rent certainty for the period of the tenancy, the basis of which should be made clear to the tenant before a tenancy agreement is signed, including any annual increases which should always be formula-linked
 - h) there is on-site management, this does not necessarily mean full-time dedicated onsite staff, but all schemes need to have systems for prompt resolution of issues and some daily on-site presence
 - i) providers have a complaints procedure in place and are a member of a recognised ombudsman scheme
 - j) providers do not charge up-front fees of any kind to tenants or prospective tenants, other than deposits and rent-in-advance.
- 2. Benefits of Build to Rent developments can make a positive contribution to increasing housing supply and are beneficial in a number of ways. They can:
 - a) attract investment into housing market that otherwise would not exist
 - b) accelerate delivery on individual sites as they are less prone to 'absorption constraints' on build-out rates
 - c) deliver more readily across the housing market cycle as they are less impacted by house price downturns
 - d) provide a more consistent and at-scale demand for off-site manufacture
 - e) offer longer-term tenancies and more certainty over long-term availability
 - f) ensure a commitment to, and investment in, place-making through single ownership

provide better management standards and better quality homes than much of the mainstream private rented sector.

²¹²Adopted from London Plan

Annexure-D-17.5.2

City of Sydney- Affordable Rental Housing Strategy 2009 - 2014

The aim of the City of Sydney Affordable Housing Strategy is to protect existing affordable housing and to facilitate new affordable housing in the City of Sydney to provide for social, cultural, environmental and economic sustainability.

The City has a social, practical and legislative responsibility to address local housing needs on behalf of the community and that access to secure, appropriate and affordable housing is not only a basic requirement for all people, but also an essential component of an inclusive, dynamic and sustainable city.

The cost of housing in the Local Government Area (LGA) largely precludes very low, low and moderate income households from accessing housing appropriate to their needs and their income. It is therefore essential that the City facilitates the provision of affordable housing to the extent of its capabilities.

Increased levels of affordable housing cannot be achieved without the active participation of other levels of government, the not-for profit sector and the private sector. Moreover, the issues influencing housing affordability and the provision of affordable housing are regional issues and that such issues may not be fully addressed in isolation from other councils.

Key Considerations:

- Social, cultural and environmental impacts of decreasing housing affordability on the individual and the larger community.
- Economic impacts of decreasing housing affordability on the LGA's economy.

Objectives and Actions:

The City to focus on six key objectives:

- 1. Increase the amount of affordable housing
- Demonstration project
- Utilising the NSW planning system
- Facilitate affordable student housing
- Working with financial institutions
- Affordable housing quick path
- Contribution of City resources
- 2. Protect the existing stock of low cost accommodation
- Research and monitoring
- Consistent approach to the application of the Affordable Rental Housing SEPP in the inner city Sydney
- Financial incentives
- Collaborate with owners of low cost accommodation
- 3. Encourage a diverse housing stock
- Review appropriate dwelling size mix
- Ensure planning supports culturally appropriate housing
- Review planning provisions for secondary dwellings
- 4. Collaborate with other councils

- Provide leadership in affordable housing research, projects and policies
- Establish working groups with inner city Sydney councils
- Develop training programs
- 5. Advocate for improved housing outcomes
- Community education
- Advocate to improve social housing outcomes
- Advocate to improve Indigenous housing outcomes
- Liaise with the Aboriginal Housing Company
- Advocate to improve funding to the not-for-profit sector
- Advocate to increase participation of private sector
- Through CCCLM (Council of Capital City Lord Mayors), advocate affordable housing matters to the Commonwealth Government.
- Commonwealth and NSW Governments' incentives for boarding houses
- Advocate for a whole of government approach
- Advocate for affordable housing in NSW Government controlled urban renewal sites
- 6. Implement, evaluate and monitor the affordable housing strategy
- Affordable Housing Officer
- Monitor existing affordable housing
- Annual review of strategy
- Maintain existing research
- Ongoing research

The strategy identifies the need to increase the supply of affordable rental housing stock by nearly 8,000 by 2030.

Planning tools:

There are a number of planning mechanisms, such as affordable housing levies and the Affordable Rental Housing State Environmental Planning Policy (SEPP), that may byutilised to protect existing affordable housing and to facilitate additional affordable housing.

Strategic Partnerships:

The issues influencing the provision of affordable housing can not be addressed solely by local government. It is essential that councils develop working partnerships with the not-for-profit sector, the Commonwealth Government and NSW Government, the private sector, other councils and the financial sector in order to protect existing affordable housing and to facilitate additional affordable housing.

Financial Initiatives:

It is possible that a council may allocate money to facilitate more appropriate and affordable housing for very low to moderate income earners. Funds may be used to offer a range of 'carrot' incentives to be offered to the private sector to encourage the provision of affordable housing. Such incentives may include:

- reducing development contributions for developers willing to provide affordable housing;
- spreading charges, e.g. infrastructure charges and DA fees, as a way of reducing upfront costs of development that provide affordable housing;
- rate rebates on properties where affordable housing is provided or to rental properties with low income tenants;

- providing land to affordable housing providers through donation or by deferring payment so that the upfront costs of development are lowered; or
- reducing rates or offering rebates for owners of boarding houses so as to provide an incentive for their retention. Money may also be used as equity in forming partnerships, undertaking housing research, advocacy programmes and offering incentives for the retention of existing low cost accommodation.

Leadership, advocacy and community development

Councils, both individually and in partnership with stakeholders and the not-for-profit sector, are able to advocate to other levels of government for improved housing outcomes for people on very low to moderate incomes.

Councils may work with members of the community to educate them on the overall benefits of providing affordable housing in the LGAs. Where community members and stakeholders are involved in the planning of affordable housing there is greater opportunity to enhance the general understanding of the importance of affordable housing.

It is important to monitor housing trends in LGAs and surrounding LGAs so that housing policies can remain responsive to change. Further, ongoing research of best practice and national and international affordable housing initiatives will inform the ongoing provision of affordable housing

Sustainable Sydney 2030

Sustainable Sydney 2030 is a 25 year strategic plan that will deliver an overarching framework for the development of the LGA over the next two decades. Sustainable Sydney 2030 poses an agenda beyond the immediate and looks to the City's long term goals. Its effective implementation relies on partnerships being established with the NSW Government, the Commonwealth Government, other local councils, business and the community. Sustainable Sydney 2030 has included 'Housing for a Diverse Population' as a key strategic direction for the City of Sydney.

During the extensive community consultation that has been undertaken as part of Sustainable Sydney 2030, the community informed that they would like to see the LGA as affordable, inclusive and accessible for all residents. Therefore, relative equality has emerged as a key principle in Sustainable Sydney 2030. The provision of affordable housing is a means of providing for increased relative equality in the LGA.

As part of its commitments in Sustainable Sydney 2030, the City, in demonstration of how affordable housing may be developed in partnership with other levels of government, the not-for-profit sector and the private sector, to explore a project to showcase the benefits of affordable housing in the LGA. Sustainable Sydney 2030 establishes an ambitious target that by 2030, of all housing in the LGA 7.5% will be social housing and 7.5% will be affordable housing delivered by 'not-for-profit' or other providers. This target seeks to increase the current proportion of social and affordable housing in the City by a modest amount.

'Housing for a Diverse Population' looks more broadly to housing in the City over the next two decades while this strategy is primarily focused on increasing housing options for very low to moderate income earners in the LGA.

City of Sydney Social Plan 2006-2010

The City of Sydney Social Plan 2006–2010 recognises that the City has a social, practical and legislative responsibility to address local housing needs on behalf of the community. The Social Plan identifies the need to provide appropriate and affordable housing in the LGA to support a diverse range of households on a variety of incomes and acknowledges that diversity contributes to greater economic stability and enhances the vitality of a local community.

The Council of Capital City Lord Mayors Affordable Housing Policy

The Council of Capital City Lord Mayors (CCCLM), of which the City of Sydney is a member, adopted the Council of Capital City Lord Mayors Affordable Housing Policy in 2007. The Policy recognises that capital cities have significant involvement in the direct provision of public and social housing, the development and implementation of planning policies, researching and monitoring housing affordability and supporting not-for-profit organisations in the provision of housing services. Capital cities also facilitate and encourage the provision of housing by the private sector via a range of incentives as well as playing an important advocacy role with all other levels of government.

The CCCLM aims to work closely with each level of government in gaining commitment, cooperation and investment to ensure an adequate supply of affordable housing and a mix of housing types are available in each capital city.

Sydney Metropolitan Strategy

The Sydney Metropolitan Strategy is the NSW Government's long-term plan to manage Sydney's continuing economic growth while balancing social and environmental impacts. The Strategy identifies a number of initiatives to improve the affordability of housing, to facilitate the development of affordable housing and to redevelop and regenerate Housing NSW stock. Specific initiatives include:

- C4.1 Improve the affordability of housing.
- C4.2 Redevelop and regenerate Department of Housing stock.
- C4.3 Use planning mechanisms to provide affordable housing.

With projections of a 1.1 million population increase in the Sydney metropolitan region in the next 25 years, the Sydney Metropolitan Strategy identifies the need for an additional 640,000 dwellings of which 55,000 are to be provided in the City of Sydney.

Sydney Subregional Strategy:

The Metropolitan Strategy identified ten Sydney subregions of which the City of Sydney LGA comprises a sub-region on its own. The strategy includes three actions towards improving the affordability of housing including:

- Improve the affordability of housing
- Redevelop and regenerate Department of Housing stock; and
- Consider potential planning mechanisms to provide affordable housing

Other Local Policies and Plans

There are a number of City of Sydney documents relevant to this Strategy, including:

- Sydney Local Environmental Plan (LEP) 2005
- South Sydney LEP 1998
- Leichhardt LEP 2000
- Green Square Affordable Housing Development Control Plan (DCP) 2002
- City of Sydney Boarding Houses Development Control Plan 2004
- Homelessness Strategy 2007-2012

The City is currently undertaking a review of its planning controls. The City Plan will comprise a single LEP and a single DCP for the whole LGA and will replace the above LEPs and DCPs.

Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) and the Environmental Planning Regulation 2000 regulate the planning and development assessment functions of councils. The 'provision and maintenance of affordable housing' is a specific objective of the EP&A Act.

The detailed strategy may be accessed at:

https://www.cityofsydney.nsw.gov.au/strategies-action-plans/affordable-rental-housing-strategy

Chapter-18-Policy Zones & Land Use

Annexure-D-18.1

NCR Constituents	AMRUT Cities ²¹³ / Area
Delhi	 East Delhi Municipal Corporation New Delhi Municipal Corporation North Delhi Municipal Corporation South Delhi Municipal Corporation
Haryana sub-region	 Bahadurgarh Bhiwani Faridabad Gurgaon/ Gurugram Jind Karnal Palwal Panipat Rewari Rohtak Sonipat
Rajasthan sub-region	 Alwar Bhwadi Bharatpur
Uttar Pradesh sub-region	 Baraut Bulandshahar Ghaziabad Hapur Loni Meerut Modinagar Muzaffarnagar Shmali

AMRUT Cities in NCR

²¹³<u>http://amrut.gov.in/content/citiescovered.php</u>

Annexure-D-18.2

S1.	Sub	District	Cluster	Activity
No.	Region		Name	
1		Karnal	Balla	Economic theme is Agri services and processing. Rurban Investments are in Agriculture Equipment
				Banks and Providing training to unemployed youth
2		Jind	Uchana	Economic theme is Skill development. Rurban
			Khurd	Investments are in Providing training to
				unemployed youth and Agriculture Equipment Banks.
3		Rewari	Kosli	Economic theme is Skill development. Rurban
				Investments are in Skill development and Dairy
	-			Farming.
4		Jhajjar	Badli	Economic theme is Skill development. Rurban
	Haryana			Investments are in Providing training to
5	-	Doningt	Samah	unemployed youth
3		Panipat	Sewan	Rurban Investments are in Agri-service centre and
				Cold Storage
6	-	Faridabad	Tigaon	Economic theme is Skill development Rurban
Ũ		1 unduoud	inguon	Investments are in Residential training to
				unemployed youth and Street Vending Project.
7		Mewat	Singar	Economic theme is Skill development. Rurban
			Ū	Investments are in Establishment of Multi skill
				development training centre and Agriculture
				Equipment Banks.
8	UP	Baghpat	Silana	Economic theme is Agri services and processing.
				Rurban Investments are in Seed Godown and Dairy
0	-			Development.
9		GB Nagar	Chitehera	Economic theme is Agri services and processing.
				Rurban investments are in Organic farming and
10	-	Ghaziahad	Dasna	Farmers framming Frogramme
10		Ollaziaoau	Dehat	Rurban Investments are in Capacity Building/Skill
			Denat	training for self-employment and Farmers Training
				Programme
11	Rajasthan	Alwar	Nauhawan	Economic theme is Agri services and processing.
	Ĵ			Rurban Investments are in Construction of animal
				shed and Irrigation
12		Bharatpur	Jurahara	Economic theme is Skill development. Rurban
				Investments are in SHG formation and capacity
				building and Veterinary Building Upgradation.

RURBAN Cluster in NCR

Source: RURBAN Mission portal & Stakeholders workshop inputs of MoRD

Brief of Urban Green Guidelines, 2014 of TCPO, MoHUA

1. <u>Importance of Urban Greens</u>

Urban Green Spaces are critical for making our cities sustainable, healthy and energy efficient. However, for Urban Green Spaces to contribute to the optimum, they have to be planned, designed, developed and managed/maintained appropriately so that they are accessible both in terms of area and population coverage. It is a fact that urbanization in India will continue unabated. The Urban Green spaces generate a diverse set of ecosystems of substantial significance for human well-being and their dynamics are shaped by human activities. Many green spaces in cities that have got disconnected from the wider environment tend to lose biodiversity characteristics due to continuous construction activities. Hence, protecting green spaces in isolation will often fail to sustain the capacity of urban ecosystems to generate value and they have to be will integrated in the overall city landscape.

Ecological Benefits-

- a) Trees absorb pollutants; moderate the impact of human activities by, for example, absorbing pollutants and releasing oxygen.
- b) They contribute to the maintenance of a healthy urban environment by providing clean air, water and soil.
- c) Green vegetation has been shown to lower wall surface temperatures by 17⁰C, which led to a reduced air conditioning load by an average of 50%.
- d) They improve the urban micro climate and maintain the balance of the city's natural urban environment.
- e) They preserve the local natural and cultural heritage by providing habitats for a diversity of wildlife and conserve a diversity of urban resources.

Despite the enormous benefits that urban green spaces provide there is a serious lack of information about the quantity and quality of urban green spaces. Data on per capita availability of open spaces is scanty and scarce. However, with new integrated approaches to combine strategic planning for green spaces with innovative design and delivery and the active involvement of the community at all levels, urban green spaces may be part of the ecological development of city. Ideally there has to be struck a right balance between the built and natural environment. Amidst concretization in the cities and towns in terms of building multi storied apartments, commercial complexes and institutional buildings, there has to be conscious efforts from Urban Local Bodies and Urban Development Authorities to provide for adequate green cover.

Physical Benefits -

- a) Urban forests act as temperature buffers providing shade in the summer, and wind breaks in the winter in addition to reducing noise pollution and CO_2 levels, and providing a habitat for wildlife.
- b) Urban greening offers improvements in air, water and land resources by absorbing air pollutants, increasing water catchment in floodplain surfaces, and stabilizing soils.

Social Benefits -

a) Green spaces provide a refreshing contrast to the harsh shape, colour, and texture of buildings, and stimulate the senses with their simple colour, sound and smell.

- b) Particular types of green space may offer a bigger diversity of land uses and opportunities for a wide range of activities, help to foster active lifestyles, and can be of real benefit to health.
- c) Well-managed and maintained green spaces contribute to social interaction by creating opportunities for people of all ages to interact.
- d) Urban green spaces emphasize the diversity of urban areas by reflecting the different communities they serve and meeting their varying needs.
- e) They enhance cultural life by providing venues for local festivals, civic celebrations and theatrical performances.
- f) Urban green spaces provide safe play space for children, contribute to childrens' physical, mental and social development and play an important role in the basic education of schoolchildren with regard to the environment and nature.

Planning Perspective

- a) From the planning perspective, a hierarchy and network of quality green spaces integrating residential areas with commercial and other uses improve the accessibility and attractiveness of local facilities and employment centers.
- b) Well-designed networks of green spaces help encourage people to travel safety by foot or by bicycle for recreation.
- c) Furthermore, well-designed urban green spaces provide a barrier to noise and can effectively function as visual barriers.

Economic Benefits -

- a) Property owners value urban greenery by the premium they pay to live in the neighbourhood of urban green spaces and public parks. Plots and flats abutting park add to value. In densely populated areas this effect is even more pronounced. For example, view of green spaces and proximity to water bodies increases the real estate prices.
- b) Impact of neighbourhood parks on the transaction price of multi-storied residential units in cities illustrate the fact that neighbourhood parks could increase price.
- c) Urban shady trees offer significant benefits in reducing building air-conditioning load and improving urban air quality by reducing smog. The savings associated with these benefits vary widely by climatic region.

2. <u>Types of Urban Greens</u>

While preparing a Master Plan or a Development Plan, detailed analysis of existing land use pattern is done. Typically a land use plan is formulated indicating broad land uses and networks based on the projected population. The land use distribution norms are dependent on parameters of Density and Work force. Green areas are normally classified as Recreational use in the Master Plan. As per UDPFI Guidelines, 1996 of Ministry of Urban Development, the proportion of recreational areas to be total developed area should be between 12-14% in small towns, 18-20% in medium towns and large cities in 20-25% in metropolitan (million plus) cities. Generally, area under parks, playgrounds, botanical gardens, parks, open spaces, water bodies and other natural features are classified as *Recreational* use.

The types of urban greens in settlements are as follows:-

- a) **Reserved forest:** *Reserved Forest* is an area duly notified under the provisions of the Indian Forest Act, 1927 or the State Forest Acts having full protection. In Reserved Forests, all activities are prohibited unless specifically permitted. Reserved Forest is notified under Section 20 of the Indian Forest Act, 1927 [Act 16 of 1927] or under the reservation provisions of the Forest Acts of the State Governments.
- b) **Protected Forest:** They are found in urban and per-urban areas generally secured by appropriate fencing or constructing a compound wall or combination of half wall and wire mesh. Areas under notified / protected forests are protected under Forest Act, where no construction activity is allowed.
- c) National Park: *National Park* is an area which is set aside for the protection and conservation of outstanding natural fauna, flora, geological formations and natural scenic areas. The park prohibits hunting, killing or capturing of fauna, or deprivation of any wild animal of its habitat, or destruction and collection of flora, and use of weapons except for the improvement and better management of wildlife therein, and on condition that these issues are handled by, or are under the control of, the park authorities.
- d) **District Park:** *District Park* is a designated term as per the hierarchy of green spaces in a city. District Park is a prominent recreation use with a sizeable area and is developed to provide vital lung spaces. As per Master Plan of Delhi-2021, a District Park has to be provided for a population of 2,50,000 and normally developed at the city level with an area of 40,000 sqm.
- e) **Neighbourhood Park:** *Neighbourhood Park* is developed at the neighbourhood level for a population of 10,000. The Park is conveniently located within the developed residential areas at walking distance and is planned on an area of 2,000-4,000 sqm.
- f) **Totlots:** *Totlots* area the lowest level in the hierarchy of green areas, planned for a population of 2,500 as play-areas for children with in an area of 125 sqm.
- g) **Playgrounds:** *Playgrounds* are provided normally in the educational institutions for the use of the school and college students. They are also provided at the neighbourhood level for a population of 5,000.
- h) **Green Belt (Buffer):** *Green Belts* include green girdle, park belt, rural belt, rural zone, agriculture belt, country belt, agriculture green belt. Agriculture belt, rural and country belt are synonymous terms and they refer to a stretch of the country side around and between towns separating one from the other. These areas are predominantly farm lands and they support agriculture and related functions. They may or may not be in ownership of the town/city/local body.

Green girdle, rural zone and park belt represent a similar idea, concept and function as the green belt. A *green belt* is defined as an area of land predominantly agricultural in character and located around the proposed urbanisable limits of the urban centre (town/city) and legally established in order to:

- Check the further growth of built up areas;
- Preserve neighbouring towns from merging into one another; or
- Preserve a special character of a town.
- i) **Green Strip:** A *green strip* is developed on a vacant land for example land under high tension power supply lines. It is also developed along the arterial roads separating residential areas from other uses.
- **j**) **Tree Cover:** Trees planted along the roads within the right-of-way and on the central verge (median).
- 3. <u>International norms for Urban Green Spaces</u>

The quantum of green space required per capita varies in different contexts of the world. In the 20th century, experts in Germany, Japan and other countries proposed a standard of 40 sqm green space of high quality or 140 sqm suburb forest area per capita for achieving a balance between carbon dioxide and oxygen so as to meet the ecological balance of human well-being. Currently, developed countries have tended to adopt a general standard of green space of 20 sqm park area per capita. The World Health Organisation (WHO) recommends that cities should provide 9 sqm of undeveloped (unpaved) open space for every inhabitant. The WHO also suggests designing green area networks so that all residents live within a 15 minute walk to an open space. There is yet another yardstick, which refers to London but has relevance to any other city. Sir Patrick Abercrombie formulated the Greater London Plan in 1946 proposing that 1.62 Ha of open space per 1000 population was a reasonable figure to adopt for London. The plan also explained that all forms of open space need to be considered as a whole, and to be co-ordinated into closely-linked park system, with parkways along existing and new roads forming the links between the larger parks.

Aarhus, with a population of 0.3 million is the second largest city in Denmark. The Green Structure Plan was prepared as part of the planning reforms of the 1970s. The political vision or Aarhus surrounded by forest had strong public support. It has been used to control urban growth and to set standards; no dwelling should be more than 500 metres from a green area of at least 6,000 sqm. In terms of structural diversity, green spaces in urban systems should essentially be developed as networks. Three main components of urban forest and green spaces are: *Patch* (urban domestic gardens, public and private parks, gardens, urban forest patches, etc.), *Corridor* (roads, avenues, walkways and urban greenways) and *Network structure* (layout of all the patches and the corridors connecting the patches).

Green space coverage in cities varied markedly, averaging 18.6% and ranging from 1.9% (*Reggio di Calabria*, Italy) to 46% (*Ferrol*, Spain). Availability of urban green spaces per capita varied by two orders of magnitude, from 3-4 sqm per person in Cadiz, Fuenlabrada and Almeria (Spain) and Reggio di Calabria (Italy) to more than 300 sqm in Liege (Belgium), Oulu (Finland) and Valenciennes (France).

Urban tree cover in the *United States* ranges from 0.4% in Lancaster, California to 55% in Baton Rouge, Louisiana, containing approximately 3.8 billion trees with an average tree canopy cover of 27% of urban areas.

Curitiba, with a population of 17 Lakh (1.7 million), is one of Brazil's large cities. In the 1970s, growing population had reduced urban green space to 1 sqm per capita. A clear priority and consistent efforts by local authorities have successfully developed green spaces, which now measure 51.5 sqm per capita.

Canberra planned by Sir Walter Griffin has an extensive integrated network of open spaces that harbor more than 40% of the nationally listed threatened ecological vegetation. Despite development pressures, Wellington in New Zealand has 200 sqm per capita of green space.

Tokyo suffers from a shortfall of open space which averages 6.1 to 8.5 sqm per capita, but it has a large forest of 21,630 Ha to conserve water.

4 Policy Guidelines for strengthening Urban Greens

4.1 Roads

The most common use of trees is on roads and avenues. If the wrong kinds of trees are planted at wrong locations or places, the safety of traffic is endangered. Therefore, it is necessary to lay down certain criteria before adopting any plantation scheme for roads.

While selecting trees species, the following criteria should be taken into account:

i) Species should suit the soil and climatic conditions.

- ii) Species should be hardy, robust and should need little attention once they have achieved certain growth.
- iii) Species having long life should be preferred.
- iv) The species must be either evergreen or nearly evergreen or be leafy during summer.
- v) The species must be fast growing and wind resistant.
- vi) The trees should be deep rooted; shallow roots injure pavements.
- vii) The species should not be allowed to grow into a very large size requiring expensive pruning or removal.
- viii) The species should be capable of easy transplantation.
- ix) The commercial, aesthetic and social values of species should also be considered while making choices.

The main function of a roadside avenue is shade. Hence, trees which are quick-growing and provide dense shade should be selected. The trees selected should provide shade not only on the sides, but also in the center of the road. From this point of view, trees with, an umbrella or semi-umbrella crown like Neem, Mahua, Imli and Mango are more suitable on National and State highways. If the trees selected provide shade they also yield valuable timber and fruit. The trees should be planted in such a way that their crowns may develop freely. Where the road is more than 30 meters wide, a double avenue of trees with the outer avenue near the edge of ROW line may be used.

Planting of trees along roads may be in the following manner:

- 1. Avenue Planting
- 2. Group Planting
- 3. Mixed Planting
- 4. Informal Planting

The planting should be suitable for different locations. The following general guide lines are useful in selecting tree types.

4.2 Avenue Plantation

Avenue planting consists of planting areas in single or double rows along highways. Long avenues may become monotonous and where travel speeds are high, may induce drowsiness. Loss or irregular growth of individual tree in long avenues is also noticed. These disadvantages may be overcome by planting at irregular intervals of say 30-75 metres and by off-setting the trees by 1 to 1.5 m from a uniform alignment. Avenue planting will take a distinct form of treatment on curves and undulating contours. In large cities and locations, where, land is available double avenues of trees may be provided. On divided carriageway having separate pedestrian footpath, the outer rows consisting of shady trees and inner row consisting of ornamental flowering trees may be adopted.

4.3 Group Plantation

Group planting consists of planting a clump of 3 or 4 trees along the highway overcomes the monotony of avenue planting. To be more effective the spacing of group should not be uniform. This should be staggered on opposite sides of the road. The advantage of this system is that it helps in selecting trees types to suit exact conditions at each site. This system should be followed where availability of land is not an issue.

4.4 Mixed Plantation

Mixed planting consists of selecting different varieties of trees, rather than one single variety. This system avoids monotony of single variety planting. The shedding of leaves takes place in different

seasons. The plants provide flowers and fruit in different seasons and thus the aesthetic value of avenues is preserved throughout. During storm, when wind velocity is high, the harder varieties will survive and will protect the weaker varieties too.

4.5 Informal Plantation

In urban fringe settings, avenue planting may include formal landscape on an otherwise informal one. Single trees may be featured where practicable, providing visual interest.

4.6 Spacing of Trees

No hard and fast rule may be laid down for the spacing of avenue trees; it depends on the type of trees. A minimum spacing of 10-12 m should be followed. The trees in the formal avenue planting should be planted in rows on either side of the road in a staggered manner. At urban intersections the trees should be at least 3 mt away from the intersections for right viewing distance.

(A) Trees which provide thick cover and are also valuable from the economic and aesthetic point of view should be planted along the National and State Highways. Some of these are:

NEEM:(*Azadirachta indica*) - It can grow in any type of poor but well drained soil. However, it prefers loam and sandy soil. It can tolerate alkali but cannot withstand water logging or sea coast conditions.

MAHUA:(*Madhuca latifolia*) - It prefers light well drained soils but can also be grown on dry, rocky, and sandy soil. It can withstand mild alkalies, but not water logging.

IMLI:(*Tramarindus indica*) - It is a beautiful tree which withstand the dust on road very well; its fruits and timber are also valuable. Suitable for dry areas.

SHISHAM:(*Dalbergia sisso*) - It yields excellent timber. Suitable for sub-Himalayan districts where rainfall is over 1,000 mm.

MANGO:(Mangifera indica) - Suitable for clay or mixed soil with water level 10 m or less.

SUFED SIRIS:(*Albizia procera*) - A quick growing beautiful tree which grows easily on sandy soil. On account of the light yellow colour of the trunk, it reflects even weak-light; and is an excellent roadside tree.

RAIN TREE: (Samanca Saman) - Suitable for moist districts with a rainfall of over 1000mm.

(B) Trees Unsuitable for Roadside Avenues:

On no account should the following trees be planted along the roadside:

Brittle Trees –

Eucalyptus:

All species - Millingtonia hortensis, Albizia lebbeck, Cassia siamea, Ficus glomerata.

All these trees have very weak wood, and consequently, break easily in a wind-storm. The result is that after the storm, roads become blocked and traffic is stopped for a considerable length of time, and during a storm, these trees are a menace to the travellers who happen to be on the road.

(C) Thorny Trees:

Acacia nilotica

Acacia modesta

Ziziphus mauritiana

These are thorny trees and their thorns are nuisance for pneumatic tyres.

Trees Suitable For Town Roads:

Foliage trees for outer avenues							
Averrhoa carambola	Anthocephalus	Tamarindus indica					
Pterygota alata	Cadamba	Polyalthia longifolia					
Callistemon	Azadirachta indica	Putranjiva roxburghii					
Lanceolatum	Alstonia Scholaris						
Samanoa saman	Eugenia operculata						
Flowering Trees for Inner Av	venues						
Cassia fistula	Spathodea nilotica						
Bauhina purpurea	Jacaranda acutifolia						
Colvillea recemosa	Delonix regia						
Peltophorum ferrugineum	Crevillea robusta						

Roads Passing Through Special Areas

It is neither possible nor advisable to lay down the rigid standards for the landscape treatment to be given to roads passing through the different areas. It is, therefore, useful if some general guidelines are provided for the treatment of special areas.

4.7 Water Logged Areas

The type of landscape treatment to be given also depends upon the extent of water logging in the area. Roads are generally on high embankments in water logged areas. It should have mild slopes and the surface should be covered with some shrubs so that road merges into the surroundings. Whenever possible some water bodies may be developed and may be used as picnic spots. The species for such areas should be so selected that they can grow well under the waterlogged conditions not requiring much maintenance.

4.8 Sandy Areas

In sandy areas such species should be planted which have least water requirements and are wind-resistant.

4.9 Wooded Areas

As far as possible roads should be aligned along the outskirt of the forest and it should form a part of the road landscape; cutting of trees should be avoided. Even if it is necessary to cut certain trees, it should neither disturb appearance of the forest nor the animal life. The felling of trees should be done in stages i.e. first the thinning be done at the proposed road/land boundary then the gaps from where thinning was done be planted with low and medium plantation and lastly when the new plantation comes up the central area be cleared from the road.

4.10 Industrial Areas

Where the roads are passing through the industrial area, screen planting should be done on both sides of the road so that views are addressed and they act as a buffer for noise and air pollution. In conditions where chemical industries are existing or are proposed it is advisable to have a thick green buffer which is resistant to obnoxious fumes.

4.11 Parking Areas

The most desirable plant material in parking area is trees and shrubs. Trees provide shade in summer and improve the environment of a car park, provide a visual break to the appearance, screen off parking areas and define some of the rows of parking. In urban situations and particularly in congested areas where large parking spaces are required, planting may be affected by atmospheric pollution in several ways. In parking areas such trees should be planted which are suitable for situations where they will be exposed to pollution. It should be noted that deciduous trees shed leaves intermittently and maintenance is needed to keep drainage clear. Therefore, this aspect should be taken into account while planting trees, in parking areas. Shady and flowering trees are most suitable for parking areas.

5. Integration of Urban Green Spaces

Open spaces serve a very important in the relationship of man and the nature. If planned properly, they help in maintaining ecological balance. Highlighting this, it is recommended that a system of open spaces be provided as part and parcel of the Master/Development Plan of the city. These open spaces, depending upon their function can be within the city and/ or on its outskirts. They should include, apart from organized open spaces for recreation purposes, areas reserved as conservation areas, natural landscape areas and social forests.

Depending upon the requirement of the city, these open spaces should be adequately provided and should be well defined in area and land use. This will help in checking encroachments and changes in functional use. It is emphasized that a whole-to-part approach of spatial planning be practiced. This calls for delineation and preparation of spatial development plan of each city and its region showing the following before making the master plan of the city:

- > Settlements, their hierarchy and functions.
- > Transportation network.
- Areas to be protected and preserved including natural conservation areas, existing forests, historical monuments, mining sites etc.;
- Reserved forest areas (both existing and proposed)
- Area earmarked for social forests,
- Agricultural areas specifying areas generally reserved for gardens to serve the city and reserved for other agricultural purposes.

The entire area outside the proposed urbanisable limit of the urban centres in a city and its region may be designated as rural area and the Town and Country Planning Department / Urban Development Authority (whichever is in charge of the planned development of the city and the city region) should regulate its use.

As a basic principle, the agricultural area of the city and its region should not be permitted to be changed to urban use unless incorporated in the revised master plan of the city at the time of its periodic review or at the end of the plan period. With a view to helping in implementation of the above, it is recommended that the zoning regulations covering the city region should specifically include the following provisions for the rural areas.

All residential activity shall be limited to the existing or extended boundaries of the urban fringe as proposed in the Master/Development Plan of the city and its region. No structure of a permanent nature for residential or any other purpose shall be permitted in the agriculture area.

With a view to preserving the rural-urban fringe and also for preventing it from ribbon development, it is recommended that a forest belt be provided on either side of all major roads passing through rural areas. For this purpose the right of the way of these roads may be appropriately earmarked.

Based upon the current practice of developing farm houses on the outskirts of the city and in the green belt zones where it is being permitted, it is observed that there exists a demand, particularly in

metropolitan centres for low density residential development with large plots in case where this demand exists and where, as part of development objectives low density residential areas with large size plots are to be provided, the following two alternative strategies are recommended:

Design this low density residential zone as an integral part of the Master Plan/Development within the proposed urbanisable limits of the city; or design these as self-contained low density satellite communities around the metropolitan centre, with or without farms to be managed and owned by urban dwellers, which are located far beyond the expected future (atleast upto next 50-60 years) urabanisable limits of the city.

In order to sustain/preserve /conserve urban greens in long run, it is important to integrate urban greens at different levels. Typically a Master Plan of the city needs to provide green spaces as per the hierarchy. The green spaces may be planned as well incidental. Following green spaces need to be protected/ conserved and it is also to be ensured that they are not unnecessarily encroached upon or subject to construction activities:

- Area around flood plains
- Area around marine drive along coastal zones in case of coastal cities/towns,
- Area under mountainous slopes in case of hill towns
- Area around natural drains

In order to protect the above mentioned environmentally sensitive areas, it is necessary that following actions need to be taken by the city planning authorities:

- Declaring the environmental sensitive zone as no construction/ development zone. This has to be ensured in the proposed/existing land use plan of the city.
- While framing zoning regulations, it has to be ensured that only those activities are to be allowed which may not have any adverse impact on environment, and should not lead to addition of built up space.
- Cities/towns which are located in valleys or where remnants of old mountains like Aravalli, Shivalik, Satpura, Western Ghats etc. need to take measures for strengthening the slopes by afforestation and regulating construction activities without compromising the overall natural environment of the cities/ towns in the said zones.

SUBCITY / ZONAL LEVEL

At the Zonal level, planned greens are generally found in the form of District Park/Sub-District Park/ playgrounds, which may be located at various parts of the zone. It has to be ensured that the different open spaces need to be inter linked by providing connectivity/ linkages and should be maintained/ developed in an integrated manner.

SECTOR / NEIGHBOURHOOD LEVEL

At the Sector/Neighbourhood level, planned green spaces are provided in the form of neighbourhood parks/tot-lots. These have to be properly maintained in terms of irrigating the plants/ trees and making the provision of pruning at regular intervals.

Annexure-D-18.4

Description of Land Use and Land Cover Classes, as per Bhuvan Portal of NRSC, ISRO

LULC classification scheme²¹⁴ and brief description of classes are as given hereunder:

BUILT-UP LAND

It is an area of human habitation developed due to non-agricultural use and that has a cover of buildings, transport and communication, utilities in association with water, vegetation and vacant lands. Web LULC map consists of 3 classes under built-up viz., urban, rural and mining.

1.1 Urban:Urban areas are non-linear built up areas covered by impervious structures adjacent to or connected by streets. This cover is related to centers of population. This class usually occurs in combination with, vegetated areas that are connected to buildings that show a regular pattern, such as vegetated areas, gardens etc. and industrial and/or other areas. (FAO, 2005).It includes residential areas, mixed built-up, recreational places, public / semi-public utilities, communications, public utilizes/facility, commercial areas, reclaimed areas, vegetated areas, transportation, industrial areas and their dumps, and ash/cooling ponds.

1.2 Rural: These are the lands used for human settlement of size comparatively less than the urban settlements of which the majority of population is involved in the primary activity of agriculture. These are the built-up areas, smaller in size, mainly associated with agriculture and allied sectors and non-commercial activities. They can be seen in clusters non- contiguous or scattered.

1.3 Mining: Mining areas encompass area under surface mining operations. The recognizable impacts of these activities on the landscape are unmistakable giant pit mines covering vast areas. The presence of water bodies does not necessarily imply inactive or unused extractive areas; ponds or lakes are often an integral part of an extractive operation. (USGS, 1999) It includes surface rocks and stone quarries, sand and gravel pits, brick kilns, etc. These are areas of stockpile of storage dump of industrial raw material or slag/effluents or waste material or quarried/mixed debris from earth's surface.

2.0 AGRICULTURAL LAND

These are the lands primarily used for farming and for production of food, fiber, and other commercial and horticultural crops. It consists of:

2.1 Cropland:These are the areas with standing crop as on the date of Satellite overpass. Cropped areas appear in bright red to red in color with varying shape and size in a contiguous to non-contiguous pattern. They are widely distributed indifferent terrains; prominently appear in the irrigated areas irrespective of the source of irrigation. It includes kharif, rabi and zaid crop lands along with areas under double or triple crops.

2.2 Plantations:These are the areas under agricultural tree crops planted adopting agricultural management techniques. Depending on the location, they are exhibit a dispersed or contiguous pattern. Use of multi-season data will enable their separation in a better way. It includes agricultural plantation (like tea, coffee, rubber etc.) horticultural plantation (like coconut, arecanut, citrus fruits, orchards, fruits, ornamental shrubs and trees, vegetable gardens etc.) and agro- horticultural plantation.

²¹⁴Source: <u>https://bhuvan-app1.nrsc.gov.in/2dresources/thematic/LULC503/lulc.pdf</u>

2.3 Fallow: An agricultural system with an alternation between a cropping period of several years and a fallow period. (Ruthenberg, 1980). In another terms these are the lands, which are taken up for cultivation but are temporarily allowed to rest, un-cropped for one or more season, but not less than one year.

3.0 FOREST

The term forest is used to refer to land with a tree canopy cover of more than 10 percent and area of more than 0.5 ha. Forests are determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 m (MOEF, 2011). It consists of:

3.1 Evergreen/Semi-Evergreen: This term as such describes the phenology of perennial plants that are never entirely without green foliage (Ford-Robertson, 1971). This category comprises of tall trees, which are predominantly remain green throughout the year. It includes both coniferous and tropical broadleaved evergreen species. Semi- evergreen is a forest type that includes a combination of evergreen and deciduous species with the former dominating the canopy cover.

3.2 Deciduous: This applies to the phenology of perennial plants that are leafless for a certain period of the year (Ford-Robertson, 1971). The leaf shedding usually takes place simultaneously in connection with the unfavorable season (UNESCO, 1973).

These are the forest types that are predominantly composed of species, which shed their leaves once a year, especially during summer. It also includes tree clad area with tree cover lying outside the notified forest boundary areas that are herbaceous with a woody appearance (e.g. bamboos, palms, tree ferns etc.).

3.3. Forest Plantation: These are the areas of tree species of forestry importance, raised and managed especially in notified forest areas. The species mainly constitute teak, Sal, eucalyptus, casuarina, bamboo etc.

3.4. Scrub Forest: These are the forest areas which are generally seen at the fringes of dense forest cover and settlements, where there is biotic and abiotic interference. Most times they are located closer to habitations. Forest blanks which are the openings amidst forest areas, devoid of tree cover, observed as openings of assorted size and shapes as manifested on the imagery are also included in this category.

4.0 GRASS / GRAZING LAND

These are the areas of natural grass along with other vegetation, predominantly grass-like plants (Monocots) and non-grass-like herbs (except Lantana species which are to be classified as scrub). It includes natural/semi-natural grass/ grazing lands of Alpine/Sub-Alpine or temperate or sub- tropical or tropical zones, desertic areas and manmade grasslands.

5.0 WASTELANDS

Described as degraded lands which can be brought under vegetative cover with reasonable effort and which is currently underutilized and land which is deteriorating for lack of appropriate water and soil management or on account of natural causes. It consists of:

5.1 Salt-Affected Land: Generally characterized as land that has excess salt in the soils with patchy growth of grasses.

5.2 Gullied / Ravinous Land: They are the resultant of terrain deformation due to water erosion which occurs widely in all agro-climatic zones. Gullies are formed as a result of localized surface runoff affecting the unconsolidated material resulting in the formation of perceptible channels causing undulating terrain. They are mostly associated with stream courses, sloping grounds with good rainfall

regions and foothill regions. These are the first stage of excessive land dissection followed by their networking which leads to the development of ravinous land. Ravines are basically extensive systems of gullies developed along river courses.

5.3 Scrub Land: These areas possess shallow and skeletal soils, at times chemically degraded extremes of slopes, severely eroded or subjected to excessive aridity with scrubs dominating the landscape.

5.4 Sandy Area: These can occur in coastal, Riverine or inland areas. Desertic sands are characterized by accumulation of sand developed in situ or transported by Aeolian processes. Coastal sands are the sands that are accumulated as a strip along the sea-coast. Riverine sands are those that are seen as accumulations in the flood plain as sheets which are the resultant phenomena of

river flooding.

5.5. Barren Rocky/Stony Waste: These are rock exposures of varying lithology often barren and devoid of soil and vegetation cover.

6.0 WETLAND / WATER BODIES

All submerged or water-saturated lands, natural or man-made, inland or coastal, permanent or temporary, static or dynamic, vegetated or non-vegetated, which necessarily have a land-water interface, are defined as wetlands. It consists of:

6.1 Inland Wetlands: These are the areas that include ox-bow lakes, cut-off meanders, playas, marsh, etc. which are seasonal as well as permanent in nature. It also includes manmade wetlands like waterlogged areas (seasonal and perennial).

6.2 Coastal Wetland: These include estuaries, lagoons, creek, backwater, bay, tidal flat/mud flat, sand/beach, rocky coast, mangrove, salt marsh/marsh vegetation and other hydrophytic vegetation and saltpans.

6.3 River /Stream / Canals: Rivers/streams are natural course of water flowing on the land surface along a definite channel/slope regularly or intermittently towards a sea in most cases or in to a lake or an inland basin in desert areas or a marsh or another river. Canals are artificial water course constructed for irrigation, navigation or to drain out excess water from agricultural lands.

6.4 Water Bodies: This category comprises areas with surface water in the form of ponds, lakes, tanks and reservoirs.

Annexure-D-18.1.5

Sub		Agriculture		ire	Barren/unculturable/ Wastelands					Builtup			Forest	t		Gras s / Graz ing	Wet lands / Water bodies				
Region	Districts	Crop land	Fall ow	Planta tion	Bar ren Roc ky	Gulli ed / Ravin ous Land	Salt Affec ted Land	San dy Are a	Scru b Lan d	Min ing	Rur al	Urb an	Decid uous	Evergree n/Semi evergreen	Forest Planta tion	Scr ub For est	Gras s/ Graz ing	Inlan d Wetl and	River/Stream /Canals	Wa ter bod ies	Total
NCT Delhi	Delhi	505.2 8	7.1	1.68				0.6 2	74.8 7	3.15	22.9 4	824. 43	1.18	12.32		1.33		3.77	20.88	3.44	1482. 99
	Bhiwani	3015. 86	131. 83	4.89			0.91	0.0 4	75.9 2	8.02	67.4 2	39.8 6	6.27				34.89	2.92	5.73	8.44	3403
	Charkhi Dadri	1233. 31	7.17	1.97			1.13		52	2.36	29.7 8	12.4 8	2.19			0.3	23.3	2.72	0.13	2.17	1371. 01
	Faridabad	384.3 4	6.54	0.78			3.79	0.4 9	108. 38	15.7 9	25.4 3	175. 47	1.85			0.27	2.6	1.9	14.75	2.63	745.0 1
	Gurgaon	733.2	14.5 3	4.97			7.37		124. 96	3.36	48.6 4	237. 43	13.43		1.39	51.2 7	2.84	8.06	2	4.56	1258. 01
Harya na	Jhajjar	1494. 15	67.4 8	1.69			5.57	0.0 9	36.7	38.4 5	46.4 3	64.0 5	12.28				36.35	7.93	8.38	14.4 5	1834
	Jind	2462. 18	30.6 6	2.71			0.2	0.0 8	11.2 3	5.57	60.2 9	50.5	5.31				40.15	1.67	12.08	19.3 6	2701. 99
	Karnal	2267. 74	9.91	2.33			0.05	0.0 5	19.5 5	7.66	62.2 6	97.9 7	4.27				6.87	0.49	34.3	6.55	2520
	Mahendragarh	1539. 41	5.68	0.57	3.55		0.03	0.3 6	180. 4	13.3	63.2 7	31.2	22.05			9.06	21.35		7.08	1.68	1898. 99
	Nuh	1179. 84	6.97	0.79	0.59		11.71	0.0 5	143. 03	11.5 3	40.8 8	21.0 5	20.15			25.0 8	25.62	6.27	8.06	5.4	1507. 02

Table 1: District and category wise distribution of Land Use / Land Cover in NCR (2015-16)(Area in sq. km.)

Sub Districts		Agriculture			Barren/unculturable/ Wastelands			Builtup		Forest				Gras s/ Graz ing	Wet lands / Water bodies						
Region	Districts	Crop land	Fall ow	Planta tion	Bar ren Roc ky	Gulli ed / Ravin ous Land	Salt Affec ted Land	San dy Are a	Scru b Lan d	Min ing	Rur al	Urb an	Decid uous	Evergree n/Semi evergreen	Forest Planta tion	Scr ub For est	Gras s / Graz ing	Inlan d Wetl and	River/Stream /Canals	Wa ter bod ies	Total
	Palwal	1152	8.1	2.87			4.92	2.0 8	34.0 3	16.0 6	41.9 7	34.7 6	1.51				26.26	9.98	17.33	7.13	1359
	Panipat	1049. 6	11.8 5	1.38			6.15	0.7 5	18.9 6	5.81	36.0 1	109. 1	0.59				4.56	0.49	15.98	6.76	1267. 99
	Rewari	1322. 14	6.22	2.73	0.2				75.5 9	12.4 7	64.2 5	69.2 4	11.46		2.83	0.52	14.32	1.88	4.29	5.85	1593. 99
	Rohtak	1431. 88	84.7 3	2.15			4.48	1.9 9	30.2 5	2.17	49.8 4	89.4 3	0.28				22.96	2.35	5.45	17.0 5	1745. 01
	Sonepat	1774. 83	17.0 8	2.52			13.66		28.8 2	20.8 6	47.0 6	115. 57	0.22				62.95	1.58	24.91	11.9 5	2122. 01
	Total	2104 0.48	408. 75	32.35	4.34	0	59.97	5.9 8	939. 82	163. 41	683. 53	1148 .11	101.86	0	4.22	86.5	325.0 2	48.24	160.47	113. 98	2532 7.03
	Baghpat	1070. 37	34.3 4	8.21					1.67	17.1 3	36.4 3	53.5 3	5.8			0.33		0.02	14.2	1.96	1243. 99
	Bulandshahr	3776. 33	17.4	133.51		3.02	15.37	0.1 1	12.7	1.12	192	83.9 4	6.51			5.7	1.9	5.26	90.02	7.11	4352
Uttar Prades	GB Nagar	879.9 8	147. 66	5.55			4.45		17.1 4	1.46	54.0 2	283. 98	8.15				2.24	11.21	21.6	4.58	1442. 02
h	Ghaziabad+Ha pur	897.0 9	25.4 5	22.71		0.06	0.27		3.48	10.9 9	48.4 7	114. 71	2.94			0.79		6.84	11.59	2.6	1147. 99
	Meerut	2195. 44	34.8 2	59.44				0.3 6	11.8 1	2.57	91.9 3	143. 86	41.64			0.41	0.27	18.76	62.29	3.39	2666. 99
	Muzaffarnaga r+Shamli	3431. 69	75.1 9	65.86				0.5 2	25.0 5	6.15	129. 07	105. 91	17.24			8.7	18.67	44.9	72.21	7.84	4009

Sub Districts		Agriculture		Barren/unculturable/ Wastelands			Builtup		Forest				Gras s / Graz ing		dies	Tetel					
Region	Districts	Crop land	Fall ow	Planta tion	Bar ren Roc ky	Gulli ed / Ravin ous Land	Salt Affec ted Land	San dy Are a	Scru b Lan d	Min ing	Rur al	Urb an	Decid uous	Evergree n/Semi evergreen	Forest Planta tion	Scr ub For est	Gras s/ Graz ing	Inlan d Wetl and	River/Stream /Canals	Wa ter bod ies	Total
	Total	1225 0.9	334. 86	295.28	0	3.08	20.09	0.9 9	71.8 5	39.4 2	551. 92	785. 93	82.28	0	0	15.9 3	23.08	86.99	271.91	27.4 8	1486 1.99
	Alwar	5393. 01	434. 61	1.66	224. 91	92.3	2.08	0.0 5	535. 16	10.2 9	115. 37	112. 94	1215.1 5		0.43	181. 93	9.04		32.44	18.6 1	8379. 98
Rajast han	Bharatpur	4198. 67	124. 37	0.57	86.9 9	3.31	3.08	0.6 1	381. 07	0.96	72.7 6	34.0 6	53.99			43.8	2.92	9.04	59.42	16.3 8	5092
	Total	9591. 68	558. 98	2.23	311. 9	95.61	5.16	0.6 6	916. 23	11.2 5	188. 13	147	1269.1 4	0	0.43	225. 73	11.96	9.04	91.86	34.9 9	1347 1.98
NCR	Total	4338 8.34	1309 .69	331.54	316. 24	98.69	85.22	8.2 5	2002 .77	217. 23	1446 .52	2905 .47	1454.4 6	12.32	4.65	329. 49	360.0 6	148.0 4	545.12	179. 89	5514 3.99

Source: Bhuvan Portal

Note: Since the district wise land use/ land cover area published by NRSC on Bhuvan is slighty more (55144-55083 =60.99 Sq.Km) from the recorded area of NCR, the final figures are to be updated based on system/ software based calculation of data as received from NRSC

The land use details are based on Bhuvan data of NRSC pertaining to year 2015-16 at 1:50,000 scale and are purely tentative.

Category	NCT Delhi Sub-	-region	Haryana Sub-i	region	UP Sub-region Raja		Rajasthan Sub-	region	NCR		Delhi	Haryana	UP	Rajasthan
-	-Area (Sq.KMm)	%	-Area (Sq.KMm)	%	-Area (Sq.KMm)	%	-Area (Sq.KMm)	%	-Area (Sq.KMm)	<u> </u>	%	%	%-	% -
Agriculture	514.1	34.66	21481.6	84.82	12881.0	86.67	10152.9	75.36	45029.6	81.66	1.1	47.7	28.61	22.55
Built-up	850.5	57.35	1995.1	7.88	1377.3	9.27	346.4	2.57	4 569.2	8.29	18.6	43.7	30.14	7.58
Forest	14.8	1.00	192.6	0.76	98.2	0.66	1495.3	11.10	1800.9	3.27	0.8	10.7	5.45	83.03
Wastelands	75.5	5.09	1010.1	<u>3.99</u>	96.0	0.65	1329.6	9.87	2511.2	4 .55	3.0	4 0.2	3.82	52.95
Water Bodies	28.1	1.89	322.7	1.27	386.4	2.60	135.9	1.01	873.1	1.58	<u>3.2</u>	37.0	44 .26	15.56
Others	0.0	0.00	325.0	1.28	23.1	0.16	12.0	0.09	360.1	0.65	0.0	90.3	6.41	3.32
Total	1483.0	100.00	25327.0	100.00	14862.0	100.00	13472.0	100.00	55144.0	100.00	-	-	-	-

Table 2: Sub-region wise summery of Land Tentative Land Uses

Source: Bhuvan Portal

Schematic Map of Existing Land Use/Land Cover-2015-16 of NCR





Source: Bhuvan Portal, NRSC

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Note: The land use details are tentative and for broad analysis purpose only and broad indicative analysis.

Chapter-19-Counter Magnet Areas

Annexure-D-19.1

List of Completed Infrastructure projects in CMAs with loan assistance from NCRPB (as on 30th September 2020)

(Rs. In Cr.)

S.N o.	Name of the Projects	Implementing Agency	Estimated cost	Loan Sanctioned/ Final Loan as per CC	Actual Loan Amount released
	Completed PROJECTS IN CMA towns				
	PROJECTS IN CMA town SADA Gwalior				
	Water Sector Projects				
1	Water Supply Scheme for Gwalior, Madhya Pradesh	SADA, Gwalior	29.65	22.24	22.24
	Total Water Sector Projects		29.65	22.24	22.24
	Land Development Projects				
2	Development of Integrated Township in Gwalior	SADA, Gwalior	40.00	31.00	31.00
	Total Land Development Projects		40.00	31.00	31.00
	Power Projects				
3	Construction of 132 kV sub- station, Gwalior	SADA, Gwalior	16.00	12.00	12.00
	Total power Sector Projects		16.00	12.00	12.00

	Transport Sector Projects				
4	Construction of 6 lane Arterial Road in CMA Gwalior, by SADA Gwalior	SADA, Gwalior	48.00	36.00	36.00
	Total Transport Sector Projects		48.00	36.00	36.00
	TOTAL PROJECTS IN MADHYA PRADESH -CMA town SADA Gwalior		133.65	101.24	101.24
	PROJECTS IN PUNJAB - CMA town Patiala				
	Land Development Projects				
5	Development of Sewa Singh Tikri Wala Nagar and Extension of Karhari Farm, Urban Estate, Patiala	PUPDA/ Improvement Trust, Patiala	18.78	1.00	1.00
	Total Land Development Projects		18.78	1.00	1.00
	Sewerage Sector Projects				
6	Extension & Augmentation of Water Supply, Sewerage & Solid Waste Mgmt, Patiala	Patiala Urban Development Authority	59.93	44.95	44.95
	Total Sewerage Sector in Patiala		59.93	44.95	44.95
	TOTAL PROJECTS IN PUNJAB -CMA town Patiala		78.71	45.95	45.95
	PROJECTS IN RAJASTHAN -CMA town Kota				
	Land Development Projects				
7	Construction of Inetgrated township at Srinathpuram, Kota	Urban Improvement Turst, Kota	35.71	2.00	2.00
	Total Land Development Projects		35.71	2.00	2.00
	Power Sector in Kota				
8	Kota Thermal Power Station(KTPS) extn unit 7, stage V(1x195 MW) Coal,	Rajasthan Rajya Vidyut Prasaran Nigam Ltd.	880.00	160.00	160.00

	Based Power Project				
	Total Power Sector in Kota		880.00	160.00	160.00
	Water Supply Project				
9	Augmentation of Water Supply in Kota, Rajasthan	Urban Improvement Turst, Kota	181.77	136.33	108.45
	Total Water Sector in Kota		181.77	136.33	108.45
	Total PROJECTS IN RAJASTHAN -CMA town Kota		1097.48	298.33	270.45
	PROJECTS IN UTTAR PRADESH -CMA town Bareilly				
	Land Development Projects				
10	Residential and Transport Nagar schemes, Bareilly	Bareilly Development Authority	339.31	20.00	20.00
11	Ram Ganga Nagar residential scheme in Bareilly	Bareilly Development Authority	99.37	37.00	37.00
	Total PROJECTS IN UTTAR PRADESH -CMA town Bareilly		438.68	57.00	57.00
	PROJECTS IN HARYANA- CMA town Hissar				
	Water Sector Projects				
12	Augmentation & Extension of Water Supply/Sewerage Scheme in Hissar	PHED Haryana	15.93	11.95	11.95
	Total Water Sector in Hisar		15.93	11.95	11.95
	Power Sector				
13	Setting up of a coal based Thermal Power Project under stage I for 1200 MW (2 x 600 MW) in Hisar District, Haryana	Haryana Power Genration Corporation Ltd.	4258.65	500.00	500.00
14	Improvement & Upgradation of Sub transmission of distribution network in Hisar	Dakshin Haryana Bijli Vitran Nigam	40.01	30.01	21.02

T	otal Power Sector in Hisar	4298.66	530.01	521.02
T	otal Projects in Hisar CMA	4314.59	541.96	532.97
T C	TOTAL PROJECTS IN	6063.12	1044.48	1007.61

Chapter-20-Implementation Strategies & Resource Mobilization

Composition of the NCR Planning Board

रजिस्ट्री सं० डी० एल०-33004/99

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असाधारण

EXTRAORDINARY भाग II—खण्ड 3—उप-खण्ड (ii) PART II—Section 3—Sub-section (ii)

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आवासन और शहरी कार्य मंत्रालय

(दिल्ली प्रभाग)

अधिसूचना

नई दिल्ली, 22 नवम्बर, 2017

का.आ. 3706(अ).—राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड नियम, 1985 के नियम 3 और 4 के साथ पठित राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड अधिनियम, 1985 (1985 का 2) की धारा 3 द्वारा प्रदत्त शक्तियों का प्रयोग करते हुए और ऐसे अधिक्रमण से पहले किए गए अथवा किए जाने हेतु छोडे गए कार्यों के अलावा, पूर्व अधिसूचनाओं का अधिक्रमण करते हुए, केन्द्र सरकार एतद्वारा राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड का निम्नवत पुनर्गठन करती है :—

1.	केन्द्रीय राज्य मंत्री (स्वतंत्र प्रभार), आवासन और शहरी कार्य	अध्यक्ष
2.	मुख्य मंत्री, हरियाणा	सदस्य
З.	मुख्य मंत्री, राजस्थान	सदस्य
4.	मुख्य मंत्री, उत्तर प्रदेश	सदस्य
5.	उप राज्यपाल, राष्ट्रीय राजधानी क्षेत्र दिल्ली	सदस्य
6.	मुख्य मंत्री, राष्ट्रीय राजधानी क्षेत्र दिल्ली	सदस्य
7.	शहरी विकास मंत्री, राजस्थान सरकार	सदस्य
8.	शहरी विकास मंत्री, उत्तर प्रदेश सरकार	सदस्य
9.	अध्यक्ष, रेलवे बोर्ड	सदस्य
10.	सचिव, सड़क परिवहन और राजमार्ग मंत्रालय	सदस्य
11.	सचिव, आवासन और शहरी कार्य मंत्रालय	सदस्य
12.	मुख्य सचिव, हरियाणा सरकार	सदस्य
13.	मुख्य सचिव, राजस्थान सरकार	सदस्य
14.	मुख्य सचिव, उत्तर प्रदेश सरकार	सदस्य
15.	मुख्य सचिव, राष्ट्रीय राजधानी क्षेत्र, दिल्ली सरकार	सदस्य
16.	प्रधान सचिव, नगर और ग्राम नियोजन विभाग हरियाणा सरकार	सदस्य
17.	सदस्य सचिव, राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड	सदस्य सचिव
40 GI/2	017 (1)	

[PART II-SEC. 3(ii)]

सहयोजित सदस्य

- सचिव-पर्यावरण, वन और जलवायु परिवर्तन मंत्रालय 1.
- मुख्य नियोजक टीसीपीओ, भारत सरकार 2.

[फा. सं. के-11019/3/2012-डीडीVI]

एम. के. शर्मा, अवर सचिव

MINISTRY OF HOUSING AND URBAN AFFAIRS

(DELHI DIVISION)

NOTIFICATION

New, Delhi, the 22nd November, 2017

S.O. 3706(E).—In exercise of the powers conferred by Section 3 of the National Capital Region Planning Board Act, 1985 (2 of 1985) read with rules 3 and 4 of the National Capital Region Planning Board Rules, 1985 and in supersession of the earlier Notifications except in respect of things done or omitted to be done before such supersession, the Central Government hereby reconstitutes the National Capital Region Planning Board as follows:---

1.	Union Minister of State (Independent Charge), Housing and Urban Affairs	Chairman
2	Chief Minister of Haryana	Member
3	Chief Minister of Rajasthan	Member
4	Chief Minister of Uttar Pradesh	Member
5	Lieutenant Governor, National Capital Territory of Delhi	Member
6	Chief Minister of NCT-Delhi	Member
7	Minister of Urban Development, Government of Rajasthan	Member
0	Minister of Urban Development, Government of Uttar Pradesh	Member
0.	Chairman Railway Board	Member
10	Secretary Ministry of Road Transport and Highways	Member
10.	Secretary Ministry of Housing and Urban Affairs	Member
11.	Chief Secretary Government of Harvana	Member
12.	Chief Secretary, Government of Rajasthan	Member
15.	Chief Secretary, Government of Uttar Pradesh	Member
14.	Chief Secretary, Government of NCT-Delhi	Member
15. 16.	Principal Secretary, Town & Country Planning Department, Government of Haryana	Member
17.	Member Secretary, National Capital Region Planning Board	Member Secretary

CO-OPTED MEMBERS

- Secretary Ministry of Environment, Forest & Climate Change 1.
- Chief Planner TCPO, Govt. of India 2.

[F. No. K-11019/3/2012-DDVI] M. K. SHARMA, Under Secy.

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Annexure-D-20.2

Year	Plan Funds released by	GNCT-Delhi	Bonds/Line	Loan	
	Central Government	Contribution	of Credit*	Released	
1	2	3	4	5	
1985-86	3.90			3.75	
1986-87	4.25			4.00	
1987-88	6.00			7.23	
1988-89	7.92			9.36	
1989-90	7.60			9.20	
1990-91	10.00			12.02	
1991-92	12.25			21.14	
1992-93	10.00			8.87	
1993-94	20.00	3.50		15.78	
1994-95	25.00	3.00		14.18	
1995-96	40.00	3.50		109.75	
1996-97	40.00	3.75	60.00	146.85	
1997-98	42.00	15.00	226.40	84.27	
1998-99	45.00	20.00	285.00	206.81	
1999-2000	42.00	30.00	0	238.45	
2000-01	45.00	30.00	152.40	159.57	
2001-02	50.00	25.00	234.75	271.91	
2002-03	55.00	0	0	110.86	
2003-04	52.00	30.00	0	274.08	
2004-05	61.70	30.00	0	275.72	
2005-06	70.00	30.00	0	364.95	
2006-07	75.00	27.00	0	416.46	
2007-08	100.00	50.00	200.00	705.37	
2008-09	50.00	50.00	265.10	723.06	
2009-10	50.00	0.00	134.90	814.56	
2010-11	50.00	0.00	500.00	598.77	
2011-12	50.00	0.00	0.00	613.65	

Table : Resource mobilization	n by N	ICR Plar	nning Boa	ard (Rs.	. in (Crores)
-------------------------------	--------	----------	-----------	----------	--------	---------
2012-13	55.00		209.26	418.51		
---------	---------	--------	---------	----------		
2013-14	60.00		155.84	355.44		
2014-15	80.00		155.44	237.91		
2015-16	80.00		2.31	165.15		
2016-17	50.00		286.15	1654.48		
2017-18	50.00		809.00	1695.42		
2018-19	50.00		43.80	993.44		
2019-20	50.00		0	795.96		
Total	1501.62	350.75	3720.35	12541.93		

*Bonds redeemed in August 2017

14th PSMG-II Meeting

National Capital Region Planning Board

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Minutes

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Minutes of the 14th meeting of the Project Sanctioning & Monitoring Group-II (PSMG-II) of the NCR Planning Board held on 10.10.2019

The 14th meeting of the Project Sanctioning & Monitoring Group-II (PSMG-II) of the NCR Planning Board was held on 10.10.2019 at 2.00 PM under the Chairpersonship of Smt. Archana Agrawal, IAS, Member Secretary, NCR Planning Board. The list of the participants is enclosed as Annexure-I.

Director (A&F) welcomed the participants and the Group was apprised about the agenda for the meeting. This was followed by agenda wise discussions as presented below:-

Agenda Item No. 1: ATR of 13th PSMG-II meeting decisions

1. Status of Studies regarding Health Infrastructure, Micro & Household Enterprises and Educational Infrastructure in NCR approved in the 11th PSMG-Il meeting

The agenda item related to 'Study on Educational Infrastructure in NCR' was deferred.

2. Empanelment of National Institutes (NIs) for providing Appraisal Services on Recurring Price Contract Basis (Three Years)

The matter was noted and PSMG-II approved the proposal for dropping the said action.

3. Filling up of vacant posts in NCR Planning & Monitoring Cells

Group noted the status. Director (A&F) asked the concerned NCR Cells to take necessary action at the earliest to fill up the vacant posts.

Agenda Item No. 2: Proposal for Creation of Geo-Portal for National Capital Region

The proposal submitted by NIC for Creation of Geo-Portal for National Capital Region was approved by PSMG-II at a total cost of Rs. 9,97,454/-.

Chief Coordinator Planner, NCR Planning & Monitoring Cell, Haryana suggested that a mechanism to continuously update the portal needs to be evolved. He also stated that Government of Haryana has all controlled area boundaries in GIS format which will be shared with NCRPB/NIC for incorporation in the portal.

14th PSMG-II Meeting

Minutes

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The representative of NIC clarified that the portal will be access controlled and will have cyber security. Also, password protected access shall be provided to the NCR participating State Governments.

Supplementary Agenda Item No. 1: Matter related to exercise undertaken for Review of Regional Plan-2021

PSMG-II accorded its approval on the proposal related to payments for undertaking the Review of RP-2021, subject to the approval of minutes of the 38th Board meeting, on the matter.

Supplementary Agenda Item No. 2: Matter related to exercise undertaken for preparation of a 'Report on Population Projections for National Capital Region for Regional Plan 2041'

PSMG-II accorded its approval on the proposal related to full and final payment for 'Report on Population projection of NCR-2041', subject to the approval of minutes of the 38th Board meeting, on the matter.

The meeting ended with the vote of thanks to the Chair.

14th PSMG-II Meeting

Annexure-l

List of Participants of the 14th meeting of PSMG-II held on 10.10.2019

- 1. Smt. Archana Agrawal, Member Secretary, Chairperson NCR Planning Board
- Shri Rahul Kashyap, Director, Ministry of Housing and Urban Affairs
- 3. Shri S.K. Singh, Director, NITI Ayog
- 4 Shri G.S. Rawat, Joint Director, Urban Development Department, Government of NCT Delhi
- Shri Rajesh Prakash, Additional Commissioner, NCR Planning & Monitoring Cell, Uttar Pradesh.
- Shri V K Goyal, Chief Coordinator Planner, NCR Planning & Monitoring Cell, Haryana.
- Smt. Indira Choudhary, Chief Town Planner, NCR Planning & Monitoring Cell, Rajasthan.

Representing Sr. Advisor (UD), NITI Aayog

Representing Ministry

of Housing & Urban

Affairs

Representing Principal Secretary (UD), Govt. of NCT Delhi

Representing Principal Secretary, Housing & Urban Planning Department, Government of Uttar Pradesh

Representing Principal Secretary, Town & Country Planning Department, Haryana

Representing Principal Secretary, Urban Development & Housing Department, Rajasthan

Other Invitees

- 8. Shri V. Udaya Kumar, Sr. Technical Director, NIC
- 9. Shri J.K. Mishra, Technical Director, NIC
- 10. Shri Kapil Singh, Sr. Manager, Greater Noida Authority
- 11. Shri Shriram, Assistant Director, Planning, NCR Planning & Monitoring Cell, New Delhi.
- 12. Shri Anil Kataria, SO, PWD, GNCT Delhi.

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- 13. Shri Jagdish Parwani, Director (A&F)
- 14. Shri P.K. Jain, FAO
- 15. Shri J.N. Barman, Consultant (Planning)
- 16. Shri Nabil Jafri, Dy. Director (GIS)
- 17. Shri Abhijeet Samanta, Dy. Director (Tech)
- 18. Smt. Nilima Majhi, Dy. Director (Tech)
- 19. Shri Syed Husain Asghar, AD (FM/PMC)
- 20. Shri Naresh Kumar, AD (Tech)
- 21. Ms. Shivangi Dubey, Consultant (PMC)

Minutes



Terms of Reference (ToR)

For

Creation of Geo-Portal for National Capital Region

Work to be undertaken by:

Remote Sensing & GIS Division National Informatics Centre, Ministry of Electronics & IT, Govt. of India, New Delhi

For:

National Capital Region Planning Board, (Ministry of Housing and Urban Affairs, Govt. of India), New Delhi

> ~ 16th Oct., 2019 ~ (Amended on 15.01.2020)

Annewerd - 8/11 34

1. Background

National Capital Region (NCR) in India was constituted under the NCRPB Act, 1985 with the key rationale to promote balanced and harmonized development of the Region, and to avoid any haphazard development. National Capital Region is a unique example of inter-state regional planning and development of a region NCT-Delhi as its core. The present constituent area of NCR is as follows:

Sub-Region	Area in sq. kms.	Name of the Districts
Haryana	25,327	Faridabad, Gurgaon, Nun (Mewat), Palwal, Rohtak, Sonepat, Rewari, Jhajjhar, Panipat, Mahendragarh, Bhiwani (including Charkhi Dadari), Jind and Karnal
Uttar Pradesh	14,825	Meerut, Ghaziabad, Gautam Budha Nagar, Bulandshahr, Hapur, Baghpat, Muzaffarnagar and Shamli
Rajasthan	13,447	Alwar and Bharatpur
NCT- Delhi	1,483	NCT-Delhi (Entire)
Total - NCR	55,083	

National Informatics Centre (NIC) is a premiere S&T organization of the Government of India in the field of Informatics Services and Information Technology (IT) applications. And, NIC has been instrumental in steering Information and Communication Technology (ICT) applications in Government Departments at Central, State and Districts in government services for wider transparency in government functions, and improvement in decentralized planning and management. To facilitate this, NIC has established a nationwide ICT Network – NICNET – with gateway nodes in Central Government Departments, 35 State/UT Secretariats, and in almost all 603 District Collectorates, for IT services. The Government has designated the nation-wide Computer-Communication Network, NICNET, as the Government Network.

The organizational set up of NIC encompasses its Headquarters at New Delhi, State Units in all the 29 State capitals and 7 Union Territory Headquarters and District centers in almost all the Districts of India. The organization employs a large pool of efficient technical manpower. At the NIC Headquarters, a large number of Application Divisions exist which provide total Informatics Support to the Ministries and Departments of the Central Government. NIC computer cells are located in almost all the Ministry Bhawans of the Central Government and Apex Offices.

NCR Planning Board is currently preparing the Regional Plan-2041 for the NCR. Discussion held between Member Secretary, NCR Planning Board and DG, NIC on 19/06/2019 followed by the meeting and detailed presentation by

the officers of Remote Sensing & GIS Division, NIC to the Member Secretary, NCR Planning Board and her team on 20/06/2019 and 21/06/2019. As follow up of these meeting, NCR Planning Board requested NIC to submit a proposal for development of NCR Geo Portal for NCRPB area which may be used as a resource portal for future use. Accordingly, NIC submitted its proposal for 'Geo-Portal for National Capital Region Planning Board' on 31.08.2019.

Project Sanctioning & Monitoring Group-II (PSMG-II) under the Chairmanship of Member Secretary, NCRPB in its 14th meeting held on 10.10.2019 approved the above proposal for creation of Geo-Portal for National Capital Region, received from Remote Sensing & GIS Division National Informatics Centre, Ministry of Electronics & IT, Govt. of India, New Delhi.

2. National GIS Framework

National GIS has been conceptualized as a service across the nation in a mission mode to strengthen systematic integration of data from different sectors and delivery of GIS to grass root level through NICNET. The major objective of this programme is the development of seamless spatial data on 1:50,000 scale for the entire country incorporating the infrastructure and natural resources themes apart from the Raster Data repository of different topographic maps and Satellite data of different resolutions. Further the database has been enriched with the updation of various spatial data in 1:10,000 scale. This will act as common service delivery platform for different customized applications.

The National Geospatial framework built around a standard reference system from Survey of India (SOI) consists of Administrative Boundaries like State, District, Sub District, Block, GP till Villages, the smallest administrative unit in our country. The other spatial layers include transportation network covering the National Highways, State Highways and District Roads etc. along with the express ways. Also included in the transportation network are the Railways, Railway Stations, and Airport Locations etc. The natural resources layers consists of Major River Network up to single order Drainages, Land use with emphasis to watershed, Forest Cover, Soil Layer, Geology, Geomorphology etc.

Besides these base layers, NIC has also a rich repository of other POI datasets like Banking Infrastructures, Post Offices, Schools, CSCs, though its various project initiatives in collaboration with respective Ministries/ departments/ Organizations.

A state of art GIS infrastructure has been setup at NIC Hqrs at New Delhi and further at the State Units of NIC. Implementation has been powered using various Remote Sensing and GIS Products for the data and application development in core and allied sectors. Necessary initiatives have been underway for proliferation of GIS to District Offices of NIC and further deployment at the grass root level with the support of the allied Govt. Agencies. This programme extensively facilitates the various sectors in Development and Planning like preparation of location-specific action plan for land and water resources, socio-economic development plan, and action plan for sustainable development.

3. PARTIES

3.1. Executing Party

Remote Sensing & GIS Division National Informatics Centre, Ministry of Electronics & IT, Govt. of India, New Delhi.

3.2. Indenting Party

National Capital Region Planning Board (NCRPB) under Ministry of Housing and Urban Affairs (MoHUA), Government of India, New Delhi

4. Authorized Signatory

Deputy Director General (DDG), Remote Sensing & GIS Division National Informatics Centre, Ministry of Electronics & IT, Govt. of India, New Delhi

[HEREINAFTER referred to as the NIC which expression shall mean and include its heirs, successors, representatives, Officers etc.]

and

Chief Regional Planner (CRP) or Director (A&F), National Capital Region Planning Board (NCRPB) under Ministry of Housing and Urban Affairs (MoHUA), Government of India, New Delhi

[HEREINAFTER referred to as the NCRPB which expression shall mean and include its heirs, successors, representatives, Officers etc.]

5. FUNCTIONARIES AND CONTACT ADDRESSES, PHONE, E-MAIL ETC.

Organization	Contact Person	Designation	Phone / Mobile / E-mail	Address
NIC	Shri Vishnu Chandra	DDG & AFA, NIC	Phone: 01124364709 Email: vishnu@nic.in	National Informatics Centre, A- Block C.G.O. Complex, Lodhi Road, New Delhi-110003
NIC	Shri V. Uday Kumar	Sr. Technical Director, NIC	Mobile: 9810091883	National Informatics Centre, A- Block C.G.O. Complex, Lodhi Road, New Delhi-110003

5.1. NIC

5.2. NCRPB

Organization	Contact Person	Designation	Phone / Mobile / E-mail	Address
NCRPB	Shri Satish	Chief	Phone:	NCRPB, 1 st Floor,
	Parashar	Regional	011-24642289	Core IVB, India
		Planner	Email:	Habitat Centre,
		(CRP)	ncpb-crp@nic.in	Lodhi Road, New
landard Gra				Delhi – 110 003.
NCRPB	Shri Jagdish	Director	Phone:	NCRPB, 1 st Floor,
	Parwani	(A&F)	011-24603138	Core IVB, India
			Email:	Habitat Centre,
			ncrpb-dr@nic.in	Lodhi Road, New
				Delhi – 110 003.

Day to day correspondence during the course of the project shall be handled by the respective Focal Points identified as above.

6. EFFECTIVE DATE

6.1. Commencement

Effective date of commencement will be the date on which 1st Stage payment is received by National Informatics Centre Services Incorporated (NICSI).

6.2. Duration

This study is to be executed within a duration of 04 months from the date of commencement of the project i.e the date on which 1st Stage payment is received by NICSI. A grace period shall be allowed upon request from either of the parties. If further extensions are required, it shall be by mutual consent of the parties.

7. SCOPE OF WORK

The main objective of the project is to create a GIS Database and the Geo Portal for NCR Planning Board with integration of various data and web services available at NIC and NCRPB. The Geo-Portal will be developed for the current NCR area of 55,083 Sq. Km. as indicated in section 01 above.

The details of the scope and objective of the project are as follows:

- Framework design and development of NCR Geo Portal with available data at 1:50,000 and 1:10,000 scales
- > To use the spatial database as available in Bharatmaps platform
- > To use the non-spatial attribute data as available in Census-2011
- To use the points of interest (POI) as available in NIC with the consent of user departments
- To use other spatial and non-spatial database as and when provided by the user departments
- > To deploy the application in NIC Cloud Environment
- Regular updation of the data on geo-portal will be done by NIC during the project implementation period under intimation to NCRPB.
- > Training

8. APPROACH & METHODOLOGY

NIC has already developed Bharatmaps Geo Portal https://bharatmaps.gov.in/ which contains all the Administrative Boundaries/Locations. Parliamentary/Assembly Constituency Boundaries, Watershed Boundaries, various Point of Interests (POI) like Banking Infrastructures, School Locations, etc. It is also integrated with base maps containing features like Road/Railway Networks. River/Drainage Networks. Habitations. Forest/Cultivation Boundaries, Habitations, etc. along with Satellite

Image, Night Light Data, Street Map and Terrain services. The proposed NCR Geo-Portal will be developed on Bharatmaps platform and all the above contents will be integrated in this. Integration of data from other sources for preparation of Geoportal may be considered as and when provided by the user departments.

8.1. Data Requirements

The following data may be used which are developed in 1:10,000 and 1:50,000 scales (around NIC Map Reference System) along with various POI data sets.

8.2. Base Maps

- NIC Base Map
- o NIC Street Map
- o NIC Terrain Map
- NIC Satellite Imageries
- o ESRI Imageries
- ESRI Street Map
- ESRI Topo Maps

8.3. Night Light data

NIC has raster image of NASA night light data for India for years 2012 and 2016. This will be integrated in application.

8.4. Spatial Data

- Administrative Boundaries
 - State Boundary
 - District Boundary
 - o Block Boundary
 - Village Boundary
 - Assembly constituency boundary
 - Parliamentary constituency boundary
 - Watershed boundaries
- Point Locations
 - State Headquarters

- District Headquarters
- o Sub-district Headquarters
- Gram Panchayat Headquarters
- Villages/Habitations
- Points of Interest (POI)
 - o Banking Infrastructures like Bank Branches, ATMs, Bank Mitras, etc.
 - Educational Facilities (including Schools, ITI, Collages, Universities, etc.)
 - Health Facilities (including CHC, PHC, Hospitals, Medical Colleges, etc.)
 - Common Service Centres (CSCs)
 - o Post Offices

The indicative list of layers (but not limited to) to be incorporated in the Geo-Portal is given in **Annexure-I**.

8.5. Attribute Data

For Demographic and Amenities information Census, 2011 data will be used. Any other data may be integrated in the application as and when provided by NCRPB. NIC will help NCRPB in designing data formats to be obtained from users based on inputs from NCRPB and NCRPB will get the data from users in Excel format, which will in turn be integrated in the application by NIC.

9. SPECIFICATIONS

The specifications are as described in Annexure – I and Project Proposal.

10. APPLICABLE DOCUMENTS

Project Proposal of NIC dated 31.08.2019.

11. RESPONSIBILITIES OF EACH PARTY

- 11.1. Responsibilities of NIC
 - Develop the NCR Geo-Portal with all available dataset as mentioned above, but not limited to.
 - Establish Framework Service Oriented Architecture in NIC Cloud.
 - Provide work plan and time frame for development and implementation of project requirements, as per the work plan and time frame for data availability for development, customization and deployment.
 - To transfer the technology through appropriate GIS training package, for future/ continuing operational services.
 - Provide/extend User Hand-Holding & Maintenance Services as mutually agreed.
- 11.2. Responsibilities of NCRPB and NCR participating State Governments

- Provide necessary budgetary support for the development and execution of the project.
- Finalize the Data Requirements, formats and standards (content, metadata, data survey, data classification, taxonomy, legends, annotation and symbols) in consultation with NIC.
- Provide time frame and work plan to NIC to ensure desired data availability to NIC for development, customization and deployment of services.
- Provide or facilitate all other spatial as well as non-spatial data inputs (including data updates) needed in the project.
- Provide all coordination & administrative and logistic support, for necessary institutional linkages for data capture, as well as for making existing/currently available data, expertise & knowledge, needed for the project.
- To provide all possible help in base data organization, as and when needed for the project.
- To facilitate or help NIC for appropriate feature coding of spatial data element with non-spatial/attribute data.
- To provide or facilitate all subject matter related inputs to the project, including analytical/modeling aspect, needed, if any.
- State Govts. will provide and validate the data for their respective subregions.

11.3. Other Terms & Conditions

- i. The project steering and monitoring committee may be constituted involving members from NCR Planning Board & NIC.
- ii. Joint Project Team of NCR Planning Board & NIC is to work to fulfill the objectives of project in time-bound manner as per the roles & responsibilities defined in the proposal.
- iii. Apart from the requirements mentioned above if any additional requirements arise after system study and design, then a separate proposal may be submitted.
- iv. The ownership of various data to be used in the application remains with the respective stake holders.
- v. At present, Data provided by NIC which is being integrated in the application as a service is not charged.
- vi. The spatial and non-spatial data to be used in the application will not be transferred to the user. However the data may be provided in the form of web-service if required.

12. Project Implementation

NIC will implement the project in collaboration with NCR Planning Board through NICSI (National Informatics Centre Services Incorporated), a section 25 company under NIC, Ministry of Electronics & IT. This is to facilitate appropriate provisioning of outsourced services required for the project.

NIC will be single point coordination for project development & execution for NCR Planning Board.

SI.No.	Tasks	M-1	M-2	M-3	M-4
1	System Study & Design		1		
2	Application Development,				
	Customization, Hosting &				
	Deployment				
3	Cyber Security Auditing				
4	Hand-Holding & Training				

13. PROJECT TIME SCHEDULE & WORK PLAN

14. PROJECT COST & SCHEDULE OF PRICES

The total project cost is **Rs. 9,97,454 (Including Taxes)**. The activity wise cost details are as under:

SI. No.	Activity	Cost in (Rs)	Remarks
1	Web Applications Development &	6,00,000	
	Customization, Hosting & Deployment		
2	Cyber security auditing	1,00,000	
3	Miscellaneous	90,000	
A	Total	7,90,000	
В	NICSI Charges (@7%)	55,300	
	& GST (@18%)	1,52,154	
	Total(A+B)	9,97,454	

15. Annual Maintenance of Project

NIC will maintain the s/w product for one year from the beginning of the project. However, from the second year onwards, the maintenance cost will be at the nominal cost of 15% (exclusive of all taxes) of the project cost.

16. CONSIDERATION

The project will be executed by NIC for NCRPB for the price as given in Section 14 above.

17. FUNDING AND TERMS & CONDITIONS OF PAYMENT

17.1. Funding

The entire project cost is funded by NCRPB, New Delhi.

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17.2. Terms & Conditions of Payment

Project cost of **Rs. 9, 97,454/-** will be paid to NICSI, out of which NCRPB will pay 50% in advance and rest will be paid after completion of work, as per schedule given in the following table:

SI. No.	Stages	Payment Schedule
1.	Stage - I Project Mobilisation	50% of the project cost.
2.	Stage - II Project Completion / Costing of Portal / Training / Handholding	50% of the project cost.

17.3. Tax Deduction at Source (TDS) & Payments

Tax Deduction at Source (TDS) would be admissible as per rules. The payment will be made in the name of NICSI, New Delhi through digital mode i.e. NEFT/RTGS/PFMS.

17.4. Penalty Clause

NIC shall strictly adhere to the four months time period for completion of project, failing which the penalty, if any, will be decided by PSMG-II of NCRPB. (This will be intimated separately.)

18. TRAINING

Training at two levels (i) Senior Officers level (1 day) and (ii) Working level Officers (2 days) for 25 to 30 members in each program. Lodging/ boarding & travel expenses will be borne by the State Govts. / concerned departments nominating officers/ staff for training. Logistic & training expenditure will be borne by NCRPB.

19. PROJECT MONITORING

- *19.1.* The project will be monitored by NIC through existing internal project review mechanism.
- *19.2.* If there is any delay at any stage of the project, the same will be communicated to NCRPB stating clearly the reasons for delay.
- *19.3.* The **project steering and monitoring committee** constituted as under would meet once in every 02 weeks or as and when desired either by NIC or NCRPB:

1.	Member Secretary, NCRPB	-	Chairperson
2.	Chief Regional Planner, NCRPB	-	Member
3.	Director (A&F) or Rep., NCRPB	=	Member
4.	DDG, NIC		Member
5.	Sr. Technical Director, NIC		Member
6.	Representative from Govt. of Haryana		Member
7.	Representative from Govt. of Uttar Pradesh		Member

- 8. Representative from Govt. of Rajasthan
- Member
- 9. Representative from Govt. of NCT Delhi
- 10. Deputy Director (Tech-GIS), NCRPB 11. Assistant Director (Tech.), NCRPB
- Member
- Member Convener
- Member Co-Convener

The committee would examine the progress of work on mapping, GIS database, quality, deliverables, timelines, payment and unforeseen delays if any and report to Member-Secretary, NCRPB.

20. CONFIDENTIALITY

The confidentiality of data shall be maintained by NIC.

21. CHANGE IN THE SCOPE OF WORK

Any change in scope of work would be with mutual consent of both the parties. Separate amendment to document to such extent has to be signed.

22. MODIFICATIONS / AMENDMENT HANDLING (PROJECT SCHEDULE, COST ETC.)

Any further modifications to this document, if required, would be through amendments with mutual consent.

<u>Annexure-I</u>

Indicative list of Layers to be incorporated in NCR Geo-Portal

Sr. No	Layers / Data	Availability Status			
(A) R	agion: Aims Objectives & Policy Zonos: Dom	graphy & Sottlement Dattern			
and C	and Counter Magnet Areas				
1.	Constituent Area of NCR for perspective year 2001	To be provided by NCRPB			
2.	Constituent Area of NCR for perspective year 2021	To be provided by NCRPB			
3.	Constituent Area of NCR with newly added 7 districts	To be provided by NCRPB			
4.	Physiography & Slope	To be provided by NCRPB			
5.	Lithology / Soil Types	To be provided by NCRPB			
6.	Geomorphic Units	To be provided by NCRPB			
7.	Ground Water Prospects	To be provided by NCRPB			
8.	Policy Zones	To be provided by NCRPB			
9.	Existing Settlement Pattern	To be provided by NCRPB/ Available at 1:10K scale with NIC			
10.	Proposed Settlement Pattern	To be provided by NCRPB			
11.	Location of Towns with Census categories	To be provided by NCRPB			
(B) Ec	onomic Profile				
12.	Taxation – District wise (Except GST)	MIS data (State Govt.)			
13.	Agriculture Crops Growth (Sugar Mills/Paper	Directorate of Statistics and			
	Mills), Soil Types, Major Crops Grown	Mahalanobis National Crop Forecast Centre, Ministry of Agriculture & Farmers' Welfare			
14.	Manufacturing-Ware House-Stores-what is	FCI/ Ware Housing			
	stored-logistics-maual/mechanized-quantum	Corporation of India			
15.	Agriculture Food Processing Centres (Primary-Secondary)	Available in NIC of MoFPI			
16.	Food Testing Labs-Food safety for Drugs	Available in NIC of MOFPI			
17.	Pharmaceutical Labs	Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers			
18.	Pottery / Handicrafts – Hotspots – Leather/Kapda	NCRPB will Coordinate with States for Obtaining the data			
19.	Trading Hubs/Centres	NCRPB will Coordinate with			
20.	Mandis/Sub yards-(e.g. Itawah) Notified/Informal Bazar	Locations of Some Mandis			
21.	Agriculture Markets				
150/1					

Sr.	Layers / Data	Availability Status
No.	,	
22.	Dairy-Capacity of Dairies-Processing	FSSAI – But spatial data not
		available -MIS data related
		for MoFPI available with NIC
23.	Industries – All categories	To be provided by NCRPB
24.	Trade - Agriculture	Ministry of Agriculture
		Creating Geo-tagged
		information
25,	Individual Estates, Govt./Private - Occupancy	NCRPB will Coordinate with
		States for Obtaining the data
26.	IT Hubs/Centres/STPIs	Source :STPI
27.	NIC/CSCs- for 6/7 villages	Available in NIC
28.	Storages/Cold Storages	Available in NIC from MoFPI
29.	Godowns	Ministry of Agriculture/
		Department of Food
(C) Tra	nsport	
30.	Existing Transport Network (Roads)	To be provided by NCRPB/
		1:10 k Data available with NIC
31.	Existing Transport Network (Rail)	To be provided by
		NCRPB/1:10 k Data available
		with NIC
32.	Proposed Transport Network (Roads)	NCRPB will Coordinate with
		States for Obtaining the data
33.	Proposed Transport Network (Rail)	To be provided by NCRPB
34,	TAZ - Traffic Analysis Zone	Ministry of Road Transport &
		Highways
35.	Road Inventory - Network – Distance, etc.	1:10K road inventory
36.	RCTA Routes	To be provided by NCRPB
37.	Transport Nagar (e.g. Bareilly)	To be provided by NCRPB
38.	Metro Network and Stations with details of	To be provided by NCRPB
	services available	
39.	Aviation – Small Air Strips – Helipads/	To be provided by NCRPB/
	Heliports	Airports available with NIC
40.	Inland Navigation – Rivers/Canals	
41.	No. of Trains – Passing Slowest Trains	Ministry of Railways
42.	ROBs/RUBs/Underpasses/Manual/Unmanned	Ministry of Railways
(D) Po	wer	Dessemutid
43.	Power-Assured & Foreseeable Requirement	Powergrid
44.	Power Stations - All	To be provided by NCRPB
45.	Sub-Stations – 132/220/440 KV	To be provided by NCRPB
46.	Islanding	NGRPB will Coordinate with
		States for Obtaining the data
(E) Wa	ater and Sewerage, Solid Waste Management,	Urainage & irrigation
47.	Ground Water Rechargeable Areas	I O DE PROVIDED DY NCRPB

1. 00 NO.

Layers / Data	Availability Status
Status of Ground Water Availability	Central Ground Water Board (CGWB)
Location of Rain Gauge Stations with capacity & other details	Indian Meteorological Department (IMD)
Rainfall, Temperature, Wind Speed, etc.	Indian Meteorological Department (IMD)
Drainage including rivers, streams, drains, canals	To be provided by NCRPB/ 1:10K data available with NIC
Embankments, flood data, water logging areas	NCRPB will Coordinate with States for Obtaining the data
Encroachments in drains & flood plains	NCRPB will Coordinate with States for Obtaining the data
Location of upstream barrages/dams	To be provided by NCRPB
Locations of ETP/CTP/STP with capacity	To be provided by NCRPB
Water Treatments Plants	NCRPB will Coordinate with States for Obtaining the data
ecommunications	
OFC Lines Network	Department of Telecom/ Village level 2G/3G/4G data availability with DOT as on 2017 is available with NIC
elter	
1997-Shelter w.r.t. Fani Cyclone	NCRPB will Coordinate with
Night Oholton Dain Decens	States for Obtaining the data
Night Shelter-Rain Basera	
Youth Hostels/Working Girls' Hostels	To be provided by NCRPB
Anath Ashram/Orphanage	
Shelters w.r.t. Disaster Management	
cial Infrastructure	
Hospitals - PHC – Indoor facilities upto 20 beds	Data from data.gov for year 2015 available with NIC
Psychological Counselling	NCRPB will Coordinate with States for Obtaining the data
Medical Stores	NCRPB will Coordinate with States for Obtaining the data
Drug Rehabilitation Centres	NCRPB will Coordinate with States for Obtaining the data
Veterinary Hospitals	To be provided by NCRPB
ITIs	Available in NIC
Medical Colleges	To be provided by NCRPB
Education Institutions (schools)	Available in NIC
ite ne and Territory	1
	Layers / Data Status of Ground Water Availability Location of Rain Gauge Stations with capacity & other details Rainfall, Temperature, Wind Speed, etc. Drainage including rivers, streams, drains, canals Embankments, flood data, water logging areas Encroachments in drains & flood plains Location of upstream barrages/dams Locations of ETP/CTP/STP with capacity Water Treatments Plants ecommunications OFC Lines Network Inject Er 1997-Shelter w.r.t. Fani Cyclone Night Shelter-Rain Basera Youth Hostels/Working Girls' Hostels Old Age Homes-Male/Female Anath Ashram/Orphanage Shelters w.r.t. Disaster Management cial Infrastructure Hospitals - PHC – Indoor facilities upto 20 beds Psychological Counselling Medical Stores Drug Rehabilitation Centres Veterinary Hospitals ITIs Medical Colleges Education Institutions (schools)

Sr.	Layers / Data	Availability Status
No.		,
72.	Historical Areas - Heritages 100 year old	NCRPB will Coordinate with
	habitants with unique architecture	States/ Archelogical Survey
		of India for Obtaining the data
73.	Heritage & Tourism data	To be provided by NCRPB
74.	Forests, Sanctuaries, Water bodies (e.g.	To be provided by NCRPB
	Bharatpur)	
75.	Viewers/Visitors (Annual average)	MIS data
76.	Bawli/Hawelis	May be obtained from 1:50K
		SOI data
77.	Forts/Kothiyan	May be obtained from 1:50K
		SOI data
78,	Hotels/Facilities available	To be provided by NCRPB
79.	Hospitality-Hotels/Motels/Dhabas/Heritages	NCRPB will Coordinate with
	4	States for Obtaining the data
80,	Inscriptions/Old sites	To be provided by NCRPB
(J) Er	vironment	
81.	Seismo-Tectonic Features	To be provided by NCRPB/
		available with NIC digitized
		from 1:250K Seismo-tectonic
		Atlas
82.	Forest Cover (latest-2015-2010-2005-1999) (5	Source FSI, Dehradun
	years interval) Green Areas-Non Agricultural Areas	
83.	Location of Industries (polluting)	CPCB/ MOEFCC
84.	Fault Lines & Seismic Micro Zonation data	To be provided by NCRPB
85.	Contour (SOI topographical sheets)	Terrain map at 1:50K
		available in NIC
(K) Di	saster Management	
86.	Fire hydrants, stations, water bodies/water	Rivers/ Canals/ Waterbodies
	sources	are available on basemap of
	1	NIC. Fire Hidrants/ Fire
		stations need to obtained
		from State Govt.
87.	Disaster Management-Life saving equipment-	MIS data
	Drugs-Material sources-Boats	
88.	Number of fire tenders, Equipment, safety	MIS data
	nets, Automatic ladders	
89.	Chemical based fire/foam/masks	MIS data
90.	Accident prone places	NCRPB will Coordinate with
04		States for Obtaining the data
91.	Police stations, Chowki, Kotwali (SHO)	To be provided by NCRPB
92.	Fire Stations	NCRPB will Coordinate with
00	202	States for Obtaining the data
93.	PCR	NCRPB will Coordinate with
		States for Obtaining the data

Sr.	Layers / Data	Availability Status
No.		
(L) Rural Development		
(M) Regional Landuse		
94.	Existing Landuse	To be provided by NCRPB
95.	Proposed Landuse	To be provided by NCRPB
96.	Dense Residential Areas	To be provided by NCRPB
97.	Counter Magnet Towns	To be provided by NCRPB
98.	Slums-Redevelopment Ares/Colonies	
(N) Recreational & others		
99.	Government Lands-Allotted/Un-allotted	State Govt.
100.	Open Recreational Areas	NCRPB will Coordinate with
101		States for Obtaining the data
101.	Parking-Multi Level Parking	To be provided by NCRPB
102.	Entertainment Zones	NCRPB will Coordinate with
100		States for Obtaining the data
103.	Golf Club/Club Houses	To be provided by NCRPB
104.	Open Entertainment/Cultural Activity Places	NCRPB will Coordinate with
105		States for Obtaining the data
105.	Exhibition Places/Mela Ground/Social	NCRPB will Coordinate with
100	Gatherings	States for Obtaining the data
100,	Snopping Malls/Multiplexes	NCRPB will Coordinate with
107	Darks	States for Obtaining the data
107.	Parks	Available in NIC for Delhi
109	Evol Stations /Datured D	only
100.	Puel Stations/Petrol Pumps/Charging Points	To be provided by NCRPB
109.	Public Fountains	NCRPB will Coordinate with
110	Swaaphata/Cavitation (States for Obtaining the data
110.	Swacrinata/Sanitation (various related	Data from
		Geourbanmissions.gov.in
		may be integrated based on
111	Discoso (Chieles Pi	requirement
111.	Virus) Spread	

Other data available with NIC:

- \circ Administrative boundaries up to village and GP level available $^{\bigcirc}$
- Administrative Point data State Hq/ District Hq./ Block Hq./ Sub District Hq/ Village and GP points codified with LGD code/ Census Code available
- Non-spatial data from Census 2011 relating Housing available at district/ Sub District Level
- Non-spatial data from Census 2011 relating to Demography and amenities database available at district/ Sub District Level/ Village level
- Banking infrastructure Bank/ ATM/ Banking Correspondent available
- Post Office Locations available
 - Hospital data from hospitalway mobile app/ NHP can be integrated
 - Geo-tectonic Atlas spatial data at 1:250K is available

- Parliamentary/ Assembly constituency boundary available
- Night light data for 2012/2016 available
- Watershed boundary available
- Base maps available with NIC : NIC Street/ NIC Map (1:50K) data of SOI/ 2.5M satellite mosaic / ESRI street/ ESRI Imagery
- Sports facilities locations in Delhi available
- Stadia locations in Delhi available
- All public parks locations in Delhi available

Layers in Geo-Portal

Annesona - 8/M

Layers (Title)

NCR Boundary (Title)

NCR (Title)

- State (Layer 1) (Open source)
- District (Layer 2) (Open source)
- Sub-districts (Layer 3) (NIC)
- Blocks (Layer 4) (Layer 8) (NIC)
- Adjoining Districts (NCR) (Layer 5) (Open source)
- Gram Panchayats (Layer 6) (NIC)
- Villages (Layer 7) (NIC)
- State Capitals (Layer 8) (Open source)
- Dist Hqtrs (Layer 9) (Open source)
- Subdist Hqtrs (Layer 10) (Open source)
- Block Hqtrs (Layer 11) (Open source)
- Villages (Demographics) (Layer 12) (Open source)
- Villages (Amenities) (Layer 13) (Open source)
- **NCR RP-2001 (Title)**
- NCR Outer Boundary (Layer 14) (RP-2001)
- Districts (Layer 15) (RP-2001)
- **NCR RP-2021(Title)**
- Outer Boundary (Layer 16) (RP-2021)
- Districts (Layer 17) (RP-2021)
- **Present NCR (Title)**
- Outer Boundary (Layer 18) (Open source)
- Districts (Layer 19) (Open source)
- Central NCR (Layer 20) (RP-2021)
- Sub-Region Boundary (Layer 21) (RP-2021)
- Parliament Constituency (Layer 22)(NIC)
- Assembly Constituency (Layer 23) (NIC)
- **Settlement (Title)**
- **NCR Towns11 (Layer 24) (RP-2021)**
- NCR Towns (Layer 25) (RP-2021)

- NCR Settlement (Layer 26) (RP-2021)
- Proposed Settlements (Layer 27) (RP-2021)
 - Transport (Title)
- Roads (Layer 28) (MoRTH)
- Rails (Layer 29) (MoR)
- AIR (Layer 30) (Open source)
- Waterways (Proposed) (Layer 31) (Open source)
- **Points of Interest (Title)**
- ITI (Layer 32) (Open source)
- CSC (Layer 33) (Open source)
- PDS (Layer 34) (Open source)
- Police Station (Layer 35) (Open source)
- Dam (Layer 36) (Open source)
- Weekly Markets (Layer 37) (Open source)
- Slum Population City (Layer 38) (Open source)
- Slums Redevelopment Colonies (Layer 39) (Open source)
- Software Technology Parks of India (STPI) (Layer 40) (Open source)
- Warehouses & Godowns (Layer 41) (Open source)
- Central Warehouses (Layer 42) (Open source)
- Transport Nagar (Layer 43) (Open source)
- Toilets (Layer 44) (Open source)
- Under Ground Reservoir (Layer 45) (Open source)
- Fountain (Layer 46) (Open source)
- Level Crossing (Layer 47) (Open source)
- Museum (Layer 48) (Tourism Department)
- Library (Layer 49) (Open source)
- Lodging (Layer 50) (Open source)
- Shopping Malls (Layer 51) (Open source)
- Sports Facilities (Layer 52) (Open source)
- Playgrounds (Layer 53) (Open source)
- Stadium (Layer 54) (Open source)
- Golf Course (Layer 55) (Open source)
- Cinemas (Layer 56) (Open source)
- District Towns (Layer 57) (NIC)

1 Fuel Stations (Layer 58) (Open source) Fire Hydrant (Layer 59) (Open source) -Fire Stations (Layer 60) (Open source) **___** Haryana Blackspot (Layer 61) (Open source) Г Rain Gauge Stations (Layer 62) (Open source) Psychological Counselling (Layer 63) (Open source) 1 Parking (Layer 64) (Open source) WTP (Layer 65) (NIC) Education (Layer 66) (NIC) Schools (Layer 67) (NIC) Rivers (Layer 68) (NIC) Sewerage Treatment Plant (Layer 69) (NIC) Г Govt Land (Layer 70) (DMRC) Tax or Cess (Laver 71) Health (Title) Blood Bank (Layer 72) Hospitals (Layer 73) (NIC) [Veterinary Hospital (Layer 74) (NIC) Γ. Pharmacy (Layer 75) (NIC) Pharmacetucal Labs (Layer 76) (Open source) Agriculture (Title) (MoAFW) Γ. Agri Mandi (Layer 77) -Agricultural Markets (Layer 78) 1 Agricultural Markets (Layer 79) Γ. Food Parks (Layer 80) Food Processing Unit (2015) (Layer 81) Agricultural Crops (2015) (Layer 82) -Food Testing Lab (Layer 83) (Open source) 5 Food Testing Lab (Layer 84) (Open source) Γ Cold Storage (Layer 85) (Open source) Г Cold Storages (Layer 86) (Open source) 1 Cold Chains (Layer 87) (Open source) Food Parks (Layer 88) (Open source) Agro Clusters (Layer 89) (Open source)

- **Banking Facilities (Title)**
- Bank Branch (Layer 90)(NIC)
- ATM (Layer 91) (NIC)
- Bank Mitra (Layer 92) (NIC)
- Power and Telecom (Title) (NIC)
- Power Plant (Layer 93)
- Power Station (Layer 94)
- Sub-Stations (Layer 95)
- Delhi Transco Limited (Layer 96)
- Pylons (Layer 97)
- Transmission Lines (Layer 98)
- OFC Network (Layer 99)
- Post Offices (Layer 100)
- **Sports (Title)**
- Major Sports Complex (Layer 101) (Open source)
- Sports Facilities (Layer 102) (Open source)
- Parks (Layer 103) (Open source)
- Shelter and Relief (Title) (Open source)
- Temporary Relief Shelters (COVID-19) (Layer 104) (Open source)
- Relief Centres (COVID-19) (Layer 105) (Open source)
- Ration Shops (Layer 106) (Open source)
- Rehabilitation Centres (Layer 107) (Open source)
- Old Age Homes (Layer 108) (Open source)
- Night Shelter (Layer 109) (Open source)
- Orphanage (Layer 110) (Open source)
- Industries (Title)
- ICD (Layer 111) (Open source)
- MSME Clusters (Layer 112) (Open source)
- Pottery, Leather Hotspots (Layer 113) (Open source)
- Industrial Estates (Layer 114)- IIS-DPIIT,2020
- DMIC Clusters (Layer 115) IIS-DPIIT
- Industrial_Area (Layer 116) IIS-DPIIT,2020
- Panchgram (Layer 117)
- F YEIDA (Layer 118) (YIEDA) 2013

- **Rivers and Canals (Title) (Open source)**
- Canal Line (Layer 119) (Open source)
- Canal Polygon (Layer 120) (Open source)
- River (Layer 121) (Open source)
- Watershed (Layer 122) (Open source)
- ☐ Heritage and Tourism (Title) (ASI & State Archaeological Department) -2019
- Heritage Sites (ASI_SP) (Layer 123)
- Heritage Sites (ASI_CP) (Layer 124)
- Forts (Layer 125)
- Baoli (Layer 126)
- Tourist Spots (Layer 127)
- Counter Magnet Areas (Layer 128) (RP-2021)
- Dense Residential Areas (Title) (Open source)
- Dense Residential Areas (Layer 129)
- Dense Residential Additional Dist (Layer 130)
- **Disaster Management (Title)**
- Wind Speed Zones (Layer 131) (Open source)
- Landslide Output (Layer 132) (Open source)
- State Rainfall (Layer 133) (Open source)
- Thunderstorm (Layer 134) (Open source)
- Earthquake (Title) –(BMTPC-2019)
- Faults (Layer 135) (BMTPC-2019)
- Delhi Earthquake Zone (Layer 136) (BMTPC-2019)
- Haryana Earthquake Zone (Layer 137) (BMTPC-2019)
- Rajasthan Earthquake Zone (Layer 138) (BMTPC-2019)
- UP Earthquake Zone (Layer 139) (BMTPC-2019)
- **Flood (Title) (BMTPC,2019)**
- Flood Prone Areas (Layer 140)
- Flood Data (Layer 141)
- Delhi Flood Area (Layer 142)
- Haryana Flood Area (Layer 143)
- Haryana River (Layer 144)
- UP Flood Area (Layer 145)
- UP River (Layer 146)

- Flood Plain (Layer 147) BMTPC, 2019
- Ground Water Recharge Area (Layer 148) (NRSC Study)
- Ground Water Prospects (Layer 149) (NRSC Study)
- Ground Water Critical Blocks (Layer 150) (NRSC Study)
- Physiography and Slope (Title) (NRSC Study)
- NCR Slope (Layer 151) (NRSC Study)
- Tectonic Framework (Layer 152) (NRSC Study).
- Lithology (Layer 153) (NRSC Study).
- Land use/ Land Cover (Title)
- Existing Land Use (2015-16) (Layer 154) NCR Regional Plan
- Existing Land Use (2016) (Layer 155) RP-2021
- Existing Land Use (1999) (Layer 156) NCR Regional Plan
- Geomorphology (Layer 157) (NRSC Study).
- **Demography (Title)**
- Rurban Clusters (Layer 158) MoRD,Gol.
- **Population**
- 2041 (Layer 159)
- 2036 (Layer 160)
- 2031 (Layer 161)
- 2026 (Layer 162)
- 2021 (Layer 163)- Census of India and NCRPB Report.
- 2011 (Layer 164) Census of India, 2011.
- Migration to Delhi (Layer 165)- Compiled by NCRPB
- Crime NCR (Layer 166)
- └ Policy Zones (Title)
- □ 17 Districts (Title)
- CNCR NCT Delhi Policy Zones (Layer 167) NCR Regional Plan-2021
- Policy Zones (Admin) (Layer 168)
- Roadrilc Polygon (Layer 169)
- Karnal (Layer 170) NCR Regional Plan-2021
- Bhiwani (Layer 171) NCR Regional Plan-2021
- Charkhi Dadri (Layer 172) NCR Regional Plan-2021
- Jind (Layer 173) NCR Regional Plan-2021
- Bharatpur (Layer 174) NCR Regional Plan-2021

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Muzaffarnagar and Shamli (Layer 175) – NCR Regional Plan-2021

Mahendragarh (Layer 176) - NCR Regional Plan-2021

Total Number of Layer on Geo- Portal = 176 Layers from known sources = 176



No. K-14011/02/2021-NCRPB

राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड NATIONAL CAPITAL REGION PLANNING BOARD प्रथम तल, कोर–IV बी. / 1st Floor, Core-IV B, भारत पर्यावास केन्द्र / India Habitat Centre, लोधी रोड, नई दिल्ली–110003 / Lodhi Road, New Delhi-110003 आवासान और शहरी कार्य मंत्रालय / Ministry of Housing and Urban Affairs दूरभाष/Phone: 011–24642284, 24642287 फैक्स/Fax: 011–24642163 Dated: 02.03.2021

Subject: Minutes of the 69th Planning Committee meeting of the National Capital Region Planning Board held at Tamrind Hall, India Habitat Centre, Lodhi Road at 10.30 AM on 23.02.2021

The 69th Planning Committee meeting of the National Capital Region Planning Board was held at Tamrind Hall, India Habitat Centre, Lodhi Road, New Delhi at 10.30 AM on 23.02.2021, under the Chairpersonship of Member Secretary, NCR Planning Board. The Minutes of the meeting along with Annexures including copy of brief presentation (not exhaustive) on Draft RP-2041, are enclosed for your information and necessary action.

- 2. Due to COVID, the minutes along with the Annexures are being mailed only in soft copy.
- 3. This issues with the approval of Competent Authority.

(Abhijeet Samanta) **Deputy Director (Tech)**

Encls: As above.

To,

- 1. Shri Kamran Rizvi, IAS, Additional Secretary (D&UT), Ministry of Housing and Urban Affairs, Nirman Bhawan, New Delhi
- Mrs. Renu Sharma, IAS, Additional Chief Secretary (UD)/Director of Local Bodies (DLB) Govt. of NCT-Delhi, 9th&10th Level, C-Wing, Delhi Secretariat, I.P. Estate, New Delhi-110002
- 3. Shri A.K. Singh, IAS, Principal Secretary, Town & Country Planning Department, Govt. of Haryana, New Haryana Civil Secretariat, Sector-17, Chandigarh, Haryana-160017
- 4. Shri Sawant Bhaskar Atmaram, IAS, Principal Secretary, Department of Urban Development & Housing, Govt of Rajasthan, Rajasthan Secretariat, Jaipur-302005, Rajasthan
- 5. Shri Deepak Kumar, IAS, Principal Secretary, Housing & Urban Planning Department, Govt. of Uttar Pradesh, 3rd Floor, Bapu Bhawan, Uttar Pradesh Secretariat, Lucknow-226001, Uttar Pradesh
- 6. Shri Anurag Jain, IAS, Vice-Chairman, Delhi Development Authority, Vikas Sadan INA Colony, New Delhi -110023

- 7. Sh. V. Makrand Pandurang, IAS, Director General, Town & Country Planning Department, Government of Haryana, SCO 71-75, Sec 17C, Chandigarh-160017
- 8. Chief Planner, Town & Country Planning Organisation, Govt. of India, E-Block, Vikas Bhawan, I.P. Estate, New Delhi-110002
- 9. Chief Town & Country Planner, Uttar Pradesh, Town & Country Planning Department, Govt. of Uttar, 7 Bandaria Bagh, Lucknow-226001, Uttar Pradesh
- 10. Chief Town Planner(NCR), Town & Country Planning Department, Govt. of Rajasthan, Nagar Niyojan Bhawan, Jawaharlal Nehru Marg, Jaipur-302004, Rajasthan

Co-opted Member

- 11. Joint Secretary (UT), Ministry of Housing & Urban Affairs, Govt. of India, Nirman Bhawan, New Delhi
- 12. Joint Secretary (IA), Deptt. Of Environment, Ministry of Environment, Forest & Climate Change, Govt. of India, India Paryavaran Bhavan, Jor Bagh Road, New Delhi -110003
- 13. Senior Advisor (HUD), NITI Aayog, Sansad Marg, New Delhi -110001
- 14. Chairman & Managing Director, Housing & Urban Development Corporation, HUDCO House, Lodhi Road, New Delhi-110003.

CMA

- 15. Secretary (Housing), Govt. of Uttrakhand, 4, Subash Road, Dehradun- 248001.
- 16. Chief Executive Officer NCR Special Area Development Authority (Counter Magnet), SheetlaSahai Administration Bhawan, SojnaTighra, Gwalior-474001 (M.P.)
- 17. The Chief Administrator, Patiala Urban Planning & Development Authority, PUDA Complex, Urban Estate, Phase-II, Patiala-147002.

MINUTES OF THE 69THMEETING OF THE PLANNING COMMITTEE HELD ON 23.02.2021 AT 10.30 A.M. IN THE TAMARIND HALL, INDIA HABITAT CENTRE, LODHI ROAD, NEW DELHI.

- 1. Chairperson welcomed the members and participants attending physically as well as over video conferencing, to the Planning Committee meeting and after a round of introduction, gave a brief background to the meeting. List of participants is at **Annexure-I**.
- 2. On the request of Principal Secretary, T&CP, Haryana citing time constraint, Chair invited Haryana to briefly place their points before the committee while the meeting can their on proceed as per agenda. PS, T&CP mentioned that the Draft RP 2041 was a 350 page document and Haryana had already requested for 2-3 months' time to go through the sensitive document and offer their comments. He mentioned that draft RP-2041 was sent by them to all departments, Authorities and local bodies of Haryana Sub-region and Counter Magnet Area (CMA) identified in Haryana State, for comments and suggestions. He also mentioned that preparing a Regional Plan for NCR when the NCR delineation is still to be finalized may not be appropriate.
- 2.1 The Chairperson, however, mentioned that the Draft RP 2041 was shared with all NCR states in the first week of January, 2021 and comments had already been received from Govt. of Rajasthan, which were highly appreciated. Comments were also expected from GNCT of Delhi within a fortnight as they were earlier busy with finalization of SRP-NCT Delhi work. NCR Planning and Monitoring Cell, UP had also sent its comments to government and same were expected shortly. Hence Haryana should also expedite its submission-of their comments and suggestions on the draft RP 2041. She further mentioned that as per the provisions of the NCRPB Act, 1985, after approval of the Board, the draft RP-2041 will be circulated to every local authority within the National Capital Region and CMA for their comments. Further, inviting attention to the decision of last Board meeting in October 2020, regarding NCR Delineation wherein it was decided that, 'the present extent of NCR area shall be used as the basis for preparation of forthcoming RP-2041' she stated that accordingly the Draft RP 2041 has been prepared for the present notified areas of NCR.
- 3. Thereafter, a presentation was made by Shri Abhijeet Samanta, Deputy Director (Tech),NCRPB on the various agenda items of the meeting, with permission of the Chair and Agenda wise brief of discussions, along with the related decisions taken, are as presented below:

4. AGENDA ITEM NO.1: CONFIRMATION OF THE MINUTES OF THE 68th PLANNING COMMITTEE MEETING OF THE BOARD HELD 16.03.2020.

Planning Committee noted that no comments have been received on the Minutes of its 68th meeting held on 16.03.2020.

Minutes of the 68th Meeting of the Planning Committee were confirmed.

5. AGENDA ITEM NO. 2: ACTION TAKEN ON THE DECISIONS OF THE 68th MEETING OF THE PLANNING COMMITTEE

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i. Regarding Agenda Item No.6 (ATR) related to Status of implementation of Projects envisaged in Regional Plan-2021 & Functional Plans, Committee noted the status and again advised that NCR participating States to expedite submission of comments along with ballpark cost estimates for proposals they intend to implement, as per the plans, and enable NCRPB to have a tentative pipeline of projects for which funds could be arranged.

(Action: NCR States & respective Cells)

ii. Regarding Agenda Item No.15 (ATR) i.e Matter related to CMA, the committee noted the status and requested the representatives from Govt. of Haryana, Uttar Pradesh, Madhya Pradesh and Uttarakhand to expeditiously submit the Plan of Actions for CMAs in their respective areas.

(Action: Govt. of Haryana, UP, Uttarakhand and Madhya Pradesh)

iii. With respect to Agenda Item No. 21 (ATR) regarding constitution of a Committee with Secretary / Commissioners of Tourism Department of NCR States and Ministry of Tourism, ASI, it was noted that nomination from Ministry of Tourism, UP Tourism Department, Haryana Tourism Department, ASI of Govt. of India, Archaeology and Museum Department, Department, Haryana has been received.

Rajasthan and Delhi were requested to expedite nominations from Govt. of Rajasthan and Govt. of NCT Delhi & ASI of Govt. of NCT Delhi and Rajasthan Circles.

(Action: Govt. of Rajasthan and GNCT of Delhi and respective Cells)

iv. The Committee also noted that other Agenda Item Nos. (ATR) 2,3,14, 17, and 20 were placed for information and Agenda Item nos. (ATR).3, 4, 5 and 13 are placed as Agenda Item Nos 7, 3, 6, 4 in the main Agenda Notes of this meeting of the Planning Committee.

6. AGENDA ITEM 3: STATUS OF SUB-REGIONAL PLANS FROM NCR PARTICIPATING STATES

i. Agenda 3.1 Sub-Regional Plan-2021 for NCT Delhi

Member Secretary congratulated the Govt. of NCT of Delhi and DDA for expeditious preparation of Draft SRP 2021 for NCT Delhi and its submission to NCRPB. The observations on the draft SRP 2021 of NCRPB Secretariat were presented in the meeting.

After detailed deliberation, the Planning Committee recommended the Draft Delhi SRP 2021 for NCT Delhi for placing the same before the Board along with the following observations:-

- a. Case of Delhi as a sub region is distinct when compared to other sub regions of NCR. Hence, NCT of Delhi has been dealt as a single urban entity in the RP 2021.
- b. Most of the observations pertain to typographical errors, formatting/ editing/ numbering/ map years etc. and reference of DRRP 2021 which was not notified as per Board decisions in 2019, which may be checked. Apart from these, the Draft Delhi SRP 2021 :
 - *i.* Needs to update NCR area details for both text and maps especially in Economic Scenario/Demographic profile & Settlement Pattern,
 - *ii. does not include NCZ updates, which may be taken up separately.*
 - *iii. Data may not refer to DRRP and information in SRP should strictly be in continuation of notified RP 2021 and related addendum*

- iv. Green areas not referred in notified RP 2021. Hence related land use like forest which are part of NCZ In RP 2021, may be taken up separately
- v. The expression 'Scope of work' mentioned in some Chapters be deleted.

(Action: GNCT of Delhi/DDA)

ii. Agenda 3.2 Sub-Regional Plan-2021 for additional districts of Haryana Sub-Region

Member Secretary brought out that as per decision of the 39th meeting of Board, the SRP - 2021 of additional areas of Haryana sub-region was to be notified by Govt. of Haryana after incorporating few observations like deleting reference to Kaithal since it does not form part of the NCR, and corrections in Population figures of Karnal as per Addendum to RP-2021 & NCZ. CCP, Haryana informed that after incorporating the necessary correction, SRP -2021 of additional areas of Haryana sub-region is submitted to the Government and will be published shortly.

After deliberations, Haryana was requested to follow-up on the matter and get the necessary action carried out at the earliest.

(Action: Govt. of Haryana/ Respective NCR Planning & Monitoring Cell)

iii. Agenda 3.3 Sub-Regional Plan-2021 for additional districts of Uttar Pradesh Sub-Region

Chief Coordinator Planner, NCR Cell, U.P. informed that after incorporating the comments of NCRPB the Draft SRP-2021 for of additional areas of U.P. sub-region was submitted to Govt. of U.P. on 04.02.2021 and the matter was being followed up.

The Committee requested the representatives from GoUP to expedite necessary action on the matter.

(Action: GoUP / Respective NCR Planning & Monitoring Cells)

7. AGENDA ITEM NO.4: STATUS OF DELINEATION AND GROUND TRUTHING OF NATURAL CONSERVATION ZONE (NCZ) AND NOTICES ISSUED UNDER SECTION 29(2) REGARDING NCZ

i. Agenda 4.1 Govt. of NCT Delhi

Special Secretary, Urban Development Department GNCT of Delhi while updating the status stated that the delineation of NCZ was is yet to be finalized and a meeting was taken by the Chief Secretary, Delhi on this matter, wherein it was decided that Revenue Department, GNCT Delhi will be the Nodal Department for NCT Delhi. Coordination among various departments / agencies will be done by this department for delineation and ground truthing of NCZ in NCT Delhi.

ii. Agenda 4.2 Govt. of Haryana

CCP, Haryana informed, that as decisions on some of the pockets where category is 'yet to be decided' in the ground truthing report is still to be taken, some more time would be required for finalization of NCZ.

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It was decided that the status of delineation of NCZ and ground truthing will be placed before the Board in its next meeting.

iii. Agenda 4.3 Govt. of Rajasthan

CTP, Rajasthan stated that after doing the exercise no variation has been found in the NCZ area. He further mentioned that SRP 2021 of Alwar district has more NCZ area (2237 sqkm) than RP 2021 (1285.46 sqkm) and requested to drop the notice issued on this matter. As per the District Collector, Alwar report stated that there is no variation. Further, coordinates of some locations had been sought from NCRPB which the concerned officer has clarified that we are unable to supply due to various reasons.

Committee recommended that matter be placed before the Board for consideration of the NCZ area submitted by Govt. of Rajasthan

iv. Chairperson also requested the Members for their views for delineation of NCZ in the newly added districts in NCR. CTP Rajasthan informed that there is only one new district (Bharatpur) has been added and suggested that delineation and ground truthing of the NCZ area should be left to the respective States. CCP, Haryana stated that Haryana views can only be offered after discussing the matter with the Principal Secretary, T&CP Department. She however informed that no exercise has been initiated on delineation of NCZ for the newly added districts of Haryana Sub Region in NCR. CCP, NCR Cell UP, informed that ground truthing with revenue record is not done in the additional areas of U.P. sub-region.

After deliberations, it was decided that all the NCR States may send their views on requirement of delineation and ground truthing of the NCZ in additional areas in writing to NCRPB.

(Action: Govt. of Haryana, UP and Rajasthan / Respective NCR Planning & Monitoring Cell)

8. AGENDA ITEM NO. 5: CONTINUATION OF NCR PLANNING AND MONITORING CELLS (NCRP&M Cells) IN NCR PARTICIPATING STATES

- i. Director (A&F) informed that a meeting was held on 19.02.2021 in this matter, wherein NCR Cells were asked to submit their outcomes on the Work Programme/Action Plan during 2017-2021 and efforts made by them to fill the vacancies. Cells were requested to submit a proposal for further course of action with details w.r.t. problems faced in filling up of vacancies.
- ii. Special Secretary, GNCT Delhi informed that matter had been taken up with the government and is pending, and department has no planners. Till date, GNCT of Delhi has been able to fill only one out of 5 sanctioned posts. *Committee suggested that NCRPB may write to Chief Secretary, Delhi requesting to look into the matter.*
- iii. Haryana informed that it faced problem of qualifications and that the qualifications / designations approved by the earlier Planning Committee meeting, may require modifications. Chairperson suggested that Govt. of Haryana may send a proposal for this purpose.

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- iv. CTP, Rajasthan informed that designation of the posts suggested by NCRPB is not agreeable by Govt. of Rajasthan due to which posts could not be filled up and requested that NCRPB may sanction few posts like GIS experts for outsourcing and appointment on contract basis. Director (DD), MoHUA suggested that trained manpower can be made available from institutions like SPA and all efforts should be made to fill in the sanctioned posts. Director, SPA stated that training / capacity building can be offered to the Jr. Planner/GIS Expert or JE level officers in SPA. Director, NIC suggested that along with the training of officers, required infrastructure (hardware and software) for GIS is also required to be ensured so that the trained persons can be used properly. Representative from TCPO mentioned that under the AMRUT scheme about 500 cities have been selected and about 600 people have been trained.
 - 8.1 After detailed discussion, Planning Committee recommended the following:
 - *i.* Continuation of NCR Planning & Monitoring Cells in NCR participating States, initially for 6 months. The matter will be placed before the Board along with recommendations of the Planning Committee.
 - ii. NCR Planning and Monitoring Cells may send proposal for requirement of two GIS posts in each Cell, with required qualifications along with issues being faced in states regarding qualification approved for filling up of vacant posts, with assurance that the vacant posts will be filled within 15-20 days of change. The proposal may be submitted to NCRPB for consideration by 05.03.21.
 - *iii.* NCRPB will consider providing centrally selected manpower assistance to NCR Cell, based on above proposal, on temporary basis for 3 months, initially and states should ensure their own selection in this period.
 - iv. A Committee be formed under the Director (A&F) with all NCR participating States to examine the matter of GIS post, providing of Hardware for GIS work. SPA may prepare a proposal for hardware requirement for GIS mapping for preparation of SRP / Master Plans by the NCR participating States.
 - v. Possibility may be explored to obtain fund for training of the GIS manpower under AMRUT scheme. Director (DD), MoHUA was requested to discuss the matter with the counterpart of AMRUT scheme in the Ministry in this matter.

(Action: NCRPB, Govt. of Haryana, UP, Rajasthan, and NCT of Delhi, SPA)

9. AGENDA ITEM NO.6: STATUS OF DELINEATION OF NATIONAL CAPITAL REGION

Representatives from both Haryana and Uttar Pradesh informed that their comments were under submission to respective State governments for approval.

Committee requested representatives from Govt. of Haryana and U.P. to expedite the submission of their Comments on the Draft Report on Delineation of National Capital Region at the earliest.

(Action: NCR Participating States of Haryana and Uttar Pradesh)

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10. AGENDA ITEM NO. 7: DRAFT REGIONAL PLAN-2041 (RP-2041) FOR NCR

- 10.1 Initiating discussion Chairperson mentioned that the copies of the Draft RP 2041 was circulated in first week of January 2021for comments and suggestion from the Nodal Departments of the NCR participating states . Subsequently, pre- policy sections namely, Introduction, Existing status and Key issues & Challenges of the draft Chapters were made concise and certain deletions/additions were also made in the circulated Draft RP204. A comparative statements has been prepared. She further mentioned the Committee will deliberate on the suggestions received from Govt. of Rajasthan, MoHUA and through NCRPB website. She added that after addressing/incorporating the comments and suggestions, the draft RP-2021will be placed before the Board for approval for inviting objections and suggestions as per the provisions of the NCRPB Act, 1985. Chairperson requested Prof.(Dr.) P S N Rao ,SPA and his Team of Professors to give detailed presentation on the Draft RP 2041.
- 10.2 The comments and deliberations which ensued on the subject are as summarized below: Prof.(Dr.) PSN Rao and his Team of professors made Chapter-wise detailed presentation before the Committee. The deliberations and recommendations are as under:
- 10.2.1 Committee noted that draft RP-2041 was prepared in-house based on the data received from the NCR participating States and inputs from Stakeholder Conclave & 17 Workshops. As per the decision of the 39th Board Meeting held on 05.10.2020 and Core Advisory Committee (CAC) meeting held on 05.01.2021, the draft RP-2041 was circulated to NCR participating States for comments and suggestions in first week of January, 2021 with a request to submit their comments and suggestions by 20.01.2021.
- 10.2.2 Comments and suggestions on Draft RP 2041 received from Govt. of Rajasthan and NCRPB's observations on the same were presented and deliberated.
- 10.2.3 The suggestions from MoHUA as made during a video conferencing (VC) held on 19.02.21, were also presented before the Committee and update taken
- 10.2.4 It was apprised to the Committee that Comments & suggestions on draft RP-2041 received over the weblink provided on NCRPB website have also been considered.

10.2.5 Decisions on Rajasthan suggestions A. <u>Decisions specific to Rajasthan</u>

- i. The suggestion "Component of migrants to NCT Delhi from Rajasthan is lowest i.e. 4.27% among NCR states. Density of Rajasthan sub-region is lowest i.e. 463 persons per sq. km among NCR states. Decadal growth of urban Area in Rajasthan sub region in lowest i.e. 36.22% among NCR states. Therefore, Rajasthan sub region has vast potential to absorb urban growth of NCT Delhi', can be added in Chapter II.
- *ii.* Kota to be added in the Table No.19.1 in the Chapter 19 as Education City/Coaching Hub under CMA table. Further, Kota Airport proposed in approved Master Plan of Kota, be also recognized in RP.

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- B. Decisions applicable to entire NCR
- *i.* A special scheme for development of small and medium towns could be thought of in the Plan like the Integrated Cluster Action Plans already there for rural development
- *ii.* Regarding SRP and DDP preparation, NCRPB can consider payment for consultants if needed, but the consultants need to be hired by respective States/NCRP&M Cells.
- iii. The State Level Steering Committee be used more efficiently to address the concerns of Rajasthan regarding preparation of District Development Plans and plan implementation through various agencies and State UD Department which is nodal department for NCRPB can also become the anchor point for all state departments, on behalf of the Steering Committee. This shall be applicable for all NCR states
- iv. On Highway/ Transit Oriented Development (TOD) Corridor Zones (HCZ), it was decided that ToDs as part of HCZs and green buffers shall continue. Further, HCZ to be delineated 01 km. either side of the highways / expressways starting from edge of highway or up to the outer boundary of intervening revenue villages, whichever is earlier. HCZ/TOD Zones shall be delineated by the respective NCR States Its plan shall be prepared by States within 18 months from the date of final notification of RP 2041.
- v. State shall make the negative list in respective SRPs in line with RP regarding activities in Agriculture (Rural) zone within and outside controlled/ development/regulated areas. This should be categorized as Rural Zone and not Agriculture (Rural).
- 10.2.6 In addition the matter of effective implementation of the policies and proposals of RP 2041 was deliberated and the Planning Committee also recommended that
 - i. The Committee further deliberated on the possible elements/sectors of RP 2041 for which Functional Plans can be prepared and suggested that NCRPB may attempt to prepare FPs on the important elements like (i) Transport (ii) Logistics (iii) Tourism (iv) Water Management (v) Drainage (vi) Comprehensive Waste Management (vii) Energy and Efficiency (viii) Ease of Doing Business in NCR (ix) Ease of Living and Smart NCR (x) Skill Development (xi) MSME (xii) Housing and Redevelopment.
 - *ii.* The Functional Plans to be finalized within one year of the notification of final RP-2041 or earlier and studies be commissioned for preparation of Functional Plans immediately to ensure their timely publication.
 - iii. For focused implementation of various Functional Plans and projects thereof, SPV formations could be explored in areas like Water, Sewerage, Tourism etc.by NCRPB and NCR constituent States, under supervision of various respective Committees like Committee of Transport Secretaries/Commissioners in case of Transport.
 - iv. the preparation of Sub-regional Plans 2041 for the NCR sub-regions should be started in advance by the NCR participating states and the Sub-regional Plan should be prepared within six months from the date of notification of the final Regional Plan 2041.

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- v. District Development Plans should be finalized within six months from the date of notification of the final Sub-regional Plan, or within one year of notification of the final Regional Plan 2041, whichever is earlier.
- vi. preparation of the Master / Development Plans of the towns should be started immediately by States in advance and notified within 6 months from the date of notification of the final SRPs of the respective NCR states. Officers from Haryana stated that they will discuss with their superiors
- vii. the perspective year of all the Master Plans / Development Plans will be 2041 to coincide the perspective year of RP-2041.
- 10.2.7 Decisions on MoHUA suggestions
 - *i.* Committee noted that Rejuvenation of Ring Rail in NCT Delhi has already been incorporated in in the Draft RP 2041.
 - *ii.* Regarding connectivity to the upcoming aviation hubs at Jewar and Hisar, it was recommended that spurs may be provided from proposed Elevated Ring Road in NCT Delhi and Circular Regional Expressways .The detail connectivity be incorporated in the Sub-regional and Master /Development Plans.
- *iii.* The suggestion of providing network of seamless Footpaths with adequate widths in all Metro Centres and Regional centres in NCR, incorporated in the Draft RP 2041
- iv. DDA/Delhi government /MCD to explore possibility to prepare complete integrated layout plans for entire Delhi, jointly. Meanwhile, a stock taking Exercise be initiated for 'as is', with regards to layout plans in place and areas for which it is still left, to understand the present/current situation, as Stage I, with the help of TCPO. It was suggested that this exercise may be carried out within next 6 months and use of Drone technology. DDA may take a call on this and provide its opinion.
- v. It was also suggested that similar stock taking exercise be undertaken as first stage for all Master/Development Plan preparation works, in all Metros and Regional Centers across NCR. NCRPB can also consider providing financial assistance as reimbursement for such onetime Stock Taking exercises being undertaken using drone technology. AMRUT / GoI funds may also be considered.
- vi. It emerged from discussions that Repeal of Delhi Land Reforms Act, 1954 is required for harmonious and planned development of Lal Dora areas of Delhi
- vii. Possibilities to bring sea water through pipeline to Delhi / CNCR from the nearest sea water source (e.g. Kandla) may be explored in order to meet the non-portable water requirements especially for large size industries, commercial establishment, etc. So that the fresh Water available in NCR can be reserved for portable purposes. However, it is also important to take all steps to conserve available water and ground water. This be added in the RP-2041.
- viii. With regard to providing health and educational facilities at affordable charges/fees it was recommended for mandatory earmarking /allocation of adequate Land and allotment in every ward of all metros and regional centers through lottery only to reputed institutions every two years, if unallocated, on land prices frozen on current level till next RP, on condition of reasonably priced health/ education services; this may

be ensured for every ward of towns with more than 01 lakh population and every town up to 1 lakh population, for primary and secondary Health care facilities as well as for primary and secondary educational facilities.

10.2.8 Comments & suggestions received over the weblink at NCRPB website

Comments & suggestions on draft RP-2041 received over the weblink provided on NCRPB website and remarks of NCRPB were also placed on record, discussed and Committee observed that most of the suggestions have been addressed in the Draft RP 2041. (Annexure II). With regard to creation of Common secretariat and shifting of Central Ministries/Departments outside Delhi to Chandigarh/ Kurukshetra/ Karnal, shifting of wholesale markets and economic activities, Committee felt that such shifting outside Delhi may not be feasible.

10.2.9 Chapter wise decisions/comments made during SPA, Delhi's presentation on RP 2041:-

Chapter 1: Introduction- Aims and Objectives: No comments Chapter 2: Demography and Settlements Pattern:

i. CCP, NCR P&M Cell, UP mentioned that in the circulated Draft RP 2041 Greater Noida has not been identified as Metro centre and RP 2021 had identified it as Metro Centre and suggested the Greater Noida be retained as Metro Centre in Draft RP 2041

Chapter 3: Economic Growth and Income Generation

- i. For Agriculture Sector, a network of Bulk Milk Coolers (BMC), with UHT based milk/milk powder plants is proposed in Agriculture chapter and can be mentioned here.
- ii. The proposal of Dadri-Noida Ghaziabad Investment Region (DNGIR) green field project from representative of UP was already part of draft RP-2041
- iii. NCR States to provide data on district wise GDP and Per Capita Income (PCI) for respective sub regions, for incorporation in the draft RP 2021
- iv. Committee also noted that in order to facilitate the migrant aspects, the draft plan had recommended Migrant Facilitation Centers (MFC) at cities and towns of NCR

Chapter 4: Transport and Mobility

- i. It was suggested that the proposed elevated road in Delhi should have spurs to provide access various locations of regional importance like Jewar and Hisar airport. In addition, based on feasibility, possibility of an elevated ring road beyond NCT Delhi may be also be explored.
- ii. Possibility of an additional highways supplementing NH-I in north-west side of NCR may be explored to offload NH-1.
- iii. Warehousing and Logistics be given Industrial Status which will enable development of warehousing and logistics infrastructure in NCR.
- iv. As regard the proposed loop around the cluster of villages for improving rural connectivity, it was suggested that this can be linked with Integrated Cluster Action Plans (ICAP) in NCR.
- v. It was noted that although Road safety policies are prepared and being implemented by the NCR States, road accidents are still very high in NCR. Rigorous efforts shall have to be made by all the NCR participating States to achieve the target of "Zero Road Death NCR".
- vi. Institutional arrangements suggested in the chapter were deliberated and need for state level committees to coordinate and monitor implementation of transport sector proposals in the sub regions, was emphasized.

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Chapter 5: Power: No comments

Chapter 6: Water and Drainage

- i. Efforts be made to reduce water consumption under agriculture by 75-80% and accordingly also strive for increasing Water Reuse from 30% in Delhi to 50% in all urban areas by 2026, 70% by 2031 and 85% by 2036.
- ii. Explore usage of existing abandoned dry canals for laying pipelines etc. so as to avoid extra cost of land for fresh water related projects.
- iii. States to provide data on district wise water availability and water treatment facility data for respective sub regions, for incorporation in the draft RP 2021
- iv. Earmarking of flood plains be carried out by the NCR participating states in their respective sub-region as being carried out in NCT Delhi.

Chapter 7: Sanitation and Waste Management

- i. Policy regarding Zero landfill site may be deleted and land fill site could termed as Waste Management site.
- ii. Target for ODF ++ by 2025 for Metro and Regional Centres, and by 2031 for rest of towns in NCR be incorporated in Draft RP 2041.
- iii. Committee also noted that there is a proposal to have for Extended Producer Responsibility (*EPR*) nodal coordinators in each district, ward in towns and cities and in each village for all companies.

Chapter 8: Agriculture and Allied Activities: No comments Chapter 9: Rural Development: No comments Chapter 10: Health: No comments

Chapter 11: Education & Skill Development

- i. Committee appreciated the proposal regarding Migrant Facilitation Centres (MFC) which will also act as Skill Registry Office at each District /Tehsil/Block Headquarter with digital platform linked to Aadhar and capture skill of residents & migrants. It was noted that this should also be linked to soft skill training videos, and should be used for assisting migrants (going out & coming) and should be having details of ration cards, etc. too for buying.
- ii. It was also informed there is proposal to have National Skill Development Council (NSDC) / Sector Skill Councils appointed District Skill Coordinator in each NCR district to assist DM/DC in working of District Skill Registry Centers along with other staff for better synergies. The District Skill coordinator shall either be in charge of the MFC or shall closely liaise with MFC head, and shall be located at MFC. The MFC shall be either at district headquarter or any other location as finalized by DM/DC of the district.
- iii. States to explore possibility of having another IIM in NCR possibly in Bharatpur or districts of UP sub region.

Chapter 12: Sports & Social Support

i. States to check the sports related data in the draft chapter and provide updations as necessary for respective sub regions, for incorporation in the draft RP 2021

- ii. Norms/policies be incorporated in SRPs to facilitate Private Sports Facilities/ Academies in respective NCR sub regions
- iii. Play areas be mandatory in all group housings and distinct from greens which shall be part of 10-15% open areas.

Chapter 13: Safety Security & Disaster Management

i. It is desirable that Common Policing Arrangement be explored for NCR and a Senior Police officer of NCR states can be appointed as head of such an arrangement, on rotation basis, to address the safety concerns of NCR citizens.

Chapter 14: Heritage & Tourism: No comments

Chapter 15: Environment

- i. States should set a minimum area for land to be reserved for green in each residential area such that it is at green spaces constitute at least 10% of the overall land cover of the area. The same be elaborated in SRPs.
- ii. Regarding 33% forest cover target at national level, it was decided that this may not be applicable in NCR as it has a different character, and is already the largest GDP contributor to the nation. However, this aspect can be covered under Govt. of India initiative, in the plan.

Chapter 16: Digital Infrastructure

- i. A Digital platform may be created at NCR level which will act as a Coordination and Facilitation Centre, with subset centers in each sub region, for sub regional coordination and monitoring.
- ii. The complete list of proposed digital platforms which earlier formed part of annexures, was read out and committee decided that this may be part of main chapter

Chapter 17: Housing and Habitat

- i. Affordable Rental Housing Complex Funds (ARHC) funds may also be utilised for workers' accommodation wherever feasible.
- ii. Planning committee suggested that monetary penalty be levied and paid by owners of properties which were hitherto vacant for five years (instead of earlier proposed three years), and, if such properties are put in rental use they may be given some rebate in such a way so that the vacant property tax paid by the owner is given back to the owner in an equal number of years, as a rebate against the penalties payable by him. This rebate could be admissible in monthly property tax payments; provided that such rebates in any month shall not be higher than the maximum monthly charged penalty in the past.
- iii. High FAR with no height restriction be considered in NCR
- iv. Committee also noted the proposal that each NCR participating States should ensure that the External Development Charges (EDC) are spent at site of respective projects and the required infrastructure is developed within and outside the housing projects. No diversion of EDC be allowed and mechanism be developed that any violation in this regard attract penalty. No physical possession/completion certificate be given without completion of external infrastructure.

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Chapter 18: Policy Zones and Land Use

- i. Instead of Agricultural Zone, expressions "Rural Zone" be used in the Zoning.
- ii. It was agreed that NCR needed an innovative land use plan and not land use planning as usual.

Chapter 19: Counter Magnet Areas: No comments

Chapter 20: Implementation Strategies

- i. SPA agreed to develop a Coordination Matrix for overall coordination of RP-2041 Implementation.
- ii. Checklist for preparation of SRP, District Development Plan, Master /Development Plan may be prepared by SPA, it will help NCR States to prepare these Plans within the time frame as recommended in the draft RP-2041.
- iii. Since RP 2041 Data Annexures are in very large volumes and these would be useful for preparation of lower hierarchy of Plans in NCR, it was suggested that the entire data annexure can be uploaded on the NCRPB website as a part of RP 2041 while the Policy Annexures of RP 2041 will remain with the main document. These Annexures can also be provided as a CD in a jacket in RP document.
- iv. Perspective year of all Master /Development Plan in NCR should be in line with the perspective years of Regional Plan i.e. 2041.
- v. All Master/ Development Plans including Master Pan of Delhi-2041 shall be compulsorily prepared on GIS platform and shall have to be in conformity/ sync with the Regional Plan-2041 policies and its horizon year. In case of AMRUT towns in NCR, second phase of Master Plans be targeted for the horizon year 2041, in sync with the RP-2041.
- vi. As per one of the policies, in keeping with the spirit of Section 29(1) of NCRPB Act, 1985, all Draft Master//Development Plans will have to be sent to NCRPB for its comments and finally "No Objection Certificate" (NOC) before being published for public objections & suggestions and again, for similar action, before their final notification. Representative from GoUP however, suggested that the proposed policy of giving NOC may be reviewed and only 'intimation' be made mandatory. Board secretariat intimated that this aspect had been taken up in Courts as well and in one case, Board was even directed by Hon'ble High Court to approve Master Plan in spirit of Section 29(1) of the NCCRPB Act. So as per Section 27 of the NCRPB Act, which has overriding effect over any other law and resolution of this aspect was important to be covered in Draft RP 2041, or else the Act would need amendments. Hence under this background, the policy for NOC for Master Plans has been included in Draft Regional Plan; however, States may suggest any other word conveying similar legal effect. Representative from GoUP assured to revert back expeditiously, on this.

10.2.10 After deliberations the Committee decided that:

- *i.* All the above suggestions may be considered and incorporated in the Draft RP 2041.
- ii. Copies of presentation made during the meeting (refer Annexure III), which is not exhaustive but has merely attempted to cover major points of Draft RP-2041 policies, and as updated as per decisions, be shared with members. This however should not be considered as the only policies/aspects highlighted in the draft RP 2041 and main document need also be referred. Revised draft Regional Plan 2041, as per Planning

Committee decisions may also be shared with Planning Committee members.

iii. The Draft Regional Plan 2041 thus revised, is recommended to be placed before the Board seeking its approval for inviting public objections and suggestions as mandated under NCRPB Act 1985, along with observations of Haryana given initially.

(Action: NCRPB & NCR Participating States)

11. AGENDA ITEM NO. 8: GEO-PORTAL FOR NATIONAL CAPITAL REGION

- 11.1 A quick brief on the Agenda on Geo-Portal for National Capital Region (NCR) was given to the participants by DD (Tech.-AS). Further Dy. Director General (DDG), NIC gave technical brief on the Portal and also requested the participants to provided their feedback so that the next phase of the Portal can be developed accordingly. The brief introduction was followed by a very exhaustive presentation Mr. Mishra, Scientist 'F', NIC. Mr. Mishra displayed all the 176 layers on the Web Geo-Portal along with various the base maps. He also explained in detail the statistical data attached to these variety of layers. While presentation the DDG also apprised the participants that for effective utilization of this massive database available in the Portal, software customization has also been carried out by NIC, for example "Area of Interest", "Swipe/Spotlight Tool", Elevation Profile", etc.
- 11.2 Mr. Monis Khan, T&C Planner, TCPO apprised the Committee that under the scheme AMRUT of Govt. of India, GIS database has been developed for few towns/cities which fall in NCR. Chairperson advised that this database be provided by TCPO to NIC for integration in Geo-Portal. DDG, NIC mentioned that enhancement of Database on the Geo-Portal will strengthen the NCR participating States in preparation of GIS based Plans.
- 11.3 After the presentation was given by NIC, the Chairperson requested participants to submit their views/comment and following were the comments offered by the representatives.
- 11.4 TCPO representative stated that it is a very useful application developed by NCRPB and that more query building options be provided. He suggested that it would be better if dynamic user defined query building option is provided in the Portal. NCT of Delhi representative mentioned that Geo-Portal for NCR will be a very helpful Portal for Govt. Departments as well as Public, especially by Local Bodies. Representative from UP suggested that a query building options and various scales at Regional, Sub-Regional and Master Plan/Local level. Representative from DDA invited attention towards updation of vector data from various sources as that would be helpful.
- 11.5 Looking at the presentation, listening to the feedback and comments from all the participants, the Chairperson directed that Source of the data be mentioned on every layer on the Portal by NIC, Bharat Maps be linked in the Geo-Portal. Comments be given by the States within one week.
- 11.6 DD (Tech.-GIS) with permission of the Chair apprised all the participants that this Web Geo-Portal may be referred for planning purpose but not for legal purpose and may not be treated as legal document on web. He also added that there is lot of updated data available on Geo-Portal which has been obtained from various sources but updation of the Portal would be a continuous process and data would keep on changing/updating. Therefore, it would be right time for launch of this Geo-Portal for National Capital Region.

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11.7 After all the deliberations, the Committee decided that

- *i.* Database be provided by TCPO to NIC for integration in Geo-Portal as applicable
- *ii.* Geo-portal Login credentials be created by NIC for NCR States Planning & Monitoring Cells, SPA, TCPO and DDA. Participants from States need to provide data w.r.t. Sports, Industries and various categories of Schools at the earlies, along with their suggestions for incorporation in the Portal, within one week.
- iii. As regards NCT of Delhi, GSDL GIS database will be linked with Geo-portal when received through the Govt. of NCT of Delhi. Special Secretary, GNCTD assured to examine this.
- iv. Source of the data be mentioned on every layer on the Portal by NIC, Bharat Maps and the Geo-Portal be linked. NIC agreed to add this including Dynamic User defined Query builder, immediately.
- v. Geo-Portal for NCR be placed in the Board meeting for Launch.

[Action: NCR States, TCPO, DDA, NIC and NCRPB]

12. AGENDA ITEM NO. 9: ANY OTHER POINTS

- 12.1 In addition, the Table of Differences made in policies subsequent to sharing of Chapters with states. Planning committee also decided that the changes suggested during the deliberations, may also be added to the 'Table of Differences'. Accordingly, the 'Table of Differences' covering the changes done, based on the discussions during Planning Committee meeting and changes done earlier, are annexed at **Annexure IV**.
- 12.2 Further, Member Secretary informed that information on passenger tax, vehicle tax and road tax of all NCR participating States for RCTA Agreements are awaited. NCR Cells were requested to follow up the matter with concerned departments and provide these details at the earliest.
- 12.3 Chairperson thereafter thanked all members and participation for the exhaustive deliberation made during the course of the meeting and reiterated that the support and collaboration of NCR states was very important to successfully plan and implement the futuristic Regional Plan 2041.

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The meeting ended with a vote of thanks to the Chair.

Annexure-I

List of the participants of 69th Planning Committee Meeting held on 23.02.2021

Chairperson		
1	Smt. Archana Agrawal, Member Secretary, NCR Planning Board	
Membe		
2	Shri A K Singh, Principal Secretary, Town & Country Planning Deptt. Govt. of Harvana (through Video Conference)	
3	Shri Rahul Kashyap, Director (DD), Ministry of Housing & Urban Affairs	
	representing AS(D), MOHUA representing Additional Secretary (D), MonUA	
4	Additional Chief Secretary (UD), GNCTD	
5	Mala Shrivastava, Special Secretary, Housing & Urban Planning Department, UP- representing Principal Secretary (H&UP Dept.), GoUP (through Video Conference)	
6	Shri Anoop Shrivastava, CTP, UP (through Video Conference)	
7	Shri Vinay Kumar Dalela, Chief Town Planner, NCR, Town & Country Planning Deptt Govt of Rajasthan	
8	Dr. K. Srirangan, Addl. Commissioner (Planning), Delhi Development Authority- representing Vice-Chairman, Delhi Development Authority	
	Mohd. Monis Khan Town & Country Planner, Town & Country Planning	
9	Organisation- representing Chief Planner, Town & Country Planning Organisation	
Co-opt	ed Member	
10	Dr. Rajendra Kumar, Deputy Director, Ministry of Environment, Forest & Climate	
1	Change representing Joint Secretary, MoEFF&CC.	
11	Shri Rakesh Desai, Director, NITI Aayog	
SPA		
12	Prof. Dr. P.S.N. Rao, Director, School of Planning & Architecture, New Delhi	
13	Shri Rabidyuti Biswas, Professor, School of Planning & Architecture, New Delhi	
14	Shri Ashok Kumar, Dean (Academics) and Professor of Planning, School of Planning & Architecture, New Delhi	
15	Ms. Sanjukkta Bhaduri, Dean (Research) and Professor of Urban Planning, School of	
	Planning & Architecture, New Delhi	
16	Ms. Meenakshi Dhote, Professor (Environmental Planning), School of Planning &	
	Architecture, New Delhi	
17	Shri Sanjay Gupta, Professor (Transport Planning Deptt.), School of Planning &	
	Architecture, New Delhi	
NIC		
18	Shri Vishnu Chandra, Deputy Director (General), NIC, New Delhi	
19	Shri J.K. Mishra, Scientist-E, NIC, New Delhi	
DDA		
20	Ms.Alka Arya, Deputy Director (Planning), Delhi Development Authority	
21	Ms.Tulika Gopal, Planning Assistant, Delhi Development Authority	
TCPO		
22	Ms. Abha Agarwal, Associate Town Planner, Town & Country Planning	
	Organisation	

Govt. of	NCT of Delhi	
23	Shri Vinod Thukral, Dy. Commissioner, Transport Deptt., Delhi.	
24	M D Liakat Mondal, Assistant Director, Public Works Department, GNCTD	
Govt. of	Haryana	
25	Ms. Gurmeet Kaur, Chief Coordinator Planner, NCR Planning & Monitoring Cell,	
	Haryana (through Video Conference)	
26	Shri Vijay Kumar, District Town Planner, NCR Planning & Monitoring Cell,	
	Haryana (through Video Conference)	
Govt. of	Rajasthan	
27	Shri Mahendra Meena, Assistant Town Planner, Town Planning Deptt., Govt. of	
	Rajasthan (through Video Conference)	
Govt. of	Uttar Pradesh	
28	Shri S C Gaur, Chief Coordinator Planner, NCR Planning & Monitoring Cell, UP,	
	Ghaziabad.	
Counter	Magnet Area	
29	Shri Sanjay Kumar, Distt. Town Planner, PUDA, Patiala	
NITI Aayog		
30	Ms.Anshika Gupta, Senior Associate,	
AMDA		
31	Shri Totak Acharya, Asstt Director (Plg.), AMDA	
NCRPB		
32	Shri Jagdish Parwani, Director (A&F)	
33	Shri J.N. Barman, Consultant	
34	Shri Abhijeet Samanta, Deputy Director (Tech.)	
35	Shri Nabil Jafri, Deputy Director (T-GIS)	
36	Smt. Nilima Majhi, Deputy Director (Tech.)	
37	Shri Ramesh Dev, Deputy Director (URP)	
38	Shri Ajitabh Saxena, FAO	
39	Ms.Shilpa Vijayvargia, Deputy Director (I/C) & Consultant (Admn.)	
40	Shri Satyabir Singh, Assistant Director (Tpt.)	
41	Shri Amardeep Gupta, Consultant (GIS)	

Comments/suggestions received over the weblink provided on NCRPB website

Annexure II

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Date 1. Shri Vishu Chikara vishuchikara48@gmai l.com; 12 Feb, 2021	1. Plan an outer peripheral expressway that will be 50 km radially outwards of the existing KMP.	Two Circular Regional Expressway (CRE-II and CRE-III) has been proposed to be developed as Growth Corridors and Opportunity Area, beyond existing KMP Expressway for balanced development of NCR which are: This has been addressed in the Chapter "Transport and Mobility" of Draft RP-2041.
	 Concept of greater Delhi will help in the construction of good social infrastructure. 	CNCR area will be defined as area from the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal expressway (KMP) up to 5 Km beyond first ring of expressways. This belt of CNCR around NCT Delhi shall form the "Ring of Opportunity" for both NCT Delhi and rest of the NCR on either sides. This has been addressed in the Chapter "Policy Zones and Regional Land Use"
	3. Extending metro rail services to the Class I towns like Baraut.	Efforts be made to develop a separate suburban passenger transport from the rest of the network and put a light rail transit system, metro lite, rubber-tyred Metro rail, Monorail, Neo Metro etc. in place in all major urban areas under local governments across NCR This has been addressed in the Chapter "Transport and Mobility"
	4. Keep all the industrial zones on the eastern and southern sides of NCR as the wind patterns in and around Delhi will help to wash away pollution from the densely populated areas.	There is no specific zone identified in the draft RP-2041 for Industrial activities. Specific Industrial areas/zones to be earmarked in the Master /Development Plans by the NCR participating States. This has been addressed in the Chapter "Economic Growth and Income Generation"
2. aryansinghlather@gm ail.com, 9 Feb, 2021	 Suggestions for development of Jind, Haryana: 1. Jind have highest number of National Highways in Haryana but still at present none is 4 lane so make all these roads 4 lane 	It has been proposed in the draft Regional Plan-2041that up-gradation of all National Highways falling in NCR be carried out by the Ministry of Road Transport and Highways or as part of NHDP or other programmes. This has been addressed in the Draft RP-2041.
	 Remaining Bypass of 9 km must be completed for hassle free commute. 	It is recommended in the draft RP-2041 to have extensive Bypass system around all urban and large rural settlements above 5000 population in NCR by 2026. This has been addressed in the Draft RP-2041

Name/	E-mail ID &	Suggestion received	Observations on Suggestions
Date			
		 Improvement of Rail network for supplier of milk products is also non-existent and agro based industries. 	Draft RP-2041 has proposed that joint efforts should be made by the NCR participating states to harness the regional potential of dairy sector and make the NCR a hub of dairy products of export quality. This has been addressed in the chapter on It has also been proposed Orbital Regional Rail Corridor III connecting Jind. This has been addressed in the chapter "Agriculture and Allied Activities" and "Transport and Mobility"
		 Institute of Eminence, Central Govt. Institutes should be placed in Jind District along Highway. IMT should be set up in Jind to create jobs 	It has been proposed that Economic growth corridors should be developed along all major expressways, orbital rail corridors, National Highways, freight corridors, etc. in NCR. This shall enable optimum exploitation of the potential and synergies generated by such large connectivity investments. Major identified/ proposed connectivity investments which could be studied for establishment of Economic Growth Corridors in NCR. Circular Regional Expressway No.3-(CRE-III) is passes through Jind district. This has been addressed in the chapter on "Economic Growth and Income Generation" of draft RP-2041
		 Bullet Train stoppage of Delhi katra rail line should be in Jind also as Delhi katra highways also crosses Jind 	The Draft RP envisaged high speed, high frequency and high capacity transit network in NCR. This has been addressed in the chapter on "Transport and Mobility"
		7. Green Cover must be increased at war footing to wipe off the tag that Jind is most polluted city in the World.	Policies and proposals to enhance the green spaces in NCR have been proposed in the draft RP-2041. This has been addressed in the chapter on "Environment".
		8. No East-West connectivity of either rail or road transport is available in Haryana so Sirsa - Jind - Panipat expressway is the need of time.	Jind –Panipat reticular road is proposed. This has been addressed in the draft RP-2041.
		9. An Army College / Training Institute should be setup in Jind	Policies for setting up/establishment of colleges/institutions have been proposed. This has been addressed in the chapter on " Education and Skill Development" of draft RP-2041.
		10. Providing of good medical facilities in Jind.	Policies and proposals for improvement of medical facilities in NCR have been provided. This has been addressed in the chapter on "Health" of draft RP-

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Date		2041.
	 Also airport is under works so high speed connectivity between Jind & Hisar is essential. 	It is proposed in the draft RP-2041 that necessary steps be taken to strengthen connectivity amongst CMAs, Metro Cities and Regional Centres through NH/ Expressways and railways. Hisar is identified as CMA and Jind as Regional Centre. This has been addressed in the chapter on "Transport and Mobility Chapter"
<u>3.</u> ashurd335@gmail.co <u>m</u> ; 11 Dec. 2020	 Improving the transport infrastructure (both roads and railways) to provide 24*7 connectivity to Delhi from the last points of NCR. 	Policy for improvement of connectivity through Road and Rail has been incorporated. This has been addressed in the chapter on "Transport and Mobility Chapter"
	2. Extend the RRTS System, from Panipat to Karnal and from Rewari to Narnaul along the NH 11, it will connect the AIIMS Rewari also.	Draft RP -2041 has proposed that all metro centers and Regional Centers to be connected with RRTS based on Feasibility studies. Panipat, Karnal and Rewari are proposed Regional Centers. This has been addressed in the chapter on "Transport and Mobility Chapter"
	3. Delhi NCR Outer Ring Road	EPE and WPE proposed in the RP-2021 is functioning. In addition, two more Circular Regional Expressway have been proposed in the draft RP-2041. This has been addressed in the chapter on "Transport and Mobility Chapter".
4. Anuj Bansal <u>aggarwalmitramandals</u> <u>hamli@gmail.com</u> ; 15 Nov. 2020	Request has been made to Hon'ble Chief Minister of U.P. for future investment in west U.P. and Dehradun	No suggestion has been given for Regional Plan-2041.
5. Ankush Kuma	1. Scrap NCR concept and make NCR a complete State.	Creation of NCR as a complete State is not within the purview of NCRPB
r <u>ankushkumar1301@g</u> mail.com; 23 Oct., 2020	2. Population of Delhi is very high and nearby areas can be used for living purpose.	Policies and Proposals for improvement of physical and social infrastructure in other parts of NCR have been incorporated in the draft RP-2041.
	3. The schemes or the benefits are not reaching to the last point of NCR such as Karnal and Shamli.	Projects for benefiting the outer districts including Karnal and Shamli are incorporated in the Draft RP-2041
6. Sanjeev Ailawadi	The Development Plan 2011 for Faridabad was published much before publication of Plan by NCRPB, however the fact that extent	It may be noted that as per the decisions of the Board, NCZ areas is to be delineated by the NCR States.

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Date <u>s_ailawadi@hotmail.c</u> <u>om</u> 18 Oct., 2020 7.	of Aravali in Faridabad district has been determined therein. NCRPB has no legal mandate to over-rule the Development Plans already finalized by constituent States prior to publication of Draft Plan and finalization of terms of reference at the end of NCRPB. In view of above, request has been made to note that the areas included in development zone prior to publication of final Development Plan by NCRPB have to be left out from the ambit of NCZ under all circumstance. Tehsil Khair of Aligarh district should also be included in NCR	Delineation of NCR is in process. In both the Options (I and II), Tehsil
suneelmtr1995@gmail		Khair (part) is proposed for inclusion in NCR.
<u>.com;</u> 7 Oct., 2020 <u>8.</u> <u>rsheoran421@gmail.c</u> <u>om;</u> 18 Sept., 2020	At present all the factories of NCT Delhi needs to be shifted out. Charkhi Dadri have a lot of potential as it situated at a very good place which is a tri-junction of IGI International Airport, Hisar International Airport, Dedicated Freight Corridor and Delhi- Mumbai Industrial Corridor, cheap land (not fertile) and good connectivity (NH 148B, NH 152D and NH334B with Delhi). Charkhi Dadri is the mining hub of Delhi NCR region that means here is abundance of raw material for development of new factories and one of the most educated district of Haryana which means skilled labour is available here.	Draft RP-2041 is being prepared for the present notified areas of NCR. It has been proposed in the Chapter on Economic Growth and Income Generation of draft RP that <i>Economic growth corridors should be</i> <i>developed along all major expressways, orbital rail corridors,</i> <i>National Highways, freight corridors, etc. in NCR. This shall enable</i> <i>optimum exploitation of the potential and synergies generated by such</i> <i>large connectivity investments.</i> Circular Regional Expressway No.3- (CRE-III) is passing through Charkhi Dadri district. Industries as prohibited by State Pollution Control Board will continue to be prohibited in Delhi. Industrial clusters as identified for spatial dispersal of industrial base should be developed across NCR. This has been addressed in the chapter on "Economic Growth and Income Generation"
9. Rita Sagar <u>ritasagar1984@gmail.</u> <u>com</u> ; 18 Sept., 2020	The Capital City has a concentration of government offices of various tiers and many of these actually need not be here. Such as Director General of Civil Aviation, Ministry of Skill Development, DGFT, Ministry of Tourism, Ministry of Health, Ministry of Power, Ministry of Water, ITBP, CISF, SSB, BSF, ICG, ICAR, ICMR, ICHR, SAIL, BHEL, COPES and so many others. Therefore requested to reconsider your idea of making COMMON SECRETARIAT and instead shift Non-core Central Ministries out of Delhi. Just try to shift offices to other states. It will lead to development of other regions too. Further, the land will be provided by State Governments free of cost that will further make prime land of Delhi free which can be used for rental purpose or can be sold for Billions of Rupees.	 There is no proposal in the draft RP-2021 for making Common Secretariat and shifting of Central Ministries (either fully or partly) outside of Delhi. Planning Committee may take a view.

Name/ E-mai Date	il ID &	Suggestion received	Observations on Suggestions
		It is humbly prayed to shift Central Ministries (either fully or Partly) out of Delhi may be in Kurukshetra/Karnal/Chandigarh making Delhi a viable place to live for the natives of Delhi.	
10. Shobhit shobhitbatra@g om; 5 Aug 2020	<u>gmail.c</u> 0	 Focus Points (Forestation & Increasing Water Table): 1. Aggressive plantation process with online monitoring system be developed. Every small & big space to be utilized within the city for trees and there should be some kind of incentive or any policy or idea which inspires people to do plantation in extreme nos. and target to make the place as dense forest 	It is proposed in the draft RP-2041 that <i>Road side plantation and social plantation programmes need to be undertaken by involving all concerned agencies and community such as eco-clubs of schools, Resident Welfare Associations (RWAs), etc. to increase the overall green/ tree cover in NCR. Further, proposed that Activities like intensive tree - plantation programme be initiated in barren/waste land/ hills.</i> NCR states should ensure that Environmental Monitoring is being carried out regularly and adequate number of well-equipped laboratory for Air, Water, Noise quality analysis are set up across urban and rural areas of NCR and online Real Time Monitoring System (RTMS) for monitoring of various environmental qualities, is effectively and efficiently implemented and made operational. Continuous Weather Monitoring Station be mandatorily established at each district of NCR.
		2. Water is very clearly seen as a major problem in the near future,	Allocation of Commercial, Industrial, Residential areas is under the
		 All roads should have efficient planning for rain water harvesting. 	This has been addressed in the draft RP-2041.
		4. Planning and traffic management should be so planned that we should not need flyovers in the upcoming developing areas.	Policy for construction of flyovers has not been proposed in the draft RP-2041, except the Elevated Outer Ring Road (EORR) in Delhi. Only identified the new/missing road/rail links . This has been addressed in the chapter on "Transport and Mobility "of draft RP- 2041.
		5. Yamuna & Hindon adjoining areas to be immediately relocated and these both to make nice river beds on Gujrat model.	Floodplain Development of Yamuna and Hindon as per Hon'ble NGT guidelines has been proposed in the draft RP-2041. This has been addressed in the chapter on "Environment".
11. S Mukkavilli	Shankar	Model Economic Township limited (METL) formerly Reliance Haryana SEZ Limited has planned development of an Industrial	CNCR area will be defined as area from the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
<u>Shankar.Mukkavilli@</u> <u>ril.com;</u> 3 Aug. 2020	Township over an area of about 8000 acres in the industrially backward Jhajjar District of Haryana. This Project has the potential to generate direct employment of about 1.5 to 2 lakh and indirect employment of about 2 to 3 lakh which will induce substantial development in the area, including residential, commercial and associated social & recreational infrastructure. In this regard following are suggested: Suggestions related to Landuse Plan: left side of the KMP Expressway should be declared as an Industrial Township with different land uses to be decided by approvals to be given by Haryana Town and country planning department. This needs to be	expressway (KMP) up to 5 Km beyond outer edge of the ROW of this first ring of expressways. This belt of CNCR around NCT Delhi shall form the "Ring of Opportunity" for both NCT Delhi and rest of the NCR on either sides. This has been addressed in the chapter on "Policy Zones and Regional Land Use" Details of industrial townships are to be dealt in the sub-regional plans.
	 incorporated in the Regional Plan. Suggestions related to Road Connectivity: State Highway 15A needs to be declared as a National Highway. SH-15A and MDR 136 should be widened to 6 lanes in view of increasing passenger and goods traffic for which land is already acquired and available at site. The connectivity from Northern Peripheral Expressway to AIIMS campus need to be improved as it is crucial to improve connectivity from KMP to Gurugram. Improved regional linkages, Bahadurgarh- Badli- Yakubpur (via Phelpha and Sondhi NCR roads)- Pataudi Haily Mandi road be widened to 6 lanes within ROW of existing roads. At least 4 lanes Service Road on both sides of KMP expressway shall be made, as per provisions in original cross-section of KMP Expressway for which land is already acquired and available at site. The Road connectivity from Farukhnagar railway station to AIIMS Badhsa campus is to be improved through Mubarikpur village for providing connectivity to patients through Rail. Road Side Facilities and amenities along KMP expressway: Especially to long distance traffic in case of accidents and breakdown of vehicles. 	 Policy for widening of all NH/SH has been given in the plan on 'Transport and Mobility' chapter. It is also proposed that all missing links needs to be taken up on priority for completion both at intra city, inter- city as well as intra and inter region levels. The sub-regional plans should prepare a comprehensive list of missing links of National and State highways, major district roads and bypasses along with major rail links in the sub-region with maps. Service lanes be mandatory provided along all NH, SH and Expressways, etc. for Non- Motorised Transport (NMTs), all non-four wheelers, etc. by 2026. Vehicles accident Recovery lanes shall also be provided. It should be made in 2 years on all NHs/ Expressways and in 05 years on all SHs, across the region. This has been addressed in the chapter on "Transport and Mobility" Draft plan proposed development of Highway Facility Centres (HFC) on a comprehensive basis. Vehicles accident Recovery lanes has also been proposed It should be made in 2 years on all SHs, across the region. This has been addressed in the chapter on "Transport and Mobility"

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Datt	Suggestions related to Rail Connectivity: In view of urbanisation being induced by Haryana Govt between Farukh Nagar and Jhajjar, it is now essential to complete this missing link between Farukh Nagar and Ihajjar. Further, in order to	Orbital Rail Corridor-I, II and III has been identified and proposed in the draft RP-2021. This has been addressed in the chapter on "Transport and
	bypass the passenger and goods Rail traffic outside Delhi, there is a proposal of Rail connectivity along KMP Expressway. This may be incorporated NCR RP 2041.	Mobility" of Draft RP-2041
	Metro Connectivity: In view of setting up of AIIMS medical centre in revenue estate of village Badsa, it is desirable to provide a new metro link between Najafgarh- Badsa - Dwarka expressway	New Metro Link between Najafgarh-Badsah (where new AIIMS is coming) – Dwarka Expressway has been proposed.
	(metro link on this 150 mt wide expressway is already approved), so that the public may avail of this transport facility for medical purpose apart from providing a new regional transport link. As the area of district Jhajjar is fast developing between Bahadurgarh- Badli - Farukh Nagar -Gurgaon, thus for fast and better regional connectivity it is desirable to develop a new metro link in the area.	This has been addressed in the chapter on "Transport and Mobility" of Draft RP-2041
	Power generation and distribution- Since land for 100mt ROW and 30 mt green belt on both sides of KMP Expressway is acquired and most of the land is lying unused at site, this shall first be protected and be used for solar/ wind power generation along with high voltage distribution lines for power supply in the Sub Region.	Green buffers Zone planning area has been proposed in the draft RP-2041, which is beyond the ROW of the connectivity network on either side of the Expressways, National Highways, SHs, Railway Lines or as per the prevailing policy of MoRTH, State Governments and Railways respectively In this zone, no residential/ institutional activities will be permissible except agriculture/horticulture/fuel station/EV charging/highway amenity centre/emergency medical care/emergency evacuation services/disaster vehicle recovery services/service roads/approach roads/toll plaza/police and security posts/bus queue shelter etc. This has been addressed in Draft RP-2041
Anuj Bansal aggarwalmitramandals hamli@gmail.com; 16 July, 2020	Request has been made to Hon'ble Member of Parliament, Baghpat, Dr. Satya Pal Singh for establishment of Google Hub in Baghpat, Shamli and Saharanpur districts of U.P.	This is not a specific suggestion on Draft RP-2041.
Anuj Bansal aggarwalmitramandals hamli@gmail.com; 25 July, 2020	Request has been made to Hon'ble Member of Parliament, Baghpat, Dr. Satya Pal Singh for establishment of IT Hub in Baghpat, Shamli and Saharanpur districts of U.P.	This is not a specific suggestion on Darft RP-2041.

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
14. Anuj Bansal aggarwalmitramandals hamli@gmail.com; 30 June 2020	Request has been made to Hon'ble Chairman of NCRPB to open AIIMS in Baghpat, IT hub on NH709B (Baghpat-Baraut- Shamli- Saharanpur) and Industrial Corridor on EPE Connected NH 709 B (Baghpat-Baraut- Shamli- Saharanpur)	Saharanpur district is not part of NCR. In the draft RP-2041, there is no mention of IT hub along Baghpat-Baraut- Shamli. However, it has been proposed in the Chapter on Economic Growth and Income Generation that <i>Economic growth corridors should be developed along</i> <i>all major expressways, orbital rail corridors, National Highways,</i> <i>freight corridors, etc. in NCR.</i>
15. N. R. K. Sinha nrks2002@gmail.com; 22 June 2020	 The common boundary walls of adjacent houses, not on their passages, be identified to locate envisaged sewer pits locations. Similar to sewer line, a rain water line be laid along the plotting so that resident need not to become complacent due to addition cost on account of pit digging Storm water pits should also be made along the rain water line so that water wastage could be minimized effectively. Conduits for Internet cable be laid along the house so that no future digging, or road cutting takes place. A large dia pipe be laid from nearest electric pole to the house junction walls to avoid overhead hanging and across the road cables. The plotting should be done in small cluster way and each cluster be fed power from a cluster dedicated sub-transformer. Piped gas line provision be made in advance to avoid future Breaking or defacing of house. 	Some grass root level policies have also been included in Draft RP. More micro level matters will be dealt in lower hierarchy of plans like SRPs, Master Plans, Development Plans etc.
	9. A municipal parking area based on envisaged occupancy Per dwelling units plus 10% capacity be spared or built up after each cluster of plots and all residents be asked to park their vehicles on subsidized monthly or yearly Payment basis. Municipal corporation should place boom gate with security guard to	Some grass root level policies have also been included in Draft RP. More micro level matters will be dealt in lower hierarchy of plans like SRPs, Master Plans, Development Plans etc.

Name/ E-mail ID & Date	Suggestion received	Observations on Suggestions
	safeguard the vehicles.	
	10.New layout must have sector road not less than 15 feet. The practice of just 10 feet or 9 feet to economise on space is not a good concept. Such practices reduce the free flowing area as well as difficulty in reversing the 15 feet long vehicle.	
	11. Street lights necessarily be of solar powered and appropriately oriented to illuminate all area, especially at four road junctions.	
	12. Green belt space of not less than 8 feet be left in front of each plot which necessarily be only hedge fenced.	
16. Robin <u>robinchauhan08@yah</u> <u>oo.com;</u> 7 June, 2020	There is no metro or Indian railway connectivity for Mawana town location. Some nearby rural areas transport connectivity is not good. Therefore, Rural areas people face lots of problem to reach their home from town.	Details of specific town connectivity will be dealt in the Sub Regional Plan.
<u>17.</u> <u>itsadabbas@gmail.co</u> <u>m;</u> 7 June, 2020	Ring Rail around Delhi along with KMP e-way. So, that goods trains can bypass Delhi without entering the city.	Orbital Rail Corridor-I, II and III bypassing Delhi has been proposed in the draft RP-2021. This has been addressed in the chapter on " Transport and Mobility" in Draft RP-2041
18. Gaurav Nirwan gauravnirwan8@gmail .com; 7 June, 2020	1. There should be a Bridge on Ganga River connecting Kila Parikshitgarh of Meerut District to Dhanaura Tehsil of Amroha District. This will improve connectivity and provide direct route from Meerut to Amroha eliminating Garhmukteshwar.	Amroha district is not part of NCR. Draft RP-2041 has been prepared for the NCR area.
	2. Hapur- Kithore- Mawana Road should be converted into National Highway as it connects two National Highway namely NH 34 and NH 709A.	Draft Regional Plan02041 has proposed Reticular Network which would increase the connectivity with Mawana This has been addressed in the chapter on " Transport and Mobility" in Draft RP-2041
	3. Meerut - Bijnor Railway Line project must be given Priority as it will connect Hastinapur to Delhi. Hastinapur has a great potential of becoming a major tourist hub.	Bijnor is not part of NCR area.
19. Raghuraj Singh	There should be no increase of urbanisable area and assigned population for NCT-Delhi and existing major settlements (Metro	Population projection has been taken from the Report approved by the Board in its 38 th meeting held on 13.09.2019.

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
ranveer1719@gmail c	centres Regional centres and Sub-regional centres) in CNCR	
om; 17, March 2020	The entire area of districts of Baghpat, Ghaziabad, Meerut and Gautambudh Nagar of UP; and Sonipat, Jhajjar, Gurugram. Faridabad of Haryana be considered CNCR.	With some purpose, CNCR area defined in the draft RP-2041, as area from the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal expressway (KMP) up to 5 Km beyond outer edge of the ROW of this expressways. It has been demarcated as "Ring of Opportunity" which will cover full/part of these districts. This has been addressed in Draft RP-2041
	 Not more than 25,000 population be added to each of the rest of settlements of NCR i.e. other than NCT-Delhi and CNCR settlements mentioned above. Population of new settlements should be restricted to 25,000 with at least 10 km spacing between two adjacent settlements. In fact development now onward should be through developing high quality villages and not through big urban centres Considerable size of economic activities can be sustained by a population of 5,000 to 25,000. In NCT-Delhi and CNCR settlements, no new extension be planned. In these areas only redevelopment of urban villages and existing unplanned colonies/slums be provisioned without increasing the assigned population 	Population projection has been taken from the Report approved by the Board in its 38 th meeting held on 13.09.2019.
	All government/development authority's unused land (big or small) within urbanisable areas of NCT-Delhi and CNCR towns be forested or converted to agriculture or green or water bodies. Mini urban forest concept be applied to all such -settlements	 Road side plantation and social plantation programmes need to be undertaken by involving all concerned agencies and community such as eco-clubs of schools, Resident Welfare Associations (RWAs), etc. to increase the overall green/ tree cover in NCR. All dried/depleting lakes and water bodies in NCR be revived in a phased manner by cleaning natural drainage channels and desilting, followed by plantation of appropriate species type. This has been addressed in the chapter on "Environment" in Draft RP-2041
	No investment that is likely to create new jobs in NCT-Delhi and CNCR be planned.	Hazardous Industries identified by State Pollution Control Committee will not be allowed in NCT
	Investment for the purpose of creating new jobs be planned in rural areas	Appropriate policies have been proposed for development of rural areas and Rural Investment Areas (RIA) This has been addressed in the chapter on 'Rural Development' of
		Draft RP-2041.

Name/ Date	E-mail ID &	Suggestion received	Observations on Suggestions
		Some of the, Ministries, associated departments and part of big whole sale markets should be shifted out of NCT-Delhi. It should be planned as integral activity of redevelopment Plan mentioned above.	Planning Committee may take a view.
		An uniform population density norm of 150 PPH be specified for all types of settlement except rural villages. Assigned population for all settlements of the NCR including NCT- Delhi should be indicated in the Regional Plan 2041 upfront.	Fixation of density norms should be based on multiple parameters and the task should be settlement specific. However, Density norms suggested in URDPFI guidelines of MoHUA has been considered for over all planning approach. This has been addressed in Draft RP-2041
		Settlement/zone/colonies wise brake down of assigned population of NCT-Delhi should also be included in the Regional Plan 2041 upfront.	Settlement/zone/colonies wise brake up of population is within the purview of Master Plans/Development Plans/Zonal Development Plans.
		Urbanisable area of all settlements of the NCR should be reflected in the Regional Plan in both manners namely numerics and maps. Separate landuse map for each settlement showing urbanisable area, greens, water bodies and agriculture land accurately be included in the Regional Plan in addition to the Regional landuse map.	Detail policies have been laid down for landuses in the Draft RP. Many schematic maps have been prepared showing road, rail, air network, settlements etc. It has also been proposed for earmarking of land for all important uses like road network, rail network, STPs, WTPs, water bodies, green areas etc. Details to be done by states in the Sub-Regional Plan which have to be prepared on at least 1:10000 scale and Master Plans/Development Plans which have to be prepared on at least 1:4000 scale.
		Land for dairy farming horticulture for each town should be earmarked and reflected in Regional Plan to avoid any ambiguity. All settlements should be self-sufficient for vegetables, milk and horticulture.	This is within the purview of Master Plans/Development Plans/Zonal Development Plans.
		Site for SWM facilities including sanitary landfill, WTE and recycling plants be precisely reflected in the Regional Plan for each settlement of the NCR in the Regional Plan.	Draft RP has proposed that land requirements for SWM should be worked out for decentralized SWM based on biodegradation of organic waste instead of traditional practice of transportation of mixed wastes to garbage dumps as it helps in reducing the land requirements as well as operational cost, besides elimination of pollution risks. This has been addressed in the chapter on 'Sanitation and Waste Management' of Draft RP-2041 .
		The Regional Plan 2021 para 17.4.1 provision of mandatory approval of Master /Development Plans' of settlements/areas be retained in Regional Plan 2041. The same should be followed in letter and spirit.	It has been proposed that Board may authorize the statutory Planning Committee to examine the Master/Development Plans and put up its views regarding NOCs to the Board for Metropolitan centers and Regional centres and may also authorize the Planning Committee to issue NOC with regards to other Master/Development Plans of NCR after due examination. This has been addressed in the chapter on " Implementation

Name/	E-mail ID &	Suggestion received	Observations on Suggestions
Date			Stratagies" of Draft RP-2041
		Entire rural area and urban villages of NCR be planned for de novo redevelopment in phased manner. The perspective year for completion of such redevelopment may be beyond 2041 and phases of rural area and urban villages' development be specified in the Regional Plan accordingly.	Strategies" of Draft RP-2041 Policy for redevelopment of villages within urbanisable area has been proposed in 'Demography and Settlements Pattern' chapter. For all villages, policy for preparation of Village Development Plan (VDP) its Integration with District Development Plans (IDDP) by States, as per the 73 rd Constitutional Amendment Act. has been proposed. Further, proposed that Comprehensive Scheme for redevelopment of villages within urbanisable area should be prepared by the concerned Departments/ local bodies for facilities and services within the abadi and integration of surrounding areas. Development along the peripheries of the villages should be carefully planned, wherever necessary, for provision of services and green/open areas, circulation, etc. Redevelopment of rural areas and urban villages will be addressed in Sub Regional Plans and Lower Level plans
		Important provisions and norms of the plan be mentioned and articulated upfront and unambiguously in RP 2041. Adequate provisions/policy norms for effective monitoring and ensuring true implementation of the Regional Plan by all concerned agencies including NCRPB be incorporated in the Regional Plan.	This has been addressed in Draft RP-2041.
		The proposed Regional Plan 2041 should be static in nature in terms of landuse for urbanisation. The urbanisable areas so decided in RP 2041 should be final with no more enhancement in future.	Planning and Development is a continuous process and it would not be appropriate to make the plan static.
		The octroi levy on vehicle movement within NCR be removed. Alternate tax system at NCR entry/exit points be considered. Such collected tax may be shared by the participating States. Similarly, all toll taxation within NCR be done away and alternate arrangement be evolved. It will enhance efficiency of transport system.	Draft Combined RCTA (Stage Carriage and Contract Carriage) for seam less movement is under preparation.
		Cap on maximum number of vehicles registration for each town be decided and fixed.	This is to be addressed by the respective NCT state Government.
		Adequate public transportation be planned and procured along with development of new settlements and redevelopment of old settlements. It should be binding on the participating States. Walkable village and small urban centres should be first option.	It has been addressed in Draft RP 2041.

Name/	E-mail ID &	Suggestion received	Observations on Suggestions
Date		Mechanical transportation should be minimum. Within that gamut	
		maximum transportation should be green.	
		Adequate Potable water be supplied to each house hold. This	Policy for 100 percent water metering and piped water for all NCR has
		should be a governing factor to decide assigned population	been proposed in the draft RP-2041.
		for respective settlement.	
		Water and power supply system; SWM; drainage;	It has been addressed in Draft RP 2041 which covers 19 sectors/
		recreational/sports facilities: transport system including parking	aspects/chapters.
		and vehicle maintenance facilities; amenities; health facilities;	
		green belts; mini urban forests, residential spaces.	
		infrastructure should be developed proportionately and	
		concurrently for all areas.	
		Maintenance plan and funds required for the same be worked out	This is to be worked out in lower level plans.
		and provisioned before development of new settlements and	*
		redevelopment of old settlements by the concerned development	
		authority.	
		The Regional Plan policies and provision should inbuilt mechanism	Aims and Objectives of the RP-2041 is to develop a planned,
		to ensure that the development and urbanization aimed at is	harmonized, balanced and Citizen Centric Smart National Capital
		sustainable and affordable for all segments of society and facilitate easy protection of citizen's right	Region of Global excellence with a sound economic Hub, quality infrastructure where all sections of people onion work travel and live
		Regional Plan should lay down the road man to transfer	a Quality L if e with Ease of Living in a sustainable environment
		of governance and administration to local body in true sense. The	This has been addressed in Draft RP-2041
		Plan should facilitate society to be resilient equitable and inclusive.	
		It should also protect cultural environment of the area of	
		development.	
		The Plan should not aim to just providing housing to all but should	
		good quality of houses and settlements to all people of the region.	
		The Regional Plan should have imposing policies to make	
		all development authorities transparent and people friendly.	Dell'siss for all second al scidical allocations and an inclusion of the
		Essential and critical elements of township planning should also	Policies for all essential and critical elements such as development of
		development authorities don't deviate from the cardinal	have been proposed in the draft RP-2041
		principles of development in regional context.	nuve been proposed in the draft for -20+1.
		Clear directives to participating States on above aspects should be	Directives to participating States has been mentioned in policies and
		included in the Regional Plan.	proposals of draft RP-2041.
		Draft Regional Plan 2041 be prepared, processed and published in	The RP 2041 will be prepared and finalized/notified as per the
		terms of NCRPB Act Section 12.	procedure laid down in the NCRPB Act, 1985

Name/ E-mail ID & Date	Suggestion received	Observations on Suggestions
Datt	Final suggestions on Regional Plan 2041 be obtained from public once the draft Regional Plan 2041 is prepared.	
20. Vinay Singh, vinayandrajendra@gm ail.com, March, 2020	Request to include Mathura-Vrindaban in Delhi NCR.	Not received through e-mail feedback.ncrpb@nic.in
21. parvenderkumar98@g mail.com, 22 nd February, 2020	 Request to provide the best facilities in Baghpat Ioni tronica city and other areas (<i>refer Sl. No. 1, 2 and 4 in remarks</i>) Akshardham to Bagpat expressway should be completed quickly (<i>refer Sl. No. 1 in remarks</i>) Shiv vihar metro line should be extend to tronica city via Ioni upto eastern peripheral express way (<i>refer Sl. No. 3 in remarks</i>) Make a trouma centre near periferral expressway (<i>refer Sl. No. 5 in remarks</i>) AIIMS branch open for Meerut Gaziabad Baghpat areas (<i>refer Sl. No. 6 in remarks</i>) Connect the Tronica city to Delhi Buradi area make a Yumana bridge. areas (<i>refer Sl. No. 4 in remarks</i>) 	 A project on 'Akshadham to Baghpat link be investigated to become an Expressway' has been proposed. It has been addressed in chapter "Transport and Mobility " of Draft RP-2041 ORC-I: Govt. of Haryana has taken initiative for developing Orbital Rail Corridor (ORC) connecting Palwal-Sonipat. Govt. of Uttar Pradesh should take necessary action to develop ORC connecting Palwal-Khurja-Meerut-Bagapat-Sonipat, to complete the Orbit/ Circle. The ORC in both the sub-regions be made fully operational. It has been addressed in chapter "Transport and Mobility " of Draft RP-2041 A project on 'Shiv Vihar Metro line extension upto Eastern Peripheral E Way via Loni and Tronica City' has been proposed. To be investigated by 2022 and implemented by 2026. It has been addressed in chapter "Transport and Mobility " of Draft RP-2041 A project on 'Shiv Vihar Metro line extension upto Eastern Peripheral E Way via Loni and Tronica City' has been proposed. To be investigated by 2022 and implemented by 2026. It has been addressed in chapter "Transport and Mobility " of Draft RP-2041 A project on 'Yamuna Bridge linking Tronica City in Ghaziabad to Burari area of Delhi with necessary links' has been proposed. To be investigated and implemented. It is recommended to have Trauma Centre on each NH/ SH/ Expressway, set up at an interval of not more than 50 km or within travel time of 1 hour (Golden Hour) with all the facilities. Areas around fuel stations at an interval of 20-40 km stretch could also be utilized to develop the trauma centres. It has been addressed in chapter "Transport and Mobility " of Draft RP-2041 One more AIIMS in UP sub-region and one in Rajasthan sub-region has been proposed. For every cluster of 4 districts there should be one AIIMS like facility either on govt. or private sector. In these priority be given to the local people. NCR people should be given prefer

Name/ E-mail ID & Date	Suggestion received	Observations on Suggestions
		It has been addressed in chapter "Health" of Draft RP-2041
	Rapid metro ISBT to Bagpat via khujuri pusta and tronica city khekra	It has been proposed in Draft RP 2041 that the road network hierarchy of the NCR should follow the Reticular Grid pattern with the Ring and Radial pattern for rail-road connectivity with strong connect from NCT Delhi to Metro cities and further connect from metro cities to sub- regional level cities through second order roads. It has been addressed in chapter "Transport and Mobility" of Draft RP-2041
	Imposed fine to those people who release the water on road because it destroy most of the road	This is within the purview of Master Plans/Development Plans/Zonal Development Plans.
22. Gaurav Nirwan gauravnirwan8@gmail .com, 23 rd January, 2020	Mawana-Kithore-Hapur road should be upgraded to 4 lane as it bypasses Meerut city the traffic going from Hapur to Muzaffarnagar and Bijnorand also Meerut does not have any ring roadso in this situation it can solve the problem of traffic in Meerut city. So. Please upgrade it to 4 lane.	 Hapur-Kothore- Mawana road could be upgraded to NH and can act as outer ring for Meerut. It has been proposed in chapter "Transport and Mobility" of Draft RP-2041
<u>23.</u>	Request has been made for development of Baghpat district.	Major proposals for Baghpat district:
rakam.gurjar@gmail.c om, 27 th December, 2019		 A project on 'Akshadham to Baghpat link be investigated to become an Expressway' has been proposed. ORC-I: It is proposed to develop ORC connecting Palwal-Khurja- Meerut-Bagapat-Sonipat, to complete the Orbit/ Circle. The ORC in both the sub-regions be made fully operational. New industrial estates should be developed in undeveloped districts like Baghpat, Mewat, etc. Special cropping areas like Ratul Mango area in Baghpat district should be identified and conserved for saving historical and regional identity across the NCR. Such areas should be promoted as part of agro-tourism as well as strategic rural investment zones. Adjoining areas particularly Meerut,Baghpat,Noida, Greater Noida, Ghaziabad, YEIDA, Gurugram-Manesar-Sohna, Faridababd-Bahadurgarh, Sonepat-Kundli, Bllabhgarh, Bhiwadi- SNB Complex,etc. should be connected with a high quality and high speed inter &intra-city train and bus services. Adequate social infrastructure like education, health, daily needs, recreational facilities, etc., should be created at local level and security of residential areas and housing complexes must be ensured. This will

Name/ E-mail ID &	Suggestion received		Observations on Suggestions
Date			
			also help in fast occupancy of vacant housing.
			The above aspects have been covered in respective chapters of
			Draft RP 2041
24. Siddhant Tyagi	As you are the governer body for NCR development planning. I	1.	Kindly refer suggestions under point no 23.
	want to draw your attention toward least develop NCR area Loni		
sid.tyagi21.st@gmail.	Mandola Khekra Baghpat Shamli Saharanpur. As you know it is	2.	ORC-2: Explore possibilities for developing the Regional Orbital
\underline{com} , 27 th December,	most nearby area to Delhi as compare to Noida Gurgaon and other		Rail Corridor (RORC) connecting Panipat- Shamli- Meerut- Jewar-
2019	NCR region but it is far behind from development. There are no		Nuh- Bhiwadi- Rewari- Jhajjar- Rohtak- Panipat (along Peripheral
	good transport facility no residential development no business		Expressways No.2) to enable movement of passenger and goods at
	development, people are living in very bad condition.		the regional level avoiding Delhi/ CNCR Area. It has been
	I want to suggest some points to consider:		addressed in chapter "Transport and Mobility" of Draft RP-
	1. Please develop good transport facility like metro rapid rail		2041
	electric buses so daily commuters who come to Delhi for job daily		
	have not to take resident in Delhi to make Delhi less populated 10		
	lakh people of this are daily come Delhi for job or business		
	2. Provide a better roads infrastructure 6 lane highway for control		
	pollution due to bad road condition.		
	3. Provide residential and commercial assets in this area so people		
	don't come to Delhi for home or job needs. It will be beneficial for		
	Delhi and this area too.		
	4. Provide hospitals and university so people also stay there for		
	education and health problems.		
	5. Develop this area as green city so it will help to fight Delhi		
	pollution too.		
	This area is in so bad condition people of this area looking for		
	development for more than 20 years. Hope you consider these		
	points and make this NCR region people life easy.		
	Hope this time this area is not ignored		
	Jai hind jai Bharat.		

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Date 25. ashish197225@gmail. com; 27 th December 2019.	It is requested to construct 2 lane railway line from Delhi to Saharanpur via Baghpat and construct NH 709B early as possible.	 ORC-I: Govt. of Haryana has taken initiative for developing Orbital Rail Corridor (ORC) by 2025 connecting Palwal- Sonipat. Govt. of Uttar Pradesh should take necessary action to develop ORC connecting Palwal-Khurja-Meerut-Bagapat- Sonipat, to complete the Orbit/ Circle. The ORC in both the sub-regions be made fully operational by 2028. ORC-3: The following four new rail links be developed to form another Outer Orbital Rail Corridor (OORC) along Circular Regional Expressway No.3, by 2041. Ministry of Railways may initiate conducting feasibility Studies in this regard Karnal – Jind - Bhiwani - Mahendergarh - Narnaul - Behror - Alwar Alwar - Deeg - Kurja (may be via Mathura) Khurja - Garhmukhteshwar –Hastinapur- Muzaffarnagar - Karnal Meerut – Panipat It has been addressed in chapter " Transport and Mobility" of Draft RP-2041
26. kapilgujjar93@gmail. com; 26 th December 2019	It is submitted that no infrastructure development in Baghpat District in last couple of decades. Pollution is major problem of Delhi-NCR but it is fact that there is no CNG pump in Baghpat District till date for supply of clean fuel so requested for ensure infrastructure development in Baghpat District in Regional Plan 2041 on priority.	This has been covered under Sl. No. 23 above.
27. Nishant <u>alagnishant@gmail.co</u> <u>m</u> ; 13 th December, 2019	 Key points: Link suggestions and recommendations to the financial resources for implementation. (<i>refer Sl. No. 1 in remarks</i>) The major determinants could be: a.) Available areas of common lands or resources (b) Open Forests (c) Mining Leases (minor and Major) (d) Power Plants) (e) Industrial Areas (f) Wastewater 	1. Draft RP-2041 envisaged active participation and collaboration of all Central Ministries and the participating States is necessary to recognize the Regional Plan-2041 as a shared initiative and to implement its policies, projects and proposals through their physical and financial effort, reflecting these in their respective Annual Plans and work programmes. It has been addressed in chapter "Implementation Strategies" of Draft RP-2041

Name/	E-mail ID &	Suggestion received	Observations on Suggestions
Date		outflow points (g) Watersheds (h) Regional Meterology (i) Rights regime (<i>refer Sl. No. 2 in remarks</i>)	2. The major determinants have been addressed in their respective chapters.
		• An economic plan for the planning region. (<i>refer St. No. 3 in remarks</i>)	3. On Economic Aspects of the Planning Region a separate chapter on "Economic Growth and Income Generation" has been addressed in Droft RB 2041
		• Bring down levels of pollution in Air, water and Land. (<i>refer Sl.</i> <i>No. 4 - 11 in remarks</i>)	 Green corridors/ Tree barriers should be developed wherever possible along roads to act as buffer and enable reducing the air and poise pollution impacts, aspecially in residential and institutional
		• Health facilities to be mapped and a health registry be made operational. (<i>refer Sl. No. 12 in remarks</i>)	5. In order to reduce vehicular pollution, clean vehicle fuel (CNG, alectricity, solar batteries, bydrogan fuel, etc.) be adopted across
		• A common monitoring cell related to environment appraisal. (refer Sl. No. 13 and 14 in remarks)	6. Identify sources and hotspots of Air Pollution in each districts/ urban areas and formulate action plan for elimination of polluting
		• Landscape and Afforestation Planning (<i>refer Sl. No. 15 in remarks</i>)	sources.7. Promote Pollution under Control (PUC) checks at entry of the vehicles in plants and bulk material handling in rakes to reduce
		• Assessment of drainage network and their ultimate watershed should be earmarked. (<i>refer Sl. No. 16 in remarks</i>)	 venteres in plants and bank internal handling in faces to reduce pollution by road transportation related to large industries. 8. Air quality monitoring equipment should be setup in all urban Wards and all villages in NCR in a time-bound manner. It should be on-line for entire NCR. CPCB may undertake this task or may designate any agency.
			 All dried/depleting lakes and water bodies in NCR be revived in a phased manner by cleaning natural drainage channels and desilting, followed by plantation of appropriate species type.
			10. Banks of all water bodies should be developed in a manner that they are lined with trees11. Indian Agricultural Research Institute (IARI), PUSA has
			developed affordable technique (which involve use of bio- organism to dissolve Stubble) for tackling the problem of Stubble Burning which further reduce pollution & make soil fertile by maintaining the moisture of field for longer duration. NCR states
			The above aspects have been addressed in chapter "Environment" of Draft RP 2041.

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Date		 12. Explore possibility of having an NCR Health Registry with details of type of patients and location or residence, etc., amongst others. Efforts be made to upgrade Electronic Health Record System in coordination with IT sector. (Refer Chapter on "Health") 13. NCR states should ensure that Environmental Monitoring is being carried out regularly and adequate number of well-equipped laboratory for Air, Water, Noise quality analysis are set up across urban and rural areas of NCR and online Real Time Monitoring System (RTMS) for monitoring of various environmental qualities, is effectively and efficiently implemented and made operational. (Refer Chapter on "Environment") 14. Continuous Weather Monitoring Station be mandatorily established at each district of NCR. (Refer Chapter on "Environment") 15. Canopy cover in Reserve and Protected forests needs to be improved through determined afforestation and conservation programmes. Afforestation drives in reserve forests can be done by respective State Forest Department. (Refer Chapter on "Environment") 16. A separate chapter on "Drainage and Water" along with its related issues, policies and proposals have been discussed in Draft RP 2041.
28. Gaurav Bhati Gaurav Bhati@live.c om, 13 th December, 2019	Sampoorna Jan Kalyan Samiti ("SJKS") is committed to transform village Bisrakh into a self-sustainable carbon neutral community living. Our main drive is to keep tourisms and heritage as main focus of sustainable development. Bisrakh Village derives its name from SAGE VISRAVA, who was the grandson of BRAHMA. VISRAVA's sons KUBER and RAAVAN are famous name in our current cultural documents, hence Bisrakh is also famously known as "BISRAKH-Ravaan Janmabhoomi", as a result one of the temples in our village has been included in Ramayan Circuit planning. It may also be noted that in the recent past the Archaeological Survey of India conducted excavation in the Shiva temple premises and unearthed a cave, large bricks, metal coins and other relics. The roughly two-and-a-half-foot- high SHIVLINGA above actually extends about eight feet under the surface. Bisrakh is situated on the bank of river Hindon that is fenced	No suggestion has been given for RP-2041

Name/ E-mail ID & Date	Suggestion received	Observations on Suggestions
	around FNG expressway that will connect to Vrindavan in less than an hour, Bisrakh sits with another potential of being a DHAM and a good fit for temple tourism category. We have detail plan inclusive of land availability, land type, ownership status and estimated project cost in regards to same. We would be more than happy if we could be given opportunity to present our case in the upcoming workshop scheduled on 06th JAN of developing Bisrakh around SHIVLINGA of tritayug (10,000 yr. old).	
29. Ranveer <u>ranveer1719@gmail.c</u> <u>om</u> ; 10 th December 2019	Key points:For NCT Delhi and settlements in CNCR there should be no increase of urbanizable area and assigned population.	Population projection has been taken from the Report approved by the Board in its 38 th meeting held on 13.09.2019
	• The entire area of districts of Baghpat, Ghaziabad, Gautambudh Nagar of Uttar Pradesh and Sonipat, Jhajjar, Gurugram, Faridabad of Haryana be considered CNCR. (<i>refer Sl. No. 2 in</i> <i>remarks</i>)	With some purpose, CNCR area defined in the draft RP-2041, as area from the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal expressway (KMP) up to 5 Km beyond outer edge of the ROW of this expressways. It has been demarcated as "Ring of Opportunity" which will cover full/part of these districts. This has been addressed in Draft RP-2041
	 Not more than one lakh population be added to settlements other than NCT-Delhi and CNCR settlements mentioned above. Population of new settlements should be restricted to one lakh with atleast 10 Km spacing between two settlements. In NCT-Delhi and CNCR settlements, no new extension be planned. In these settlements only redevelopment of urban villages and existing unplanned colonies be planned without increasing the assigned population 	Population projection has been taken from the Report approved by the Board in its 38 th meeting held on 13.09.2019.
	• All Government/development authority's unused land space big or small within urbanizable areas of NCT –Delhi and CNCR towns be forested or converted to green or water bodies.	 Road side plantation and social plantation programmes need to be undertaken by involving all concerned agencies and community such as eco-clubs of schools, Resident Welfare Associations (RWAs), etc. to increase the overall green/ tree cover in NCR. All dried/depleting lakes and water bodies in NCR be revived in a phased manner by cleaning natural drainage channels and desilting, followed by plantation of appropriate species type.

Name/ Date	E-mail ID &	Suggestion received	Observations on Suggestions
			This has been addressed in the chapter on "Environment" in Draft RP-2041
		No investment for creating new jobs in NCT –Delhi and CNCR	Hazardous Industries identified by State Pollution Control Committee
		be planned	will not be allowed in NCT
		An uniform population density norm of 150 PPH be specified for all types of settlement except rural villages.	Fixation of density norms should be based on multiple parameters and the task should be settlement specific. However, Density norms suggested in URDPFI guidelines of MoHUA has been considered for over all planning approach. This has been addressed in Draft RP-2041
		• Assigned population for all settlements of the NCR including NCT-Delhi should be indicated in Regional Plan- 2041 upfront in numerics.	As per NCRPB Act, major urban settlements are to be dealt in the Draft RP 2041. Accordingly, metro and regional centers have been proposed. The lower hierarchy of urban settlements will be dealt in the SRPs.
		• Settlement/zone/colonies wise brake down of assigned population of NCT – Delhi should also be including in the RP-2041 upfront in numerics.	Settlement/zone/colonies wise brake up of population is within the purview of Master Plans/Development Plans/Zonal Development Plans.
		• Urbanisable area of all settlements of the NCR should be reflected in the RP in both manners namely numeric and maps. Separate landuse map for each settlement showing urbanizable area, greens, water bodies and agricultural land accurately be included in the Regional Plan in addition to the Regional Landuse Map	Detail policies have been laid down for landuses in the Draft RP. Many schematic maps have been prepared showing road, rail, air network, settlements etc. It has also been proposed for earmarking of land for all important uses like road network, rail network, STPs, WTPs, water bodies, green areas etc. Details to be done by states in the Sub-Regional Plan which have to be prepared on at least 1:10000 scale and Master Plans/Development Plans which have to be prepared on at least 1:4000 scale.
		• Site for SWM facilities including landfill, WTE and Recycling plants be precisely reflected in the Regional Plan for each settlement of the NCR in the Regional Plan	Draft RP has proposed that land requirements for SWM should be worked out for decentralized SWM based on biodegradation of organic waste instead of traditional practice of transportation of mixed wastes to garbage dumps as it helps in reducing the land requirements as well as operational cost, besides elimination of pollution risks. This has been addressed in the chapter on 'Sanitation and Waste Management' of Draft RP-2041 .

Name/	E-mail ID &	Suggestion received	Observations on Suggestions
Date			
		• The Regional Plan 2021 para 17.4.1 provision of mandatory approval of Master/Development Plans of settlements/areas be retained in Regional Plan 2041.	It has been proposed that Board may authorize the statutory Planning Committee to examine the Master/Development Plans and put up its views regarding NOCs to the Board for Metropolitan centers and Regional centres and may also authorize the Planning Committee to issue NOC with regards to other Master/Development Plans of NCR after due examination. This has been addressed in the chapter on "Implementation Strategies" of Draft RP-2041.
		• Entire Rural Area and Urban villages of NCR be planned for de novo redevelopment in phased manner. The perspective year for completion of such redevelopment may be beyond 2041 and phases of rural area and urban villages development be specified in the Regional Plan.	Policy for redevelopment of villages within urbanisable area has been proposed in 'Demography and Settlements Pattern' chapter. For all villages, policy for preparation of Village Development Plan (VDP) its Integration with District Development Plans (IDDP) by States, as per the 73 rd Constitutional Amendment Act. has been proposed. Further, proposed that Comprehensive Scheme for redevelopment of villages within urbanisable area should be prepared by the concerned Departments/ local bodies for facilities and services within the abadi and integration of surrounding areas. Development along the peripheries of the villages should be carefully planned, wherever necessary, for provision of services and green/open areas, circulation, etc. Redevelopment of rural areas and urban villages will be addressed in Sub Regional Plans and Lower Level plans.
		 Important provisions and norms of the plan be mentioned and articulated upfront and unambiguously in the RP. Adequate provisions/policy norms for effective monitoring and ensuring true implementation of the RP by all concerned 	This has been addressed in Draft RP-2041.
		agencies including NCRPB be incorporated in the RP.	

Name/ E-mail ID & Date	Suggestion received	Observations on Suggestions
	 The proposed RP 2041 should be static in nature in terms of landuse for urbanization. The urbanizable areas so decided in RP-2041 should be final with no more enhancement in future. Further draft RP 2041 be published in terms of NCRPB Act Section 12. 	Planning and Development is a continuous process and it would not be appropriate to make the plan static. The RP 2041 will be prepared and finalized/notified as per the procedure laid down in the NCRPB Act, 1985.
 30. Indira Chaudhary 8.11.2019. Letter to Director (A&F) from CTP, Jaipur (Not received through e-mail link) 	 Key points: 1. There is a need to design a new strategy/mechanism for implementation of the plan. (<i>refer Sl. No. 1 in remarks</i>) 2. Decision to be taken at the highest level for shifting of economic activities from Delhi and for their discouragement in Delhi. (<i>refer Sl. No. 2</i>) 3. Rajasthan sub region has potential due to low density for decongesting Delhi. However, Rajasthan sub region is less developed as compared to areas adjoining Delhi. This needs to be overcome by providing soft loans of differential rates of interest to various projects which are at longer distance from Delhi. Less developed areas in NCR can be provided with special financial package may be in the form of grant, interest subsidy, taxation based policy etc. (<i>refer Sl. No. 3</i>) 4. Adequate emphasis to be given on tourism as an economic activity. Rajasthan is rich in historical, natural and heritage tourism in the world. It is also a major revenue generating and employment activity for the state government. Hence, tourism be looked as a generator of economic activity more emphatically. (<i>refer Sl. No. 4 in remarks</i>) 5. Economy of NCR should be seen in a regional context bridging the imbalance within and outside the central NCR and the remaining portion with a particular reference to the role of housing, corridor development, agriculture, and marketing facilities. Therefore, NCR plan 2041 needs to expedite the economic 	 A separate chapter on "Implementation Strategies" have been discussed in Draft RP 2041. Planning Committee may take a view This aspect has not been addressed. Tourism in NCR can act as a potent engine for inclusive social and economic progress through its forward and backward linkages and has ability to create employment through local skills & capabilities. This has been addressed in chapter "Heritage and Tourism") Economy of NCR should be seen in a regional context bridging the imbalance between central NCR and the remaining portion with a particular reference to the role of housing (FSI, Low income and institutional development including education), corridor development, agricultural productivity, and marketing facilities. This has been addressed in chapter "Economic Growth and Income Generation" It is critical to expedite the economic activity in the region to fully utilise the economic potential of Delhi, Central NCR, and rest of the NCR in the overall context of equitable, sustainable, and productive development of the region. This has been addressed in chapter "Economic Growth and Income Generation" Delhi Mumbai Industrial Corridor (DMIC) is one of the prime 5 national level industrial corridors under National Industrial Corridor Development Programme and its effective

 potential of Delhi, central NCR and Rest of NCR in the overall context of equitable, sustainable and productive development of the region. (<i>refer Sl. No. 5 and 6 in remarks</i>) 6. DMIC corridor passes through Rajasthan Sub Region. The vision for DMIC is to create strong economic base with globally competitive environment and adequate infrastructure to to activate local commerce, enhance foreign investment, and attain sustainable development. Thus high impact and market driven nodes are to be identified along the corridor to provide transparent and investment regions and industrial areas to be set up. (<i>refer Sl. No. 7 in remarks</i>) 7. The density norms should be flexible and the character of the town, land values and development pressure etc. should be considered. (<i>refer Sl. No. 7 in remarks</i>) 8. Fixatom of density norms should indicate special rural investment regions and industrial areas to be set up. (<i>refer Sl. No. 7 in remarks</i>) 7. The density norms should be flexible and the character of the town, land values and development pressure etc. should be considered. (<i>refer Sl. No. 7 in remarks</i>) 9. The success of CMA and interceptors of migration depends on their capacity to generate more and more economic activity. CMAs are to be developed as model industrial estates or technology parks of SEZs for attracting investments. To support and sustain the economic infrastructure of the CMAs, physical and social infrastructure of very high order needs to be provided. (<i>refer Sl. No. 10 in remarks</i>) 9. The success of CMA and interceptors of migration depends on their capacity to generate more and more economic activity. CMAs are to be developed as model industrial estates or technology parks of SEZs for attracting investments. To support and social infrastructure of very high order needs to be provided. (<i>refer Sl. No. 10 in remarks</i>) 9. The success of CMA and interceptors of migration depends on their capacity to generate more and more economic ac	Name/ E-mail ID &	Suggestion received		Observations on Suggestions
 10. Rural Development through Village Development Plans and providing adequate physical and social infrastructure facilities in rural areas to reduce the migration to urban centers. (<i>refer Sl. No. 11 in remarks</i>) 11. Improvement of forest cover in the region and preservation of Agricultural land. Bio Diversity of the region should also be taken care with sustainable wildlife/ecosystems. (<i>refer Sl. No. 12 in remarks</i>) 12 in remarks) 14. (a) Implementation of this Green Field Airport is to be do the State Government and Central Government Department (b) RRTS corridors (all eight as proposed in RP 2021) and corridors including the link from Gurugaon–Manesar -R Dharuhera and Bawal, be implemented on priority. Extense RRTS corridors to closest CMA town of NCR may also be up on priority. This has been addressed in chapter and Mobility" 12. Development of Highway Transport Facility Centers on a state for the state of the state	Date	 potential of Delhi, central NCR and Rest of NCR in the overall context of equitable, sustainable and productive development of the region. (<i>refer Sl. No. 5 and 6 in remarks</i>) DMIC corridor passes through Rajasthan Sub Region. The vision for DMIC is to create strong economic base with globally competitive environment and adequate infrastructure to activate local commerce, enhance foreign investment, and attain sustainable development. Thus high impact and market driven nodes are to be identified along the corridor to provide transparent and investment friendly policy/facility regime under which integrated investment regions and industrial areas to be set up. (<i>refer Sl. No. 7 in remarks</i>) The density norms should be flexible and the character of the town, land values and development pressure etc. should be considered. (<i>refer Sl. No. 8 in remarks</i>) IWRM approach is required in the region. To maintain quality of water throughout the region, mapping of the water quality status along with the reasons is also required. (<i>refer Sl. No. 9 in remarks</i>) The success of CMA and interceptors of migration depends on their capacity to generate more and more economic activity. CMAs are to be developed as model industrial estates or technology parks of SEZs for attracting investments. To support and sustain the economic infrastructure of the CMAs, physical and social infrastructure of very high order needs to be provided. (<i>refer Sl. No. 10 in remarks</i>) Rural Development through Village Development Plans and providing adequate physical and social infrastructure for erginal areas to reduce the migration to urban centers. (<i>refer Sl. No. 11 in remarks</i>) Improvement of forest cover in the region and preservation of Agricultural land. Bio Diversity of the region should also be taken care with sustainable wildlife/ecosystems. (<i>refer Sl. No. 12 in remarks</i>) 	 8. 9. 10. 11. 12. 13. 14. 	implementation along with the developments along the corridor is essential. This has been addressed in chapter "Transport and Mobility") Fixation of density norms should be based on multiple parameters and the task should be settlement specific. This has beer addressed in chapter "Policy Zones and Regional Land Use" This may be considered while preparing the Sub Regional Plans Policies and proposals related to Strengthening of Economic Base of the CMAs, Upgradation of Physical and Social Infrastructure have been mentioned under the chapter "Counter Magnet Areas" The sub-regional plans should indicate special rural investment areas and promote development of these areas through strategic partnerships between relevant government agencies, private sector, NGOs and CBOs. These areas should be further detailed out in district development plans for implementation through ICAPs and village development plans. This has been addressed in chapter " Rural Development" Areas for environmental protection should be identified and detailed out in Sub-Regional Plans, District Plans and Master. Development Plans. The Plans should define areas that must be protected for providing important environmental services such as Biodiversity Preservation; Flood Control; Water Production Erosion Control; & Mitigation of Heat Islands, etc. Highway Facility Centres (HFC) need be planned and developed on a comprehensive basis. This has been addressed in chapter " Transportation and Mobility" (a) Implementation of this Green Field Airport is to be done by the State Government and Central Government Department. (b) RRTS corridors (all eight as proposed in RP 2021) and DMIC corridors including the link from Gurugaon–Manesar -Rewari Dharuhera and Bawal, be implemented on priority. Extension o RRTS corridors to closest CMA town of NCR may also be taket up on priority. This has been addressed in chapter ' Transportation and Mobility"
12. Development of fighway frainsport facinty centers on a comprehensive basis. (<i>refer Sl. No. 13 in remarks</i>) 13. For better connectivity in NCR and development of Mobility."		 12. Development of fighway frainsport facility Centers of a comprehensive basis. (<i>refer Sl. No. 13 in remarks</i>) 13. For better connectivity in NCP and development of 	13.	routes and around transit interchanges both at urban and regional level This has been addressed in chapter "Transportation and Mobility"

Name/	E-mail ID &	Suggestion received	Observations on Suggestions	
Date		 Rajasthan Sub Region following proposals are to be included in RP-2041 a.) Implementation of the proposed Green field airport located at Bhiwadi, which is an alternative cargo and passenger airport for the Delhi and NCR. b.) RRTS corridor in Rajasthan sub region is being implemented from Delhi to Sotanala industrial area along NH-8. Jaipur, the capital of the state and also CMA of NCR is connected connected to Delhi via NH-8. Therefore, the RRTS corridor in Rajasthan Sub Region is to be extended upto Jaipur (CMA) (<i>refer Sl. No. 14 in remarks</i>) 14. TOD should focus around transit nodes to reduce travel demand as well as encourage public transport. (<i>refer Sl. No. 14 -16 in remarks</i>) 15. Promotion of Public Transportation and promotion of NMT. (<i>refer Sl. No. 17 in remarks</i>) 16. Mixed use zoning approach at regional level to integrate land use and transport planning to optimize the functional and spatial linkages between housing, workplaces and commercial areas. (<i>refer Sl. No. 18 in remarks</i>) 	 16. To reduce the need of long commutes and to bring people clo to their jobs - a growth model based on through development residential and office spaces around public transportation syste be attempted in new areas being developed. This has be addressed in chapter "Transportation and Mobility" 17. Service lanes be mandatory provided along all NH, SH a Expressways, etc. for Non-Motorised Transport (NMTs), non-four wheelers, etc. by 2026. Vehicles accident Recove lanes shall also be provided. It should be made in 2 years on NHs/ Expressways and in 05 years on all SHs, across the regi- This has been addressed in chapter "Transportation a Mobility" 18. Integration of transport planning with land use planning a providing for efficient, cleaner & safer movement of people goods deserves prime importance. There is a need for Strategi Plans of Action and Regulations/Standards that are futuristic a consistent with the responsibility of Integrated Mobility a Smart Transport System for a sustainable future of NCR. This I been addressed in chapter "Transportation and Mobility" 	
		Air pollution being a challenge in NCR, there is an urgent need to adopt Travel Demand Management (TDM) policy. Vehicle ownership controls can be implemented through vehicle quota systems and taxes and insurances. A quota system aims to control the vehicle ownership of individuals by permitting a certain monthly quota on registration of new vehicles. Vehicle usage controls are applied in the form of road space rationing, congestion pricing, parking policy etc.	This has not been specifically addressed.	
31. Prate 11.11.2(from UN (Not through	eek Kumar)19, Letter NDP India received a e-mail link)	 Key Points: Leverage platform approach to promote inclusivity, especially with regard to underprivileged and informal sector in the NCR area. (<i>refer Sl. No. 2 and 3 in remarks</i>) Formalization of informal sector is a great opportunity of enhancing the efficiency of several informal value chains and also better social/economic outcomes for all stakeholders. 	 Material recovery facilities should be set-up in each ward. At le one material recovery facilities should be made mandatory each village. A 'common cleanliness complaint forum' for all water, sanitati and waste related services in each sub-region should be crea where calls are recorded, documented and followed up a tracked till satisfactory resolution of problems are obtained. T 	
Name/ E-n	mail ID &	Suggestion received		Observations on Suggestions
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Date				
		• Value chain approach to ensure:		has been addressed in chapter "Sanitation and Solid Waste
		• Important value chains in NCR areas are identified.		Management"
		• The efficiency of value chains can be then increased through	3.	A digital platform with GIS mapping of the existing sewerage
		technological and capacity building interventions.		systems with installed and operational capacities as well as
		• Value Chain Approach shall enhance: Institutional and System		proposed networks with other sewage handling facilities should
		Strengthening, Logistics, Resource Use, Resilience.,		should also avaluate systems' performances against stipulated
		Inclusiveness, Land Rights and Land Use etc.		norms. It is very important to make all this information public on
		• Setting up Material Recovery Facilities (Swacchata Kendras) at		web portals for effective participation Web portal with
		UNDP project to increase plastic collection, segregation and		Monitoring and Feedback facilities This has been addressed in
		recycling. (<i>refer St. No. 1 in remarks</i>)		chapter "Sanitation and Solid Waste Management"
		• Working with informal wasta nickars (Safai Saathis) by	4.	Ragpickers or erstwhile waste workers should be trained and
		• working with informat waste pickets (Satar Sataris) by connecting them to Swacchata Kendras, and ensuring decent and		integrated into sustainable solid waste management systems with
		safe livelihoods and also support in formalizations (<i>refer Sl</i>		proper personal protective equipment and proper working
		No. 4 in remarks)		conditions. This has been addressed in chapter " Sanitation and
		···· · · · · · · · · · · · · · · · · ·		Solid Waste Management")
		• In NCR area, the UNDP's Swacchata Kendra is already set up in		
		Ghaziabad with Ghaziabad Nagar Nigam and talks are in		
		progress in NDMC and SDMC area.		
32. Boston (Consulting	An article by Boston Consulting Group.	No s	suggestion has been given for RP-2041
Group, 1	10.11.2019,		(No	t received through e-mail link)
Letter from 1	BCG			
33.		The Capital City has a concentration of government offices of		
Rita Sagar		various tiers and many of these actually need not be here.		
ritasagar1984	<u>34@gmail.</u>	Such as Director General of Civil Aviation, Ministry of Skill		
<u>com</u> ; 18 Sep	pt., 2020	Development, DGFT, Ministry of Tourism, Ministry of Health,		
		IVIIIIISITY OF POWER, IVIIIIISITY OF WATER, IT BP, CISF, SSB, BSF, ICG,		
		Therefore requested to reconsider your idea of making COMMON		
		SECRETARIAT and instead shift Non-core Central Ministries out		
		of Delhi. Just try to shift offices to other states. It will lead to	Con	nmittee decided that shifting of Govt. offices /institution. wholesale
		development of other regions too. Further, the land will be provided	mar	kets and economic activities from Delhi to other places of NCR as
		by State Governments free of cost that will further make prime land	sugg	gested in weblink comments, is not feasible.
		of Delhi free which can be used for rental purpose or can be sold for		-
		Billions of Rupees.		
		It is humbly prayed to shift Central Ministries (either fully or Partly)		
		out of Delhi may be in Kurukshetra/Karnal/Chandigarh making		

Name/ E-mail ID &	Suggestion received	Observations on Suggestions
Date		
	Delhi a viable place to live for the natives of Delhi.	
34. Raghuraj Singh	Some of the, Ministries, associated departments and part	
ranveer1719@gmail.c	of big whole sale markets should be shifted out of NCT-	
om; 17, March 2020	Delhi. It should be planned as integral activity of	
	redevelopment Plan mentioned above.	
35. Ranveer		
ranveer1719@gmail.c	Some of the ministries, associated departments and part of big	
\underline{om} ; 10 th December	wholesale markets should be shifted out of NCT – Delhi.	
2019		
36.Indira Chaudhary	Decision to be taken at the highest level for shifting of economic	
8.11.2019. Letter to	activities from Delhi and for their discouragement in Delhi.	
Director (A&F) from		
CTP, Jaipur		
(Not received		
through e-mail link)		

Annexure - III

REGIONAL PLAN - 2041

by

School of Planning and Architecture, New Delhi

Feb 23, 2021

Disclaimer: This presentation does not cover all the Policy and Proposals of draft RP-2041. Only main points are given in this PPT

Significance of the NCR

- NCR is a unique area which requires specialized planning. This area is dynamic and can push the impulse of development
- About two out of every three people are likely to be living in cities or other urban centres by 2050 in the world. This will increase the demand for resources in the cities and cities will need for sustainable urban planning.
- ▶ It is expected that the Delhi will counter the Tokyo in terms of Population by 2030 in terms of population.
- > Delhi ranks *sixth* on its Economic Performance Index (EPI) out of the world's 300 largest metro areas.
- During 2014 to 2016, *Delhi generated the most number of jobs* of 6.2 lakh, nearly a third more than Mumbai's 4.7 lakh.
- NCR is the *world's largest region*, as big as some of the states of India and some countries in the world.
 Challenges in the NCR
- Interstate region with 3 states and 1 NCT and largest region in the world at 55, 083 sq.km.
- Rapid urbanisation at 62.6 percent in 2011 of the then NCR and environmental Issues
- Employment generation and earthquake prone
- Water resources and integration of various plans
 - Implementation and funding

Area of NCR in Sq. km

Year 2001 (Area 30,242)







PROJECTS FINANCED BY NCRPB (as on 30 June 2020)

Ongoing	= 95	Rs. 4,946 cr. (loan released)
Completed	= 265	Rs. 7,415 cr. (loan released)
TOTAL	= 360	Rs. 12,361cr. (loan released)

VISION AND OBJECTIVES – RP 2041

To develop a planned, harmonized, balanced and Citizen Centric Smart National Capital Region of excellence with a sound economy and quality infrastructure where all sections of people enjoy residence, work, travel and lead a Quality Life with Ease of Living in a sustainable environment.

- Providing suitable economic base for future growth by identification and development of regional settlements capable of absorbing the economic development impulse of Delhi.
- Providing fast, efficient and economic rail, road, air and water based transportation networks (including mass transport systems) well integrated with the land use patterns to support balanced regional development
- Developing selected urban settlements as internationally competitive investment and business activity centres with quality physical infrastructural facilities.
- Providing a rational land use pattern in order to provide harness socio-economic potential of the world's greatest megapolis and to also make this development sustainable by protecting and conserving environmentally sensitive natural features.
- Provide for planned and harmonious development of urban and rural areas of NCR.

Providing sustainable and inclusive living conditions in the region where all citizens feel safe & secure and live a quality life.

DEMOGRAPHY & SETTLEMENT PATTERN CURRENT STATUS

- According to the Census 2011, total population of NCR was 474.13 lakhs in 2001 and the sub-regions of Delhi, Haryana, Rajasthan and Uttar Pradesh accounted for 29.1, 28.2, 10.7 and 31.9 percent respectively.
- The NCR population increased to 581.57 lakhs in 2011 (4.8 percent of country population) and the share of sub-regions changed to 28.9, 28.2, 10.7 and 32.1 percent respectively.
- Average population density of NCR as per Census 2011 is about 1,056 persons per sq. km. which is about three time higher than the all India average of 382 persons per sq. km.
- NCT Delhi has the highest population density of 11,320 persons per sq km followed by Uttar Pradesh with 1,263 persons per sq km, Haryana with 649 persons per sq km and Rajasthan with 463 persons per sq km.
- Average density of the NCR excluding NCT Delhi is about 772 persons per sq km in 2011, which increased from 627 persons per sq km in 2001.

Sub-region wise Distribution and Growth of Population in NCR, 2001-2011

Region and	Population		Decadal Growth Rate Percent	Share of Population Percent	
Sub-region	2001	2011	2001-2011	2001	2011
NCT-Delhi	13,850,507	16,787,941	21.21	29.19	28.87
Haryana	13,388,603	16,427,524	22.70	28.22	28.25
Rajasthan	5,093,734	6,222,641	22.16	10.74	10.70
Uttar					
Pradesh	15,110,452	18,719,180	23.88	31.85	32.19
NCR	47,443,296	58,157,286	22.58	100.00	100.00

POPULATION PROJECTIONS

- Population of the NCR is projected to be 718.2 lakh by 2021, 895.9 lakh by 2031, and 1130 lakh by 2041.
- At sub-regional, share of projected population for 2041 shall be 33.22% in case of Uttar Pradesh (375.43 lakh), followed by Haryana 29.55% (334 lakh), NCT Delhi- 27.25 (208.03 lakh) and Rajasthan- 9.98% (112.08 lakh).
- Total urban population of NCR is projected to be 425.9 lakh by 2021 (59.3% of total population), 570.4 lakh by 2031 (63.6% of total population) and 766.5 lakh by 2041 (67.8% of total population). NCT Delhi is expected to be 100% urban by 2031.

KEY ISSUES AND CHALLENGES

- In NCR there are about 78 non statuary Census Towns of which 34 are in UP sub region, 33 are in Haryana sub-region and 11 in Rajasthan sub-region.
- Most of these towns are experiencing unplanned construction, ad-hoc provisioning of infrastructure and haphazard development, etc.

- There is an urgent need for planned development of such urban areas in the NCR. There are small statutory towns (less than 50,000) also which need to be streamlined in terms of overall planning and specific plans are to be prepared.
- Many towns outside the CNCR could not achieve their desired population as proposed in the Regional Plan, 2021.
- The emphasis, therefore has to be placed on the development of Metro Centres and Regional Centres outside the CNCR by providing fast and efficient connectivity, boost economic activities and development of infrastructure.
- The NCR has imbalanced sex ratio of 877, which is much below the national average of 940 as per Census 2011.
- Migration to urban areas of the NCR will continue to be a major contributor to population growth in the region.
- Rural-urban migration results in overcrowding of cities, haphazard growth including formation of slums and pressure on city infrastructure.

- Rural development will be encouraged by providing facilities and services in appropriate hierarchy to help stimulate production and increase the income of the rural population.
- Providing necessary infrastructure to accommodate migration will be another major challenge.

POLICIES AND PROPOSALS

- NCR states to endeavor to achieve development of a well-knit regional settlement system based on polycentric approach of planning.
- NCR states should adopt the mixed approach in the development of settlements by undertaking redevelopment as well as greenfield township projects to encourage sustainable development.
- Ministry of Urban Development (now MoHUA) in 2016 has already requested all the states in India to initiate action for converting Census Towns into statutory towns to ensure their planned development.

- Metro and Regional Centres within the CNCR have grown much faster while the proposed Metro and Regional Centres outside the CNCR could not grow as anticipated to achieve the target population of the Regional Plan, 2021.
- The emphasis, therefore, should be placed on development of Metro Centres and Regional Centres outside the CNCR by providing fast and efficient connectivity, boosting economic activities and developing of infrastructure.
- Migrant registration be mandatory to keep track of all citizens moving from rural or village areas and entering into urban areas or vice versa and necessary infrastructure be created accordingly at district, block and gram panchayat level, in an integrated manner, with shared data.

Proposed Seven-Tier Hierarchy of Settlements

S. No.	Hierarchical Level	Components and Proposed Population Range by 2041
1	Metro Centre	All towns with 1,000,000 and above population
2	Regional Centre	All district headquarters, and all towns with population ranging from 300,000 to 999,999
3	Sub-Regional Centre	All tehsil headquarters and all towns with population ranging from 100,000 to 299,999.
4	Service Centre or Nodal Point or ICAPs	All block headquarters, and all settlements or clusters with population ranging from 10,000 - 99,999.
5	Central Village or Cluster of Bazar Villages	All settlements with population ranging from 5,000-9999
6	Medium Village	All settlements with population ranging from 2,000 to 4,999
7	Small Village	All settlements with population below 2,000.

ECONOMIC GROWTH AND INCOME GENERATION CURRENT STATUS

NCR is one of the vibrant economic regions having attracted 20% of country's FDI in 2010-15. Region has multiple SEZ and industrial clusters. It has more than 100 industrial estates with Delhi having 29 industrial estates.

Manufacturing Clusters	Manufacturing Units
Meerut, Ghaziabad,	Auto component, IT,
Gautambudh Nagar,	textiles, general
Bulandshahr, Gurugram,	engineering, power
Faridabad, Panipat and Alwar	looms, carpet, etc.

- Significant industries in NCR include
 - a. Automobile industry, metal industry (basic & fabricated), textiles, apparel & footwear industry, animal production (dairy industry);
 - b. computers, consumer electronics & electric equipment, Rubber & plastic industry etc.
- There are more than 42 lakh MSMEs (micro small and medium enterprises) in the region



Workforce Participation Rate (WPR)

S. No.	Sub - Region	WPR (Census 2011)	National Average
1.	UP	43.6%	39.8%
2.	Haryana	35.1%	
3.	NCT of Delhi	33.2%	
4.	Rajasthan	32.3%	

- The percentage contribution of **Primary Sector** (Agriculture and Allied) to the Gross State Value Added was 0.39% in 2017-2018.
- The contribution of Secondary Sector (Industry Sector) and Tertiary Sector (Service sector) was 15.91% and 83.70% respectively in 2017-2018.

KEY CHALLENGES

- Economic growth is heavily skewed in favour of NCTD (constitutes more than half of GDP of NCR) and Central NCR (Noida, Gurgaon, Ghaziabad, Faridabad etc.). Economy of NCR should be seen in a regional context bridging the imbalance.
- Deficiencies in basic infrastructure like power, water, transport linkages, telecommunication etc.
- Inadequate infrastructure for industrial development including common facility centers, quality power supply, lack of infrastructure for effective treatment & disposal of polluting industries waste, etc.
- Limited non-farm sector employment and poor rural economy due to inadequate rural infrastructure
- There is also lack of a comprehensive policy for strengthening of the craft-based informal sector
- Manufacturing in India holds the potential to contribute up to 25%-30% of the GDP by 2025

POLICIES AND PROPOSALS

Growth through Collaboration (SDG 01, 08 and 17)



NCR be treated as a **Unified Economic Space (UES)** giving suitable coordination and synergy with respect to interstate toll, pollution tax, regional taxes sharing etc.



- Central NCR as a "Ring of Opportunity" could be used to **trigger pace of economic development** in the entire NCR with emphasis to **service sector, logistic hubs** and high value **manufacturing sector**
- NCR States may take necessary initiatives to achieve and go beyond the 8% GDP target of the country by 2025



States may integrate their economic initiatives with the Central schemes of "Assemble in India for the world" and "Make in India"



Possibilities of shifting economic activities like wholesale market, inter-state bus depots/ yards, etc. to peripheral areas from city centers, be explored and taken up.

Development of Industries (SDG 08, 09, 12 and 17)

10

INDUSTRY

- Promote in a planned manner the adoption of the latest technology advancements, referred to as 'Industry 4.0'.
- Clusters such as Film City, Aero City (Jewar), Tech-City, Medi-City, Knowledge city, etc. be promoted
- Smart industrial estates be developed on the line of smart cities in NCR
- Existing industrial estates/industrial parks/ industrial plots should be reenergized and redeveloped with rational land use conversion policies



- Potential of small and medium towns should be specially investigated
- Promote Economic Hubs (EHs) like Integrated Cyber Hubs (ICHs) where facilities like food, shopping, etc. co-exists

Development of Industries (SDG 08, 09, 12 and 17)

- Agro-Food Processing Parks including dairy and Export Zones be developed and promoted
- Special emphasis be given to service sector and selective high value manufacturing sector like Electronics (ESDM) sector, etc.
- MSMEs mega parks and manufacturing clusters in labor intensive sectors be promoted.
- MSMEs should be facilitated through Pradhan Mantri Mudra Yojana
- Efforts be made by the NCR States to crate support infrastructure for encouraging e-Commerce/ e-Business
- With estimated demand of five million litres per day, NCR is biggest milk market in the country. Thus, Agro & Food Processing Industries, having vital linkages. Agriculture and industry, have huge potential in economic growth of NCR.
- Every Panchayat/Gram Sachivalayas should have IT Center, CSCs, health service center, daily milk collection centers and Bulk Milk Coolers, primary agriculture / horticulture processing center, packing center for perishable marketable surplus, skilling coordinator center, etc.
- Skill coordinator at every village (above 2000 population) and every ward who would liaise with all skill councils and also with Migration Facilitation centre of the district.
- Circular economy concept be adopted for possible convergence to minimize environmental and health risks
- All NCR States should come up with Circular Economy schemes/ initiatives especially about Cities & Construction, Food & Agriculture and Mobility & vehicle manufacturing, by 2023.
- NCR States may align their policies for getting higher FDIs in collaboration of concerned Central Ministries/ Departments



Enabling Infrastructure (SDG 01, 03, 04, 08, 09, 11, 12 & 14)



Provide **24x7 quality power** to all by 2025. Mandatorily promote smart grid and smart meters across NCR



Adequate **investment/fund** allocation be made on the infrastructure



Enhance **capacity & efficiency** of warehouses and their operations. Possibilities of converting existing warehouses into multi-storied ones



• Warehousing and logistics be given industrial status and the process of approval should be simplified and made time bound.



 Develop Multimodal Logistics Parks (MMLP) and dry ports to ensure seamless movement of freight. NCR should have its own Integrated Logistics Action Plan (ILAP) in line with initiatives taken by respective states.

Technology and Innovation (SDG 08, 09 AND 17)

- NCR to aspire to be a leading Global Innovation hub, to enable the country to be amongst the top 50 nations in the Global Innovation Index by 2022-23.
- At least existing 10 of NCR Scientific Research Institutions (SRIs) may be amongst the top 100 in the world
- Promote and support co-building industrial parks, for incubation & duplication in NCR. Establish R&D centers for manufacturing and Incubation Centers (ICs) in all Metro and Regional centers in NCR.

Travel, Tourism and Hospitality (SDG 08, 11 AND 12)

- Make NCR the first choice for domestic and foreign tourist visitors by improving the overall experience
- A mega project initiative to develop 100 "Smart Tourist Destination Sites" showcasing themebased museums, heritage and natural sites
- Plan and develop 4-5 globally competitive and world-class Tourism circuits from entry to exit.

Employment and Labour force (SDG 05, 08 AND 10)





- State may take joint initiative to create a "Job-Portal of NCR' and Migration Facilitation Centers (MFCs) wherein perspective employers & employees can share their details and interact. There should be a Pan NCR Job/ Employment Portal. Govt. of India has launched ASEEM Portal (Atamnirbhar Skilled Employees Employer Mapping), a subset of this portal be created for NCR.
- **'Plan for Street Vending**' be prepared by every local body as also mandated in the "Street Vendors Act, 2014"



• Encourage increased formalization of the labour force by **reforming labour laws** and social security



skilling and training centers with sector specific programme be planned at district level with the support of **NSDC**.

Ease of Doing Business (EoDB)

These may include aspects such as Starting a business, construction permits, power connections, property registration, credit availability, etc.

Mapping and Data Management

For better planning and ease of environmental clearances, all concerned in the sub-regions should adopt the system of using Geographic Information System (GIS) based maps at all levels

PROJECTS PROPOSED

S. No.	Proposed Projects/Policies
1.	Projects for developing Industrial clusters like Film City, aero city (Jewar), Hisar airport, Tech-City, Medi-City, Knowledge city, etc. (Industrial Clusters/ Cities like Panchgram & YEIDA, etc.)
2.	Projects be prepared for up-gradation of existing Industrial Estates/ Parks into Smart Industrial Estates/ Parks with a motto of "Make in NCR/ Assemble in NCR".
3.	Projects for the development of ESDM clusters and making them fully operational
4.	Projects for development of MSMEs mega parks and manufacturing clusters
5.	Projects for setting up plug and play parks (flatted factories) as per international productivity standards.

S. No.	Proposed Projects/Policies
7.	Projects for development of Mega Agro-Food Processing Parks including dairy and Export Zones
8.	 Check viability of the projects for developing the Concentric Circular Rings as Economic Corridors: a. E&W peripheral Expressway b. Panipat-Shamli-Meerut-Jewar-Nuh-Bhiwadi-Rewari-Jhajjar-Rohtak-Panipat, and c. Karnal-muzaffarnagar-Gharmukhestwar-Naraura-Aligarh-Mathura-Deeg-Alwar-Mahendragarh-CharkhiDadari-Bhiwani-Jind-Kaithal-Karnal
9.	Projects for identification and development of Multimodal Logistics Parks (MMLP) and Dry Ports
10.	Projects be developed to upgrade at least 10 Scientific Research Institutions
11.	Projects be developed for Establishing R&D centers for manufacturing and Incubation Centers (ICs)

S. No.	Proposed Projects/Policies			
12.	Develop 100 " Smart Tourist Destination/Sites " showcasing theme-based museums/ virtual museums', heritage and natural sites			
13.	Projects to create Street Vending Zones in each city/ town in line with the Street Vendors Act, and Plan.			
14.	Development of Migration Registration/ Facilitation centers (MFCs) and Skill Mapping			
15.	Expedite development of Jewar International Airport			
16.	NCRTC to expedite implementation of prioritized RRTS corridors.			
17.	Govt. of Haryana to coordinate and implement Orbital Rail Corridor			
18.	India International Convention & Expo Centre (lICC, Dwarka)			

TRANSPORT AND MOBILITY CURRENT STATUS – Road Network

The existing transport network in National Capital Region is largely on 'radial' pattern. It comprises of Expressways, National Highways, State Highways, Major District and Other District roads

Category of Roads (length in km)	Haryana	Uttar Pradesh	Rajasthan
Expressway	47	273	-
National Highway (NH)	961	593	311
State Highway (SH)	3469	660	1247
Major District Road (MDR)	893	499	503
Other District Road (ODR)	10223	31849	918
Village Roads	1455	6085	7370
Total Roads	17048	39958	10350

- Five National Highways (NH-1, 2, 8, 10 & 24) converge on Ring Road of Delhi and one Highway (old NH-58) meets NH-24 at Ghaziabad.
- In addition, NH-71, 71-A, 71-B, NH-91 and NH-119 also pass through the region Delhi - Meerut Expressway is under construction.

CURRENT STATUS – RAILWAY & METRO NETWORK

Eight Railway lines connecting Delhi and the NCR are collectively served by about 180 trains (85 mail/express, 34 passenger and 61 EMUs) between Delhi and the NCR Towns.

Sub Region	Type of Network	No. of Stations	Length (Kms)			
Haryana	Broad Gauge	81	558.76			
Uttar Pradesh	Broad/Meter Gauge	72	396.57			
Rajasthan	Broad Gauge	42	485			
NCR	Broad/Meter Gauge	195	1440.33			
Source: NCR Monitoring and Planning Cell, Govt. of Haryana, Govt. of Uttar Pradesh, and Govt. of						
Rajasthan						

A total of 396.89 km of metro rail network exists in NCR of which 291km is in Delhi, 34.2Km in Haryana and 71.6km in Uttar Pradesh respectively.

Sub Region	No. of Towns	No. of Stations	Length (kms)	
NCT Delhi	10	211	291.026	
Haryana	2	27	34.225	
Uttar Pradesh	2	46	71.64	
NCR Total	14	284	396.891	
Source: NCR Monitoring and Planning Cell, Govt, of Delhi & Delhi Metro Rail Corporation Ltd (DMRC) Govt of				

Source: NCR Monitoring and Planning Cell, Govt. of Delhi & Delhi Metro Rail Corporation Ltd. (DMRC), Govt of Haryana, Govt of Uttar Pradesh

CURRENT STATUS – PUBLIC TRANSPORT SYSTEM

- Intercity buses between Delhi and NCR/other states and within NCR are operated by :
 - > Haryana Roadways (HR), PEPSU Road Transport Corporation (PRTC),
 - > Delhi Transport Corporation (DTC), Uttar Pradesh RTC (UPSRTC),
 - Punjab Roadways (PR), Himachal RTC (HRTC),
 - > J&K RTC (JKRTC), Rajasthan State RTC (RSRTC)

Operator (2007)	Haryana Roadways	UPSRTC	DTC	RSRTC	Overall NCR
No. of Depots	14	12	28 + 1	3	58
No. of Buses in NCR depots	1285	1219	351	289	3144
Average no. of passengers carried daily/ Bus on road	353	230	931	243	360
Avg. no. of passengers carried per day	4,12,781	2,69,155	2,97,371	67,418	10,46,724

Source- Functional Plan on Transport for National Capital Region-2032

Depots locations in NCR are focused more on state level operations

CURRENT STATUS – REGIONAL TRANSPORT SYSTEM

Regional Rapid Transit System - RRTS (under construction)

The Integrated Transportation Plan 2032 has identified eight Regional Rapid Transit corridors in the NCR. Three prioritized corridors namely - Delhi-Meerut, Delhi-Panipat and Delhi-Alwar in Phase -1.

Air Transport

IGIA Delhi is the busiest airport of the country since 2015. It has three runways, and the fourth runway is under construction. In 2018, IGIA Delhi was the 12th busiest airport globally, and 6th busiest airport in Asia. IGIA Delhi handled a cargo of 0.955 million tons in 2019-20.

EXISTING TRAVEL DEMAND (2007)

Daily Traffic at Outer Cordon

- Average daily traffic (ADT) of Passengers: **2.2 lakh vehicles** (67%)
- Average daily traffic of Goods: 63,352 vehicles (33%)

Mobility levels at Outer Cordon

- Daily Passengers Trips: **19.1 lakh trips,** PT modal share: **52%**
- Daily Freight tonnage: 3.95 lakh tonnes



Inter-Spatial Movement Pattern of Passenger Modes in NCR on Outer Cordon (Year: 2007)

KEY CHALLENGES

- Constant increase in **travel demand** but infrastructure not growing in adequate proportions
- Lack of adequate **Regional Public Transport -** low frequency, absence of integration etc.
- ▶ High share of private transport (63%) resulting in **congestion**
- ▶ Inadequate **bus related infrastructure facilities** terminals, shelters etc.
- Absence of **comprehensive policy** and a **designated authority** for bus terminals
- ▶ Inadequate terminal infrastructure, storage facilities, regulations etc. in the Logistics sector
- Small **airports** lack basic facilities like hangars etc.
- **Poor infrastructure for pedestrians and cycling** is a major challenge in urban areas
- **Road safety** is a major concern
- **Pollution** is also a major concern with vehicles contributing to 40% to 50% share
- Non-availability of CNG across NCR especially in areas beyond CNCR is another issue.
- Influx of Intermediary Public Transport (IPT) has added to the congestion on the roads.

POLICIES AND PROPOSALS



- Create a more integrated, user-centered, accessible, and affordable transportation system.
- Improve mass public transport appropriately, identifying the corridors, modes, speeds, infrastructure needs etc.



> Develop a high-capacity, high-speed, high-frequency transit network services



- Reticular grid through new expressways & missing links as required.
- Commuting time 30 Minutes from NCR limits to Delhi through new fast trains or modification of RRTS
- Develop Strategies for Integrated Mobility and Smart Transport System for sustainable future of NCR
- Expedite Delhi Mumbai Industrial Corridor (DMIC) development
- Need for more airports in NCR
- > Develop Electrical vehicles charging infrastructure



- Explore Possibilities of promoting commercial developments at all stations
- Adequate and seamless footpath/walkway connectivity in Metro and Regional Centers initially.



- Two more Circular Regional Expressways (CRE) II and III may be developed as Growth Corridors
- Access controlled and Elevated Ring Road (ERR) parallel to outer ring road in Delhi to be explored as per feasibility
- Regarding connectivity to the upcoming aviation hubs at Jewar and Hisar, it is recommended that spurs may be provided from proposed Elevated Ring Road in NCT Delhi and Circular Regional Expressways .The detail connectivity be incorporated in the Sub-regional and Master /Development Plans.
- Based on feasibility, possibility of an elevated ring road beyond NCT Delhi may be also be explored.
- > Possibility of an additional highways supplementing NH-I in north-west side of NCR may be explored to offload NH-1.
- Develop Bypass system around all urban & large rural settlements above 5000 size in region
- Enhance connectivity, linking a loop of villages by a ring road about 30 km in circumference with frequent bus services, etc. thus integrating population of all connected villages into one market
- Widening and strengthening of all National Highways (NH) and State Highways (SH)



Elevated Ring Road (ERR)



- Three priority Regional Rapid Rail Transit System (RRTS) corridors namely Delhi-Meerut; Delhi-Panipat; and Delhi-Rewari-Alwar
- All Metro Centers, Regional Centers, CMAs should be connected with RRTS by 2035
- Orbital Rail Corridor (ORC) Networks :
 - a. **ORC-1**: Palwal-Khurja-Meerut-Bagapat-Sonipat
 - b. ORC-2: Panipat- Shamli- Meerut- Jewar- Nuh- Bhiwadi- Rewari- Jhajjar- Rohtak-Panipat
 - c. **ORC-3**: Four Links
 - i. Karnal Jind Bhiwani Mahendergarh Narnaul Behror Alwar
 - ii. Alwar Deeg Kurja (may be via Mathura)
 - iii. Khurja Garhmukhteshwar –Hastinapur- Muzaffarnagar Karnal
 - iv. Meerut Panipat
 - Revival of existing Ring Rail Infrastructure in Delhi, by resolving ingress /outgress issues
 - The proposed elevated road in Delhi should have spurs to provide access to various locations of regional importance like Jewar and Hisar airport. In addition, based on feasibility, possibility of an elevated ring road beyond NCT Delhi may be also be explored.

Rail Projects

Projects for construction of ORC

Construction of Regional ORC

Construction of Outer ORC

Projects for the construction of RRTS connecting Metro centers and Regional centers

Projects for the construction of RRTS connecting CMAs

Fast Rail Connectivity Projects for 30 minutes rail connectivity from NCR limits to Delhi



PROPOSALS

Air connectivity



- International airport at Jewar near Greater Noida, UP. Area: 7200 acres
- A large aviation hub is proposed at Hisar (CMA) in Haryana
- UAV/ Drone, helipads and UAV launch pads be established at all District headquarters.
- ▶ Water Aerodromes at least one in each sub-region.
- All district and divisional headquarters should be having direct and efficient connectivity with airports.
- Heli taxi service be provided at each district headquarters & tourist destinations to promote tourism.
- Inland Waterways
 - Implementation of passenger and cargo ferry service on Inland National Waterway (NW)-110 (Yamuna River)
 - Develop passenger and cargo ferry service on major canal network in NCR like Agra Canal, Upper Ganga Canal, Western Yamuna Canal, etc.

Intra urban public transport system



- Develop Integrated transport system of different transit system technologies at city level based on contextual feasibilities.
- Encourage shared mobility (Ola/Uber/City Cabs, auto/cycles, Electric cycles) along with feeder buses/minibuses. MaaS Phase 1 be introduced
- Develop 6 Metropolitan Passenger Transport Terminals (MPTs) in Delhi

Multi-Modal Integration



- Multimodal Integrated Transit Interchanges should be developed covering Rail (Trains, RRTS, MRTS, etc.), Road (Bus/ IPT/ NMT), Air (Aeroplane/Helicopters), Water (Speed boats/ Streamers, etc.),
- Interchange designs be such that they enable seamless movement of traffic and transfer of passengers and goods.

Warehouse and Logistics facilities



- Areas for logistics zones be identified with suggested land use and land cost categorization, in Sub-Regional Plans and local level Plans
- Logistic areas be earmarked around all the Expressways-I, II & III, ORC-I, II & III, around IGI, Jewer, Hisar, all the airports and appropriate places between Industrial areas and ICDs etc.

ICT and smart mobility

4	
	20/

- Bus Terminals and Rail Terminals, enabling integration and smooth transfer in terms of fare, physical, operational amongst modes and agencies using ITS should be undertaken on priority by the NCR States.
- COVID pandemic has highlighted issues caused by inter-state blockage/ border checks as part of traffic management at borders by NCR states. Steps shall be taken to prevent closure of interstate borders across NCR in coming decades, except in emergency situations like crime control etc.

- Road safety policies are prepared and being implemented by the NCR States, however road accidents are very high in NCR. Rigorous efforts shall have to be made by all the NCR participating States to achieve the target of "Zero Road Death NCR".
- Efforts be made to get funds from MoHUA under Urban Green Mobility and Plan of Action in this regard be prepared in the Sub-Regional Plans especially covering all 5 lakh plus cities with their thrust for mobility.
- MoHUA is expected to purchase 20,000 buses for these 5 lakh + cities & capital cities. MoHUA support to these cities will be provided either through state budget, PPPs mode and per km basis. NCR States should make a plan to mobilise resources from this budget and prepare projects in their SRPs.
- Tier-II cities (as per MoHUA definition) have possibilities to get supported by MoHUA funds for Metrolite (30-40% of cost of Metro) and Metro Neo (20-25% of cost of Metro). States may make assessment and prepare plans for same, and indicate it in the respective SRPs. Such cities should undertake feasibility studies and make proposals for accessing MoHUA funds, so that the same can be planned as part of SRPs.
- ➤ Guidelines of MoHUA for universal accessibility be followed across NCR.
Institutional Arrangement

- 1. The Regulatory systems in NCR for logistics, new Rail/road/air/water connectivities and associate infrastructure should be simplified, online and time -bound with focus on Ease of Doing Business. All approvals from all agencies required for various modes and categories of transport projects should be accessible through this Online- Platform on a time-bound deemed approval ,basis, unless rejected for recorded reasons in time.
- 2. Multiplicity of authorities for transport sector in NCR has created many problems in NCR. This chaotic situation can be managed by creation of an umbrella Transport Coordinating Body for NCR which should be empowered to examine, monitor, facilitate approvals and execution of all sectors of transport projects including road, rail, water, air etc.
- 3. Delhi especially has a classic situation of confusion where different widths of roads and associated drains/sewers etc are managed by different authorities. NCT Delhi deserves a more streamlined road management by creation of a local overarching body for its roads wherein this body could have different sub-agencies if needed.
- 4. Transport Policy and Planning Group (TPPG) be established to function specifically at the Sub-regional level to plan and coordinate with agencies at the State level through Committee of Transport Secretaries (CoTS) housed within NCRPB. The TPPGs such constituted for the Sub-regions may interact amongst the TPPGs of the other sub-regions for inter- state connectivity for integrated transport planning. This group should be an "Empowered Group" with ACS level officer as its head and should take into consideration the policies for overall spatial planning for the region with the objectives:
 - a) to spell out goals and formulate policy guidelines to facilitate preparation of a Strategic Transport Plan (STP) for the sub-region and a multi-modal plan for linkages with NCR
 - b) to coordinate activities of various groups/agencies at the plan formulation stage,
 - c) to regulate allocation of funds to different agencies for coordinated development
 - d) to ensure provision of land with focus on identification, reservation, and protection for development of transport related projects.
 - e) to conduct Safety Audit of all transport plans, designs and operations.
- 5. State departments should collaborate engagement with the safety and security regulators for promoting safe air traffic in NCR with initial focus on Metro Centres and its satellite/ nearby towns.
- 6. A coordinating agency for the entire region, having a long-term goal of planning and development of a coordinated network of transport services of all modes (road/rail/air/water), needs to be constituted with representatives from various Transport Authorities, which would coordinate and take an overall and integrated view of the total transportation system in the region. NCRTC may take this role. This shall strengthen coordination and cooperation between transport under a single umbrella.

S. No.	Proposed Projects/Policies				
Road					
1.	Projects for widening of Highways (NH/ SH)				
2.	Projects for the development of Peripheral Expressway No.2				
3.	Projects for the development of Peripheral Expressway No.3				
4.	Elevated Outer Ring Road in Delhi				
5.	Development of emergency service lane/ accident recovery lanes along NH/ Expressways/ SH/ MDRs, etc.				
6.	Development of Trauma Center facilities/ hospitals on all National & State Highways and Expressways				
7.	Development of Highway Facility Centres (HFC)				
8.	Projects for Construction of missing road links (links to be identified and projects to be formulated)				
9.	Construction of bye-passes around urban and major rural settlements				
10.	Development and modernization of Bus Terminal/ Metropolitan Passenger Terminals				
11.	Seamless Footpath/walkway network in Metro and regional centres				

S. No.	Proposed Projects/Policies						
	Rail						
11.	 Projects for the development of missing rail links/ new rail lines. Broadly identified links are: a) Karnal – Jind - Bhiwani - Mahendergarh - Narnaul - Behror - Alwar b) Alwar - Deeg - Kurja (may be via Mathura) c) Khurja - Garhmukhteshwar - Muzaffarnagar - Karnal d) Meerut – Panipat 						
12.	Projects for construction of ORC						
13.	Construction of Regional ORC						
14.	Construction of Outer ORC						
15.	Projects for the construction of RRTS connecting Metro centers and Regional centers						
16.	Projects for the construction of RRTS connecting CMAs						
17.	Fast Rail Connectivity Projects for 30 minutes rail connectivity from NCR limits to Delhi						

S. No.	Proposed Projects/Policies			
18.	Construction of intra-urban transit system likes Metro Rail/ LRT/ Monorail (MRTS)/ BRTS, etc.			
19.	Development & augmentation of Ring Railway in Delhi			
	Air			
20.	Project for development of District Level Airports/ Airstrips			
21.	Develop New Helipads/ Heliports			
22.	Development of water Aerodromes			
Water				
23.	Develop inland over rivers and major Canals.			
24.	blue green network in all sub-regions			
Multi Modal Logistic Parks/ Hubs/ Stations				
25.	Development of MMLPs			
26.	Development of Multi Modal Stations			

POWER AND ENERGY

CURRENT STATUS

- There is adequate generation capacity of Power (9496MW).
- > The substations in NCR also have adequate capacity.
- Inter-state transmission system (ISTS) network is also adequate



Energy Consumption and Demand in NCR (2018-2019)

Energy Consumption	83,849 MU
T&D losses	14.68%
Energy Requirement	98,271 MU
Peak Demand	15,430 MW
Per capita energy consumption	1,694 kWh (It is 1.77 times higher than that of the Northern Region (i.e. 953 kWh).

The energy supply has met most of the energy requirement in the states.



Sub Region wise Energy supplied (MU) 2018-19





- Energy supply has improved in the last five years (2012-13 to 2018-19) across the states.
- The energy supply deficit varies from 984 MU(0.8%) in U.P., 184 MU (0.2%) in Rajasthan, 17 MU (0.1%) in Delhi (MU) and zero deficit in Haryana. (2018-19)
- Peak Demand has been met for all the states except U.P. wherein 436 MW (2.1%) has not been met.



KEY CHALLENGES

- Meeting the growing energy needs of society at a reasonable cost through development and management of various forms of energy.
- **Generation** and **Transmission & Distribution**:
- Availability of land for Power Plants and Transmission Lines is a major constraint.
- Optimization of energy generation, transmission, distribution and consumption through development of Smart Grid/ Automated systems
- Access to Energy
- Under-performance and financial stress of State-owned Power Distribution Companies (DISCOMS)
- Planning and implementation of Cyber Security in power projects/ Central Power Utilities and private DISCOMS
- Installation/ application of scaled down options of solar energy (i.e. solar rooftop)
- Achievement of E-Mobility
- Adoption of Automatic Demand Side Management (ADSM), Energy Conservation & Efficiency Improvement programmes.
- Planned Inter State (ISTS) network in NCR Area

POLICIES AND PROGRAMS

- NCR is envisaged to develop and promoted as a
 - Clean environment friendly region with emphasis on generation of renewable energy.
 - Renewable Energy and Smart Hub through adoption of solar power generation, Waste to Energy, bio-energy, automated and smart grid initiatives etc.

Note: CAGR: Compound Annual Growth Rate MU: Mega Unit

MW: Mega Watt

Energy Requirement and CAGR in NCR in MU			Peak Demar CAGR in NC	nd and CR in MW
2019-20	1.02.631,		2019-20	16,386
CAGR	4.38%		CAGR	6.14%
2024-25	1,27,149		2024-25	22,070
CAGR	4.03%		CAGR	5.78%
2029-30 1.54.916			2029-30	29,233

- Energy Supply: Ensuring uninterrupted and adequate supply of quality power to existing consumers (households/ homes, industrial, commercial and agricultural consumers) with adequate cyber security measures
- Cyber Security : Preparation and implementation of Crisis Management Plan (CMP) and identification and listing of Critical Infrastructure (CI) should be identified/ listed by the Utilities.
- **Energy access :** Providing access to electricity to all un-connected consumers
- Energy management: a right mix of renewable & non-renewable energy source need to be explored and promoted.
 - Solar energy, Hybrid renewable energy systems such as solar PV+ biomass, Commercial biogas, wind, hydrogen, etc..
 - Electric Mobility
 - Implementation of National Gas Grid (NGG) to ensue PNG in Urban areas
- Enabling Infrastructure: Dedicated utility corridors should be constructed across NCR and 100% underground cabling
- Adoption and implementation of 'smart grid' and 'smart metering' and use communication infrastructure, control systems and information.

- Investment in Distribution & Improving the Financial Health of the DISCOMs
- Reduction in electrical energy requirement and peak electricity demand through implementation of Demand Side Management (DSM)
- The ECBC is currently a voluntary programme, should be mandatory in NCR.
- Energy Efficiency and conservation should be mandatory for all activities : Energy auditors be appointed in each DISCOM subdivision and at each district under the respective DC/DM.
- Implementation of Energy Audits Schemes It should be obligatory for all big industries and utilities to carry out energy audits of their system.
- Certification of Energy Auditors and Managers
- Reduction of Aggregate Technical & Commercial (AT&C) loss and T&D (Transmission & Distribution) loss: Preparation and implementation of reduction road map and NCR States as part of their Sub-Regional Plans.
- Planned Inter State (ISTS) network in NCR Area : State Sector generation projects power evacuation system is to be planned and implemented by respective State Transmission Utilities (STUs).

Sl. No.	Proposed Projects NCR	Sl. No.	Proposed Projects Sub Region
1.	Power generation, strengthening & up gradation of transmission and distribution systems to ensure24X7 efficient electricity supply across NCR	1.	Metering of all 11 KV feeders
2.	Schemes for ensuring 24X7 access to clean cooking facilities (including bio-gas).		and transformers
4.	Schemes to promote bio-gas production and uses as clean fuel (including Goober/ Manure collection centers, bio-gas plants and distribution network).		
5.	Schemes for Dedicated utility corridors incorporating 100% underground cabling in Urban areas across NCR.	2.	Projects/measures
7.	Ensuring 100% 'smart metering' and implementation of 'smart grid' across NCR.		for reduction of AT &T losses
8.	Setting up of EV Charging Station and related infrastructure across NCR.		
9.	Replacement of old appliances and 100% lighting of city facilities & streets through LED lighting.	3.	Schemes for achieving
10.	Framing of Schemes to enable 100% Automatic Demand Management System (ADSM) (SCADA, EMS, etc.)		higher Green Energy
11.	Schemes to have 'Mega Solar Parks' in NCR Districts.		MoP target of 57 %.
12.	Scheme for Rooftop PV System		
13.	Plan for pumped storage plants dedicated to NCR requirements,		
14.	Schemes for strengthening of power distribution system in UP sub-region as proposed by the Govt. of U.P.		

WATER AND DRAINAGE CURRENT STATUS

- Total domestic water demand for the NCR in 2031 is estimated to be about 10,389.58 million litres per day (MLD), which is likely to rise to 13,399.42 MLD by 2041.
- For two-third of water demand, the NCR depends on water sources located outside of the region. For another 31 percent, the region depends on ground water for water supply in urban areas of the NCR.
- In the Uttar Pradesh (UP) Sub-region, dependency on ground water for urban water supply is very high (88 percent) followed by urban areas of the Rajasthan Sub-region where it is 54 percent.

CURRENT STATUS

Average Change in Ground Water Table in the NCR, 2012-2018 (in meters below ground level)

S. No.	Sub Region	Average depth of water table in 2012	Average depth of water table in 2018	Change in Water Table (2012-2018) (Meters below ground level)
1.	Delhi	13.32	15.23	-1.91
2.	Haryana	17.25	22.32	-5.08
3.	Uttar Pradesh	14.17	17.36	-3.19
4.	Rajasthan	19.95	25.64	-5.69

Local sources of water supply such as ground water are depleting, water is increasingly getting polluted, and ground water is becoming unusable.

CURRENT STATUS

- Inequitable coverage of water supplies in urban areas of the NCR:
 - In Delhi urban area coverage of water supply is the highest i.e.
 92 percent through piped water supply and rest through tankers.
 - In Rajasthan Sub-region has the lowest urban water supply coverage (73.9 percent).
 - The U.P. Sub-region has the lowest water supply coverage of 42 percent and Rajasthan Sub-region has the lowest service level of 34 LPCD against a standard of 70 LPCD.



Water Treatment Plants, 2021

• The NCR has insufficient number of water treatment plants. A total number of towns without water treatment plants (WTPs) are 94 (two third) and only 31 towns have water treatment plants (WTP).





KEY ISSUES AND CHALLENGES

- Increasing water demand, little reuse of wastewater and shrinking fresh water sources cause widening gap between demand supply.
- Insufficient infrastructure for the treatment of wastewater hinders augmentation of water supplies.
- Non-implementation of three proposed dams namely, Renuka dam, Lakhwar dam and Kishau dam along with the proposed Sharda-Yamuna linkage project is very important for rejuvenation of water in Yamuna.
- The unaccounted for water (UfW) is also high in urban areas of the NCR with the highest in Delhi (nearly half).
- Most of the village settlements are not connected with potable piped water supply networks.

- New sources of water for the NCR population should be explored. This should be done by promoting inter-basin transfers as one of the possibilities.
- Integrated approach should be adopted for the revival and rejuvenation of rivers and major water bodies in the NCR.
- Flood waters of the rivers Yamuna, and Hindon may be stored in barrages and floodplain reservoirs could be regulated like flood tunnels in Tokyo. These structures could be used to store excess monsoon over flows at suitable locations, which could then be used for managing aquifer recharge like it is done in Singapore.
- Reuse of wastewater should be adopted as one of the main water policies to augment the increasing water demand in urban settlements by preparing time bound plans for implementation.

- Adoption of Water sensitive planning for creating blue-green infrastructure in the NCR should be mainstreamed in all four states.
- Strategies for the localization of storm water runoff should be made an integral part of urban and rural development plans for recharging aquifers.
- The NCR and participating four states should undertake promotion of artificial groundwater recharge including recharge in areas such as ridges, roof-top rain water harvesting, rainwater harvesting of runoff from roads and flyovers, deepening and rejuvenation of village ponds and lakes, etc.
- The four states should start a drive in mission mode to separate stormwater drains from sewage drains so that storm water is used for groundwater recharge in all sub-regions of the NCR.

- Sub-regions should devise mechanisms to monitor and control the quantity of water to be withdrawn and maximum limit of ground water withdrawal should be fixed for such areas.
- The NCR need to have a single digital platform for all issues related to water and drainage including interstate issues. Introduction and adequate use of appropriate tools of integration such as GIS and databases, need to be promoted.
- Work on registration and geo-tagging of all bore wells and other wells across the NCR should be made mandatory for effective monitoring and management of groundwater resources through an online portal.

- Efforts be made to reduce water consumption under agriculture by 75-80% and accordingly also strive for increasing Water Reuse from 30% in Delhi to 50% in all urban areas by 2026, 70% by 2031 and 85% by 2036. There has to be an account of water use. It should be made mandatory.
- 100% mandatory registration and Geo Tagging of bore wells and construction of future bore wells should only be allowed after having permission from the competent authority and that too in the non-scarce region.
- Recycling of water to be emphasized upon. Around 90% of water may be recycled. Delhi and NCR region should start with 40% within 3 years, and should go upto 50% by 2026, 70% by 2031, 80% by 2036
- The old abandoned canals should be used for water supply pipelines. This will save the land acquisition cost for new water channels/ pipelines. Suitable measures be taken in this regard and an action plan be prepared and incorporated in the Sub-Regional Plan-2041 of each sub-region.
- Possibilities to bring sea water pipeline to Delhi / CNCR from the nearest sea water source (e.g. Kandla) may be explored in order to meet the non-portable water requirements especially for large size industries, commercial establishment, etc. So that the fresh Water available in NCR can be reserved for portable purposes. However, it is also important to take all steps to conserve available water and ground water.
- Earmarking of flood plains be carried out by the NCR participating states in their respective sub-region as being carried out in NCT Delhi.

- To be a water + region, "water balance table" for each sub region, district and towns of the NCR should be prepared, as part of Master Plans and District Development Plans.
- State level agencies should be directed by states for preparing the Water Balance Table and funding for same may be sourced through Jal Jeevan Urban mission of MoHUA.
- Unaccounted water should be reduced across the NCR and specific targets should be provided for each district in the respective Sub-Regional Plans and Master Plans in this regard. States should give status and targets in the SRP and Master plans for the same
- 100% all urban areas in NCR should be made 100% water secured. In this regard, target be set in the SRPs and funds available with MoHUA in this regard, be utilized.
- Service Level Benchmarks (SLA) should be decided by the States in their SRPs, District Development Plans (DDPs) and Master Plans and funding available under (Jal Jivan Mission Urban) should be tapped to achieve the required service level benchmark.
- Water ATM should be facilitated/ set up in areas where piped water supply is not feasible and areas where water is contaminated due to industrial activities or waste landfills in vicinity (sites nearby solid waste management sites saline areas, etc.)
- Waste water treatment and water bodies rejuvenation are major elements of Jal Jivan Mission (Urban). NCR State should prepare their Action Plans / proposals in this regard and get funds from the MoHUA, and make this part of SRP.

- Schemes for augmentation of water supply including new water treatment plants (WTPs) and 100 percent piped water supply coverage across the NCR, specifically rural settlements.
- Schemes pertaining to revive i.e. conservation and restoration, geo-tagging and geo-fencing of water bodies, ponds, lakes, etc. by way of catchment treatment, de-siltation work and deepening for ground water recharge.
- Schemes should be prepared for areas surrounding hills, ridges, etc. in the NCR enabling higher subsurface recharge by constructing trenches, gully plugs, gabion structures, etc.

- Scheme for 100 percent coverage of the NCR with storm water drainage network (separate from sewerage) but integrated with ground water recharge facilities.
- Schemes to store flood water of the rivers Yamuna, Hindon and Ganga by way of construction of barrages, regulated floodplain reservoirs, and green storm water infrastructure (GSWI), etc.
- Project for increasing embankment heights of all drains across the NCR including Diversion Drains 6 near Piau Manihari, and Diversion Drain 8 near Garhi Birdroli Sonipat.

- Schemes for 100 percent water metering and water auditing for the key water guzzling sectors.
- Schemes for the replacement of the existing non-porous and permeable pavements across the NCR.
- Expediting and completing Sharda-Yamuna River Link Project like Renuka Dam, Lakhwar Dam, Kishau Dam.
- Sanction and Implementation of Eastern Rajasthan Canal (ERC) project.
- Scheme for building rainwater harvesting structures in all settlements across the NCR.

SANITATION AND WASTE MANAGEMENT CURRENT STATUS

- NCT of Delhi generated 4,155 MLD of sewage and had the treatment capacity of 2,694 MLD, which is about 65 percent of the total sewage generated. Haryana has treatment capacity of 60 percent, Uttar Pradesh 37 percent and Rajasthan has 32 percent.
- NCR has 133 STPs out of which 60 STPs are located in the Haryana Sub-region, 35 in Delhi, 35 in Uttar Pradesh Sub-region, and 3 in Rajasthan Sub-region. Wastewater generated in Delhi finds its way through the drains into the river Yamuna.

Sub Region Wise Sewerage Network Services in Urban Areas of the NCR

S. No.	Region and Sub- Region	District Level Coverage of Sewage Network Services in Urban Areas (percent of total area)	
1.	Delhi	79.00	
2.	Haryana	81.36	Source: NCP Planning and Monitorin
3.	Uttar Pradesh	16.54	Cells, 2019.
4.	Rajasthan	97.89	Note: District level coverage of sew network services in urban areas
	NCR	68.70	excludes data of Faridabad, Jindanc Baghpat districts

age

CURRENT STATUS

- The total solid waste generated in the NCR is 20,099 metric tons per day of which the NCT of Delhi has the highest share of 66 percent, followed by Uttar Pradesh Sub-region with 19 percent and Rajasthan Sub-region with 2.51 percent.
- The NCT of Delhi claims to have achieved the target of 100 percent service level benchmark, Uttar Pradesh Sub-region with 97.38 percent, Haryana Sub-region with 87.81 percent and Rajasthan Sub-region has the lowest with 87 percent.

Sub-Region wise Solid Waste Generation in Major Urban Areas, 2019

S. No.	Sub Region	Solid Waste Generation (MT/D) in urban areas	Household level coverage of solid waste management services (100%)	Efficiency of collection of municipal solid waste (100%)	Percent of total waste generation in urban areas
1.	Delhi	13,250.00	100.00	100.00	65.92
2.	Haryana	2,514.88	87.81	92.91	12.51
3.	Uttar Pradesh	3,830.40	97.38	99.17	19.06
4.	Rajasthan	504.00	86.97	85.91	2.51
Total NCR		20,099.28	93.04	94.50	100.00

KEY ISSUES AND CHALLENGES

- The rivers Yamuna, Hindon, Kali Nadi and various seasonal streams and drains in the NCR are under severe water quality threat due to dumping of untreated sewage polluting downstream areas.
- Surface water bodies and rivers are becoming unfit for bathing and unsuitable for supplying drinking water.
- Large percentage of population have septic tanks and often dump wastes in the open environment. one truck of faecal sludge and septage carelessly dumped equals 3,000 people defecating in the open.
- Sewerage systems in the NCR have inadequate capacity of STPs.
- Waste segregation is critical to solid waste management. Treatment, storage, and disposal facilities need to be provided for hazardous and e-waste.
- Unavailability of land for landfill sites for disposal and management of wastes scientifically, poor segregation of wastes at source, and poor public awareness.
 - Inadequate financial resources, piecemeal approach towards handling of solid wastes, appropriate training and knowledge of municipal staff.

- Target of 100 percent coverage of population and area with sewerage networks
- Decentralized and localized sewerage system should be developed
- Hasten the process of land use change for critical services like sanitation services.
- The NCR sub-regions should adopt ODF++ policy. The ODF++ is about treating the faecal material before discharging it in water.
- Target for ODF ++ by 2025 for Metro and Regional Centres, and by 2031 for rest of towns in NCR be incorporated in Draft RP 2041.
- All metro centres in NCR should achieve 7 star rating against the Garbage Free Indicators of Swatch Bharat Mission Urban of MOHUA by 2023. This should be achieved in all regional centres and urban areas with 1 lakh and above population by 2024. Further, rest of the areas in NCR should achieve 3 star rating by 2025.
- Emphasis should be placed on developing a decentralised sanitation system (DSS) and treated wastewater from STPs in urban or rural areas should be channelized.
- Subsidies available for double pit toilets in SWM should be availed and unsafe disposal practices of sewage or faecal sludge and careless dumping of septage should be discouraged.
 - The National Policy on Faecal Sludge and Septage Management should be followed throughout the NCR.
 - The NCR recommends a complete ban on manual cleaning of manholes and sewers with immediate effect.

- All master development plans should clearly earmark lands for STP.
- Manure produced from organic wastes should be taken up to ensure the quality of manures produced by certification.
- District wise specific plans should be prepared for resource requirements vis-à-vis waste management in terms of wastewater and solid wastes.
- GIS mapping of the existing sewerage systems with installed and operational capacities as well as proposed networks should be prepared and updated.
- Public awareness campaigns should be organized for encouraging sewage connections, reuse of treated water, low-cost sanitation methods
- All cities and towns should practice 100 percent door to door collection and segregation of solid wastes.
- Livestock excreta or dung disposal units like vermi compost, biogas plants, etc. should be encouraged.
- On-site composting should be made mandatory for all mega events, fairs, festivals, etc.
- Local authorities should consolidate the existing plans and long-term needs into a comprehensive waste management plan.
- About 10-15 percent park area should be dedicated to garden waste and appropriate bylaws should be formulated.
- Authorities and ULBs should plan for 'waste to energy' plants using technologies.

- No land should be allotted for illegal use of garbage dumps.
- All urban areas in the NCR should prepare city sanitation plans as per the National Urban Sanitation Policy, 2008, and integrate them with sub-regional level sanitation strategies.
- As per the Swachh Bharat Mission (Grameen), all 3 tier panchayats of sub-region should declare themselves 'opendefecation free' (ODF) and progress towards ODF ++.
- Solid waste rules like Solid Waste Management Rules, 2016 and other many more such as E-Waste Management Rules, 2016, Bio-Medical Waste Management Rules, 2016 and other etc., should be implemented by local bodies in the NCR.
- All local authorities should prepare a roadmap for waste management:

(a) Enforcement of segregation of wastes (b) Ward by ward mapping and coverage to ensure segregation at source (c) Building awareness in households (d) Distribution of bins (e) Monitoring of progress to achieve the desired objectives (f) Ensuring compliances from bulk generators (g) Ensuring compliances from street vendors (h) Creating infrastructure to collect segregated waste (i) Protection and training of waste collectors (j) Ensuring compliance over processing of segregated streams.

- All metro and regional centres, Municipal Corporations / ULBs and District Headquarters will mandatorily have 100% mechanical cleaning of all Sewage Systems/machine holes by 2023 and in rest of the NCR by 2026. This should be mandatory in all district headquarters, metro centres, regional centres, areas under Municipal corporations /ULBs in NCR.
- Extended Producer Responsibility (EPR) nodal coordinators in each district, ward in towns and cities and in each village for all companies.
- Funds for underground drainage should be available with NCR participating States for their respective sub-regions.

- Coverage of urban areas with sewerage and sanitation facilities including decentralised and centralised sewage treatment plants, septic management, etc.
- 100 percent segregation of wastes at source and door to door collection.
- Projects having C and D waste recovery facilities should cater to nearby small towns and villages.
- Projects for material recovery facilities at ward and village level.
- Projects for replacing soak pits with decentralised STPs across the NCR.
- District wise specific plans for resource requirements vis-à-vis waste management in terms of wastewater, and solid wastes.
- Projects for STPs or DSTPs and Common Effluent Treatment Plants (CETP) bring out extent of reuse and area and population proposed to be served.

AGRICULTURE & ALLIED ACTIVITIES CURRENT STATUS

• Total area under various crops in the NCR is 58 lakh hectares as shown:

S. No.	Category of Crops	Area in '000 hectares	Average Yield (kg per hectare)	Percent share of area under different crops
1.	Food Grains	4,215.79	2,441.42	72.5
2.	Pulses	100.88	481.50	1.7
3.	Oilseeds	864.33	595.53	14.9
4.	Commercial Crops	632.05	11,155.22	10.9
	Total Area	5,813.05	3,668.42	100.0

- In the NCR, sugarcane is being produced in Meerut, Bulandshahr, Baghpat, Hapur, Shamli and Muzaffarnagar districts of Uttar Pradesh, and in Rohtak, Sonipat, Panipat and Palwal in Haryana.
- The NCR is also an industrialized region. This region cannot exist without linkages with agriculture..

- The region's peri-urban areas have the potential of growing fruits and vegetables through organic farming with the use of bio-wastes or recycled wastewater for the production of fresh organic foods at reduced costs.
- Considering the prospects of dairy production in the NCR, the regional markets are poised to grow from about 100 lakh litres per day to 650 lakh litres per day by 2041.
- It is estimated that in order to meet growing milk requirements of the NCR, Uttar Pradesh and Haryana shall have to meet 65 percent of the total requirements in 2041.

KEY ISSUES AND CHALLENGES

- Enhancing farm incomes is one of the top priorities. Diversified agriculture and off-farm activities are also becoming important.
- Increasing per capita consumption, large market size and availability of milk without compromising quality.

- Milk collection from villages and transfer to milk chilling and processing facilities is not always hygienic and timely, leading to loss of quality and curdling or souring of milk in significant amounts, especially in the summers.
 POLICIES AND PROPOSALS
- Animal farms and poultry could benefit from the consumption of farm residues and wastes could be used in animal farms.
- Action plans at sub-regional level should be prepared to enhance area under horticulture and organic farming in the NCR from 10 percent to 20 percent by 2041.
- Bacterial culture based slurry should be used mandatorily across NCR for Stubble Burning/ Paralli management along with other strategies.
- The number of bore wells of all types and sizes be identified, Geo-tagged and registered by 2023 across NCR, same to be followed for new wells.
- Water consumption levels in agriculture sector should be managed through right choice of crops in accordance with water availability.
- All efforts should be made to use the treated recycled or wastewater or sewage water for agriculture purposes.
- In order to monitor water supply and conservation of water, water metering of agricultural supplies should be made mandatory in the NCR.
- Food grains are necessary for food security. High value crops like spices, and medicinal plants should be promoted as they are linked with increasing incomes of farmers.
- Explore possibilities of freshwater pearl farming.
- Efforts be made to channelize all edible food waste to feed empty stomach.
- Network of Bulk Milk Cooler (BMC) based procurement from every cluster of 2000+ population.
- UHT based dairy plants with aseptic packaging for longer self life of packed milk in every district. There should be a milk Powder Plant facility in such dairy plants catering to 2-3 district each.
- Transparent Milk procurement with online real time testing and alert based immediate transfer of milk prices to farmer's accounts.

PROJECTS

- 100 percent metering of water supplies for agricultural purposes even if subsidies are given.
- Rainwater harvesting structures should be prepared for agriculture sector considering natural drainage systems, ponds, lakes, etc.
- Schemes covering canals through solar power projects should be initiated.
- Schemes for mega agro-processing parks and export zones should be implemented in association with APEDA.
- Terminal agri-market schemes along with collection centers in surrounding districts should be implemented.
- Development of warehouses and cold chain systems along expressways and highways in the NCR.
- Build agri-produce certification centers in all district headquarters of the NCR.
- Build compost or waste based manure certification centers in all district headquarters of the NCR.
- Development of agriculture and village based tourist centres at cluster level should be carried out. ICAPs should identify such centres.

RURAL DEVELOPMENT CURRENT STATUS

- Remote sensing data of 1991 showed that about 91 percent of the area of the NCR was rural, accommodating about 43.61 percent of population in 1991, which increased to 45.44 percent in 2001.
- The Rajasthan Sub-region is predominantly rural with 81.53 percent of rural population, followed by the Haryana Sub-region with 63.55 percent, and the Uttar Pradesh Sub-region with 56.06 percent.
- The NCT of Delhi with only 2.5 percent population living in rural areas as per Census of India, 2011.
- Decadal change of rural population in the NCR is declining but there is an increase in absolute rural population in the NCR.
- The NCT Delhi is lagging behind in rural development programs.
- No Integrated Cluster Action Plans (ICAPs) were prepared under Rurban Mission for rural areas of the NCT Delhi. The Haryana Sub-region has covered such plans under the cited mission.

KEY ISSUES AND CHALLENGES

- The existing Town and Country Planning Acts of the constituent states but these acts do not have any control over development activities in rural areas outside the controlled or regulated areas. These acts doesn't make any provisions for the preparation and implementation of ICAPs. Either we amend the existing acts or enact new laws for spatial rural development.
- Legislations on city planning, and urban and rural local government run parallel to each other and do not compliment.
- Government of India and the participating states have various development schemes for rural development, which are not embedded in the policies and proposals of the sub-regional plans and district development plans for implementation in rural areas.
- Prevailing acts and policies of the participating states do not have any control over the location of urban activities in rural areas outside notified areas.

• This results in large scale haphazard development of urban activities, and construction outside notified areas by way of conversion of rural agricultural lands to urban activities has become quite common.

POLICIES AND PROPOSALS

- Uttar Pradesh, Haryana and Rajasthan should identify in the sub-regional plans comparably less developed NCR districts on carefully selected development parameters such as income, employment, resources, land, literacy, life expectancy, infant mortality, productivity and per capita income, etc.
- The sub-regional plans should recommend strategies for balanced development of these districts.
- State governments should insist on the preparation of constitutionally mandated district development plans in the NCR.

- The sub-regional plans should broadly set out socio-economic goals for each district and existing state and center sponsored schemes to be incorporated in this regard.
- The states should wholeheartedly adopt the policies of the Rurban Mission across the rural NCR. ICAPs should be prepared in all districts of the three NCR states with a priority given to less developed districts within no more than one year.
- The demand for exotic agriculture products in large cities in the NCR is increasing and should be met through cultivation of non-conventional crops such as mushrooms, broccoli, baby corn, bamboo shoots, poultry, and fish.
- In addition, farmers should be given low interest loans for floriculture.
- The sub-regional plans should indicate special rural investment areas through strategic partnerships between relevant government agencies, private sector, NGOs and CBOs.

- The state governments should make necessary provisions by extending the provisions of the *Model Spatial Planning Guidelines* adopted in March 2019 by the Ministry of Rural Development, Government of India.
- Every Panchayat/Gram Sachivalayas should have IT Center, CSCs, health service center, dairy milk collection and Bulk Milk Coolers, primary agriculture / horticulture processing center, packing center for perishable marketable surplus, skilling coordinator center, etc.

PROPOSED HIERARCHY OF RURAL SETTLEMENTS

Tier	Category	Broad Description
Ι	Service Centres - A Nodal Point	Act as Nodal Point for the economy covering an area of about 15-20 km radius.
ΙΙ	Central Village or Bazaar Village	Generally, such villages have a weekly trading activity in spaces like "haats or rural vending zones". These are weekly markets where people come from around 7-8 km gather either for sale of their local products or as buyers for the non-local products on a weekly basis. Suppliers and shoppers converge from outside areas to sell their products not available or produced in local areas.
III	Medium Villages	Villages having some common facilities like post office, senior school, and agricultural processing units. Serves villages in around 2-3 km area.
IV	Small Villages	Served by Medium Villages for common facilities.

PROJECTS

- Projects for the development of *rurban clusters* with growth centers through the ICAPs.
- Projects for the setting up of the *Common Service Centres* in rural areas.
- Projects to develop infrastructure that support and improve micro and household enterprises in rural settlements in the NCR.
- Projects for ensuring optical fiber connectivity in all rural areas of the NCR.
- Projects for the establishment of facilitation centres for skills development and mapping.
- Projects for rural road development.
- Projects for rural electrification.
- Projects for rural water supply.
- Projects for rural housing other than PMAY.

HEALTH CURRENT STATUS

- Hospitals: In NCR there are about 150 Govt. hospitals, more than 200 CHCs, and above 580 PHCs. In Haryana sub region, districts like Palwal, Mewat and Sonipat have only one district level hospital whereas other districts like Gurugram, Faridabad and Jind have more than 3 district hospitals. Similarly in UP & Rajasthan sub regions Baghpat, Alwar & Bharatpur districts have only one district hospital each, in comparison to other districts like Bulandshahr, and Ghaziabad. There are over 2000 private and charitable health facilities.
- Blood Bank: NCR has about 177 blood banks both government owned (50) and private (127).
- Trauma Centers: There are about 19 trauma centers in NCR (NCT Delhi-08, Haryana subregion-03, U.P. sub region-05 & Rajasthan sub region-03) with bed capacity of 426, nursing staff of 128 and 62 doctors
- Private, co-operative and other non-profit organizations are also medical services available to the public.

KEY CHALLENGES

- WHO standard is of 1 doctor /1000 persons the NCR states of Uttar Pradesh (1/ 19,962), Haryana (1/10189), Rajasthan (1/10,976) and even NCT of Delhi (1/2203) lag far behind till 2018.
- Challenges are w.r.t poor referral mechanism, lack of trained manpower, poor network of Ambulance, lack of accidental trauma centres with trained critical care specialist, etc.
- Floating' populations' from the neighbouring areas; seeking treatment extends the problem.
- ► The Indian **Public Health Standards (IPHS)** were published in 2007 and have been revised in 2012, which indicates services are lacking as per standards .

POLICIES and PROPOSALS

- Implementation of Ministry of Health and Family Welfare (MoHFW) flagship scheme 'Ayushman Bharat', to achieve the vision of UHC, designed to meet SDGs and its underlining commitment, which is to "leave no one behind."
- Healthcare facilities of the neighbouring States (especially in NCR districts) to be strengthened to reduce the burden on the tertiary care facilities in Delhi.

▶ There must be a Community Clinic in each ward, Medical first-aid center accessibility within a radius of 3km in the main city and new townships, and within a radius of 10 km in suburbs be ensured.

- At least one Hospice be created in each district for rural areas and separately in each town/ city in the districts.
- Each district should also have a Medical College and Nursing training centre in NCR .
- ▶ Hospitals should have capacity to deal with disaster management or emergency services.
- E-Health Record System
- > Online registration/consultation system to tackle proper referral mechanism and OPD time.
- Health Mapping System on Cloud
- Paramedic Training Colleges like Medical Colleges
- Insurance for middle income Groups or financial Intermediaries
- Each district should have a Medical College and Nursing training centre. Such college & Nursing training centre be equipped with quality hostels/ accommodation facilities. Further, efforts be made by the NCR States to ensure adequate Nursing hostels and accommodation for para medical staff.
- Mandatory earmarking /allocation of adequate Land and allotment through lottery only to reputed institutions every two years, if unallocated, on land prices frozen on current level till next RP, on condition of reasonably priced health services; this may be ensured for every ward of towns with more than 01 lakh population and every town up to 1 lakh population, for primary and secondary Health care facilities.

PROJECTS

- Project/ Scheme for upgrading existing hospitals and medical facilities (to provide disease specific acute care like stroke centers, neurosurgical centers, Geriatric Clinics and Palliative Care Clinics, etc.)
- Project/ Scheme for up-gradation of existing Trauma Care Center, facilities for accident cases etc. (along with adequate number of ambulances) and development of fully equipped new Trauma Care Center.
- Project/ Scheme for creating medical functional agglomeration areas with ancillary facilities.
- Project/ Scheme for upgrading/ improving or having Community Clinic and/or Healthcare Wellness Centres in each ward
- Project/ Scheme for development of Hospice / Geriatric Clinics and Palliative Care Clinics
- Project/ Scheme for having Medical College and Nursing training centre
- Project/ Scheme for having Nursing hostels and accommodation for para- medical staff.
- Project/ Scheme for Establish an International Level Central Public Health University in NCR.

EDUCATION & SKILL DEVELOPMENT EXISTING STATUS

- As per 2011 Census, Mewat district in Haryana with 56.1 percent and Shamli district in Uttar Pradesh sub region with 58.7 percent are the two districts with the lowest literacy rates, while New Delhi district of NCT of Delhi has the highest literacy (89.4 percent).
- There are 3 districts in the region where literacy rates are in the range of 60-70 percent and these districts are Karnal in Haryana, Muzaffarnagar in Uttar Pradesh and Bharatpur district in Rajasthan.
- There are 7 districts in the region where literacy rates are in the range of 70-75 percent and these districts are Palwal and Mahendergarh in Haryana, Baghpat, Bulandshahr, Hapur and Meerut in Uttar Pradesh and Alwar district in Rajasthan.
- Panipat in Haryana is the only district in NCR that has literacy rates between 75 and 80 percent.
- All the rest of the districts (including whole of NCT Delhi), have literacy rates above 80 percent.

SCHOOLS IN NCR 2016-17

District/State	No. of Elementary Schools (per Lakh Population)	No. of Secondary Schools (per Lakh Population)	No. of Elementary Schools (per Sq. Km.)	No. of Secondary Schools (per Sq. Km.)
Delhi	34.11	12.43	3.86	1.41
Haryana	86.28	31.72	0.59	0.22
Uttar Pradesh	79.62	9.27	1.08	0.13
Rajasthan	134.59	47.18	0.62	0.22
NCR	74.44	20.06	0.83	0.22

Enrolment at elementary level in the NCR is found to be the highest in Delhi where total children enrolled is 29,88,501 which is followed by Uttar Pradesh (27,99,184), Haryana (25,49,300) and Rajasthan (10,98,240).

• The average elementary level enrolment per district in NCR districts reveals that it is the highest in Uttar Pradesh (3,49,898) followed by Delhi (3,32,055) while in Haryana it is lowest (1,96,100). However, Rajasthan having only two districts in NCR, has 5,49,120 children enrolled at elementary level.

ENROLLMENT IN SCHOOL EDUCATION

- At the secondary level total enrolment in Delhi (12,32,736) is the highest among the NCR followed by sub regions of Haryana (10,00,333), Uttar Pradesh (9,12,068) and Rajasthan (3,98,580).
- However, average secondary level enrolment per district for NCR sub regions shows that it is also the highest in Rajasthan (1,99,290), followed by Delhi (1,36,970), Uttar Pradesh (1,14,008) and Haryana (76,949).

HIGHER EDUCATION AND OTHER COURSES

- The NCR is also home to a large number of Universities, technical education institutions, IIT, SPA, NIT, AIIMS and other such specialised institutions.
- > Several medical college/nursing college facilities are available
- Specialised Dairy development, Agriculture, Food technology, Design and Fashion, Sports and Management institutions are also available.
 - A large number of colleges also provide a diverse set of educational offerings.
 - Polytechnics provide special skill sets for various technicians.

- > Several institutions providing a variety of computer courses are available
- > Delhi is also a major hub for CA and IAS training

NEW INITIATIVES OF THE GOI

- New Education Policy 2020, DIKSHA Portal and SWAYAM Program
- NEAT (National Educational Alliance for Technology) for better learning outcomes in Higher Education
- MoSDE has formulated the National Skills Qualifications Framework (NSQF), it convey education according to levels of knowledge, skills and aptitude.
- NSDC (National Skill Development Corporation) is a Public-Private Partnership Company was set up by Ministry of Finance for coordinating/ stimulating private sector initiatives in skill development.
- Govt. Institutions like Central Staff Training and Research Institute (CSTARI) Kolkata, National Instructional Media Institute (NIMI)-Chennai, NIESBUD-Noida, NIEPA-Delhi, National Council for Vocational Education and Training (NCVET), National Institute of Technical Teachers Training & Research (NITTTRs), etc. which are helping in imparting training and developing course material on various aspects.

NCVET has a target of skill training of one crore youth/ annum through apprenticeship, skill training labs in schools and promoting entrepreneurship through YUVA programmes.

KEY ISSUES AND CHALLENGES

- Diversity in educational requirements in urban and rural areas
- Demand for specialised skill sets for diverse economic and industrial activities
- Limited land availability for setting up new educational institutions
- Low quality of government school infrastructure vs. need to implement RTE
- Huge demand for skilled labour force particularly in the construction sector
- Addressing emerging skill needs viz. beauticians, drivers, catering, logistics, retail, healthcare workers, eldercare, interior decoration, gardening, electricians, plumbers, carpenters, entertainment, TV and telecommunication, sports education, paramedical, tourism, domestic workers, real estate brokerage, fintech, computer skills, etc.
 - Need for skilling in emerging new areas of agriculture viz. floriculture, etc.

POLICIES AND PROPOSALS

- Ensure adequate and evenly spread out elementary, secondary and high schooling facilities in all the sub-regions, both in urban and rural areas as per URDPFI Guidelines
- Provide for adequate schools for vocational training, ITIs and polytechnics
- Provide for adequate schools for persons with special needs/abilities
- Promote 'educational hubs' in existing cities
- Promote 'University Campus Towns' which are self contained
- Promote quality upgradation of existing government institutions
- Promote new educational institutions which impart skills in emerging areas
- Educationally deficient regions to be given priority
- States to explore possibility of having another IIM in NCR possibly in Bharatpur or districts of UP sub region.
- Establish a skill registry and labour workforce management system and prepare SKILL DEVELOPMENT PLANS for all districts
- Skill Registry Office at District Hq., Tehsil Hq., Block Hq. with digital platform linked to Aadhar and capture skill of residents & migrants. This Registry should be linked to Swayam Portal for further learning, to NSDC portal for further skilling and for getting certification. It should also be linked to soft skill training videos, and should be used for assisting migrants (going out & coming) and should be having details of ration cards, etc. too for buying.

There should be NSDC coordinator in each NCR district to assist DM/DC in working of District Skill Registry Centers along with other staff for better synergies

POLICIES AND PROPOSALS

- Migrant Facilitation Center (MFC) Migrant registration should be mandatory to keep track of all persons moving rural areas and entering urban areas or vice versa. Necessary infrastructure should be created accordingly at district, tehsil, block and gram panchayat level and data should be shared through public portals. The registration be linked with aadhar number and thus with the common data base. Registration centers could be developed as Migrant Service/Facilitation Centers (MFCs) also providing orientation about the city/town, shelter home allocation till rented accommodation arranged, list of local contractors registered, Fair Price shops, govt. dispensary details, accident insurance coverage etc. MFCs should liaison with Industries for placements and with Sector Skill Councils for training and certification. Regular medical check-ups and requisite counselling along with soft skill video trainings etc. for migrants be organised every fortnight /weekly at these MFCs. MFC will also act as Skill Registry Office.
- District Skill Coordinators will be sitting with MFCs, who would either be heading the MFC or closely coordinating/liasoning it. They would be appointed by Central Skill Council/NSDC. District Skill Coordinator would be located within MFC. May be located within ITI campus at District Hq. or at any other suitable place decided by the District Magistrate.
- Provisions for Gig workers (Temporary and on call workers)
- Strengthening digital infrastructure for encouraging all the new initiatives of the Ministry of Education, Government of India and the NEP 2020
- Mandatory earmarking /allocation of adequate Land and allotment through lottery only to reputed institutions every two years, if unallocated, on land prices frozen on current level till next RP, on condition of reasonably priced Education services; this may be ensured for every ward of towns with more than 01 lakh population and every town up to 1 lakh population, for primary and secondary educational facilities.

PROJECTS					
SI. No.	Proposed Projects/Policies	Phase -I (2021-2026)	Phase -II (2026-31)	Phase -III (2031- 2036)	Phase -IV (2036- 2041)
1	Projects/ Schemes for up-gradation of existing higher educational institutions with adequate facilities.	To be done by 2026	-	-	-
2	Projects/ Schemes for Special Needs School	At least one in each district.	-	-	-
3	Projects/ Schemes fordeveloping world-class universities	At least one in each sub-region.	-	-	-
4	Projects be developed to upgrade at least 10 Scientific Research Institutions	At least one in each sub-region by 2023	Remaining 06 by 2031	-	-
5	Projects for National Center for Student Assessment	To be developed in Haryana sub-region	-	-	-
6	Projects for having a National Center for Education Technology	To be developed in U.P sub-region	-	-	-
7	Projects for having Skill Registry	To be developed in each district by 2023	-	-	-
8	Projects for having Multi-Sector Training Centers in consultation with NSDC	At least one in each district.	-	-	-
9	Projects be prepared to establish/ upgrade Teachers' Training and Faculty Development Institute	Al least one in each district	-	-	-
10	Projects be prepared to establish/ upgrade Colleges, ITIs, technical institutions, etc.	To be done for each district	-	-	-
11	Project for establishing/developing Indian Institute of Management (IIM)	At least one in NCR			

SPORTS & SOCIAL FACILITIES CURRENT STATUS

- NCR has more than 300 Sports Training Institutes imparting sports education and training to national and international sports persons.
- About 51% of facilities are privately owned followed by state owned facilities (34%) and Central Govt. owned (15%)
- Private coaching facilities have good infrastructure but are unaffordable



- About 212 international players are being trained in sports facilities available at UP sub region, 88 international players at Haryana sub region sports facilities.
- More than 600 players are being trained for national level sports activities at Haryana sub region and 460 players at UP sub region sports facilities.



Sub Region	
NCT Delhi	Swimming, Basketball, Badminton, Hockey, Foot ball, Cricket, Athletics, Volley Ball, Netball, Tennis, Boxing, Judo/ Wrestling / Kabaddi , shooting, Archery (All most all kinds of sports facilities)
Haryana	Badminton, Boxing, Hockey, Gymnastics, Athletics, Cricket, Wrestling, Hockey, Volleyball, Cycling, Judo, Basketball, Archery, Football, Kho-Kho, Table Tennis, Handball, Wushu, Kabaddi
UP	Athletics, badminton, kho-kho, volleyball, wushu, cricket, judo, wrestling, taekwondo, swimming, hockey, Judo, Basketball, Wushu, Weightlifting, Kabaddi, Athletics, Volleyball, , Gymnastic, Boxing, Shooting, 10m air pistol shooting, Archery, Volleyball

- About 34 old age homes are there in NCR, with a total capacity of 2039 as against the 43.31 lakh elderly population of NCR
- There are a only a total of 61 Hostels with a capacity of 4,589 persons, including
 - Working Men Hostels (7 in no. and 18% of the total capacity) and
 - Working Women hostels (19 in no. and 35% of total capacity),
 - Youth Hostels (11 in no. and 2% of total capacity) and
 - Other Hostels (24 in no. and 46% of total capacity).



KEY CHALLENGES SPORTS

- Lack of infrastructure both in terms of physical buildings and equipment as well as adequate training and coaching
- ► Up gradation and enhancement of sports facility ≻
- Provision of core sports infrastructure like sports fields, grounds and stadiums and quality equipment,
- Provision of sports ancillary infrastructure and manpower/staff
 - Promotion of sports infrastructure sharing and usage
 - Integrated Planning of Health, Education and Sports so as to leverage synergies for improving wellbeing of citizens.

SOCIAL SUPPORT

Meeting the needs and preferences of the ageing Population

Make cities

Age friendly, affordable, accessible, safe, participatory/ inclusive

- Meeting the needs of nuclear families and working women through
 Dravision of adequate shild care performed
- Provision of adequate child care centers, crèches

Supporting the unemployed with employment opportunities

POLICIES AND PROPOSALS

- Development and Sustainability of Sports Culture
- Augmentation of Sports facilities through multi storey facility development
- Provision of Infrastructure for competitive &non-competitive Sports
- Efficient usage of developed facilities
- Formulation of norms for ensuring access to sports facilities
- PPP for sports infrastructure development be encouraged
- Providing necessary sports ancillary infrastructure
- Development and Sustainability of Sports Culture
- Augmentation of Sports facilities through multi storey facility development
- Provision of Infrastructure for competitive &non-competitive Sports

- Efficient usage of developed facilities
- Formulation of norms for ensuring access to sports facilities
- PPP for sports infrastructure development be encouraged
- Providing necessary sports ancillary infrastructure
- Planning and Provision of adequate
 - Care Centres for physically / mentally challenged persons
 - Integrated Rehabilitation/Reform Centers be planned in NCR districts
 - Orphanages/ Night Shelters/ Multipurpose Community Hall; Yoga Meditation, Spiritual & Religious Discourse Centres; Music/ Dance and Drama Training Centre, Adult Education Centre, etc.
 - support centers for women victims
 - 'Facilitation Centers' for migrants
 - Vending zones

- Planning for Universal accessibility
- > Application of the concept of Happy City
- >Reviving the postal infrastructure
- Play areas be mandatory in all group housings and distinct from greens which shall be part of 10-15% open areas.
- > Organization of Olympics in next 20 years in NCR.
- >Provision for starting private coaching schools should be made.

PROJECTS

- >Sport Facilities equipped with the required Coaches, physiotherapist, medical support and hostel facilities at Tehsil and District Headquarters.
- >Fitness centers, open gymnasiums in the parks and energy-harvesting outdoor gym (at local level like Gram Panchayat and Block headquarters).
- Sports Libraries, Sports Museums, Traditional Games Park (Olympic, Paralympic, Traditional Games, Martial Arts, etc.) in each district

- Sports related Medical/ Rehabilitation Centres in each district.
- Projects for establishing Sports University, Sports Research Centres and laboratories in NCR
- Project for having Sports Equipment and apparel manufacturing hub of international standards
- Project for having Old age home, care center and elderly clubs.
- Project for having Care Centres for physically/ mentally challenged persons
 - Projects for setting up efficiently functioning Integrated Rehabilitation/ Reform Centres in each district of NCR

Projects for setting up 'Migrants Facilitation Centers (MFC)' in Cities/ towns in NCR.

SAFETY, SECURITY AND DISASTER MANAGEMENT CURRENT STATUS

Status of Crimes in NCR 2018

- The total No. of IPC crimes in NCR in 2018 was 4,02,509, which includes Severe crimes (2,59,893) (i.e. 65%) and Crime against Women (9,881) (i.e. 2%). Together, Severe crimes and Crime against Women account for 67% of the IPC crimes in NCR.
- The severe crimes have increased by 35% from 2016 to 2018.
- 91% of the Severe Crimes was accounted for by Thefts.





Status of Disasters in NCR 2018

NCR is a multi hazard prone region for Seismicity: High damage risk & Very high damage risk zone Floods: 3 districts of U.P. and 3 districts of Haryana are affected

Fire : Urban settlements are prone to fire due to increased population density and mixed occupancy, construction of high rise buildings having multi activities, roads, industries

Safety and Security

- NCT Delhi has the highest percent of IPC crimes (62%) in NCR, followed by Haryana(19%), U.P (14%) and Rajasthan (5%).
- Crime against Women is also high in NCT Delhi (38%) followed by Haryana(29%), U.P.(22%) and Rajasthan (11%).
- Severe crimes are also very high in NCT Delhi (79%)

followed by Haryana(12%) U.P. (7%) and Rajasthan (2%).



Status of Safety Support in NCR / Sub Regions 2018

Fire stations, Fire personnel,

- There is a deficiency of 98% Fire Stations, 80% Fire Fighting & Rescue Vehicles and 96% fire personnel
- The training Capacity of Police Personnel is not commensurate with the number of institutes.



KEY CHALLENGES

- Road accidents and crime issues are key challenges for the region
- Safety of the vulnerable category i.e. women, child and elderly
- (i) Huge stock of vulnerable structures (ii) Lack of awareness about the seismic risk (iii) Inadequate monitoring and enforcement of earthquake-resistant building codes and town planning bye-laws (iv) Lack of formal training among professionals in earthquake-resistant construction practices.
- Multiplicity of Public Safety agencies'
- Inter-State & Inter-District Coordination, Inter-Agency Coordination and balance between conflicting interests of various agencies is one of the concerns across NCR
- Lack of Emergency Operation Centers and Emergency Response Centers are lacking in few districts of NCR
- Disaster Management provisions are yet to be incorporated in Master/ Development Plans, which is a concern.

POLICIES AND PROPOSALS

- NCR should be developed as a safe, secure and resilient region.
- Implementation of the Concept of Safe cities and Safe Neighbourhoods through innovative technology based security systems and Improvement of Cyber security
- Strengthening of Disaster Risk Governance and Capacity Development: All emergency services to be brought under one umbrella like NDRF police, medical services and fire services and Agency wise Responsibility Matrices for Disaster Risk Response should be put forth at state & district level.
- > Development proposals should maximise building resilience and minimise potential physical risks
- Resilience Action Plan including Policy guidelines for
 - preparedness and Integrated planning for the areas (i.e. Block, Urban, Rurban Clusters and Village level
 - protection/ Disaster risk reduction of Natural Conservation Zones (NCZ) and environmental protection zones.
 - Monitoring, Forecasting and Early Warning Systems should be incorporated in the Resilience Plans
 - It is desirable that Common Policing Arrangement be explored for NCR and a Senior Police officer of NCR states can be appointed as head of such an arrangement, on rotation basis, to address the safety concerns of NCR citizens.

PROJECTS

Sl. No.	Proposed Projects/Policies
1	Prepare Schemes for improvement of Infrastructure in Women Police Stations and establishing new
	Women Police Stations in all NCR districts
2.	Prepare Schemes for developing/ earmarking areas/ spots to act as strategic locations for emergency
	vehicles such as ambulances, vehicles from Trauma centers and even for highway patrol vehicles on
	all road networks having RoW of 6.5 mtrs & above.
3.	Schemes for reading having 'Complete Streets', 'Vision Zero', connective sidewalks, public restrooms,
	and places to sit or rest in communities.
4.	Schemes to have network of Drone launch pads across NCR
5.	Schemes for having network of CCTV cameras
	(a) Schemes for having Automated incident detection capabilities on the inter-state/ City entry/ exists points
	(b) Schemes for having network of security cameras covering markets, in & around education institutions
	& health facilities, major intersections, transportation hubs, recreational areas, mandi, business centres,
	tourists spots, etc.
6.	Schemes for having People Priority zones
7.	Scheme to set up NCR Crime Coordination Support Office/ Cell at NCRB
8.	Scheme be prepared for air policing using drones and helicopters for emergency response, evacuations etc.
9.	Project for installation of Radars (including Radar Rain Gauge)

HERITAGE & TOURISM CURRENT STATUS

- Out of total 38 World Heritage Sites in India as recognized by UNESCO, 04 sites exist in NCR and about 06 sites are within close proximity to NCR. Furthermore, NCR has around 295centrally protected monuments under ASI and more than about 70 state protected monuments under State Archaeological Departments.
- NCT Delhi consists of 03 World Heritage Sites and has the highest number of centrally protected monuments (174), followed by Haryana sub-region (66) and Uttar Pradesh sub-region (31) and Rajasthan sub-region (24).
- Delhi is the center for foreign and domestic tourists, with domestic tourists increasing continuously and has grown from 18.49 million in 2012-13 to 22.62 million in 2014-15.
- During 2018, about 9.49% of the total foreign tourists visited NCT Delhi, 13.09% State of Uttar Pradesh, 6.08% State of Rajasthan and 0.26% visited the State of Haryana. In respect of domestic tourists the share was 1.57%, 15.37%, 2.71% & 0.26% in Delhi, Uttar Pradesh, Rajasthan and Haryana, respectively.
KEY CHALLENGES

- For Heritage & Tourism sites, achieving international level for four key quality aspects (4Qs) i.e. (1) Quality of infrastructure/ services (2) Quality of monument/site, (3) Quality of intangibles & (4) Quality of people, have to be ensured which shall be a big challenge.
- The existing Archaeological Act (Ancient Monuments and Archaeological Sites and Remains– AMASR Act) and Heritage Zone provisions are very stiff, as sometimes even repair of these very monuments is delayed because of these provisions.
- Safety and security issues news goes global and grossly impacts tourism of a particular place. Accordingly, maintaining the same in such a vast region is a challenge.
- Implementation of various schemes of Government of India to promote tourism and culture

POLICIES AND PROPOSALS

- **Major Schemes of Union Ministry of Culture includes-**
- Safeguarding the Intangible Cultural Heritage and Diverse Cultural Traditions of India.
- Financial Assistance for Promotion of Art and Culture .
- Financial assistance for promotion and strengthening of regional and local museums;
- Ministry of Tourism has two major Schemes i.e. Swadesh Darshan and PRASAD. Swadesh Darshan Scheme is launched for integrated development of theme based tourist circuits and PRASAD Scheme, was for integrated development of pilgrimage destinations in planned, prioritised and sustainable manner to provide complete religious tourism experience, it focuses on development and beautification of identified pilgrimage destinations.
- Ministry of Tourism has also taken up initiative to overcome 'seasonality' challenge in tourism and to promote NCR as a 365 days tourist destination.
- Ministry of Housing & Urban Affairs (MoHUA) had launched Heritage City Development and Augmentation Yojana (HRIDAY) which is applicable for selected cities.

PROJECTS

- Develop World Class Tourist Circuits
- Develop Smart Tourism Hubs in NCR, in line with HRIDAY.
- Develop at least one heritage Site in each sub-region to qualify as a World Heritage Site
- Develop 100 "Smart Tourist Destination/Sites" showcasing theme-based museums/ virtual museums', heritage and natural sites
- Develop "World Class Museums" & 'Virtual Museum'
- Develop areas around iconic sites/ point of international standards in NCR
- Each NCR district to identify at least one local attraction point/ event (like annual mela, fair, local festival, adventure & tracking routes etc.) and develop it as Iconic Places of international standards.
- Blue Green Getaways Circuits be identified for development of tourism infrastructure such as accommodation facilities, food and beverage facilities, accompanying facilities and communication facilities etc. including last mile connectivity. NCR States Government concerned may develop these circuits.

Environment CURRENT STATUS

- NCR is Situated in Semi-Arid Bio-Geographic Zone. The area is characterised by rivers, numerous wetlands and Dry deciduous to Thorn forests
- Some of the major environmental concerns that can be addressed by regional plan are, control of pollution specially air and water and maintenance of the water courses., maintenance of green cover, forests and eco fragile areas, and control and regulation of activities which have impact on environment.
- Forest Cover: As per India State of Forest Report (ISRF) 2019, of Forest Survey of India, the area under forests in NCR is about 3262 (sq. km) which constitutes about 5.75% of its total area, which is much below national average
- Wetlands and Natural Features :NCR has many lakes, ponds and wetlands, and 11 notified wildlife sanctuaries/National Parks and endowed with other environmentally rich natural features such as ridge, forest, rivers, green areas, etc. needs to be planned in a way to achieve an environmentally sustainable pattern of urban development through a rational land use pattern and conservation.

- Built up area: The growth in NCR region has increased the built-up area by 34.6%, while green areas, wastelands, and water bodies have decreased by about 22.5, 40, and 6 percent, respectively, in the year 2012 with respect to 1999.
- The Graded Response Action Plan (GRAP) devised by the Environmental Pollution Control Authority (EPCA), could not achieve much of its objective of reducing air pollution of Delhi-NCR.
- The top four causes of the deteriorating air quality were identified to be motor vehicles (74%), industrial units (58%), tree cutting (56.9%) and construction activities (48.2%)⁻.
- Air Quality Monitoring Stations: Total Number of Ambient Air Quality Monitoring Stations in NCR is 64.
- Against the permissible noise levels (55 dB during the day and 45 dB at night in residential areas), the sound level in cities/ towns often exceeds 70 dB.
- Sewerage and Drainage: Water Quality in Yamuna, Hindon, Najagarh drain and West Kali has deteriorated due to direct discharge of un-treated sewage.

KEY CHALLENGES

- Ministry of Jal Shakti (MoJS) has identified many Districts and Urban local Bodies (ULBs) as water stressed. These districts and Urban Local Bodies have to undertake efforts for conservation, restoration, recharge and reuse of water.
- Deteriorating Surface Water Quality in NCR is another challenge which majorly includes (a) Water Quality in Yamuna, Hindon, Najagarh drain and West Kali due to direct discharge of wastes.
- Crop Residue Burning (CRB) : farmers mainly in Punjab, Haryana and western Uttar Pradesh burn an estimated 35 million tons of crop residue from their fields.It is the major sources of air quality deterioration in Delhi in the months of October and November.
- Green spaces: To provide optimum Green Spaces in urban areas of NCR is also a challenge due to increasing demand for various urban & economic activities.

Regulating the activities in the Eco-sensitive Zones notified around protected areas.

Addressing the provisions of National Action Plan for Climate Change, national Biodiversity Strategy Action Plan and meeting the targets of SDG goals w.r.t to 'environmental protection', as expressed directly through Goals 13 (Climate action), 14 (Life below water), 15 (Life on land) and indirectly through Goals 7 (Affordable and Clean Energy) and 11 (Sustainable Cities and Communities).

POLICIES AND PROPOSALS

- NCR States should ensure that development and construction activities are carried out in the region safeguarding the Environment and improving ecosystems of the region.
- All dried/depleting lakes and water bodies in NCR be revived in a phased manner by cleaning natural drainage channels and de-silting, followed by plantation of appropriate species type.
- States should set a minimum area for land to be reserved for green in each residential area such that it is at green spaces constitute at least 10% of the overall land cover of the area. The same be elaborated in SRPs.
- The possibilities of participation by NCR Delhi, U.P and Haryana in River rejuvenation programme stated by Unified Center for Rejuvenation of River Yamuna- Restoration and Beautification (UCRRY) may be explored.
- ▶ NCR states should adopt global norms of clean water supply.
- ► Industries should be regulated as per norms of Local Pollution Control Authorities in NCT Delhi.

CNCR and rest of NCR; as per Govt. of India / State Govt. with mandated environmental safe guards. **Water** :Zero discharge of un-treated sewage & industrial discharge into Rivers (Yamuna, Hindon, Kali) should be ensured by all NCR states across the region.

► Ground Water: Heavy metal/ chemical occurrence in water should be strictly monitored across the region and boring in such areas should get stiff penalties.

Waste Management: Waste to Energy' concept should be widely adopted in NCR.

Forest and Biodiversity: Necessary initiative be taken by states to remove transportation-related barriers to wildlife crossings and reconnect key habitat corridors as applicable.

► The Eco-Sensitive Zones as identified and notified by State / central Govt. be incorporated in the Landuse and Landcover maps and the development would have to be regulated within the zone, as per respective State/ Central laws.

Technology and Innovation : use of state of art technology to monitor and control of air and water pollution

PROJECTS

- Prepare project for revival of the water bodies including cleaning and beautification.
- Floodplain Development of Yamuna River: U.P. Section, NCT Delhi and Haryana section.
- Floodplain Development of Hindon and Kali River.
- Development of Bio-diversity parks.
- Projects for the development of new common effluent treatment plants (CETPs).
- Up-gradation of existing CETPs with conveyance system (including reverse Pipeline).
- Projects for tree planation/ afforestation and development of green corridors along rivers/ water bodies/ waste lands, etc. on government land.
- Projects for setting up Air quality monitoring stations and modernization of equipment In major urban areas.
- Implementation of NCAP in non-attainment cities in NCR.
 - Establish Continuous Weather Monitoring Station at each district.
 - Projects for setting up of recycling plant for "end of life vehicles".

DIGITAL INFRASTRUCTURE CURRENT STATUS

Internet Connections in NCR





Common Service Centres (CSCs) in NCR

Source: Ministry of Electronics and Information Technology (MeitY), 2019

https://digitalseva.csc.gov.in/

KEY CHALLENGES

- Rural Urban Digital Divide: need to connect 200 cities/towns and 8,000 Gram Panchayats of NCR through optical fibres
- Availability of land and permissions for Right of Way (ROW) for laying fibres to facilitate last mile connectivity
- **Online delivery of services** including e-governance, educational facilities, etc
- **Low and delayed** telecom infrastructure development
- **Data Security** is emerging as a major challenge and concern.
- Need to customize applications and services, for catering to local and regional needs and accordingly develop an application ecosystem
- High level of digital illiteracy and awareness
- Internet Speed is a major concern

ELEMENTS REQUIRED FOR A HEALTHY DIGITAL SERVICE SECTOR



NATIONAL LEVEL POLICY THRUST



Niti Aayog: Transform India from a data rich nation to a data intelligent nation using **Artificial Intelligence** (AI)



Digital as a Service for enabling Internet of Things (IoT), the Cloud, Blockchain, Big Data, Virtual Reality, and the combination of digital and real infrastructure.



Unmanned Aerial Vehicles (UAVs), commonly know as **Drones** to replace many of the most dangerous and high-paying jobs within the commercial sector (*Annexure-D-16.4: Drone Law & Policy Developments in India*)



"Connect India", "Propel India" and "Secure India": Deployment of vast & secure digital infrastructure in urban as well as rural areas (*Annexure-D-16.5: Nation Digital Communication policy 2018*)

POLICIES AND PROPOSALS

- Goal of "Smart NCR" needs to be achieved through development of smart cities/towns and villages with an advanced IT centric approach
- A Digital platform may be created at NCR level which will act as a Coordination and Facilitation Centre, with subset centers in each sub region, for sub regional coordination and monitoring.

SUGGESTED LIST OF DIGITAL PLATFORMS FOR NCR IN REGIONAL PLAN-2041

- 1. NCR Tourism Platform Portal.
- 2. Job Portal of NCR.
- 3. Web portal with GIS mapping of the existing & proposed sewerage systems with Monitoring and Feedback facilities.
- 4. Waste Management System: Web portal with GIS mapping of the existing & proposed Waste Management systems with Monitoring and Feedback facilities.
- 5. Common cleanliness complaint forum for Water, Sanitation and Waste
- 6. CSR Portal for NCR
- 7. EV Charging Infrastructure Portal
- 8. NCR Health Portal
- 9. District-Wise Portal of Government Schemes
- 10. NCR Blood Bank Portal.
- 11. Online Traffic Challan Portal for entire NCR
- 12. NCR Virtual Court Portals
- 13. NCR Home Buyers Portal
- 14. E-Right of Way (RoW) Permission Portal
- 15. E-Land Management System Portal
- 16. Online Building Approvals, Construction Permits Portal
- 17. Environmental permissions portal for NCR
- 18. NCR wide Emergency Response System for police, ambulance, fire
- 19. NCR Crime Monitoring Portal
- 20. Portal for Project Monitoring of Implementation including approvals etc.
- 21. NCR Unified Economic Space Portal or NCR Mega Portal

Infrastructure & Digital Platforms



All cities, towns and villages in NCR should be operating on Networked Information. States should produce specific targets & phasing in their Sub-Regional Plans to achieve 100% digital connectivity with support infrastructure



- Delhi Service Area for telecom services shall have to be extended to whole of NCR, to guarantee seamless & uniform regulatory framework in the region
- Exploit potential of digital initiatives, especially in the domains of mobility, security, healthcare, education, energy, water, waste, economic development, employment, housing, engagement & community participation, emergency services, besides other relevant aspects



- Master database should be created for NCR and be managed properly for its effectiveness.
- Government initiatives like UMANG (Unified Mobile Application for Newage Governance) App may be supported and promoted by the NCR participating States, especially to facilitate farmers.

Common ICT facilities like (a) A Unified Data Centre, (b) A high speed backbone communication network, (c) Geographic Information Infrastructure (GIS Portal), and (d) Sensor networks following common protocols and standards be created & strengthen in NCR



- **Bharat Net** be implemented 100% in NCR
- **Digital payment** modes like NETC FASTag, BHIM UPI, etc. be followed across NCR for various services
- **Common Service Centers** (CSCs) services be effectively utilized
- **Smart logistic solutions** be developed, especially for Agricultural sector
- Use of Electric and autonomous vehicles for smart and environment friendly mobility be promoted
- Adopt use of robot services (BOTs) in NCR for: (a) Domestic and industrial functions to be promoted in NCR; (b) Elderly care; & (c) healthcare in diseases involving physical social human diseases like Covid-19
- Aadhar be utilized as a tool for good governance across NCR and Aadhaar Biometrics be utilized for individual authentication
- NCR participating states may create digital platform on the line of "TATPAR" app of Delhi police.
- A responsible **Public Digital Platform** (PDP) be created for Public Service Delivery
- Each District should have 02 **Digital Villages** in next 2 years and at least 01 in each block by 2026.

POLICIES AND PROPOSALS

Growth via Digitization



Creation of big data repository for the Development of a regional Big Data integrated pilot zone



All efforts need to be made to utilize GIS platforms while planning for Sub-Regional/ District/ City/ Town/ Village/ local level. Alongside such efforts, GIS based Land and Asset Management System be also created.



Ensure availability of skilled workforce, a vibrant start-up scene and infrastructure being built to purpose, with actively nurtured cooperation between city/ towns, rural areas, business, and science



Monetization of data is source of non-traditional revenues and this aspect could be explored by concerned State departments.



All concerned State Governments may endeavor towards adoption of latest technologies across all service delivery sectors and thus contribute towards enhancing EODB in the region

Ease of Doing Business



- State should work towards 100% adoption of existing Online Building Plan Approval System (OBPAS) in phased manner within five years.
- The authorities/ agencies/ ULBs where OBPAS is already in operation may offer handholding assistance to other towns/areas



100% online permissions with deemed approval and time bound decision

Cyber Security & Resilience

Identify each critical data and devise the related disaster **recovery plan** Ensure that IT platforms are backed up by **Data Centre & Mission Data Centre** Level of **cyber security protection** may be enhanced through followings –

- a. protection of communication networks, major information systems and data resources,
- **b.** reliability of information infrastructure, and raise the level of information security & protection,
- c. proactive use of **advanced technology** and facilitate use of secure communications technology
- d. put in place a robust **notification and warning mechanism** for cyber and information security matters,
- e. step up **real-time surveillance, notification and warning** as well as emergency response, and establish a comprehensive cyber security defense system

POLICIES AND PROPOSALS

Training, Skilling & Capacity Building



- Collaborate with NSDC, NASSCOM and MeitY, etc. for devising and conducting programs for training, skilling, capacity building of the workforces in the digital sector across various sectors in NCR.
- **Key focus areas**: AI, Big Data Analytics, Cyber Security, Mobile Tech., Virtual Reality, Blockchain, Cloud Computing, Internet of Things, Robotics Process automation, 3D Printing, amongst others.
- All Govt. Departments in NCR may ensure compulsory GIS trainings for its concerned staff to improve digital facilities across various sectors.

S. No. Proposed Projects/Policies

- 1. Scheme for Speed up expansion of **band width capacities** of international internet communication gateways and enhance overall traffic handling capabilities.
- 2. Scheme for development of **wireless broadband system** in NCR
- 3. Scheme for 100% coverage of **free high-speed wireless local area network** in hotspots and along main transport routes within the region
- 4. Scheme for **full fibre access** for provision of fixed broadband services in NCR

PROJECTS

S. No.	Proposed Projects/Policies
5.	All ULBs and Panchayats in NCR should have Public Portals data, service delivery, peoples' feedback , etc.
6.	Scheme for Developing a 'International Innovation and Technology Hubs' in each sub-region in collaboration with MeitY.
7.	Schemes be prepared to have Smart/ Digital Cities and Smart Village clusters in NCR
8.	Scheme for upgradation of infrastructure of each District Disaster Management Authorities (DDMAs) to establish an " District Digital Coordination Centers " at each district level
9.	Ensure the facility of Digital Payment modes like NETC FASTag, BHIM UPI, etc. across NCR for various services like, Toll Plaza (all National Highways, State Highways, Expressways), City Toll Plazas, Enforcements Vehicle Linked Fines, Fuel Payments, Parking, Payments of utilities bills/ dues, ticketing, etc.

HOUSING & HABITAT CURRENT STATUS

- While the *urban housing surplus* in urban areas of NCR was about 5.45 lakh, the rural areas had *rural housing shortage* of about 2.54 lakh. Therefore, there is an excess of housing stock in the urban areas of the NCR. However, in the rural areas, there is a housing shortage.
- > There are many slums in the large settlements of the NCR which need urgent attention.
- Delhi public housing supply has almost come to a standstill. However, Land Pooling Policy and Redevelopment thru' TOD is likely to generate new housing stock. Contribution of DUSIB for slums and SRDC for old city has been minimal.
- Haryana Operating the PPP Licenced Coloniser policy, HUDA and HHB have been active in providing plots, Affordable Housing Policy, PMAY and DDJAY.
- Rajasthan 5 variants of PPP models, Slum Development Policy, Mukhya Mantri Shahari BPL Awas Yojana, RHB housing projects, PMAY Projects
- UP State Housing Policy 2009, State Housing Policy for EWS and LIG 2011, Integrated Township Policy, Hi-Tech Township Policy, New Township Policy, UPHDB, etc. PMAY projects

District Population and Slum Population in NCR, 2011

Sub Region	District	Population 2011	Slum Population 2011	% of slum population to District Population	Source: Census of India, 2011		
NCT Delhi	-	167,87,941	17,85,390	10.6			
Haryana	14	164,27,524	10,31,946	6.3			
Uttar Pradesh	8	187,19,180	14,61,565	7.8			
Rajasthan	2	62,22,641	43567	0.7			
NCR	24	581,57,286	43,22,468	7.4			
Existing status of the Pradhan Mantri Awas Yojna(PMAY) at city/town level in NCR (As on April 2019)							

Sub Region	District	Total number of Dwelling	Households benefited*	Number of Dwelling Units under-	NumberofDwellingUnitsproposedto	Households to be ber	efited from
		Units constructed		construction	constructed*	DUs under- construction*	DUs proposed
NCT Delhi	-						
Haryana	14	2,094	986	820	12,726	28,950	0
Uttar							
Pradesh	8	35,723	43,061	36,314	62,375	46,700	90,690
Rajasthan	2	5,993	6,416	1,047	5,792	1,047	10,168
NCR Source: NCR Monito	33 oring and Pla	43,810 anning Cell, Govt o	<mark>50,463</mark> f Haryana, Goveri	38,181 nment of Uttar Pra	80,893 desh, Govt of Rajasthan an	76,697 d *PMAY (U) website.	100,858

KEY CHALLENGES

- Stalled projects and vacant housing projects and future demand for 11 crore population by year 2041
- Land acquisition issues and high priced housing
- Earthquake prone area and low densities and sprawl
- Few housing options for low income population and poor transportation connectivity
- Inadequate infrastructure and safety concerns in residential areas
- Limited organised rental options for emerging 'special groups' viz. students, working women, working men, elders, low income migrants, etc.

Inner city congestion, dilapidation and ageing infrastructure MAJOR STAKEHOLDERS

State	Parastatal Agencies	State / Central Government	Private Developers	Cooperatives	Others
Delhi	DDA, DUSIB	Govt. of India / Govt. of NCT of Delhi	Pvt. Developers	Cooperatives	Individuals, Employers and Others
Uttar Pradesh	UPHDB, and Development Authorities, ULBs	Govt. of Uttar Pradesh	Pvt. Developers	Cooperatives	Individuals, Employers and Others

MAJOR STAKEHOLDERS

State	Parastatal Agencies	State / Central Government	Private Developers	Cooperatives	Others
Haryana	Haryana Shahari VikasPradhik aran (HSVP), HHB, Development Authorities, ULBs	Govt. of Haryana	Pvt. Developers	Cooperatives	Individuals, Employers and Others
Rajasthan	RHB, UIT, ULBs	Govt. of Rajasthan	Pvt. Developers	Cooperatives	Individuals, Employers and Others

POLICIES AND PROPOSALS

- NATIONAL LEVEL
 - National Housing and Habitat Policy
 - RERA
 - Housing Finance
 - PMAY
 - New Technology Thrust

STATE LEVEL

- PPP Policies
- Township policies
- Land Pooling policy
- Affordable Housing Policies
- Slum Policies
- TOD policy
- Rental Housing policy

POLICIES AND PROPOSALS

- Preparation of detailed Sub-Regional Housing Plans and Master Plans for NCR
- Alternate land assembly and allocation methods
- Transit Oriented Development hub and spoke model
- Mixed use Development
- Concept of sustainable neighbourhood communities
- Promoting 'Affordable Housing Projects'
- Encourage Housing Cooperatives

- Strategy for Stalled and Vacant Housing Projects
- NCR States should take necessary steps so that the large quantum of vacant housing in NCR towns is reduced. It shall be ensured that no residential areas/ projects lying vacant. Alongside, focus should also be on creating of infrastructure for economic activities and employment generation.
- Registry / inventory of unoccupied and unsold homes in NCR should be prepared by the respective sub-divisional Magistrate (SDM), who shall also be responsible for monitoring the levying and collection of the penalties.
- Properties which were hitherto vacant for five-years, and monetary penalty were levied and paid, if such properties are put in rental use they may be given some rebate in such a way so that the vacant property tax paid by the owner is given back to the owner in an equal number of years as a rebate against the penalties payable by him for the period of the property be rented out. This rebate shall be admissible in monthly property tax payments; provided that such rebates in any month shall not be higher than the maximum monthly charged penalty in the past.
- Promote Housing for Special Groups viz. industrial workers, construction workers, students, working women, elders, pavement dwellers, migrant labour, slum dwellers, etc.
- Promote planned Rental Housing Projects.
- Construction Workers Fund under the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 should be used for acquiring lands/dwelling units for workers. The Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979, as in-force, should be duly adhered to. This fund should be utilised for constructing housing facilities for construction workers which are prominently the migrants.
- ARHC funds can also be pulled into for workers accommodation wherever feasible. For In-situ Slum redevelopment, MoHUA funds can be sourced.
- Promote efficient use of land with a judicious mix of FAR, density and height
- Earthquake safety and 'green' housing
- Increase in number of dilapidated house is a major concern. Retrofitting norms should be decided by the respective ULBs within two years by 2023.
- Each NCR participating States should ensure that the External Development Charges (EDC) are spent at site of respective projects and the required infrastructure is developed within and outside the housing projects. No diversion of EDC be allowed and mechanism be developed that any violation in this regard attract penalty. No physical possession/completion certificate be given without completion of external infrastructure.
- Intensive Redevelopment strategy for :Existing private housing colonies, Existing government housing colonies, Lal dora areas, Slums areas, Heritage / Inner city areas

- Preparation of detailed Sub-Regional Housing Plans and Master Plans for NCR
- Vertical dense mixed both vertically and horizontally with no height restriction but with mandatory
 - Zero Net discharge buildings
 - Rainwater Harvesting
 - Decentralised STP
 - Dual pipeline at inlet and outlet stage
- High FAR with no height restriction
- TDR in general
- > TDRs also for heritage and conservation areas.
- Mix landuse permitted both in vertical development and horizontal development, ToD areas, old cities and small towns (with up to 01 lakh population).
- Retrofitting of old buildings in phase manner
- All the future buildings especially high-rise building should have engineered structures mandatorily across NCR for meeting Seismic requirements.
- > All the new buildings should have landscaping with mandatory Blue Green Infrastructure.
- Norms for Greens/ open spaces Playgrounds and Street Vending, etc.
 - Repeal of Delhi Land Reform Act 1954 recommended for harmonious development of NCR and to resolve anachronistic development of Lal Dora villages in Delhi/ NCR.

Sl. No.	Proposed Projects	Phase –I (2021-2026)	Phase –II (2026-31)	Phase –III (2031-2036)	Phase –IV (2036-2041)
1	Projects for "Slum Free NCR" through in-situ development/ redevelopment	At least 02 projects in NCT-Delhi and in eachdistrictby 2024	Restofthedistrictby2030	-	-
2	Projects for augmenting/ developing hostel facilities (student/ youth hostels, working men & women hostels, special need hostels, etc.)	At least one in NCT-Delhi and in each district Hq. & Tehsil Hq. and Metro & Regional Centres with adequate capacity.	Additional hostels as per the need.	-	-
3	Projects for redevelopment/ urban rejuvenation/ renewal	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2026	Such projects in remaining urban areas	-	-
4	Projects for development of Social Housing and Supported & Specialized Accommodation (either on ownership or rental basis)	At least onein NCT-Delhi and in each district Hq. & Tehsil Hq. and Metro & Regional Centreswith adequate capacity.	Such projects in remaining urban areas	-	-
5	Projects for the development of affordable housing	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2026	Such projects in remaining urban areas	1.	1.
6	Projects for the development of rental housing	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2025	Such projects in remaining urban areas	1.	1.
7	Projects for the development of construction workers housing	At least 02 projects in NCT-Delhi and in each Metro and Regional Centres by 2025	Such projects in remaining urban areas	1.	1.
8	Policy for allowing extraFSI/ extra FAR for high rise building with net zero discharge be notified by each sub-region	By 2023	1.	1.	1.

REGIONAL LANDUSE & POLICY ZONES CURRENT STATUS

Agriculture is the predominant land use (82%) followed by **Built up (only 8%) Natural Resources occupy 5% of the land i.e. Forests (3%) and Water bodies/ wetlands** (2%) Wastelands (4%)



Source: Bhuvan Portal, NRSC

Note: The land use details are tentative and for broad analysis purpose only and broad manuau analysis.

Land Use/ Land Cover-2015-16 of NCR



Land use Distribution of Sub Regions 2018



KEY CHALLENGES

- Conversion of Agricultural Land to Non-Agricultural Uses to meet the demand for
 - urban/ industrial/ commercial / institutional uses
 - expansion of rural settlements and
 - construction of transport networks
- Large scale haphazard development of urban activities/constructions (outside notified controlled/ development/ regulated areas)
- Ribbon urban development

(along national highways, which are not converging to Delhi and expressways)

Effective and integrated planning and development of entire NCR

POLICIES AND PROPOSALS

Land use Policy Zones

- NCT Delhi
- Central National Capital Region (CNCR) : Area from the boundary of NCT Delhi to the Eastern Peripheral Expressway (EPE) and Kundli-Manesar-Palwal expressway (KMP) up to 5 Km beyond outer edge of the ROW of this first ring of expressways.
- Highway corridor zones (HCZ): HCZ to be delineated 01 km. either side of the highways / expressways starting from edge of highway or up to the outer boundary of intervening revenue villages, whichever is earlier. HCZ/TOD Zones shall be delineated by the respective NCR States Its plan shall be prepared by States within 18 months from the date of final notification of RP 2041.
- Conservation Zone (Natural and Manmade): Environmentally sensitive natural features such as Aravalli ridge, protected & reserved Forests, Wild life & Bird Sanctuaries, major Rivers), large lakes and identified Ground Water Recharging Areas such as wetlands), ox-bow lakes and paleo-channels.

NCT DELHIImprove Quality of livingDevelopment PatternVertical growth patterns, along with massive redevelopment not only in identified areas but also in slums, urban villages, other current low rise areas, etc.Less of livingInfrastructure ProvisionZero-net discharge buildings, rain water harvesting, ground-water recharge, water recycling and decentralized sewerage systems	Policy Zones	Objectives	Policies		
Ease of livingInfrastructure ProvisionZero-net discharge buildings, rain water harvesting, ground-water recharge, water recycling and decentralize sewerage systemsEase of doing	NCT DELHI	Improve Quality of living	Development Pattern	Vertical growth patterns, along with massive redevelopment not only in identified areas but also in slums, urban villages, other current low rise areas, etc.	
husinges		Ease of living Ease of doing	Infrastructure Provision	Zero-net discharge buildings, rain water harvesting, ground-water recharge, water recycling and decentralized sewerage systems	
DusinessConservationPreservation of identified environmentally sensitive areasandand conservation of Delhi's rich heritage areasPreservationPreservation		DUSINESS	Conservation and Preservation	Preservation of identified environmentally sensitive areas and conservation of Delhi's rich heritage areas	
Governance Smart Governance/ Smart economic portals			Governance	Smart Governance/ Smart economic portals	
PollutionHazardous activitiesControl			Pollution Control	Hazardous activities	

Policy Zones	Objectives		Policies	
Central National Capital Region (CNCR)	Utilize the Ring of Opportunity	Development Pattern	Innovative Development control norms and regulations. An area from the boundary of NCT Delhi to EPE and KMP up to 5 Km or the village (whichever is earlier) beyond outer edge of the ROW of this first ring of expressways. This belt of CNCR around NCT Delhi shall form the "Ring of Opportunity" for both NCT Delhi and rest of the NCR on either sides. Non-notified areas shall also be brought under development control norms for planned growth and development	National Capital Region Schematic Map of Policy Zones
		Activities	Land extensive activities with support infrastructure Logistic parks, multi modal transport hubs, ICDs, dry ports, recreational/ theme parks, specialized townships (like Medi-cities, tech-cities, Edu-cities, etc.), skilling hubs, MSME clusters and other activities should be encouraged and permitted and respective master plans should clearly earmark areas for such land uses.	Guergaon Dubre bound of Revaal Mahengraagan Towards Jaipur Activar Bharatter
		Conservation	Conserve the State identified Environmentally sensitive area	and the second sec
		Plan Preparation	Prepare a separate sub-set of plans in the Sub Regional Plans for their CNCR area.	Mae hóf to scale & el details given in the map are tertildrive. Nets : Oneenden Zine shallhave to la elected i inte SHP Regard by the respecter KKR Refe Government, as per RP-2041 provisions.

Towards Lucknow

Legend NCR Boundry District Boundry Rail Network RRTS NH & Expressways Boliar Zanac Policy Zones

NCT Delhi CNCR / Ring of Opportunity TOD Zones * Conservation Zone Rest of NCR
Policy Zones	Objectives		Policies
Highway Corridor Zones (HCZ) with TOD (area up to 800 meters to 01 km on both sides of the transport corridors)	Facilitate	Delineation	Identification, delineation and notification by the respective NCR States Governments.
	ease of transport,	Development Pattern	Intense development will be encouraged on both sides of the corridors
	reduce transportation costs and improve quality of life	Activities	Dense, Mix Land use (vertical and horizontal) with residential, office, institutional, commercial uses which generally require trunk transport facilities.High FAR, say up to 500 or above if justified.Activities being permitted in this zone segregated from highway traffic through proper green belts, service roads and controlled access to the highways.
		Plan Preparation	Development layout plans/ development plans based on the potential of these areas and local conditions; However, these areas should be developed beyond the Right of Way (ROW) of the connectivity network and the green buffer on either side of the transport corridors

Policy Zones	Objectives		Policies
Conservation Zone (natural and manmade)	Conservation, Protection and Preservation	Delineation	identify such environmentally sensitive areas
		Conservation	Conserve the State identified Environmentally sensitive areas
		Activities	 Intensive tree-plantation on barren/waste land/ hills, and on the banks of Canals/drains water bodies; Water aerodromes and related infrastructure in Water bodies; Recharge structures in water recharge areas; 0.5% of total area under NCZ is allowed for related compatible development could be either at one place or multiple areas, subject to other approvals.
		Guidelines	Setting of Benchmarks, parameters and minimum sizes in the respective Sub-Regional Plans; NCZ as provided and detailed out by NCR State Governments for the Regional Plan-2021 shall be continued. Conservation transferable development rights (C-TDR) and Heritage transferable rights (H-TDR)

Policy Zones	Objectives		Policies
Rest of NCR	St of CR Induce Growth	Development approach	Accelerated Development of urban and rural areas; Innovative land use planning for locating economic and allied activities, employment and income generation and for attracting private sector investments.
	Adapt to fast changing	Activities	Large Rural Investment Area, special economic zones, heavy industries, which can supply to and benefit from the logistic parks, ICDs, air cargo terminals, dry ports, etc. in the CNCR area.
	domestic opportunities and impulses	Infrastructure Provision	Fast, efficient and affordable rail (RRTS, ORC OORC, New rail links etc.) road (Expressways, NHs etc.) and air connectivity; Upgradation of Physical and social infrastructure in Metro Centres, Regional Centres, Sub Regional Centers
		Land Assembly/ Management	Encouraging third part land aggregators (Govt. sector/ Private sector or by both), who would undertake land arrangements from land owners, consolidate them and enter into dynamic short & medium term (5-10 year) lease arrangement with investors. Such a system will also enable NCR to dynamically change its industrial production to adapt to fast changing global and domestic opportunities and impulses. The land use in these areas should also be innovatively planned to support the accelerated development. This will make them more attractive for locating economic and allied activities, employment and income generation and for attracting private sector investments.

- The land use plans in entire NCR shall broadly be under the following categories:
- Urbanisable areas (including existing Built-up/urban areas),
- Rural Zone within controlled/development/regulated areas
- Green buffers
- Rural Zone outside controlled/development/regulated areas
- NCR States should identify and develop more Rurban Clusters
- PLANNING FOR RURAL SETTLEMENTS
- Planning of rural areas and districts (as per Rural Area Development Plan Formulation and Implementation (RADPFI)Guidelines, 2017 and Gram Panchayat Development Plan(GPDP 2018)
- Rural settlement should have 2 water bodies, area for water recharge, village deity/ sacred forests
 recognized by community at large, spaces for ceremonies, play grounds, festival & fairs and last rites, etc.

The time frame for preparation, submission, notification and revision of the Plans are as follows:

- Sub- Regional Plan Preparation within six months from the date of notification of the final Regional Plan-2041. Sub-Regional Plans be revised after every five years in line with the Regional Plan.
- All Master/ Development Plans including Master Pan of Delhi-2041 shall be compulsorily prepared on GIS platform and shall have to be in conformity/ sync with the Regional Plan-2041 policies and its horizon year. In case of AMRUT towns in NCR, second phase of Master Plans be targeted for the horizon year 2041, in sync with the RP-2041
- Perspective year of all Master / Development Plan in NCR should be in line with the perspective years of Regional Plan i.e. 2041.
 - District Development Plans finalization within six months from the date of notification of the final Sub-regional Plan or within one year of notification of final Regional Plan 2041, whichever is earlier.

- Master / Development plans in the Sub-regions notification within one year from the date of the final notification of Regional Plan 2041, or within 06 months from the date of the notification of their final Subregional Plans 2041, whichever is earlier.
- Entire Delhi Layout plans is currently not available in an integrated manner. Hence, preparation of integrated layout plan for entire Delhi across different land owning/ land regulating agencies may be explored by DDA/GNCTD within 24 months of RP 2041 notification.
- All plans should be prepared/ available on digital platforms/ based on Remote Sensing and GIS technologies with integration of both spatial and attribute data.
- It is suggested that stock taking exercise be undertaken as first stage for all Master/Development Plan preparation works, in all Metros and Regional Centers across NCR.
- NCRPB can also consider providing financial assistance as reimbursement/ AMRUT/GOI funds may also be considered for such one time stock taking exercises being undertaken using drone technology.



COUNTER MAGNET AREAS

CURRENT STATUS

- Excluding Delhi, level of urbanisation in the rest of the NCR is only 27 percent.
- Out of 53 million-plus cities, four cities i.e. Delhi, Meerut, Ghaziabad and Faridabad are located in the NCR, also indicating high concentration of million plus cities around Delhi.
- With increasing level of urbanisation in future, the identified CMAs are expected to play a significant role in attracting Delhi-NCR bound potential migration from their respective influence areas or regions.
- Presently nine areas have been identified as Counter Magnet Areas to NCR.

Counter Magnet Areas in NCR :

- i) Ambala in Haryana (notified area considered in Development Plan)
- ii) Bareilly in Uttar Pradesh (notified area considered in Master Plan)

iii)Dehradun in Uttarakhand (not yet notified or identified)

CURRENT STATUS



Name of Counter Magnet Areas in NCR

iv) Hisar in Haryana (notified area considered in Development Plan)

v) Kanpur-Lucknow corridor in Uttar Pradesh

vi) Jaipur city in Rajasthan

vii) Patiala-Rajpura Corridor in Punjab

viii) Gwalior city and surrounding areas as notified byGovernment of Madhya Pradesh

ix) Kota City in Rajasthan

KEY ISSUES AND CHALLENGES

- CMAs are lagging behind to prepare the Plan of Action (PoA). The Plan of Action is only prepared for Jaipur and Kota CMAs.
- The respective state government has prepared the Master or Development Plan of these CMAs without focusing on the role of these Counter Magnet Areas in relation to the NCR.
- No specific mention of its identification and purposes as Counter Magnet Areas in the Master Plans is noted. This may be the reason that these Counter Magnet Areas are unable to play any significant role.
- To act as a strong counter magnet and to play a significant role as interceptors of migratory inflows to the NCR, the CMAs should be:
 - developed in a big way by strengthening their economic base and promotion of employment generating activities,
 - creation of high quality physical and social infrastructure,
 - intra-city mass transit systems and fast and efficient connectivity with Delhi and NCR.

- Presently, the concerned state governments are not able to initiate large scale development projects.
- Out of the nine CMAs, only 5 CMAs have submitted a total of 24 projects to the NCRPB for financial assistance.

POLICIES AND PROPOSALS

- State governments should develop the Counter Magnet Areas as Model Industrial Estates, Technology Parks, Tourist Hubs, and Special Economic Zones for attracting export orientated economic activities.
- Examples are: Tourist hubs in Jaipur, Patiala, and Gwalior; Education Cities like Kota;
- Economic activities related to Education City/Coaching hub may be identified for Kota. Kota Airport proposed in approved Master Plan of Kota may be developed.
- Projects should be also taken up jointly by state governments and concerned central ministries.
- CMAs should be developed as Opportunity Towns for people in their influence areas. These should be well connected and integrated and should have the potential to become metropolitan areas in the next ten years.
 - Physical infrastructure and fiscal incentives should be provided to attract industry to these the Counter Magnet Areas.

- Government of the NCT of Delhi should continue with those economic activities necessary to sustain local population, those that can create high scale jobs in the subregion.
- Specialized social, cultural and institutional activities like universities and center of higher education should be established as well as development of tourist destinations should be encouraged.
- Linkages with the hinterland and with other important metropolitan centers need to be strengthened to make meaningful use of the economic and physical infrastructure proposed to be developed in Counter-Magnet Areas.
- There are 3 existing unserved or underserved small airports or airstrips in the CMAs of the NCR which should be revived to enhance connectivity, to Bareilly, Kota and Patiala by 2025 and made fully operational.
- Rural development needs to be encouraged by providing urban infrastructure in rural areas through schemes like the Rurban Mission.

POLICIES AND PROPOSALS

- Central ministries like Housing and Urban Affairs, Railways, Shipping, Road Transport and Highways as well as Communications and Information Technology should put in a lot of efforts by:
 - Improving critical transport linkages by providing high speed connectivity in the form of expressways, national highways, rapid rail transport systems, airports
 - Creating robust digital communication infrastructure to promote broadband for all as a tool for social-economic development in these Counter Magnet Areas in a planned manner within a specified time frame.
 - Except Delhi and cities located in the CNCR, district headquarters should be developed within the NCR as magnets of development (MOD). Other small and medium towns should be developed service centres in each sub-region.
- Development along national highways beyond controlled areas or development and regulated areas with a minimum width of 500 meters including green buffer on either side of the right of way should be delineated and developed by participating states.
- Uneven development of settlements and economic activities should be accepted as a norm in globally linked regional market economies.

IMPLEMENTATION AND RESOURCE MOBILISATION STRATEGIES

ISSUES WITH EARLIER PLAN IMPLEMENTATION

- NCRPB a unique challenge of coordination central ministries, state governments and departments, parastatals and ULBs
- NCRPB role is more as a custodian of the strategies at an agglomeration level with details to be prepared and implemented by state govts., parastatals and ULBs
- NCRPB cannot exercise complete control over the implementing agencies who enjoy their own jurisdiction and reporting mechanisms
- Lack of congruence in preparation of the hierarchy of plans and projects
- Severe manpower constraints in monitoring cells
- Severe funding constraints

IMPLEMENTATION STRATEGIES

- MACRO LEVEL
 - All detailed Sub Regional Plans, Functional Plans, Master Plans, DPRs are to be prepared in a time bound manner
 - All Master plans/ development Plan to procure an NOC from NCRPB
 - Use of latest technologies viz. GIS, etc. to be adopted so as to enable data accuracy, reduced litigation and sharing
 - Creation of NCR COMMON ECONOMIC ZONE or Unified Economic Spaces with uniform regime of approvals/clearences, taxes, etc. to ensure speedy work progress
 - Appropriate technical manpower posting in all concerned agencies including NCR monitoring cells

- Time bound coordination meetings at all levels for quick decision making
- ▶ IT platform based linking of all urban and rural agencies for better coordination
- A real time framework for reporting project performance
- MICRO LEVEL
 - > Appropriate technical manpower posting in all concerned agencies
 - > Time bound coordination meetings at all levels for quick decision making
 - > IT platform based linking of all urban and rural agencies for better coordination
 - A real time framework for reporting project performance
- Performance indicators provided in "Ease of Living Index" and "Municipal Performance Index" 2020 of MoHUA should be followed and achieved in all Metro and Regional Centres across NCR.
- > PPP guidelines for sectors like street light, fire-brigade, security etc. should be promoted.
- NCR should be considered as a "Special Metropolitan Area" for special funding as was considered earlier for Mumbai Metropolitan Region. This would accelerate the infrastructure development in NCR, the world's largest urban agglomeration.
- Metro Centres and Regional centres and major cities in NCR should explore possibilities for resource mobilization from various resources like issuing of Municipal Bonds should be encouraged.
- For focused implementation of various Functional Plans and projects thereof, SPV formations could be explored in areas like Water, Sewerage, Tourism etc.by NCRPB and NCR constituent States, under supervision of various respective Committees like Committee of Transport Secretaries/Commissioners in case of Transport.
- A Coordination Matrix for overall coordination of RP-2041 Implementation.
 - Checklist for preparation of SRP, District Development Plan, Master /Development Plan may be prepared, it will help NCR States to prepare these Plans within the time frame as recommended in the draft RP-2041.

RESOURCE MOBILISATION STRATEGIES

MACRO LEVEL

- A detailed financial plan with 'PRIORITY PROJECTS' needs to be made for the entire PLAN PERIOD, indicating quantum, source and timing of funding, both from GOVERNMENT and PRIVATE sources
- Leveraging funds from various Central Govt. projects/schemes
- Creating a facilitative tax regime/tax holidays for incentivising private capital investments in the NCR

MICRO LEVEL

- Tapping Non tax revenues viz. user charges
- Non financial instruments viz. FAR, TDR, etc. to be imaginatively used for funding
- Creation of land banks, land pooling, land reuse, land redevelopment

CLEAR ROLES AND RESPONSIBILITIES





Thank you.

Annexure IV

Chapter Name	Section/ Para	Description/Text
Introduction: Aims &		Paragraphs shortened and made crisp in general
Objectives		
Demography and	Existing Status	Proposed Six-Tier Hierarchy of Settlements RP-2021 removed. Only proposed Seven Tier Hierarchy of Settlements, 2041
Settlements Pattern		retained.
		Component of migrants to NCT Delhi from Rajasthan is lowest i.e. 4.27% among NCR States. Decadal growth of urban Areas
		in Rajasthan sub region is lowest i.e. 36.22% among NCR states. Therefore, Rajasthan sub region presents vast potential to
		absorb urban growth of NCT Delhi Added
	Policies &	Points related to Improvement of Sex Ratio – Deleted
	Proposals	Table on Proposed population of Regional centres shifted to Annexures.
		Every NCR participating state shall make appropriate provisions and include details for the above migrant facilitation provisions
		in their Sub- Regional Plans, District Development Plans and Master/Development Plans Added
		Greater Noida retained as Metro Centre - Added
Economic Growth	Future	Circular economy has vast potential in India (refer Figure 3.3) and in NCR there is \$1bn of value that can be realized from the
and Income	Perspectives	extraction of gold from e-waste in India. Currently, ~40% of plastic waste in India ends up being uncollected for recycling.
Generation		Proper management of this waste can create ~14 lakhs jobs and could potentially represent a ~\$2bn opportunity. There is over
		8mn tons of steel that can be potentially extracted from end-of-life vehicles in India in 2025, representing a ~\$2.7bn opportunity.
		- Revised and figure added
	Policies and	 Figure on Policy Zones – Added
	Proposals	• Table on sector specific recommendations for generating employment opportunities in Delhi NCR – Revised
		• Industrial clusters as identified for spatial dispersal of industrial base should be developed across NCR. In this regard,
		potential of small and medium towns should be specially investigated. Industries requiring large space/land can be located
		in the identified lower hierarchy of settlements where land, water and labour are cheap. –Deleted.
		• Promote Economic Hubs (EHs) like Integrated Cyber Hubs (ICHs) where facilities like food, shopping, etc. co-exists
		Para deleted.
		• Cluster approach shall be adopted for promoting horticulture – Deleted
		• Support extensive use of ENAM platform in a regional and pan India context, through training and awareness
		campaign.– Deleted

Table of Differences

	0	Encourage states to adopt the Model Contract Farming Act, 2018. Contract farming can be thought of as a form of price
		futures. The contract will specify the price and quality at which the farmers' produce will be purchased – Deleted
	0	In NCR major employment generating sectors are banking, construction, financial services, fast moving consumer goods
		(FMCG), human resources (HR), manufacturing, advertising, event management, real estate, retail and telecom. – Deleted
	0	The plan should contain, inter-alia, earmarked vending zones, spatial norms for street vending, covering existing as well as
		accommodating future growth in the number of vendors. In this regard, necessary amendments be made in the existing
		Master Plans/Development Plans, Zonal Plans, etc. and steps be taken towards regulation of street vending in the Region, to
		provide respite to street vendors from undue harassment and help them carry out their business peacefully. – Deleted
	0	NCR participating States to develop necessary policies/ amendments/ initiatives for enabling the region to become a
		'Common Economic Zone (CEZ)', by 2026 – Revised
	0	For efficient approval/ inspection process, a system of accountability may be developed for major stakeholders like
		inspection bodies, testing labs, etc. on a digital platform. This should be taken up as one of the priorities for NCR in
		collaboration with MeitY and its knowledge partners. – Deleted
	0	10-pillars, as strategies for harmonies economic development of the NCR should have the following ten pillars (i)
		Industrial Development, (ii) Improving Farmers' Incomes, (iii) Economic Growth Corridors, (iv) Ease of Doing Business,
		(v) Logistics, (vi) Tourism, (vii) Enabling Infrastructure (viii) Skilling and Employment (ix) Circular Economy (x) Quality,
		Technology and Innovation - Added.
	0	Economic development in CNCR and rest of NCR can be encouraged by focused attention to specific industries/ sectors in
		the 24 districts in the participating States, surrounding NCT Delhi. Table 3.1 below shows sector–specific recommendations
		for industrial development and employment generation in different districts of NCR Added
	0	Major part of NCR outside Delhi, has dairy farming as a major economic activity. With adequate milk processing, storage
		and marketing, dairy farming has the potential to almost double the farmers' incomes. Details of the strategies may be referred
		to in the Chapter on 'Agriculture and Allied Activities'. Similarly, participating States should encourage other diversified
		agricultural activities like poultry, bee keeping, fresh water fisheries, goat-sheep rearing, etc Added
	0	Every village/ group of villages with population of 2000 or more should have a Bulk Milk Cooler (BMC) based milk
		procurement system set up by the nearest Milk Processing Plant (refer Chapter on 'Agriculture & Allied Activities) Added
	0	Encourage states to undertake agricultural reforms and to provide additional marketing options to farmers to reduce the
		number of middlemen and to increase farmers' incomes Added
	0	Economic growth corridors should be developed along all major expressways, orbital rail corridors, National Highways,
		freight corridors, etc. in NCR. This shall enable optimum exploitation of the potential and synergies generated by such large
		connectivity investments. Major identified/ proposed connectivity investments which could be studied for establishment of
		Economic Growth Corridors in NCR (Figure 3.5). – Added.
	0	The list of Economic Growth Corridors and figure - Added/Revised.

	1.01	
	0	NCR being a land locked region, an appropriately located network of dry ports, inland container depots (ICDs), multi-modal logistic hubs, etc. in close proximity to airports, freight corridors, industrial centres, etc. should be designed and implemented in a time bound manner. The Transport Functional Plan should include this as a major aspect. – Added.
	0	The process of approvals for warehouses, MMLP should be simplified, NCR States should have an on line portal for this or integrate all concerned approvals with the proposed pan NCR-Nivesh Mitra portal. Such approvals should also be time bound.– Added.
	0	Tourism sector is universally recognised as the highest multiplier of every unit of investment. NCR is richly endowed with variety of sites with tourism potential including architectural, natural, mythological, recreational, historical, heritage and other sites Added.
	0	There is large potential to improve incomes through the handicraft-based informal sector in the region. – Added.
	0	NCR participating States to formulate necessary policies/ amendments and take initiatives for enabling the region to become a 'Unified Economic Space (UES)', by 2026. NCRPB to play a coordinating role. – Added.
	0	The term Common Economic Zone (CEZ) replaced with the Unified Economic Space (UES), as already proposed.
Transport and Policies and	0	Given the time and economics of travel involved within NCR, although expressway and RRTS are under planning/execution
Mobility Proposals		to potentially address the larger demand, the desire of most to have connectivity with NCR/Delhi is a huge potential to
		be exploited for Inter- NCR connectivity as more cities want to be connected to Delhi. – Deleted
	0	Regional Rail shall play a major role in transforming economies and lives of people, enabling inter-connected clusters
	-	to develop as vibrant, dynamic NCR. – Deleted
	0	All roads in NCR should provide equitable space for all the users with safe crossing and interchange facilities. – Deleted
	0	All Counter Magnet Areas (CMAs) to the NCR should be well connected with Air, Rail, RRTS and NH/ Expressways, All
	-	CMAs should be connect with RRTS by 2035, based on feasibility. – Added.
	0	The COVID-19 pandemic has highlighted the issues caused by inter-state blockage/ border checks as part of traffic
		management at borders by the states in NCR. Steps shall be taken to prevent closure of interstate borders by NCR states in
		coming decades in NCR area, except in emergency situations like crime control etc. – Added.
	0	Warehousing and Logistics be given Industrial Status which will enable development of warehousing and logistics
		infrastructure in NCR – Added.
Road Network	0	For better connectivity of CNCR area, the EORR should have spurs to major economic hubs like Jewar & Hisar Airports,
Proposals		etc. In addition, based on feasibility, possibility of an elevated ring road beyond NCT Delhi may be also be explored. –
		Added.
	0	Hapur-Kothore- Mawana road could be upgraded to NH and can act as outer ring for Meerut. – Added.
	0	Possibility of an additional highways supplementing NH-I in north-west side of NCR may be explored to offload NH-
		1 (erstwhile). – Added.
	0	This can be linked with Integrated Cluster Action Plans (ICAP) in NCR Added in existing para

	 Optimum utilisation of existing road transport investments by inclusion of suitable interchanges at each intersection/crossing of Expressways with other expressways and NH/SH and vice-versa should be provided at priority as feasible in a time bound mannerAdded
	 Efforts be made to get funds from MoHUA under Urban Green Mobility and Plan of Action in this regard be prepared in the Sub-Regional Plans especially covering all 5 lakh plus cities with their thrust for mobility. – Added.
	• MoHUA is expected to purchase 20,000 buses for these 5 lakh plus cities & capital cities. MoHUA support to these cities will be provided either through state budget, PPPs mode and per km basis. NCR States should make a plan to mobilise
	resources from this budget and prepare projects in their SRPs. – Added.
Bicycles and Pedestrian Facilities	The 'Strategies and Methodologies for Mitigation' for bicycle path and pedestrian path as recommended by National Mission on Sustainable Habitat, MoUD need to be adopted by State Governments for development of Non-motorised facilities in the towns of NCR. The strategies are reproduced below:
	"Significant GHG mitigation can be achieved through modal shift by providing all arterial roads more than 25 m right of way to have minimum of 2.5 m pedestrian path (with trees) and proper street furniture and 2.5 m bicycle path preferably in each direction as a mandatory measure. Where it is not possible to provide a dedicated cycle path because of right of way being
	narrow, traffic calming measures to reduce the speed of traffic to 30 kmph need to be adopted. Without properly engineered pedestrian path and bicycle path, the roads are unsafe for walking and bicycling and safety of walking and bicycling needs to be ensured " – Added
	Adequate and seamless networks of footpaths/ walkways should be created initially in all Metro and Regional Centers by 2026 and in the remaining areas by 2031. – Added.
Rail Network Proposals	 Explore feasibility of a 30 minute fast mass transit rail system from NCR boundaries to Delhi, to effectively help people settle far from Delhi and commute to work/business to Delhi in a very time-efficient manner -like Shinkansen of Japan. – Added.
	• Utilisation of spare and off peak capacities for cargo movement like airways can be explored gainfully in NCR portions of railways network. – Added.
	• Figure on Reticular Network (Road)-Concept and Reticular Network (Rail) – Added.
	• Tier-II cities (as per MoHUA definition) have possibilities to get supported by MoHUA funds for Metrolite (30-40% of cost of Metro) and Metro Neo (20-25% of cost of Metro) – Added.
	 States may make assessment and prepare plans for same, and indicate it in the respective SRPs. – Added. Such cities should undertake feasibility studies and make proposals for accessing MoHUA funds, so that the same can be released as part of SDPs. – Added
Internete d	pranneu as part of SKPS. – Auueu.
Integrated	• Following live IFCs were also proposed in the Master Plan for Delni-2021 for the integration of goods movement by road
Freight	and rail in Deini. These IFCs are required to meet the need for Deini only and need to be implemented expeditiously.
Complexes	1. Madanpur Khadar (NH-2)

	(IFC)	ii. Ghazipur (NH-24)
		iii. Narela (NH-1)
		iv. Dwarka (NH-8)
		v. New site in Urban Extension (Rohtak Road) Tikri Kalan – Added.
		• Master Plans, where these provisions are not kept need to be reviewed and revised to provide land for IFCs and integrating
		them with intra-urban transport network system. – Added.
	Institutional	• The Regulatory systems in NCR for logistics, new Rail/road/air/water connectivities and associate infrastructure should be
	arrangement	simplified, online and time -bound with focus on Ease of Doing Business. All approvals from all agencies required for various
		modes and categories of transport projects should be accessible through this Online- Platform on a time-bound deemed
		approval ,basis, unless rejected for recorded reasons in time. – Added.
		• Multiplicity of authorities for transport sector in NCR has created many problems in NCR. This chaotic situation can be
		managed by creation of an umbrella Transport Coordinating Body for NCR which should be empowered to examine, monitor,
		facilitate approvals and execution of all sectors of transport projects including road, rail, water, air etc Added.
		• Delhi especially has a classic situation of confusion where different widths of roads and associated drains/sewers etc are
		managed by different authorities. NCT Delhi deserves a more streamlined road management by creation of a local
		overarching body for its roads wherein this body could have different sub-agencies if needed Added.
		through Committee of Transport Secretaries (CoTS) housed within NCRPB.
		(e) to conduct Safety Audit of all transport plans, designs and operations Added in existing para
	Road Safety	• All districts must have modern driver training facilities/ driving schools to facilitate qualified drivers on NCR roads. Land
		may be earmarked (about 2-3 ha.) in the Sub-Regional Plans. Private investment may also be considered for expeditious
		establishment and management of these driver training facilities Added
		• Road safety policies are prepared and being implemented by the NCR States, however road accidents are very high in NCR.
		Rigorous efforts shall have to be made by all the NCR participating States to achieve the target of "Zero Road Death NCR".
		In this regard, brief note on national initiatives along with few international examples is placed in Annexure D-4.6 Added
		 Para on Skill Development and Awareness – Deleted
	Other Aspects	o Identify land use and related policies and actions that support optimizing the efficient movement of vehicles for
		passengers, special employment areas, goods, and services on the major road networks of the region – Deleted
		• Integrate all modes of transport in a complementary way. Given the increasing diversity of mobility needs, the
		principle of 'co-modality' should be at the heart of the future transport & mobility related initiatives. Different
		modes of transport should be seen as complementary and interconnected. – Deleted
	Projects	• NHAI project list added in the key projects section as Table no. 4.8 - Added
Power	Policies and	• Ministry of Power had prepared a draft proposal for Amendments in Electricity Act 2003 in the form of draft Electricity
	proposals	(Amendment) Bill 2020 which proposes consumer centricity, direct benefit transfer of subsidy, 24*7 Power supply as an

		obligation, Ease of Doing Business, penalisation on violation of PPA, setting up Smart Meter and Prepaid Meters, promotion of green power, etc. along with regulations related to the same. Salient Features of the Bill are placed at Annexure-D-5.6.
		Added from Introduction.
Water	Introduction, And Existing Water &	 All sections before the policy & proposals has been reworked and figures in the tables updated. Figure 6.1 Towns with WTPs in NCR, 2019; Fig. 6.2: Drainage Networks in NCR; Fig. 6.3: Canal Networks in NCR & Fig. 6.4: Drains falling in Yamuna River - Added/ modified
	Drainage Status	
	Policies and	Following added:
	Proposals –	• Agricultural Water Demand by adopting combination of all the water saving measures and considering socio-economic
	General	conditions of Farmers, their adaptability to accept new innovations, capacity building. availability of resources etc. by giving judicious spatial distribution for implementing above conservation methods 5% of irrigation water may be saved by year 2026, 10% of irrigation water be saved for year 2031, 15% of irrigation water be saved for year 2036 and 20% of irrigation water be saved for year 2041.
		• Construction of Tube Wells: 300 Nos. of Wells can be constructed in flood plains of NCR every year so that 51.1 MCM of water can be drawn and utilize from the ground water resources every year.
		• Extraction of Ground Water & Recharging: A total of 1,347.7+ MCM/year water can be extracted from flood plain aquifers by constructing 1,275 shallow tube wells. The areas are:
		 a) Garh Mukteshwar Jaithal and Sarurpur-Bhaghpur areas of Ganga River Flood Plain of River Ganga. b) Hindon Flood Plain aquifer of river Hindon c) Baghpat-Murad Nagar-Jainl area of Upper Ganga Canal Flood Plain
		 Ground water should not be extracted from over exploited area. As far as possible, water supply should be made from surface water resources and ground water from flood plain aquifers. (refer Annexure for Block wise groundwater status in NCR)
		• Recharging of aquifer should be taken up immediately by constructing suitable rain water harvesting structures such as recharge pits, recharge trench, recharging dug wells, recharge shaft, shaft with recharge well, trench with recharge well, check dam and percolation tanks.
		• All opportunities should be utilized to recharge ground water as proposed by Govt. under various schemes.
		• Law for Private Sewage Disposal: It should be made mandatory by amending building by laws in NCR region for institutions,
		shopping complexes, malls and hotels etc. to have dual intake and triple outlets to enable reuse/recycle of water. Further all large area housing societies, institutions, industries; hospitals etc. should mandatorily follow the required water quality level guidelines, before disposing its used water to severage system. This shall also reduce the load on municipal sever and STPs
		\sim Efforts be made to reduce water consumption under agriculture by 75-80% and accordingly also strive for increasing
		Water Reuse from 30% in Delhi to 50% in all urban areas by 2026, 70% by 2031 and 85% by 2036. Decentralized STPs
		with 80-90% local reuse of recycled water facility mandatory for new group housing and high rise construction /

			redevelopment.
		0	Earmarking of flood plains be carried out by the NCR participating states in their respective sub-region as being in NCT
			Delhi.
		0	To be a water + region, "water balance table" for each sub region, district and towns of the NCR should be prepared, as part
		_	of Master Plans and District Development Plans.
		0	sourced through Jal Jeevan Urban mission of MoHUA
		0	Unaccounted for water should be reduced across the NCR and specific targets should be provided for each district in the
			respective Sub-Regional Plans and Master Plans in this regard.
		0	States should give status and targets in the SRP and Master plans for the same
		0	100% all urban areas in NCR should be made 100% water secured. In this regard, target be set in the SRPs and funds available with MoHUA in this regard, be utilized.
		0	Service Level Benchmarks (SLBs) should be decided by the States in their SRPs, District Development Plans (DDPs) and
			Master Plans and funding available under (Jal Jivan Mission Urban) should be tapped to achieve the required service level
			benchmark.
		0	Water ATM should be facilitated / set up in areas where piped water supply is not feasible and areas where water is
			contaminated due to industrial activities or waste landfills in vicinity (areas nearby solid waste management sites saline areas,
			elc.) Weste water treatment and water bodies reinvension are major elements of Ial Jivan Mission (Urban) NCP State should
		0	prepare their Action Plans / proposals in this regard and get funds from the MoHUA and make this part of SRP
	Major Proposed	0	Explore usage of existing abandoned dry canals for laying pipelines etc. so as to avoid extra cost of land for fresh water
	Projects and		related projects. Suitable measures be taken in this regard and an action plan be prepared and incorporated in the Sub-
	Implementation		Regional Plan-2041 of each sub-region Added
	Strategies	0	Possibilities to bring sea water through pipeline to Delhi / CNCR from the nearest sea water source (e.g. Kandla) may be
			explored in order to meet the non-portable water requirements especially for large size industries, commercial establishment,
			etc. so that the fresh water available in NCR can be reserved for portable purpose. However, it is also important to take all
			steps to conserve the available water and ground water Added
Sanitation and Waste	Policies and	0	The last line of the para changed as below:
Management	Proposals		.Privatization of waste management sites may be promoted with appropriate safeguards for the waste collection staff.
		0	Following added in the end of the existing para:
			all Metro & Regional Centers should become ODF++ by 2025 and rest of the towns in NCR should achieve ODF++ by 2031.
		0	Extended Producer Responsibility (EPR) nodal coordinators in each district Headquarters also added.
		0	All metro and regional centres, Municipal Corporations / ULBs and District Headquarters will mandatorily have 100%

		mechanical cleaning of all sewerage system and machines holes (erstwhile termed as manholes) by 2023 and in rest of the NCR by 2026. This should be mandatory in all district headquarters, metro centres, regional centres, areas under Municipal corporations /ULBs in NCR Added
		• All metro centres in NCR should achieve 7 star rating against the Garbage Free Indicators of Swatch Bharat Mission Urban
		of MOHUA by 2023. This should be achieved in all regional centres and urban areas with 1 lakh and above population by
		2024. Further, rest of the areas in NCR should achieve 3 star rating by 2025 Added
		• Funds for underground drainage should be available with NCR participating States for their respective sub-regions Added
Agriculture and	Policies and	Following added:
Allied Activities	Proposals	\circ The region's peri-urban areas have the potential of growing fruits and vegetables through organic farming with the use of
	Toposuis	bio-wastes or wastewater after recycling for the production of fresh organic foods at reduced costs, which is beneficial for
		farming community as well as consumers in urban settlements. Animal farms and poultry could benefit from consumption
		of farm residues and recycled wastes from animal farms
		\circ A network of Milk Procurement and Processing Facilities should be set up in all NCR States outside Delhi
		\circ Fvery village/ group of villages with a combined population of 2000 or more should have a Bulk Milk Cooler (BMC) haved
		milk procurement system set up by the nearest milk processing plant. The BMC should have a capacity of 500 liters or more
		depending up on the nonulation or potential of that village(s)
		• There should be a milk procurement and processing plant in every district of NCR preferably one plant each at every 15 kms
		Radius to maintain quality/freshness of milk procured alternatively the milk procurement and processing plant in every
		district should have a refrigerated milk tankers based procurement of milk from these BMCs. Procurement should be based
		on transparent automatic quality/SNE (solid not fat) testing with sharing of online reports with dairy farmers on the spot
		along with software/system alert based immediate transfer of procurement price in their accounts. Protocols for milk
		along with software/system alert based initial transfer of productment price in their accounts. Trotocols for mink
		The visbility of such milk programment and processing plants, whether public or private is also dependent on their
		o The viability of such mink procurement and processing plants, whether public of private, is also dependent of their procurement (seles in summer/less months) beding to milk
		producement /sales in summer/lean months which is generally hampered by mink availability in lean months, leading to mink
		adulteration complaints by private milk vendors. Hence the milk procurement and processing plants should have UH1 (Ultra
		High Temperature) pasteurization facility with long shell life packaging facility. It is also important that there shall be at
		least one whik Powder facility in addition, in every such milk procurement and processing plant at least for a cluster of 2-3
		districts of at a radius of 30 kms, whichever is less.
		• Diversification of dairy plant facilities to produce processed milk products like cheese, dairy whiteners, ice-cream, whey etc.
		will luriner increase viability of such plants and improve farmers' incomes in turn.
	Other Aspect:	• Proper norms and assessment procedure be formulated as part Sub-Regional Plans, regarding allowing of conversion of
		land use from agri to non-agri uses. Strict implementation of such norms be monitored to ensure time bound utilisation
		of such converted land. The concerned departments to ensure that no agricultural land remain un-utilised or underutilised.

		-	
			Mechanism be developed to support needy agriculture landowners/ farmers for carrying out agricultural activities and utilisation of the ageri- land. Provision of penalty/ fines for misutilization of agricultural land may be explored by the States. Approval of departments, responsible to ensure achievement of required targets for agricultural produce, be mandated and these departments should be accountable for land mass under agriculture use. – Deleted
	Planning No	orms	• Conversion of land from agriculture use to urban and other non-agriculture uses should be allowed only under exceptional circumstances for clearly stated. – Deleted
Health	Policies	and	Following added:
	Proposals		• Similarly, every hospital with 50 beds and above should mandatorily have nursing and paramedical college to train workforce.
			Necessary rules may be framed/ amended in this regard by the NCR States by 2022 so that quality workforce is available within NCR to cater to domestic as well international patients.
			• Referral system should be mandatory in NCR for the first consultation which should be online. Physical consultation should be permissible in NCR only after prior online consultation with a doctor and if such online consultation does not provide adequate relief.
			• Appropriate steps be taken to cover all citizens especially all sections of middle classes who are unserved by Ayushman Bharat and other medical insurance schemes in NCR under appropriate Health Insurance. In this regard participation of the private sector can also be explored.
			• Mandatory earmarking /allocation of adequate Land and allotment through lottery only to reputed institutions every two years, if unallocated, on land prices frozen on current level till next RP, on condition of reasonably priced health services; this may be ensured for every ward of towns with more than 01 lakh population and every town up to 1 lakh population, for primary and secondary Health care facilities.
			 5% of the GDP of the 8% NCR's health allocation of overall GDP of the central and State govt should spend. Of the overall 5%, delhi 5%, Central 8% of 5% of GDP and NCR states 5% of the state GDP should be allocated to the as per their share of total area of the state. – Deleted
Education and Skill	Policies	and	Partial Addition/ Modification
Development	Proposals		• Each district should have Migrant Facilitation Centres (MFCs) also providing orientation about the city/town, shelter home allocation till rented accommodation arranged, list of local contractors registered, Fair Price shops, govt. dispensary details, accident insurance coverage etc. Regular medical check-ups and requisite counselling along with soft skill video trainings etc. for migrants be organised every fortnight/weekly at these MFCs. The registration be linked with aadhar number and thus with the common data base which would also include data on qualifications, skill set/ updates /Skill mapping, education, local address and employment related details etc. Necessary infrastructure should be created accordingly at district, block and gram panchayat level and data should be shared through public portals. MFCs should liaison with industries for placements and with Sector Skill Councils for training and certification

ndd1			
			Each District should have District Skill Coordinator, to be appointed by the NSDC or Sector Skill Councils. He should be
			in-charge of the MFC/ will closely liaison with MFC or should be located within MFC. MFCs could be located physically in
			ITI, etc. in the district headquarter or any other locations as decided by the respective DC/DM or the State Govt Added
			Mandatory earmarking /allocation of adequate Land and allotment through lottery only to reputed institutions every two
			years, if unallocated, on land prices frozen on current level till next RP, on condition of reasonably priced Education services;
			this may be ensured for every ward of towns with more than 01 lakh population and every town up to 1 lakh population, for
			primary and secondary educational facilities Added
			States to explore possibility of having another IIM in NCR possibly in Bharatpur district of Rajsathan sub-region or
			districts of UP sub region Added
			Sports University be established in Meerut district of UP Sub-Region.
Sports & Social	Policies a	nd	Annexure adjustment/renumbering has been done.
Support System	Proposals		
			Further, NCR States may include appropriate provisions/ norms in the SRPs for setting up/ starting private Sports Academies
			in their respective Part added w.r.t. PPP for sports infrastructure
			Play areas be mandatory in all group housings and distinct from greens which shall be part of 10-15% open areas Added
			Sports University be established in Meerut district of UP Sub-Region Added
Safety, Security and	Policies a	nd	It is desirable that Common Policing Arrangement be explored for NCR and a Senior Police officer of NCR states can be
Disaster Management	Proposals		appointed as head of such an arrangement, on rotation basis, to address the safety concerns of NCR citizens Added
Environment	Key Issus a	ind	Draft National Forest policy, 2018 cleared by various Ministries of Govt. of India stipulate to continue 33% tree and forest
	Challenges		cover and two third in hills and mountains. Policy calls for "promotion of trees outside forests and urban greens". The target
	_		of the policy is yet to be fully achieved in NCR. A brief of the Draft National Forest Policy-2018 is at Annexure D -15.3 –
			Deleted as provided in Regional land use.
	Policies a	nd	State should set minimum area for land to be required for green in each residential area such that green spaces constitute at
	Proposals -		least 10% of the overall land cover of the area. The same be elaborated in SRPs, which shall not be categorized as forest.
	Ambient A	Air	This should be elaborated in the Sub-Regional Plans Partially modified
	Quality		
Digital Infrastructure	Policies a	nd	Box 16.1: Suggested List of Digital Platforms for NCR in Regional Plan-2041 - List inserted from Annexure
	Proposals		
			Each District should have 02 Digital Village in next 2 years and at least 01 in each block by 2026. Added from Annexure
			with slight modification
			A Digital platform may be created at NCR level which will act as a Coordination and Facilitation Centre, with subset
			centers in each sub region, for sub regional coordination and monitoring.
	Key Projects		One Project has been added in the Project list regarding Creation of Digital Platforms.

Housing and Habitat	Policies	and	0	Affordable Rental Housing Complexes (ARHCs) funds can be utilized for workers housing wherever possible.
	Proposals		0	For In-situ Slum redevelopment. MoHUA funds can be sourced.
	- F		0	For adequate and well located social housing opportunities, explore possibilities for having Special Zones of Social Interest
			-	(SZSI), which are designated to the provision of affordable housing, particularly for EWS & LIG. – Deleted
			0	In order to protect vendors' livelihood rights and social security, a 'Plan for Street Vending' be prepared by every local
				body as also mandated in the "Street Vendors Act, 2014". The plan should contain, <i>inter-alia</i> , earmarked vending zones,
				spatial norms for street vending, covering existing as well as accommodating future growth in the number of vendors.
				In this regard, necessary amendments be made in the existing Master Plans/Development Plans, Zonal Plans, etc. and
				steps be taken towards regulation of street vending in the Region, to provide respite to street vendors. – Deleted
			0	Properties which were hitherto vacant for five years, and monetary penalty were levied and paid, if such properties are put
				in rental use they may be given some rebate in such a way so that the vacant property tax paid by the owner is given back to
				the owner in an equal number of years as a rebate against the penalties payable by him for the period of the property be rented
				out. This rebate shall be admissible in monthly property tax payments; provided that such rebates in any month shall not be
				higher than the maximum monthly charged penalty in the past. – Slightly modified
Policy Zones and			0	Section 10 (2) of the National Capital Region Planning Board Act, 1985 states "The Regional Plan shall indicate the manner
Regional Landuse				in which the land in the National Capital Region shall be used, whether by carrying out development thereon or by
				conservation or otherwise, and such other matters as are likely to have any important influence on the development
				of the National Capital Region". Further, Section 10(2) (a) of the National Capital Region Planning Board Act, 1985
				emphasizes that the Regional Plan shall indicate "the policy in relation to land use and the allocation of land for different uses" – Deleted
	Policy Zone	es	0	Figure regarding Policy Zones - Deleted (appropriate reference added)
	-		0	The broad analysis of the existing land use (2015-16) is given below Table-18.1 and details are given at Annexure-D
				18.1.5. It is clarified that these details from Bhuvan Portal/NRSC have been presented in annexure as a purely schematic
				layout and this schematic layout is tentative and gives a purely indicative analysis which is based on a satellite imagery of
				1:50000 input scale and are to be referred merely for indicator purpose and for broad understanding. However, state shall
				prepare existing land use maps and details based on separate and more detail satellite inputs at a scale not less than of at least
				1:10000 and the existing land use details for the Master Plans/Development Plans shall be prepared by State based on
				separate satellite inputs at a scale of 1:4000. The District Plans shall similarly prepared existing land use maps based on
				satellite inputs of scale not less than 1:10000. – Added
			0	Existing para slightly modified w.r.t width of HCZ by adding following
				01 kms on either side of the highways / expressways starting from edge of highway or up to the outer boundary of intervening
			rei	venue villages, whichever is earlier.

	HCZ	Z/TOD Zones plan shall be prepared by States within 18 months from the date of final notification of RP 2041.
Policies	• D	Definition of existing landuse - Deleted and given as Annexure-D-18.3.
Relating to Land	o N	NCR is endowed with environmentally rich natural features and environmentally fragile and sensitive areas like Aravalli
Use within	R	Ridge, forest areas, rivers and river beds, streams/ channels/ natural drains, wetland, lakes/ ponds/ paleo-channels & other
different Policy	W	water bodies, wildlife sanctuaries, national parks, etc Deleted due to repetition
Zones	o It	It shall not be possible to show each and every site in Regional Plan with specific land use category, for an area of 55,083
	S	Sq. Km. The decision of allowing the lowest level of use, within the broad regional land use (as also mentioned in RP-2021),
	s	shall have to be undertaken by the participating states Deleted
	o N	NCRPB Act being an unique instrument for national capital region land use planning, an innovative land use planning
	a	approach to Regional Plan-2041 is required for the next two decades to meet the challenge of providing for the requirements
	0	of most populous agglomeration on the planet. A first step would be to recognise the realities of growth and to accommodate
	tl	he needs while also planning for better organised future growth in NCR. NCR participating States shall elaborate the details
	0	of broad land uses indicated in Regional Plan according to the Policy Zones outlined above in para 18.2 and as per the detailed
	la	and uses mentioned in the policy zones section of this chapter. States shall also bring out details of phasing, for
	d	levelopment and zoning regulations in the respective Sub-regional Plans, District Plans and Master/Development Plans, etc.
	-	Added
	o C	Categories slightly modified w.r.t. Rural Zones, expression "Agriculture" removed.
	a) l	Urbanisable areas (including existing Built-up/urban areas),
	b) F	Rural Zone within notified (controlled/development/regulated) areas
	c) (Green buffers
	d) F	Rural Zone outside notified (controlled/development/regulated) areas
	o S	State shall make the negative list in respective SRPs in line with RP regarding activities in rural zone within and
	0	outside controlled/ development/regulated areas.
	• T	The last line of existing para slightly modified as under:
	Any p	permission in this regard should be duly granted by the district administration except where barred by any GoI/state govt
	rules	δ.
	o T	The tree cover/ plantation outside the designated statutory forest should be increased to have minimum 10% of area in each
	С	city/ town under tree/ green cover, which shall be kept out of statutory forests and shall not be covered under statutory forest.
		- Existing para Modified
	o A	All Master/ Development Plans including Master Pan of Delhi-2041 shall be compulsorily prepared on GIS platform and
	s	shall have to be in conformity/ sync with the Regional Plan-2041 policies and its horizon year. In case of AMRUT towns in
	N	NCR, second phase of Master Plans be targeted for the horizon year 2041, in sync with the RP-2041 Added
	o F	For Urban Areas a stock taking Exercise be initiated for 'as is', with regards to layout plans in place and areas for which it

Implementation Resource MobilizationProjects StrategiesoProjects for Economic Development Plan preparation works, in all Metros and Regional Centers across NCR. also consider providing financial assistance as reimbursement/ AMRUT/ Govt. of India funds may also be c such one Stock Taking exercises being undertaken with drone technology AddedCounter Magnet AreasProjects Implementation StrategiesoProjects for Economic Development of Kota CMA indicated in the Table w.r.t. Education City/Coaching Hu proposed in approved Master Plan of Kota.Macro Level- MobilizationOIn view of Section 27 of NCRPB Act, NCR States should ensure that all related State legislations applicable o NCR are in line with NCRPB Act, 1985, through amendments, as may be necessary. Further, where amendment in Central laws, such amendments may be initiated by States as per due process AddedMobilizationOThe Urban Development Fund (UDF) with the Ministry of Housing & Urban Affairs can also be accessed t investment efforts in the respective urban areas of NCR AddedMonitoring and CoordinationRephrased and simplifiedOIn order to ensure that the policies and strategies get converted to results on ground, it is required to hav management system for (a) speedy implementation and monitoring of the Plan policies & proposals, which itsel	this exercise caken as first NCRPB can nsidered for
Counter Magnet Areas Projects α α Projects for Economic Development of Kota CMA indicated in the Table w.r.t. Education City/Coaching Hu proposed in approved Master Plan of Kota. Implementation Strategies and Resource Mobilization Macro Level- Implementation Strategies α <th>1</th>	1
Implementation Strategies and Resource Mobilization Macro Level- Implementation Strategies In view of Section 27 of NCRPB Act, NCR States should ensure that all related State legislations applicable of NCR are in line with NCRPB Act, 1985, through amendments, as may be necessary. Further, where amendments in Central laws, such amendments may be initiated by States as per due process. Added The Urban Development Fund (UDF) with the Ministry of Housing & Urban Affairs can also be accessed t investment efforts in the respective urban areas of NCR. Added For focused implementation of various Functional Plans and projects thereof, SPV formations could be explore Water, Sewerage, Tourism etc.by NCRPB and NCR constituent States, under supervision of various r committees like Committee of Transport Secretaries/Commissioners in case of Transport. Added In order to ensure that the policies and strategies get converted to results on ground, it is required to have management system for (a) speedy implementation and monitoring of the Plan policies & proposals, which itsel 	and Airport
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Monitoring and Coordination Rephrased and simplified • In order to ensure that the policies and strategies get converted to results on ground, it is required to have management system for (a) speedy implementation and monitoring of the Plan policies & proposals, which itsel	l in areas like epresentative
Coordination • In order to ensure that the policies and strategies get converted to results on ground, it is required to hav management system for (a) speedy implementation and monitoring of the Plan policies & proposals, which itsel	
 tremendous coordination amongst NCR state departments and Central Govt. Ministries /Departments and (monitoring of the projects. The polices and proposals of RP 2041 pertaining to Central Ministries/ Department like Railways, MoRTH, Power, Environment etc. has to be implemented by the respective Departments. Hen Suitable arrangements like designation of a Senior Officer in each concerned Ministry /Department/Agen 	an efficient shall require b) for proper nts/ Agencies ee, cy/concerned
secretariat of Central Govt. as per RP 2041 sectors, as Nodal Officer who could haison with NCRPB to provi monitor implementation of policies/proposals RP 2041, be made and effective monitoring and reporting of implementation of the policies and proposals of RP-2041 pertaining to central Sectors be ensured. In particula of Executive Director level officers of NHAI, Railway Board, NeGD/MeitY, Tourism, Health, Rural Devel Development, Water Resources, etc. as Nodal Officers for Regional Plan implementation would be very use coordination.	le inputs and
 ii) Designated Nodal Officer may also be the special invitee to the Planning Committee meetings of the Bo Nodal Officers, who will provide both inputs for planning and also provide regular update/report the status of in of policies/proposals and projects being executed in NCR to NCRPB. With its limited powers and invisition, the NCRPB cannot take up the task of comprehensive matching of the status of the NCRPB cannot take up the task of comprehensive matching of the status of the NCRPB cannot take up the task of comprehensive matching of the status of the NCRPB cannot take up the task of comprehensive matching of the status of the NCRPB cannot take up the task of the NCRPB cannot take up the task of the NCRPB cannot take up the task of take up take up the task of take up take u	r, nomination ppment, Skill ful in smooth

		implementation of the Regional Plan. It, therefore, requires the support not only from the Ministry of Housing and Urban Affairs but also from other concerned Central Ministries/Departments, Niti Aayog and constituent State Governments, their local bodies etc. who are having power under their own jurisdiction. – Deleted
	0	The State Level Steering Committees (SLSCs) be used more efficiently to address the concerns regarding preparation of District Development Plans and plan implementation through various agencies and State Urban Development/ Town Planning Department which is nodal department for NCRPB can also become the anchor point for all state departments, on behalf of the Steering Committee. – Added
	0	Coordination Matrix for overall coordination of RP-2041 shall have to prepared along with Checklists for preparation of SRP, District Development Plan, Master /Development Plan – Added
Macro Level – Resource Mobilisation	0	RP review has suggested that NCRPB should leverage the funds from the various schemes / missions launched by the central Government. NCRPB should be able to manage such external funds easily due to its experience in managing extra budgetary resources since it has been managing and servicing loans taken from ADB and KfW. The reviews also advised to identify indigenous specialist / domain experts for specific studies with ultimate aim to create in-house capacity in NCPRB for taking up this responsibility Added from Issues and rephrased
	0	The need to have a mechanism of dedicated fund, to effectively undertake various activities envisaged in the Regional Plan 2041, can be achieved to a considerable extent through an earmarking of developmental funds for NCR region by concerned departments and agencies at Centre and NCR state levels especially for elements referred /mentioned in RP -2041, thereby creating an institutional mechanism of a 'Greatest NCR Initiative'. Requisite fund allocations specific to NCR under various budget heads could be separately collated under NCR budget head through NCRPB under MoHUA for better monitoring and efficient utilization of funds allocated for the development of the world's greatest agglomeration and a future ready NCR Added
	0	The massive amount of funds required for provision of basic necessities like water, drainage, sewerage, sanitation, health, etc. and for provision of smart citizen services required for Ease of Living coupled with huge infrastructure for transport connectivity, power distribution, other social infrastructure, will require large investments in NCR in multiple sectors. Facility of significant amounts of Subordinate Loan with little or no interest to NCRPB would be a major contribution for bringing the infrastructure of this best performing economic hub of India at par with similar global capitals Added
	0	This devolution / routing of funds through NCRPB will facilitate a more focused intervention in the NCR sub regions, even
	0	Performance indicators provided in "Ease of Living Index" and "Municipal Performance Index" 2020 of MoHUA should be
	Ŭ	followed and achieved in all Metro and Regional Centres across NCR Added
	0	PPP guidelines for sectors like street light, fire-brigade, security etc. should be promoted Added
	0	NCR should be considered as a "Special Metropolitan Area" for special funding as was considered earlier for Mumbai

Metropolitan Region. This would accelerate the infrastructure development in NCR, the world's largest urban agglomeration Added
• Metro Centres and Regional centres and major cities in NCR should explore possibilities for resource mobilization from various resources like issuing of Municipal Bonds should be encouraged - Added

Note:

- i. Maps has been modified for clarity and few more maps added as required.
- ii. Annexures have been restructured, shortened and accordingly re-titled.
- iii. The text in the pre-policies and proposal part/section of all chapters of the circulated Draft RP-2041 has been made crisp and reorganized to make it more systematic.



राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड NATIONAL CAPITAL REGION PLANNING BOARD प्रथम तल, कोर–IV बी, / 1st Floor, Core-IV-B, भारत पर्यावास केन्द्र, / India Habitat Centre, लोधी रोड, नई दिल्ली–110003/ Lodhi Road, New Delhi-110003 आवासन और शहरी कार्य मंत्रालय / Ministry of Housing and Urban Affairs दूरभाष/Phone : 011-24642284, 24642287 फैक्स/Fax : 011-24642163

Dated 04.03.2021

No. K-14011/02/2021-NCRPB

Subject: Corrigendum to the Minutes of the 69th Meeting of the Planning Committee.

This is in continuation of the Minutes of the 69th Meeting of the Planning Committee, issued vide NCRPB's letter of even no. dated 02.03.2021.

2. As one item was inadvertently omitted, please find enclosed a Corrigendum to the Minutes of the 69th Meeting of the Planning Committee for kind information and necessary action.

3. This issues with the approval of the Competent Authority.

(Abhijket Samanta)

Deputy Director (Tech.)

Encls: As above.

To,

- 1. Shri Kamran Rizvi, IAS, Additional Secretary (D&UT), Ministry of Housing and Urban Affairs, Nirman Bhawan, New Delhi
- Mrs. Renu Sharma, IAS, Additional Chief Secretary (UD)/Director of Local Bodies (DLB) Govt. of NCT-Delhi, 9th&10th Level, C-Wing, Delhi Secretariat, I.P. Estate, New Delhi-110002
- 3. Shri A.K. Singh, IAS, Principal Secretary, Town & Country Planning Department, Govt. of Haryana, New Haryana Civil Secretariat, Sector-17, Chandigarh, Haryana-160017
- 4. Shri Sawant Bhaskar Atmaram, IAS, Principal Secretary, Department of Urban Development & Housing, Govt of Rajasthan, Rajasthan Secretariat, Jaipur-302005, Rajasthan
- 5. Shri Deepak Kumar, IAS, Principal Secretary, Housing & Urban Planning Department, Govt. of Uttar Pradesh, 3rd Floor, Bapu Bhawan, Uttar Pradesh Secretariat, Lucknow-226001, Uttar Pradesh
- 6. Shri Anurag Jain, IAS, Vice-Chairman, Delhi Development Authority, Vikas Sadan INA Colony, New Delhi -110023
- 7. Sh. V. Makrand Pandurang, IAS, Director General, Town & Country Planning Department, Government of Haryana, SCO 71-75, Sec 17C, Chandigarh-160017
- 8. Chief Planner, Town & Country Planning Organisation, Govt. of India, E-Block, Vikas Bhawan, I.P. Estate, New Delhi-110002
- 9. Chief Town & Country Planner, Uttar Pradesh, Town & Country Planning Department, Govt. of Uttar,7 Bandaria Bagh, Lucknow-226001, Uttar Pradesh

10. Chief Town Planner(NCR), Town & Country Planning Department, Govt. of Rajasthan, Nagar Niyojan Bhawan, Jawaharlal Nehru Marg, Jaipur-302004, Rajasthan

Co-opted Member

- 11. Joint Secretary (UT), Ministry of Housing & Urban Affairs, Govt. of India, Nirman Bhawan, New Delhi
- 12. Joint Secretary (IA), Deptt. Of Environment, Ministry of Environment, Forest & Climate Change, Govt. of India, India Paryavaran Bhavan, Jor Bagh Road, New Delhi -110003
- 13. Senior Advisor (HUD), NITI Aayog, Sansad Marg, New Delhi -110001
- 14. Chairman & Managing Director, Housing & Urban Development Corporation, HUDCO House, Lodhi Road, New Delhi-110003.

CMA

- 15. Secretary (Housing), Govt. of Uttrakhand, 4, Subash Road, Dehradun- 248001.
- 16. Chief Executive Officer NCR Special Area Development Authority (Counter Magnet), SheetlaSahai Administration Bhawan, SojnaTighra, Gwalior-474001 (M.P.)
- 17. The Chief Administrator, Patiala Urban Planning & Development Authority, PUDA Complex, Urban Estate, Phase-II, Patiala-147002.

Corrigendum to the Minutes of the 69th Meeting of the Planning Committee

The Minutes of the 69th Meeting of the Planning Committee of NCR Planning Board held on 23.02.2021 were circulated vide letter No. K-14011/02/2021-NCRPB dated 02.03.2021 to the member of the Planning Committee. One item was inadvertently omitted and same is brought out below and accordingly the minutes are partially modified and may kindly be read as para 12.3 under the Agenda Item No. 9, as follows:

Agenda Item No. 9: Any Other Points:

12.3 The Section 3(*h*) of the NCRPB Act, 1985 provides *that no change shall be made in the composition of the Board by rules except with the consent of the Government of each of the participating States and of the Administrator of the Union territory.* Accordingly, the request received from MoHUA vide letter dated 14.01.2021 forwarding copy of letter dated 30.12.2020 of Chief Secretary, Haryana, addressed to Secretary, MoHUA, Govt. of India, regarding proposed nomination of the Administrative Secretary, Urban Local Bodies Department, Haryana either as Member of the Board or as a special invitee, was deliberated by the Planning Committee.

The Committee noted that as per Section 3(f) of the NCRPB Act, 1985, eight members, to be nominated by the Central Government on the recommendation of the participating States and the Administrator of the Union territory; Provided that not more than two members shall be nominated on the recommendation of a participating State or, as the case may be the Administrator of the Union territory. The Board already includes 03 Members from the Govt. of Haryana i.e. the Hon'ble Chief Minister, Chief Secretary and Principal Secretary, Town & Country Planning Department and that as per the provision of the NCRPB Act, 1985 under Section 3(f), the quota of Members from the Govt. of Haryana is already full.

Further, there is no provision in the NCRPB Act for special invitee in the Board as requested. However, even if the available provisions of co-option is considered for Haryana, the participants from the other States indicated that the other States may also press for similar representation of their respective such Department. It was also felt that if such nominations are considered then it would lead to two nominations from the urban sector itself whereas Regional Plan is multi-sectoral and even in the NCRPB Act, multiple sectors like Water, Transport, Drainage and other priorities areas etc. have been specifically mentioned in the context of Regional Plan. Hence, the other participants of the Planning Committee also felt that_this may entail requests for more representations from the other States for not only urban sector but all other elements/ sectors, which will make the Board's composition unwieldy.

The Committee was further of the view that all the sectors in each participating States are being represented in the Board through overarching dignitaries like Hon'ble Chief Ministers and Chief Secretaries of the States and the urban development Department or the Town and Country Planning Department as applicable, is the Nodal Department for entire sub-region as Member of the Planning Committee constituted by the NCRPB Act to assist the Board in technical matters. Accordingly, it may not be advisable to accept the above proposal of Haryana.

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