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राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड  
NATIONAL CAPITAL REGION  
PLANNING BOARD  
7th Floor, 'B' Wing,  
Janpath Bhavan, Janpath,  
राष्ट्रीय विकास मंत्रालय  
(Ministry of Urban Development)  
नई दिल्ली-110001

No. K-14011/12/91-NCRPB

New Delhi-110001 11/6/1991

MEETING NOTICE

Subject: 21st Meeting of the Planning Committee of the  
National Capital Region Planning Board.


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The 21st Meeting of the Planning Committee  
of the National Capital Region Planning Board will be  
held at 10.30 A.M. on 3rd July, 1991 in the office of  
the National Capital Region Planning Board, New Delhi.

2. You are requested to kindly make it convenient  
to attend the meeting.

3. The Agenda for the meeting is enclosed.

Encl: As stated above.

  
(S. Arunachalam)  
Senior Planning Engineer  
Phone: 3325833-

To

1. All the members of the Planning Committee.
2. All the officers in the NCR Planning Board's Office.

AGENDA ITEMS FOR THE 21ST MEETING OF THE PLANNING  
COMMITTEE TO BE HELD AT 10.30 ON 3.7.1991 IN THE  
OFFICE OF THE NATIONAL CAPITAL REGION PLANNING  
BOARD, NEW DELHI.

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AGENDA ITEM NO. 1 : CONFIRMATION OF THE  
MINUTES OF THE 20TH  
MEETING HELD ON AUGUST  
20, 1990.

AGENDA ITEM NO. 2 : REVIEW OF THE DECISIONS  
OF THE LAST MEETING OF  
THE PLANNING COMMITTEE  
HELD ON AUGUST 20, 1990  
AND ACTIONS TAKEN THEREON

AGENDA ITEM NO. 3 : PREPARATION OF SUB-  
REGIONAL PLANS FOR THE  
NCR SUB-REGIONS

AGENDA ITEM NO. 4 : CREATION OF PLANNING  
CELLS FOR THE SUB-REGIONS

AGENDA ITEM NO. 5 : REGIONAL PLAN 2001 -  
VIOLATIONS THEREOF

AGENDA ITEM NO. 6 : ALLOCATION AND  
EXPENDITURE OF FUNDS  
DURING 1990-91 AND  
ALLOCATION DURING 1991-92

AGENDA ITEM NO. 7 : SCHEME FOR FINANCING  
PATTERN AND ACCOUNTING  
PROCEDURE FOR DEVELOPMENT  
OF COUNTER MAGNET AREA

AGENDA ITEM NO. 8 : FUNCTIONAL PLAN FOR DELHI  
METROPOLITAN AREA

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AGENDA ITEMS FOR THE 21ST MEETING OF THE PLANNING COMMITTEE TO BE HELD AT 10.30 AM ON 3.7.1991 IN THE OFFICE OF THE NATIONAL CAPITAL REGION PLANNING BOARD, NEW DELHI.

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AGENDA ITEM NO. 1 : CONFIRMATION OF THE MINUTES OF THE 20TH MEETING HELD ON AUGUST 20, 1990.

The 20th meeting of the Planning Committee was held on 20.8.1990 and the minutes of the meeting were circulated on 31.8.1990. The Planning Committee may like to confirm the minutes.

AGENDA ITEM NO. 2 : REVIEW OF THE DECISIONS OF THE LAST MEETING OF THE PLANNING COMMITTEE HELD ON AUGUST 20, 1990 AND ACTIONS TAKEN THEREON

#### Decisions

#### Action

1. Recommendations of the Working Group on Urban Services and Resource Mobilisation by Local Bodies in the National Capital Region.

Comments on the recommendations of the Working Group have been received from the Governments of Haryana and Rajasthan. The State Government of Uttar Pradesh has reported that recommendations of Working Group were under circulation to other Departments. The progress may be reported in the meeting.

2. Finalisation of Development Plans for the Counter/Magnet Towns.

Latest position may please be indicated in the meeting.

3. Planning Cells and Preparation of Sub-Regional Plans.

This is being discussed under Agenda Items 3 and 4 separately.

4. Training programme in the formulation and Management of project.

The Training Programme would be taken up after the Planning Cells become fully functional. The Secretary, Urban Development had written to the Chief Secretaries of the State Government in this regard on 12.10.1990. Progress may be intimated.

5. Formation of the National Capital Region Development Finance Corporation.

Setting up of the Financial Corporation is still under the consideration of the Government of India. The reactions of the State Governments may be brought for consideration and discussion in the meeting.

6. Setting up of Building Centres in the Priority Towns of NCR.

Latest position may please be indicated.

7. Preparation of the Functional Plan for Delhi Metropolitan Area.

This is being discussed as separate agenda item no.8.

AGENDA ITEM NO 3 : PREPARATION OF SUB-REGIONAL PLANS FOR THE NCR SUB-REGIONS

The need for the finalisation of the Sub-Regional Plans for the Sub-Regions was time and



again impressed upon the State Governments particularly in the context of the rapid developments taking place in the Sub-regional areas and also to guide the implementation of the Regional Plan. A draft Sub-Regional Plan for the UP Sub-Region was received from the Chief Town Planner, Uttar Pradesh and was discussed in a meeting of the Sub-Group constituted for this purpose on 7.12.1990. Based on the discussions the Chief Town Planner, UP stated that the revised Sub-Regional Plan incorporating the comments of the Sub-Group and various Departments of UP would be submitted for the consideration of the Planning Committee. This is yet to be received.

The Secretary, Ministry of Urban Development in his letter dated 12th October 1990 addressed to the Chief Secretaries of Haryana and Rajasthan emphasised the need for expediting the preparation of the Sub-regional Plans. The Government of Rajasthan have replied saying that 11 out of 17 chapters of the Plan have been completed and circulated among the State Departments for their comments.

The Government of Haryana have also informed the preparation of the Sub-Regional Plan for Haryana Sub-Region would be completed soon after the setting up of the Planning Cell. The planning cell in full strength was created on 10.9.1990.

The Steering Committee of Delhi UT in its Meeting held on 25.3.91 emphasised that the Sub-Regional plan for Delhi UT should be prepared by the DDA on consultancy basis as early as possible.

The State Governments and the UT of Delhi may report the progress regarding the preparation of the Sub-Regional Plans for the respective Sub-Regions.

#### AGENDA ITEM NO.4 : CREATION OF THE PLANNING CELLS FOR THE SUB-REGIONS

Latest position may be reported in the meeting.

## AGENDA , ITEM NO.5

## REGIONAL PLAN-2001 VIOLATIONS THEREOF.

The Regional Plan-2001 for the National Capital Region has been approved by NCR Planning Board and statutorily enforced with effect from January 23, 1989. In order to achieve its twin basic objectives of a manageable National Capital and balanced development of the Region, the plan has suggested three policy zones for implementation of its policies. The three policy zones along with the suggested population and settlement strategies, are as follows:-

### DELHI U.T.

- (1) The plan has suggested that out of the projected population of 132 lakhs by 2001, 20 lakhs potential migrants should be deflected to the rest of the Region. In terms of settlement planning, the plan has suggested that Delhi should take up acquisition and development of land in suitable phases, so that potentiality of the adjoining Delhi Metropolitan Area towns and the Priority towns for absorbing potential migrants is fully exploited.

### DELHI METROPOLITAN AREA

- (2) Delhi Metropolitan Area, excluding Delhi, which should have the projected growth of 38 lakhs by 2001. In view of the fact that the entire Delhi Metropolitan Area, including Delhi, would become a huge urban agglomeration creating further stress on Delhi's infrastructure, the Plan has suggested moderate growth for these towns.

### REST OF THE REGION

- (3) Rest of the National Capital Region, which includes the identified Priority towns where the assignment of population has been increased by an additional 20 lakhs to absorb potential migrants to Delhi. It is expected that major investments for development by the State Governments in the Region would

take place in the identified Priority towns, so that the objectives of the NCR Plan could be achieved.

## I Development of Greater NOIDA in UP Sub Region

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The development of proposed Greater NOIDA in the UP Sub Region goes against the concept of policy zones indicated above and the suggested policies in the plan for population and settlements.

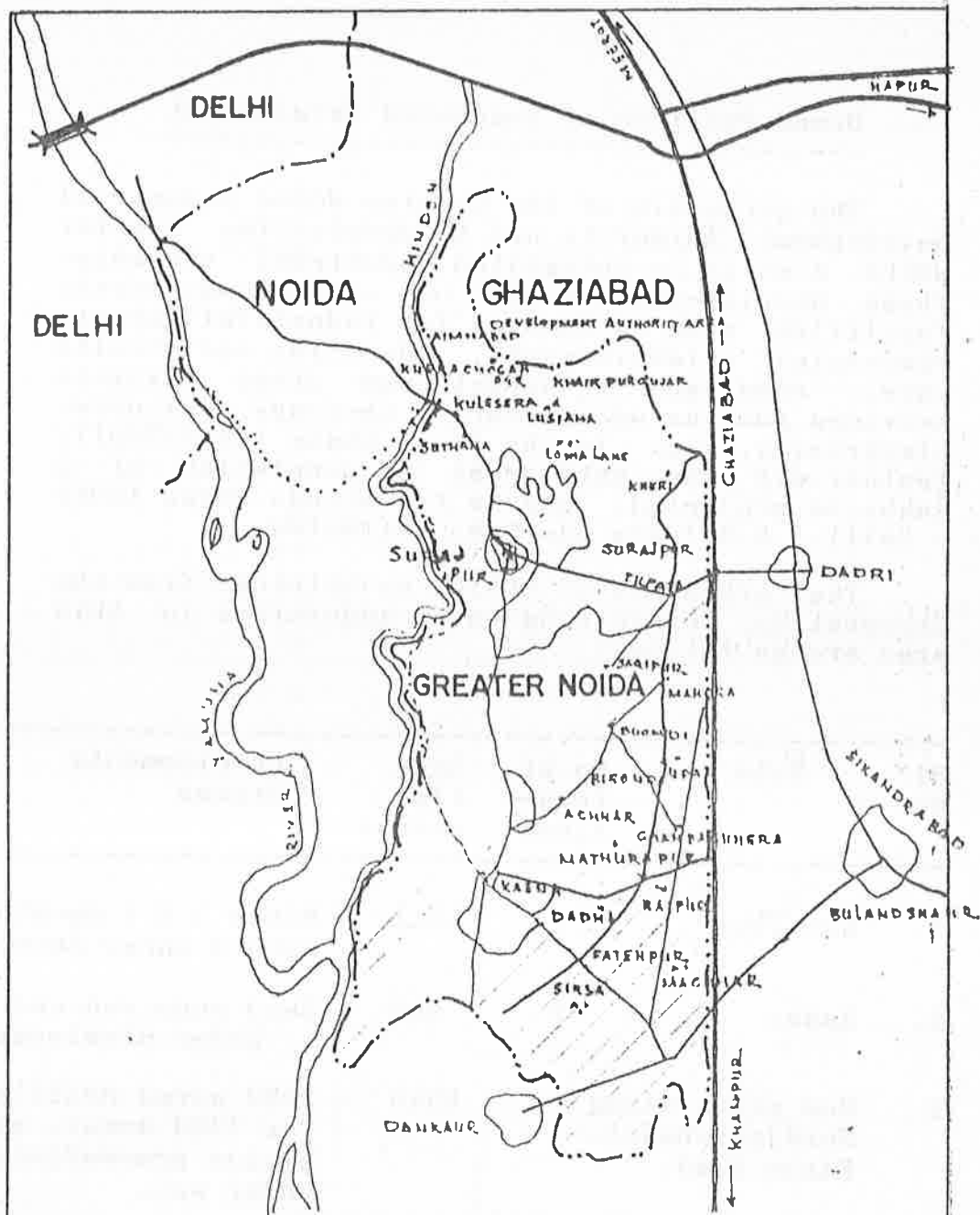
### CONCEPT AND ITS EVOLUTION

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A number of advertisements appeared in the press announcing several residential schemes by private developers. The UPSIDC also advertised proposing acquisition of land along NOIDA-Surapur-Kasna Road in 13 villages falling in Ghaziabad and Bulandshahr districts.

2. These facts were brought to the notice of Government of Uttar Pradesh by the Minister of Urban Development, in June, 1989 suggesting the need for regulation and control of the land outside the regulated areas of Ghaziabad and NOIDA under the provision of the regulatory Act such as "U.P. Regulation of the Buildings and Operations Act, 1958" and, the development proposals by UPSIDC to be in conformity of the Regional Plan proposals.

3. Subsequently, the Government of Uttar Pradesh on September 19, 1989 issued a Notification bringing 57 villages in Ghaziabad and 48 villages in Bulandshahr under Regulatory measures of the "U.P. Regulation of Buildings and Operations Act, 1958." Later on, in January, 1991 the Government of Uttar Pradesh declared the area as "Industrial Area Greater NOIDA" under the "U.P. Industrial Development Act, 1976, and, constituted Greater NOIDA Industrial Development Authority for planning and developing the area as an integrated industrial township. The entire area known as Greater NOIDA measures 2 1/2 times the present NOIDA, and extends from NOIDA to Surajpur bounded by Hindon on the West and the Railway Line on the East.



- Covers 105 villages:  
57 in Ghaziabad and 48 in  
Bulandshahr districts.
- Area about 38000 ha.
- Notified on 19.9.1989.

1:75000



## Broad Outlines of Suggested Development

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The proposals of the Greater NOIDA Industrial Development Authority are to develop the Greater NOIDA Area as an integrated industrial township. These developments would be with commensurate facilities such as housing for industrial labour, commercial establishments, education and health care, road and transport and other utility services such as water supply, sewerage, drainage, electricity, etc. In the first phase (1991-2001), tentatively the settlement of population of 3 lakhs is projected, and in the second phase (2001 - 2011), 5.5 lakhs has been estimated.

The proposals of UPSIDC as obtained from the Corporation for setting up of industries in this area are as follows:

Sl. No.	Site	No. of Locations	Area (In acres)	Developments Status	
1.	Surajpur	3	1262	- Sites 1 & 2 developed - Site 3 under development	732 ac 530 ac
2.	Kasna	2	800	- Land acquired and under development.	
3.	New areas along 1 <sup>st</sup> Surajpur-Dadri-Kasna Road.		9940	- 2000 acres notified; for 7000 acres, acquisition proceedings under way.	
Total		6	12,002		

This scale of industrial development will generate employment to the extent of 2.40 lakhs industrial workers at a nominal rate of 20 persons/acre. At a participation ratio of 33% and industrial workforce component accounting to one-third of the workforce, the population will be of the order of 21 lakhs.

### Violations of NCR Plan

- (i) The proposed development of Greater NOIDA in the UP Sub Region violates the settlement system as proposed in the

Regional Plan which does not suggest any large scale development in the area now known as Greater NOIDA. Further, it violates the proposed settlement system, since these investments should have really gone in the identified Priority towns of Hapur, Bulandshahr, Khurja and Meerut.

- (ii) The population assignments in the plan would get completely distorted, since the total population of 121 lakhs in the Greater NOIDA area itself exceeds the total population projected for the UP Sub Region and would distort the entire projections.

UP Sub-region for 2001 already stands population assigned as under and the likely population of Greater NOIDA would be in excess.

A.	Urban	Total	75.5 lakhs
i	NOIDA	5.5 lakhs	
ii	Ghaziabad-		
	Loni	11 lakhs	
iii	Meerut	15.5 lakhs	
iv	Hapur	4.5 lakhs	
v	Bulandshar-	8 lakhs	
	Khurja complex		
vi	Other towns	31 lakhs	
	Total	75.5 lakhs	

B Rural 45.5 lakhs

- (iii) The proposed development would completely upset the Regional Infrastructure Plan for development of rail and road communications, since it would need large scale movements which have not been provided in the Regional Transport Plan.

- (iv) In the Development Plan of the Ministry of Telecommunications, there is no provision for development of telecommunications facilities in this area and hence either it would be at the cost of Priority towns or it would suffer for want of these facilities.



## II. INDUSTRIAL DEVELOPMENT IN LONI

The Township of Loni is planned as part of the Ghaziabad - Loni Complex for which a population size of 11 lakhs has been assigned by the Regional Plan. The Master Plan for Ghaziabad - Loni has been prepared for a population of 11 lakhs. However, it has been observed that in Loni, colonisers are developing land outside the urbanisable area of Loni along the Loni-Baghat road and also across the Bund towards Yamuna River. Further, the UPSIDC has notified for acquisition of land in 12 villages admeasuring an area of 1500 acres which clearly fall in the Green Belt of the approved Master Plan of Ghaziabad - Loni Complex. The land acquisition proceedings are learned to be partly complete and perhaps are in an advanced stage now.

The Master Plan for Ghaziabad - Loni proposes to accommodate a population of 60,000 in Loni. Development of industrial land of the order of 1500 acres would generate an industrial employment of 30,000 workers making an additional population of 3 lakhs. Such a scale of development is not visualised in this zone in the Regional Plan and is thus in contravention of the Regional Plan provisions.

## III. INDUSTRIAL DEVELOPMENT IN NOIDA

NOIDA has been assigned a population of 5.5 lakhs for 2001 by the Regional Plan. Subsequent to this in a letter dated 8.10.1988 received from the Government of Uttar Pradesh, a revision in the population assessment from 5.5 to 12 lakhs was proposed in the light of the total industrial area in NOIDA having gone up from 450 hectares to 1000 hectares. In reply (on 25.11.1988) the Member Secretary intimated that such a revision might be possible only at the time of the revision of Regional Plan after 5 years i.e. 1994.

Secondly, an area of about 500 ha (1200 acres) on the National Highway - 24 Bypass which was originally planned to be 'green' has been converted into 'Institutional' area. Letters (last one on 10.1.1989) were addressed to the Chief Minister, Uttar Pradesh by the Union Minister of Urban Development regarding the undesirability of undertaking such a large scale conversion of 'green' areas and this development being not as per NCR Plan.

#### IN SUM:

The population size for the entire Sub-region of Uttar Pradesh is 121 lakhs by the year 2001 A.D. out of which 75.5 lakhs would be urban and 45.5 lakhs rural. Out of the urban population 16.5 lakhs have already been assigned to Delhi Metropolitan Area towns (Ghaziabad-Loni, NOIDA) and 28 lakhs to Priority towns (Meerut, Hapur and Bulandshahr - Khurja Complex). The remaining population of 31 lakhs is primarily meant for the natural growth of the other towns and also the villages which would upgrade themselves to urban by 2001 A.D. Such developments on massive scale such as that in Greater-NOIDA and Loni which alone together may result in additional 24 lakhs population. This would pervert the NCR Plan objectives.

#### Communications sent to State Government

Details of communications to and replies received from the State Government are enclosed. (Annexure I) It would be noticed that the response of the State Government has not been commensurate with the seriousness of the problem. At the same time, without taking due regard of the objections being raised by the office of the NCR Planning Board, the State Government has gone ahead with its proposals for taking up large scale development.

#### Available options for preventing violation of NCR Plan

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Section 29 of the NCR Planning Board Act, 1985, contains provisions for action which can be taken in such eventualities:-

"Sec. 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, or is carrying out, any activity which amounts to a violation of the Regional

Plan, it may, be 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 to stop such activity, withhold such financial assistance to the concerned participating State or the Union Territory, as the Board may consider necessary.

The Planning Committee may consider the matter and advise the Board to issue of notice to the UP Government, as provided in Section 29 of the Act, and give them a period of three months for complying with the directions. In case of failure of the State Government to comply with these directions, further financial assistance from the Board for development projects in UP Sub Region may be stopped.

It is further felt that the action as envisaged in Section 29 of the Act alone will not be sufficient to stop a deliberate violation on the part of any agency. The Act should be amended to provide for taking the following further measures to effectively prevent such violations:-

- (i) Prior approval of NCR Planning Board for all major development plans in the National Capital Region involving an area of more than 25 acres.
- (ii) Empowering the Board to take such other steps as may be necessary including sealing of premises, confiscation of building materials to physically prevent these violations.

ANNEXURE - I

Details of Communications sent

1. Letter from Member Secretary,  
NCR Planning Board to Secretary  
Housing and Urban Development  
Department, Govt. of Uttar Pradesh.  
(No.K-14011/25/88-NCRPB dt. 21.4.88).  
(relates to Surajpur-  
Dankaur industrial  
area)
2. Letter from Minister of Urban  
Development, Government of India  
to the Chief Minister,  
Government of Uttar Pradesh,  
(No.OM No.K-14011/25/88-5779-NCRPB dt.10.1.89)  
(relates to  
-NOIDA-Surajpur - Dadri  
industrial area,  
-change in landuse  
from green to  
institutional (1200  
acres) on NH 24 in  
NOIDA.
3. Letter from Minister of Urban  
Development to the Chief  
Minister, Govt. of Uttar Pradesh,  
(DO No.K-14011/25/88-2580-NCRPB dt.16.6.89)  
(relates to  
1)NOIDA-Dadri &  
NOIDA-Kasna Dev.  
2)Land Acquisition  
by UPSIDC in 13  
villages in  
Ghaziabad and  
Bulandshar districts).
4. Letter from Member Secretary,  
NCR Planning Board to the  
Chief Secretary,  
Government of Uttar Pradesh,  
(DO No.K-14011/25/88-NCRPB dt.21.11.89)  
1)relates to NOIDA-  
Surajpur-Kasna(UPSIDC)  
21,000 acres, 2.4 lakh  
workers and 21 lakhs  
population  
2)Change in population  
of NOIDA from 5.5 lakh  
to 12 lakhs  
3)Industrial Development  
on 1500 acres; 3 lakh  
population in Loni.
5. Letter from Member Secretary,  
NCR Planning Board to Secretary,  
Housing Department,  
Government of Uttar Pradesh,  
(DO No.K-14011/25/88-NCRPB dt.27.2.90)  
1)relates to Steering  
Committee meeting at  
NOIDA. Reply to  
earlier letter  
requested.
6. Letter from Member Secretary,  
NCR Planning Board to the  
Chief Secretary, Uttar Pradesh.  
(DO NoK-14011/25/88-NCRPB dt.1.4.91)  
1) relates to Greater  
NOIDA

Response from Government of Uttar Pradesh

1. The Chief Minister, Uttar Pradesh acknowledged the receipt of the letter to Minister of Urban Development at Serial No.2 on 2.2.1989.
2. Letter from the Chief Secretary, Govt. of Uttar Pradesh to the Chief Secretary, NCR Planning Board Vide letter No.57/37-1-91 in respect of Communication at Serial No.6 above indicating that the matter was under consideration.

AGENDA ITEM NO 6 : ALLOCATION OF FUNDS AND  
EXPENDITURE DURING 1990-91  
AND ALLOCATION DURING  
1991-92: CENTRAL AND STATE  
SECTORS.

For the year 1990-91, an allocation of Rs. 10.00 crores was made to the NCR Planning Board by the Ministry of Urban Development. The Board has released Rs. 12.02 crores including the internal resources generated through interest accruals and the expenditure reported upto 31.3.1991 was of the order of Rs.139.95 crores.

During the year 1991-92, an allocation of Rs. 14.00 crores has been made for the NCR Planning Board by the Ministry of Urban Development.

The Statewise position is as under:-

Rs in lakhs

	1990-91		1991-92	
	Allocation	Releases to States	Expenditure upto	Allocation
Haryana		158.00	5024.74 (12/90)	*
Rajasthan		356.00	1767.28 (3/91)	*
Uttar Pradesh		687.00	7203.44 (12/90)	*
Total	1000	1202.00	13995.46	1400.00



## CENTRAL MINISTRIES

Allocation and expenditure relating to Central Ministries during the 7th Plan.

		8th Plan (1990-95)	1990-91		1991-92
		Projected Requirement of fund	Amount allocated by respec- tive Ministry for NCR	Total expenditure incl. exp. by State Agencies (Upto Dec91)	Amount allocated by respective Ministry for NCR
1.	Railways	11400	Nil	Nil	NA
2.	Communications	37500.00A	5796.18B	NA	3513.73C
3.	Surface Tpt	26400.00D	5680.00	NA	NA
4.	Energy	69700.00	Nil	Nil	NA
Total		175000.00	11476.18		3513.73

### Notes:

- A For provision of 150,000 telecom lines in NCR. In addition, a separate budgetary provisions of Rs. 15500 lakhs has been made by the Deptt. of Telecommunications for provision of 47,400 lines in counter magnet towns.
- B For provision of 31340 lines in DMA and priority towns. In addition, a separate budgetary provision of Rs. 2320.25 lakhs has been made for Counter Magnets (for 11700 lines) by the Deptt. of Telecommunications.
- C For provision of 19000 lines in DMA and Priority towns. In addition, a separate provision of Rs. 1487.34 lakhs has been made for Counter Magnets (for 11700 lines) by the Deptt. of Telecommunications.
- D Rs. 21900 lakhs for National Highway and Rs. 4500 lakhs for Expressways in NCR.

\* A Statement of Telecom proposals is annexed.

This is for information of the Members.

AGENDA ITEM NO 7 : SCHEME FOR FINANCING  
PATTERN AND ACCOUNTING  
PROCEDURE FOR DEVELOPMENT  
OF COUNTER MAGNET AREA

Section 8 (f) of the NCR Planning Board Act, 1985 provides that the Board has powers to select, in consultation with the State Governments, any urban area, 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. Accordingly, the Board has identified the following towns as counter magnet areas for development. i. Hissar in Haryana ii. Gwalior in Madhya Pradesh iii. Patiala in Punjab iv. Kota in Rajasthan and v. Bareilly in Uttar Pradesh .

A draft scheme suggesting the financing pattern and accounting procedure for development of counter magnet areas is placed before the Committee for consideration and approval. This has already been circulated to the State governments on 9.4.91 for their comments but no comments have been received.

## DEVELOPMENT OF COUNTER MAGNET AREA - GUIDELINES

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The National Capital Region Plan 2001 enforced with effect from 23rd January, 1989 envisages development of the following five counter magnet areas outside the NCR in accordance with the NCR Planning Board Act, 1985. These areas have been selected in consultation with the concerned State Governments on the basis of a comprehensive study undertaken by the Board through the School of Planning and Architecture, New Delhi.

1. Hissar in Haryana
2. Gwalior in Madhya Pradesh
3. Patiala in Punjab
4. Kota in Rajasthan
5. Bareilly in Uttar Pradesh

The counter magnet areas are envisaged to play two distinct and mutually complementary roles, namely, i) as the future interceptors of migratory flow to NCR ii) as regional growth centres in the region of their setting which would help to achieve a balanced pattern of urbanisation. Further, the NCR Plan-2001 envisages the development of counter magnet areas as a collaborative and participatory effort requiring the State governments to prepare an integrated long term programme and its phasing, coinciding with five Year Plans

The report of the Working Group on the Investment Plan for VIII Five Year Plan - 1990-95 (which has since been approved by the Board ) provide for an outlay of Rs. 728.00 crores in the Central Sector (Railways Rs.299.30 crores; NH-Rs.273.90 crores; Telecom Rs. 155.00 crore) and Rs.100.00 crore in the State Sector in the shape of Revolving Fund for the development of the five counter magnet areas mentioned above during the VIII Plan period. Each concerned State Government would constitute a Revolving Fund for its counter magnet area for Rs. 20.00 crores, contribution to which would be made on matching basis by the Board and the respective State Government.

Contribution to the Revolving Fund by the NCR Planning Board would be in the shape of interest bearing loan, carrying rate of

interest prescribed by the Central Government from time to time. At present, the rate of interest is 10.25% per annum. The period of loan may be upto 15 years with a moratorium upto two years for payment of principal. In case of financial difficulties being faced by the State Government/Implementing Agency, the payment of interest could be re-scheduled as mutually agreed to between the Board and the concerned State Government. Loans granted direct to the Implementing Agencies may have to be secured either by the State or bank guarantee.

Schemes and projects to be financed out of the Revolving Funds would be, largely, of remunerative nature and commercially viable. The activities could be both in informal and formal sectors. These should be employment intensive and conform to the policies and objectives of the NCR Plan-2001 in terms of attracting and absorbing on a sustainable basis the Delhi-bound potential migrants. The Board would assist the State Government/Implementing agencies in the formulation of the projects, if necessary. The State Government would however, submit in the beginning of each financial year an action-plan indicating financial implication with broad details of the schemes and projects (both ongoing and new) to be undertaken during the ensuing year. The preparation, approval and sanction of detailed schemes within the ambit of the Plan for the town would rest with the State Governments. The Board would monitor the implementation of various schemes and projects for which it would be empowered to require the State Government to submit periodically or as and when required, physical and financial progress reports, as also allow its officers to conduct site inspections.

Separate account of the Revolving Fund either on regular or proforma basis shall have to be maintained in the formats and guidelines contained in the Annexure.

## GUIDELINES FOR MAINTAINING THE ACCOUNTS OF THE REVOLVING FUND

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### 1. RECEIPTS INTO THE REVOLVING FUND:

The following items of receipts shall be credited into the fund:

i) Moneys received from Board in the shape of loans or Grants-in-aid.

ii) Moneys provided by the State Government or the Implementing Agency out of their own resources not less than the moneys received from the Board.

iii) Revenue generated by the schemes by sale of plots (residential/commercial), sale of residential flats, sale of shops, etc.

iv) Miscellaneous receipts such as interest on deposits of the fund kept in bank or in some other financial institution.

### 2. EXPENDITURE

The following expenditure may be met out of the amounts in the fund:

- i) Purchase of land.
- ii) Development of land
- iii) Construction of residential flats, shops, industrial sheds, etc.
- iv) Payment of interest and repayment of principal in respect of loans contributed by the board.
- v) Any other expenditure with the approval of the Board.

### 3. TEMPORARY DIVERSION OF FUNDS:

In case of extreme urgency/ emergency due to circumstances beyond the control of the implementing agencies, amounts available in the fund may be temporarily utilised on schemes/projects other than those approved by the Board. The fund may be recouped to the extent funds were diverted, at the earliest, but not later than the close of the financial



year in which funds were diverted to other projects/schemes. A report of the diversion and recoupment of funds may be submitted to the Board before 30th April of the following year.

4. SHORTFALL IN THE FUNDS:

In case in any year expenditure on the approved projects exceeds the available amounts in the Fund, the excess expenditure may be made out of other available resources of the Implementing Agencies and those resources may be recouped out of the revenues generated by schemes at a later date. A report in this regard may be submitted to the Board by the Implementing Agencies half yearly.

5. ACCOUNTS OF THE FUND:

As far as possible, separate bank account with a separate cash book in the usual form may be maintained in respect of all receipts into the Fund and expenditure therefrom. Where this is not feasible due to the accounting system followed by the Implementing Agencies, the account records of the Fund may be kept on Proforma basis from month to month.

6. ANNUAL ACCOUNTS OF THE FUND:

Within three months of the close of the financial year, the Implementing Agency shall submit a copy of the annual account for the month of March in Form A and Annual Statement of completed scheme in the financial year in Form B).

7. INSPECTION OF THE ACCOUNTS :

The Board shall have the authority to inspect locally the account records maintained for receipt and payment transactions of the Fund or call for any information that may be considered necessary by the Board in this behalf.



Name of the Implementing Agency:----- Month-----

MONTHLY STATEMENT OF RECEIPTS AND PAYMENTS OF THE REVOLVING FUND  
OF NCR. SCHEMES.

## RECEIPTS

## PAYMENTS

S.NO.	Sub-head	during the month	Progressive for the year	S.No.	Sub-head	during the month	Progressive for the year
1.	Balance b/f from previous year			1.	Acquisition of land		
2.	Loan assistance received from NCR Planning Board			2.	Development of Land		
3.	Grants-in-aid other receipts from the Board			3.	Construction of flats/shops/sheds etc.		
4.	State Govt. Implementing Agencies share paid into the Fund			4.	Payment of Interest on loans taken from from NCR Planning Board		

5. Sale proceeds as  
Plats, Plots, Shops  
Sheds etc.
6. Interest on Banks  
deposits
7. Other receipts  
(residual heads  
of Misc. receipts to be  
indicated objectwise)
8. Transfer of Funds  
from other sources/  
schemes.

5. Repayment of  
Instalment of loan  
loan taken from  
NCR Planning Board
6. Other expenditure  
(residual heads for  
Misc. expenditure  
to be indicated  
objectwise.
7. Transfer of Funds  
in other Sources/  
Schemes
8. Balance carried  
forward

(Note: Receipts and payments would include book adjustments also).

Total

ANNUAL STATEMENT OF COMPLETED SCHEMES YEAR-----

NAME OF IMPLEMENTING AGENCY -----

1. Name of the Scheme:

2. Estimated Cost                      Date of Start                      Date of Completion

.....

.....

3. Actual Expenditure:

i)

a) Cost of Acquisition of Land:-----

b) Cost of Development of Land:-----

c) Cost of Constn. of flats/shops/  
sheds etc: -----

Total (i)

ii) Departmental charges levied  
on percentage basis as per  
rules of the Agency: -----

iii) Interest on borrowed Capital-----

iv) Other Misc. expenditure: -----

Total (i), (ii), (iii) & (iv) -----

4. Amount of Revenue generated:

a) Sale of Plots/Flats/Shops etc.-----

b) Misc. receipts -----

Total receipts (a+b) -----

5. Net financial implication  
(difference of Col. 3 & 4) -----

6. Mode of adjustment of net  
financial implications (i.e.  
whether transferred to NCR  
Revolving Funds, General Revenues  
of the Agency, or used for some  
other purpose)

AGENDA ITEM NO. 8 : FUNCTIONAL PLAN FOR  
DELHI METROPOLITAN AREA.

The Functional Plan for Delhi Metropolitan Area in its draft form as guided and prepared by the Study Group was considered by the Coordination Committee for Delhi and Delhi Metropolitan Area in its 4th meeting held on 25.3.1991. Comments on the draft Functional Plan were received from NOIDA and Delhi Administration and have been suitably incorporated in the Plan. No other comments have been received. The revised draft of the Functional Plan is circulated for consideration of the Planning Committee for its approval for placing the same to the Board in its next meeting for its consideration.

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SPE

MINUTES OF THE 21ST MEETING OF THE PLANNING  
COMMITTEE HELD AT 10.30 A.M. ON JULY 3, 1991  
IN THE OFFICE OF THE NCRPB.

The list of the participants is annexed.

AGENDA ITEM NO.1: CONFIRMATION OF THE  
MINUTES OF THE 20TH  
MEETING HELD ON  
AUGUST 20, 1990.

The minutes were confirmed.

AGENDA ITEM NO.2: REVIEW OF THE DECISIONS  
OF THE LAST MEETING OF  
THE PLANNING COMMITTEE  
HELD ON AUGUST 20,  
1990 AND ACTION TAKEN  
THEREON.

1. Recommendations of the Working Group on urban services and resource mobilisation by local bodies in the National Capital Region:

Shri K.K. Bhatnagar, Member Secretary informed the Committee that comments on the report of the Working Group have been received from Haryana and Rajasthan. He stated that while Haryana had accepted the recommendations, Rajasthan has expressed reservations regarding raising of finances by the local bodies. Shri J.P. Bhargava, Chief Town Planner, U.P. stated that recently State Govt. has taken certain decisions, like abolition of octroi etc. and restructuring of local bodies was also under consideration. Keeping this in view it would not be possible for the State Govt. to send comments at an early date. Member Secretary informed that resources for infrastructure assistance were available with HUDCO, and he suggested that the States and local bodies should make full use of the available facilities. He further indicated the willingness of the Board in expediting sanction in case of delays. He requested Shri Bhargava to look into in the scheme of additional water supply for Hapur which had been sent by the Municipal Board to the State Government.



2. Finalisation of Development Plans for the Counter Magnet Towns:

Shri Bhatnagar informed the Committee that the Board had received development plans with respect to four counter magnet towns viz Patiala, Kota, Bareilly and Gwalior. The development plan of Patiala has been cleared by the Board whereas observations with regard to development plans for Bareilly and Gwalior have been sent to the State Governments. The plan for Kota has just been received and is under scrutiny. Shri J.C. Chopra, Chief Coordinator Planner, Haryana said that the Draft Development Plan for Hissar was going to be completed very soon. Member Secretary further said that the release of funds under this scheme may have to await finalisation of the VIII Plan proposals, though a draft of the proposed scheme had already been circulated and also included in the agenda items for today's meeting.

3 & 4. The position indicated in the agenda notes was noted.

5. Formation of the National Capital Region Development Finance Corporation:

Shri Bhatnagar invited the reactions of State Governments on setting up of the National Capital Region Development Finance Corporation. The representatives of Govt. of Haryana, Rajasthan and U.P. while agreeing in principle to the setting up of the Corporation, expressed reservations with regard to the equity participation of the State Govt. due to financial constraints. Member Secretary stated that without the equity participation of State Governments, setting up of such a corporation would not be possible at all. He emphasised that since it would be possible to raise the borrowing capacity of the Board by 6 times of the equity, the State Governments should have an open view in this regard. He requested State Governments to examine the matter afresh and send their reactions.

6. Setting up of building centres in the priority towns of NCR:

Member Secretary repeated the offer made earlier that the Board will be willing to provide additional financial assistance in setting up of building centres in the priority towns and also consider financing of their projects. He requested the States to open these centres in the priority towns to take benefit of the existing centrally sponsored scheme and the offer of the Board.

7. Preparation of the Functional Plan for Delhi Metropolitan Area:

Please see Agenda item No.8.

AGENDA ITEM NO.3: PREPARATION OF SUB-REGIONAL PLANS FOR THE NCR SUB-REGIONS.

Member Secretary informed the Committee regarding the position of preparation of sub-regional plans by the States and Delhi UT. He said that a Draft Regional Plan for the UP sub-region was received from the Chief Town Planner, UP which was discussed in a meeting of the Sub-group constituted for this purpose and returned for modifications. This is yet to be received back. He expressed concern over the fact that inspite of several discussions on the subject the Delhi Administration had not been able to start the work at all. He requested the representatives of the States and Delhi UT to apprise the members of the Committee regarding the latest position of the preparation of the Sub-regional Plans. Shri Bhargava, Chief Town Planner, UP, informed the members that the comments of the Sub-group were being incorporated in the Draft Plan which will be sent to various Departments for their comments and it would be possible to have informal discussions in the Sub-group in the 3rd week of July, 1991. Shri C.S. Mehta, Chief Town Planner, Rajasthan, informed the members that the work on preparation of the Sub-regional Plan for Rajasthan Sub-region is almost complete and it will be submitted to the Board in the month of August, 1991. Shri J.C. Chopra, Chief Coordinator Planner, Haryana said that

the work on Draft Sub-regional Plan of Haryana Sub-region was almost complete and it will now be circulated to various concerned Departments for inviting their views. The Draft of the Plan is thus likely to take another 3-4 months. The Member Secretary suggested that it would be appropriate to have an informal discussion on all the Sub-regional Plans which were under preparation in a meeting towards the end of July, 1991. As regards Delhi, since Delhi Administration has failed to take any action in this regard, the possibility of preparation of the Plan through some Consultant, like School of Planning and Architecture may have to be explored.

#### AGENDA ITEM NO.4: CREATION OF PLANNING CELLS

The Member Secretary apprised the Members regarding the Planning Cells in the Sub-regions. He showed his concern about the fact that they had still not been made fully functional. He said that in such a situation Board will find it difficult to release the funds for them. He said that in spite of the fact that Board had given the State Governments full authority to select the place of functioning of these cells, the locations of Planning Cells in Haryana and Rajasthan have not yet been finalised by the State Governments and these are functioning at two places. In case of UP, although the cell has been placed at Meerut, it has not been fully staffed and it is still not completely operational. Shri C.S. Mehta Chief Town Planner, Rajasthan requested the Member Secretary to permit them to have a small cell at Jaipur and the field staff at Alwar, as it would help in the better functioning of the Cell. Member Secretary said that this was not acceptable to the Board on the grounds that it would not be possible to have a supervision over the field staff unless it is manned by a higher level officer at Alwar. Shri Pradeep Kumar, commissioner Housing and Urban Development, Haryana said that he will let the Board know about the final decision of the State Government in this regard early. In case of U.P., Shri J.P. Bhargava said that the Planning Cell in U.P. would be fully manned and work programme would be assigned to them at an early date. It was agreed that it would

be appropriate to give three months time to all the States, to fully strengthen the cells and to have a proper work programme for them, which will be monitored by the Board.

AGENDA ITEM NO.5: REGIONAL PLAN 2001  
VIOLATIONS THEREOF.

Shri Bhatnagar drew the attention of members of the Committee towards various cases of violations mentioned in the Agenda note. He said that although, incidentally, all these violations pertain to one State only there may be such instances in other States also. He was of the view that the solution to the entire problem can be seen in two perspectives. In the overall general perspective the Regional Plan is based on a participatory approach where such problems should be solved by evolving proper methodology based on dialogue and discussions. Another approach in this direction would be to have amendments in the NCR Planning Board Act so as to make it more effective. He mentioned that the matter was also discussed in the Ministry of Urban Development and they are of the view that the provisions in the Act to check such violations were not sufficient and appropriate amendments to that effect should be taken up in the next meeting of the Board. Some suggestions in this regard had been made in the agenda note.

While endorsing the views expressed by Shri Bhatnagar, Shri K.K. Narang, Deputy Adviser, Planning Commission stated that the State Govt. should strictly follow the NCR Plan. While reacting on this issue the Chief Town Planners of the States and Shri Pradeep Kumar, Secretary, Town and Country Planning, Haryana expressed reservations against the provisions suggested for modifications in the Act. However, they agreed to consider proposals for any methodology of consultations to be adopted to deal with such issues. Shri S.K. Bansal, Dy. Director, representing DDA said that under the DDA Act there were separate provisions for inviting objections and suggestions when any change in the Master Plan was contemplated. Shri Bhargava stated that the issues raised in the agenda note were under examination in the State Government and he was not in a position to make any further comments at this stage.

**AGENDA ITEM NO.6: ALLOCATION OF FUNDS AND EXPENDITURE DURING 1990-91 AND ALLOCATION DURING 1991-92, CENTRAL AND STATE SECTORS.**

Position with regard to the allocations made in the 1990-91 and 1991-92, separately for State and Central sector, was reviewed by the Committee. The Member Secretary showed his concern regarding the lack of flow of projects from the State. He said that in case of U.P., we could get projects mainly for Meerut whereas the projects for the other priority towns have not been forthcoming. Similar situation was existing in the case of Haryana. While referring to the project for industrial development in Gurgaon, costing about Rs.50 crores, which was submitted by the Haryana Government, he said that the project could not be considered since it was not considered appropriate to invest such a huge amount in Delhi Metropolitan Area and that too only in one town. He said that while selecting the projects preference would be given to the priority towns. He also showed his concern about the delay in releasing the State share and the amount released by the Board for the schemes in Khurja and Bulandshahr towns by the U.P. Government. The Member Secretary stated that for the year 1991-92 the Board had enough funds and it would be possible to finance more projects in the priority towns.

While discussing the allocations in the Central sector, Shri Bhatnagar requested Shri S. Kumar, Director, representing Railway Board, to include NCR proposals in the 8th Plan of the Ministry of Railways. He specifically gave stress on the inclusion of doubling of the Railway Line with electrification between Muradnagar and Meerut since in the last two-three years a lot of development had taken place in Meerut and the construction of this line would be very important from this point of view. Shri Kumar stated that the plan size of railways would not be enough to meet the requirements of NCR proposals and said that development of 4-directional terminals in Delhi as proposed in the Perspective Plan-Delhi 2001, alone have been included in the 8th Plan proposals.

Shri Malik, Director, representing Ministry of Telecommunication gave details showing the latest achievement, in the NCR/counter magnet towns during 1990-91. Shri Malik stated that the STD facilities have been provided in most of the Priority and DMA towns except in Dharuhera and Kundli which would be provided by the end of 8th Plan. Reacting to the suggestions made by Shri Chopra, Chief Coordinator Planner, Haryana regarding inclusion of telecom charges in the reserve prices of the plots, Shri Bhatnagar said that an exercise in this regard was done earlier also in the Board and the conclusion was that this would not be feasible.

Member Secretary informed that bids were invited for floating study for the preparation of detailed feasibility and project report for the two expressways viz Delhi-Ghaziabad-Meerut and Faridabad-Noida-Ghaziabad. The proposals were considered by a Sub-group specially constituted for this purpose but for want of some more detailed information and technical aspects the bids have been floated for further consideration. The Regional Roads study has been awarded to M/s. Intercontinental Consultants and Technocrats, Delhi and they have started the work. He requested the officers of the Urban Development departments present in the meeting to include these aspects in their internal meetings while discussing State Plans etc.

Shri Jatinder Vir, Director (STP), representing the Central Electricity Authority (CEA) said that in case of power the main problem was regarding transmission and distribution. He mentioned that CEA has carried out surveys for NCR to assess the power requirements. He was of the view that the power requirements should coincide with the future proposals of development of the towns. Shri Bhatnagar advised him to consult the State Governments regarding development perspectives of these towns before taking into consideration the demand of power in these towns. Shri Pradeep Kumar, Secretary, Town & Country Planning, Haryana mentioned

that quality of power supply would be the crucial factor in assessing the future requirements of the town. He emphasised the need to first consider the deficiencies which were to be bridged.

**AGENDA ITEM NO.7: SCHEME FOR FINANCING  
PATTERN AND ACCOUNTING  
FOR DEVELOPMENT OF  
COUNTER MAGNET AREA.**

The various proposals brought out in the Agenda note regarding financing pattern and accounting procedures for development of counter- magnet area were discussed in the Committee. Shri Bhatnagar said that in the overall financing pattern the priority towns would be our first focus. The provision of investment for the counter magnets could be considered after meeting such requirements. The scheme was generally approved for presentation before the Board.

**AGENDA ITEM NO.8: FUNCTIONAL PLAN FOR DELHI  
METROPOLITAN AREA.**

Shri Bhatnagar apprised the members of the Committee about the background of the preparation of functional plan and invited the suggestions/comments of the members over the contents of the Plan. Shri Y.P. Kakkar, Scientist, representing Ministry of Environment and Forests, while reacting to the dismal state of environmental degradation due to such aspects like sewerage and solidwaste disposal in Delhi and DMA towns as brought out in the Functional Plan said that the situation was likely to lead to complete chaos in near future and, therefore, ways and means to check the disposal of these pollutants should be thought out. Shri Bhatnagar, while endorsing the views expressed by Shri Kakkar said that the Plan sought to highlight such problems and these were to be supplemented by specific studies and surveys and remedial measures by the State Governments. The contents of the Functional Plan, however, could not be



discussed in detail as the representatives of the State Governments felt that they wanted some more time to study them. It was agreed that specific comments may be sent within one month.

K-14011/23/91-NCRPB  
National Capital Region Planning Board  
7th Floor, 'B' Wing, Janpath Bhawan,  
Janpath, New Delhi.

Dated: July 17, 1991

Copy forwarded to all the members of the Committee.

(S ARUNACHALAM)  
SENIOR PLANNING ENGINEER



ANNEXURE-I

LIST OF PARTICIPANTS IN THE 20<sup>th</sup> MEETING OF  
THE PLANNING COMMITTEE HELD ON 3.7.1991.

1. Shri K.K. Bhatnagar, Member Secretary,  
NCR Planning Board, New Delhi.
2. Shri Pradeep Kumar, Secretary, Town &  
Country Planning, Government of  
Haryana, Chandigarh.
3. Shri R.P. Meena, Deputy Secretary,  
Representing Secretary, Urban  
Development and Housing, Govt. of  
Rajasthan, Jaipur.
4. Shri Prakash Narayan, Joint Director,  
DDA, representing the Vice Chairman,  
DDA, New Delhi.
5. Shri J.C. Chopra, Chief Coordinator  
Planner (NCR), representing Director,  
Town & Country Planning, Government of  
Haryana, Chandigarh.
6. Shri C.S. Mehta, Chief Town Planner,  
Govt. of Rajasthan, Jaipur.
7. Shri J.P. Bhargava, Chief Town Planner,  
Govt. of Uttar Pradesh, Lucknow.
8. Shri K.K. Narang, Deputy Advisor,  
Planning Commission, representing Joint  
Advisor, Planning Commission, Govt. of  
India, New Delhi.
9. Shri K.R. Bhagwan, Deputy Secretary,  
Department of Power, representing  
Director (Power), Ministry of Energy,  
Govt. of India, New Delhi.
10. Shri S. Kumar, Director (MTP),  
representing Director (Planning),  
Ministry of Railways, Government of  
India, New Delhi.
11. Shri K.K. Malik, Director (TPS),  
representing Deputy Director General  
(TP), Ministry of Communications, Govt.  
of India, New Delhi.

12. Shri Y.P. Kakkar, Scientist,  
representing Director, Department of  
Environment, Govt. of India, New Delhi.

#### OTHER PARTICIPANTS:

13. Shri Jatinder Vir, Director (STP),  
Central Electricity Authority, Govt. of  
India, New Delhi.
14. Shri S.K. Bansal, Assistant Secretary,  
Department of Power, Govt. of India.
15. Mrs. Usha Sharma, Project Director NCR-  
cum-Secretary UIT, Alwar, Alwar,  
Rajasthan.
16. Shri S.P. Bansal, Deputy Director, DDA,  
New Delhi.
17. Shri Kamal Kumar, Assistant Town  
Planner, Office of the Chief Coordinator  
Planner (NCR), Govt. of Haryana.

#### NCR PLANNING BOARD

1. Shri R.P. Rastogi, Regional Planner.
2. Shri V.K. Thakore, Senior Research Officer.
3. Shri J.N. Barman, Associate Planner.
4. Shri Pran Nath, Deputy Director.
5. Shri K.L. Sachar, Finance & Accounts Officer
6. Shri P. Jayapal, Asstt. Town Planner.
7. Shri M.M. A. Baig, Asstt. Town Planner.
8. Shri Manmohan Singh, Research Officer.
9. Shri P. Sisupalan, Research Officer.

MINUTES OF THE 21ST MEETING OF THE PLANNING  
COMMITTEE HELD AT 10.30 A.M. ON JULY 3, 1991  
IN THE OFFICE OF THE NCRPB.

The list of the participants is annexed.

AGENDA ITEM NO.1: CONFIRMATION OF THE  
MINUTES OF THE 20TH  
MEETING HELD ON  
AUGUST 20, 1990.

The minutes were confirmed.

AGENDA ITEM NO.2: REVIEW OF THE DECISIONS  
OF THE LAST MEETING OF  
THE PLANNING COMMITTEE  
HELD ON AUGUST 20,  
1990 AND ACTION TAKEN  
THEREON.

1. Recommendations of the Working Group on  
urban services and resource mobilisation  
by local bodies in the National Capital  
Region:

Shri K.K. Bhatnagar, Member Secretary informed the Committee that comments on the report of the Working Group have been received from Haryana and Rajasthan. He stated that while Haryana had accepted the recommendations, Rajasthan has expressed reservations regarding raising of finances by the local bodies. Shri J.P. Bhargava, Chief Town Planner, U.P. stated that recently State Govt. has taken certain decisions, like abolition of octroi etc. and restructuring of local bodies was also under consideration. Keeping this in view it would not be possible for the State Govt. to send comments at an early date. Member Secretary informed that resources for infrastructure assistance were available with HUDCO, and he suggested that the States and local bodies should make full use of the available facilities. He further indicated the willingness of the Board in expediting sanction in case of delays. He requested Shri Bhargava to look into the scheme of additional water supply for Hapur which had been sent by the Municipal Board to the State Government.

## 2. Finalisation of Development Plans for the Counter Magnet Towns:

Shri Bhatnagar informed the Committee that the Board had received development plans with respect to four counter magnet towns viz Patiala, Kota, Bareilly and Gwalior. The development plan of Patiala has been cleared by the Board whereas observations with regard to development plans for Bareilly and Gwalior have been sent to the State Governments. The plan for Kota has just been received and is under scrutiny. Shri J.C. Chopra, Chief Coordinator Planner, Haryana said that the Draft Development Plan for Hisar was going to be completed very soon. Member Secretary further said that the release of funds under this scheme may have to await finalisation of the VIII Plan proposals, though a draft of the proposed scheme had already been circulated and also included in the agenda items for today's meeting.

3 & 4. The position indicated in the agenda notes was noted.

## 5. Formation of the National Capital Region Development Finance Corporation:

Shri Bhatnagar invited the reactions of State Governments on setting up of the National Capital Region Development Finance Corporation. The representatives of Govt. of Haryana, Rajasthan and U.P. while agreeing in principle to the setting up of the Corporation, expressed reservations with regard to the equity participation of the State Govt. due to financial constraints. Member Secretary stated that without the equity participation of State Governments, setting up of such a corporation would not be possible at all. He emphasised that since it would be possible to raise the borrowing capacity of the Board by 6 times of the equity, the State Governments should have an open view in this regard. He requested State Governments to examine the matter afresh and send their reactions.

6. Setting up of building centres in the priority towns of NCR:

Member Secretary repeated the offer made earlier that the Board will be willing to provide additional financial assistance in setting up of building centres in the priority towns and also consider financing of their projects. He requested the States to open these centres in the priority towns to take benefit of the existing centrally sponsored scheme and the offer of the Board.

7. Preparation of the Functional Plan for Delhi Metropolitan Area:

Please see Agenda item No.6.

AGENDA ITEM NO.3: PREPARATION OF SUB-REGIONAL PLANS FOR THE NCR SUB-REGIONS.

Member Secretary informed the Committee regarding the position of preparation of sub-regional plans by the States and Delhi UT. He said that a Draft Regional Plan for the UP sub-region was received from the Chief Town Planner, UP which was discussed in a meeting of the Sub-group constituted for this purpose and returned for modifications. This is yet to be received back. He expressed concern over the fact that inspite of several discussions on the subject the Delhi Administration had not been able to start the work at all. He requested the representatives of the States and Delhi UT to apprise the members of the Committee regarding the latest position of the preparation of the Sub-regional Plans. Shri Bhargava, Chief Town Planner, UP, informed the members that the comments of the Sub-group were being incorporated in the Draft Plan which will be sent to various Departments for their comments and it would be possible to have informal discussions in the Sub-group in the 3rd week of July, 1991. Shri C.S. Mehta, Chief Town Planner, Rajasthan, informed the members that the work on preparation of the Sub-regional Plan for Rajasthan Sub-region is almost complete and it will be submitted to the Board in the month of August, 1991. Shri J.C. Chopra, Chief Coordinator Planner, Haryana said that



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#### AGENDA ITEM NO.4: CREATION OF PLANNING CELLS

The Member Secretary apprised the Members regarding the Planning Cells in the Sub-regions. He showed his concern about the fact that they had still not been made fully functional. He said that in such a situation Board will find it difficult to release the funds for them. He said that inspite of the fact that Board had given the State Governments full authority to select the place of functioning of these cells, the locations of Planning Cells in Haryana and Rajasthan have not yet been finalised by the State Governments and these are functioning at two places. In case of UP, although the cell has been placed at Meerut, it has not been fully staffed and it is still not completely operational. Shri C.S. Mehta Chief Town Planner, Rajasthan requested the Member Secretary to permit them to have a small cell at Jaipur and the field staff at Alwar, as it would help in the better functioning of the Cell. Member Secretary said that this was not acceptable to the Board on the grounds that it would not be possible to have a supervision over the field staff unless it is manned by a higher level officer at Alwar. Shri Pradeep Kumar, Commissioner Housing and Urban Development, Haryana said that he will let the Board know about the final decision of the State Government in this regard early. In case of U.P., Shri J.P. Bhargava said that the Planning Cell in U.P. would be fully manned and work programme would be assigned to them at an early date. It was agreed that it would

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AGENDA ITEM NO.5: REGIONAL PLAN 2001  
VIOLATIONS THEREOF.

Shri Bhatnagar drew the attention of members of the Committee towards various cases of violations mentioned in the Agenda note. He said that although, incidentally, all these violations pertain to one State only there may be such instances in other States also. He was of the view that the solution to the entire problem can be seen in two perspectives. In the overall general perspective the Regional Plan is based on a participatory approach where such problems should be solved by evolving proper methodology based on dialogue and discussions. Another approach in this direction would be to have amendments in the NCR Planning Board Act so as to make it more effective. He mentioned that the matter was also discussed in the Ministry of Urban Development and they are of the view that the provisions in the Act to check such violations were not sufficient and appropriate amendments to that effect should be taken up in the next meeting of the Board. Some suggestions in this regard had been made in the agenda note.

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Position with regard to the allocations made in the 1990-91 and 1991-92, separately for State and Central sector, was reviewed by the Committee. The Member Secretary showed his concern regarding the lack of flow of projects from the State. He said that in case of U.P., we could get projects mainly for Meerut whereas the projects for the other priority towns have not been forthcoming. Similar situation was existing in the case of Haryana. While referring to the project for industrial development in Gurgaon, costing about Rs.50 crores, which was submitted by the Haryana Government, he said that the project could not be considered since it was not considered appropriate to invest such a huge amount in Delhi Metropolitan Area and that too only in one town. He said that while selecting the projects preference would be given to the priority towns. He also showed his concern about the delay in releasing the State share and the amount released by the Board for the schemes in Khurja and Bulandshahr towns by the U.P. Government. The Member Secretary stated that for the year 1991-92 the Board had enough funds and it would be possible to finance more projects in the priority towns.

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that quality of power supply would be the crucial factor in assessing the future requirements of the town. He emphasised the need to first consider the deficiencies which were to be bridged.

**AGENDA ITEM NO.7: SCHEME FOR FINANCING  
PATTERN AND ACCOUNTING  
FOR DEVELOPMENT OF  
COUNTER MAGNET AREA.**

The various proposals brought out in the Agenda note regarding financing pattern and accounting procedures for development of counter-magnet area were discussed in the Committee. Shri Bhatnagar said that in the overall financing pattern the priority towns would be our first focus. The provision of investment for the counter magnets could be considered after meeting such requirements. The scheme was generally approved for presentation before the Board.

**AGENDA ITEM NO.8: FUNCTIONAL PLAN FOR DELHI  
METROPOLITAN AREA.**

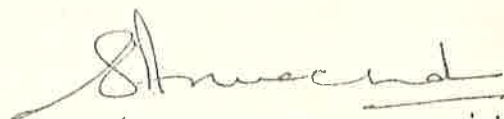
Shri Bhatnagar apprised the members of the Committee about the background of the preparation of functional plan and invited the suggestions/comments of the members over the contents of the Plan. Shri Y.P. Kakkar, Scientist, representing Ministry of Environment and Forests, while reacting to the dismal state of environmental degradation due to such aspects like sewerage and solidwaste disposal in Delhi and DMA towns as brought out in the Functional Plan said that the situation was likely to lead to complete chaos in near future and, therefore, ways and means to check the disposal of these pollutants should be thought out. Shri Bhatnagar, while endorsing the views expressed by Shri Kakkar said that the Plan sought to highlight such problems and these were to be supplemented by specific studies and surveys and remedial measures by the State Governments. The contents of the Functional Plan, however, could not be

discussed in detail as the representatives of the State Governments felt that they wanted some more time to study them. It was agreed that specific comments may be sent within one month.

K-14011/23/91-MURPB  
National Capital Region Planning Board  
7th Floor, 'B' Wing, Janpath Bhawan,  
Janpath, New Delhi.

Dated: July 17, 1991

Copy forwarded to all the members of the Committee.



(S. ARUNACHALAM)  
SENIOR PLANNING ENGINEER





ANNEXURE-I

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LIST OF PARTICIPANTS IN THE 200TH MEETING OF  
THE PLANNING COMMITTEE HELD ON 9.7.1991.

1. Shri K.K. Bhatnagar, Member Secretary,  
NCR Planning Board, New Delhi.
2. Shri Pradeep Kumar, Secretary, Town &  
Country Planning, Government of  
Haryana, Chandigarh.
3. Shri R.P. Meena, Deputy Secretary,  
Representing Secretary, Urban  
Development and Housing, Govt. of  
Rajasthan, Jaipur.
4. Shri Prakash Narayan, Joint Director,  
DDA, representing the Vice Chairman,  
DDA, New Delhi.
5. Shri J.C. Chopra, Chief Coordinator  
Planner (NCR), representing Director,  
Town & Country Planning, Government of  
Haryana, Chandigarh.
6. Shri C.S. Mehta, Chief Town Planner,  
Govt. of Rajasthan, Jaipur.
7. Shri J.P. Bhargava, Chief Town Planner,  
Govt. of Uttar Pradesh, Lucknow.
8. Shri K.K. Narang, Deputy Advisor,  
Planning Commission, representing Joint  
Advisor, Planning Commission, Govt. of  
India, New Delhi.
9. Shri K.R. Bhagwan, Deputy Secretary,  
Department of Power, representing  
Director (Power), Ministry of Energy,  
Govt. of India, New Delhi.
10. Shri S. Kumar, Director (HIF),  
representing Director (Planning),  
Ministry of Railways, Government of  
India, New Delhi.
11. Shri K.K. Malik, Director (HPS),  
representing Deputy Director General  
(TP), Ministry of Communications, Govt.  
of India, New Delhi.

12. Shri Y.P. Kakkar, Scientist, representing Director, Department of Environment, Govt. of India, New Delhi.

OTHER PARTICIPANTS:

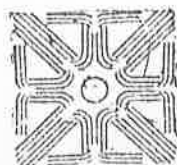
13. Shri Jatinder Vir, Director (SIP), Central Electricity Authority, Govt. of India, New Delhi.
14. Shri S.K. Bansal, Assistant Secretary, Department of Power, Govt. of India.
15. Mrs. Usha Sharma, Project Director NCR-cum-Secretary UII, Alwar, Alwar, Rajasthan.
16. Shri S.P. Bansal, Deputy Director, IDA, New Delhi.
17. Shri Kamal Kumar, Assistant Town Planner, Office of the Chief Coordinator Planner (NCR), Govt. of Haryana.

NCR PLANNING BOARD

1. Shri R.P. Rastogi, Regional Planner.
2. Shri V.K. Thakore, Senior Research Officer.
3. Shri J.N. Barman, Associate Planner.
4. Shri Pran Nath, Deputy Director.
5. Shri K.L. Sachar, Finance & Accounts Officer.
6. Shri P. Jayapal, Asstt. Town Planner.
7. Shri H.M. A. Baig, Asstt. Town Planner.
8. Shri Manmohan Singh, Research Officer.
9. Shri P. Sisupalan, Research Officer.

DRAFT

# FUNCTIONAL PLAN FOR DELHI METROPOLITAN AREA



National Capital Region Planning Board  
Ministry of Urban Development, Government of India

June 1991

# FUNCTIONAL PLAN

FOR

THE METROPOLITAN AREA

1951-1961

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# FUNCTIONAL PLAN : DELHI METROPOLITAN AREA

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## FUNCTIONAL PLAN FOR THE D M A: CONCEPT, NEED AND OBJECTIVES

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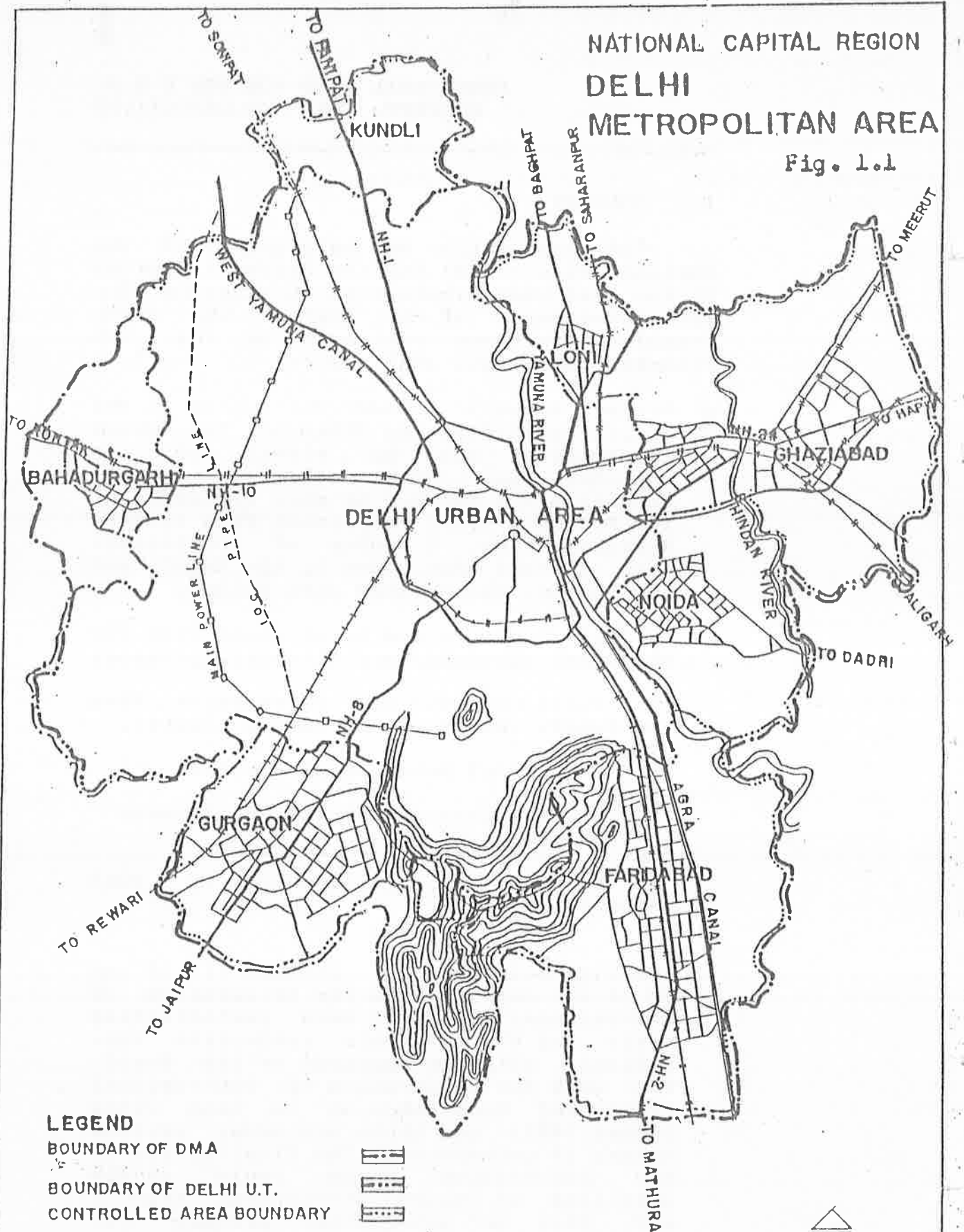
### 1.1 CONCEPT

The preparation and enforcement of the Regional Plan - 2001 for the National Capital Region has been a milestone in planning for the development of the Region. The other planning exercises envisaged by the NCR Planning Board Act, 1985 are :-

- a) Project Plans : Under Section 18 of the Act, a participating State or the Union Territory, may by itself or in collaboration, with others, prepare Project plans for one or more elements of the Regional Plan, Functional Plan or Sub-Regional Plan. A number of initiatives have already been taken by the Board and the States, the notable ones being :
  - i. Joint Land Use and Development Plan for Dharuhera (Haryana) and Bhiwadi (Rajasthan)
  - ii. Joint Land Use and Development Plan for Kundli (Haryana) and Narela (Delhi).
  - iii. Industrial Development Projects.
  - iv. Informal sector activity development projects.
  - v. Projects for development of Road network.
- b) Sub-Regional Plans : Section 17, 19 and 20 of the Act, provide for preparation of Sub-Regional Plans by each participating State and UT, for their respective Sub-regions, with the approval of the Board. The work for preparation of Sub-regional Plans had been taken up in hand since August 1987, and these are under various stages of preparation. The finalisation of the Sub-Regional Plans would enable detailing of various development aspects and give an integrated picture for preparation of detailed Project Plans for development of respective Sub-regions.

# NATIONAL CAPITAL REGION DELHI METROPOLITAN AREA

Fig. 1.1



- c) Functional Plan : Section 16 of the Act provides for preparation of Functional Plans by the Board, with the assistance of the Planning Committee, for the proper guidance of the participating States and the Union Territory after the Regional Plan has come into operation. Section 2 (d) of the Act defines 'Functional Plan', as 'a plan prepared to elaborate one or more elements of the Regional Plan'. Functional Plan for the Delhi Metropolitan Area is the first such Plan.

## 1.2 CONSTITUENT AREAS AND LOCATIONAL CHARACTERISTICS :

The Delhi Metropolitan Area as delineated in Regional Plan - 2001, NCR comprises of the following :

- i) Delhi Union Territory (1485 sq.km)
- ii) Ghaziabad-Loni Complex (496.91 sq. km)
- iii) NOIDA controlled area (149.15 sq. km)
- iv) Faridabad Complex Admn. (393.98 sq. km)
- v) Gurgaon (266.71 sq. km)
- vi) Bahadurgarh (174.03 sq. km),
- vii) Kundli township (137.22 sq.km)
- viii) extension of Delhi Ridge in Haryana, i.e., the portion in Faridabad Complex and Gurgaon Complex, as well as, the part between Faridabad and Gurgaon (78.85 sq. km). (Fig.1.1)

Physiographically, Delhi Metropolitan Area is part of the Yamuna basin and, except the ridge is, almost a flat plain. The ridge itself is an extension of Aravali range on the south-west, and some parts of North and Central Delhi. The slope is from north-west to south-east with the elevation ranging from 220 metres in the north-west to 200 metres above MSL in the south-east of DMA. The small flat lands in between the hills have created picturesque lakes in the hills. These lakes namely Surajkund, Badkhal and Damdama are being utilised as tourist resorts by Government of Haryana. Delhi Metropolitan Area is drained by the rivers Yamuna and Hindon, and a number of drains e.g. Nangloi, K.S. Nagar, Mangeshpur and Gandhi which meet and flow through Bahadurgarh to join the Najafgarh drain in the south. There are in all 17 major drains falling into the river Yamuna from Wazirabad upto Okhla Barrage.

### 1.3 DELHI METROPOLITAN AREA IN EVOLUTION

The concept of Delhi Metropolitan Area owes its origin to the Delhi Master Plan, 1962. The Delhi Master Plan 1962, in fact identified some of the present DMA towns as 'Ring Towns' in the vicinity of Delhi to be developed as self-contained entities in matters of workplaces and housing but having strong economic, social and cultural ties with the mother city - Delhi. The ring towns were expected to absorb the population increase in the Region, and the spill-over population of Delhi could be diverted to these towns. These towns were more strongly oriented towards industrial activity since Delhi was not to promote new heavy and medium scale industries.

A Sub-group was constituted by the Ministry of Urban Development, in 1983, to:

- i) examine the present policies in the States of Haryana, Uttar Pradesh and Delhi UT relating to location of industrial and other employment generating activities, housing, acquisition, development and disposal of land, provision of infrastructure and utilities; and
- ii) in the light of such examination, propose such steps for harmonising these policies for the growth of DMA and coordinated implementation of programmes in various sectors within the framework of the NCR Plan.

The Sub-group consisted of :

1. Secretary, Town Planning Department, Government of Haryana.
2. Secretary, Housing & Urban Development, Government of Uttar Pradesh.
3. Secretary ( Land & Building ), Delhi Administration.
4. Vice-Chairman, Delhi Development Authority.
5. Chief Planner, Town & Country Planning Organisation, Government of India.

6. Director, Urban Development,  
Ministry of Urban Development.

7. Commissioner (Planning),  
Delhi Development Authority.

The Sub-group, defining DMA as stated earlier, stressed the need to evolve a comprehensive urban development programme for its development and recommended adoption of policies which ensure restricted growth of urban Delhi, maintain the growth of the other DMA towns and accelerate the growth of the other NCR towns. It observed that such an objective could be achieved through a package of incentives/disincentives in the employment generating sectors of the economy such as Central government, industry, Public Sector Undertakings and wholesale trade & commerce. The Sub-Group made the following recommendations on the major employment generators in Delhi :

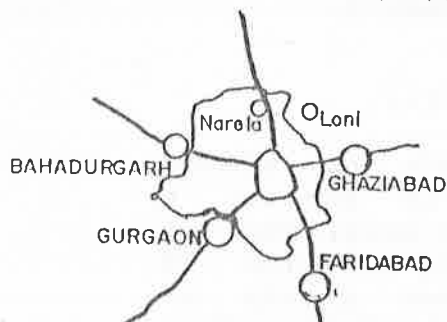
1. Only those Central Government offices which directly serve the Central Ministries are to remain in Delhi and offices which would need expansion should be shifted to DMA. In addition, new Central Government offices should be set up in counter magnets with the provision of proper infrastructural facilities and incentives for employees. It recommended discouragement to location of offices of the Public Undertakings of all India nature in Delhi. Such Public Sector offices are to be shifted to DMA and NCR.
2. The industrial policy for the DMA should be geared towards dispersal from Urban Delhi. There is a need for restricting the growth of industries in Delhi through fiscal and other measures and to encourage the growth of industries in DMA and NCR. Particularly, the heavy industries should be discouraged in the towns of the DMA. Special infrastructural facilities needed for industrial development should be provided in industrial areas within DMA and NCR.
3. In regard to development of wholesale trade and commercial activities, only those commodities which are directly consumed in Delhi should be distributed through Delhi. Other trades of primarily



# DMA IN EVOLUTION 1962-1990

Fig.1.2

## 1962 DELHI MASTER PLAN



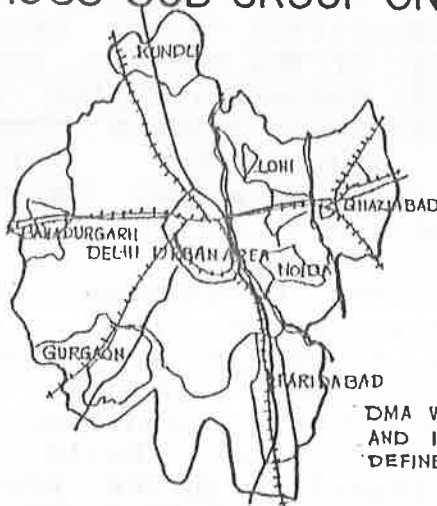
6 RING TOWNS AROUND DELHI TO BE DEVELOPED AS SELF CONTAINED SATELLITE TOWNS TO ABSORB OVER SPILL OF DELHI'S POPULATION.

## 1973 REGIONAL PLAN



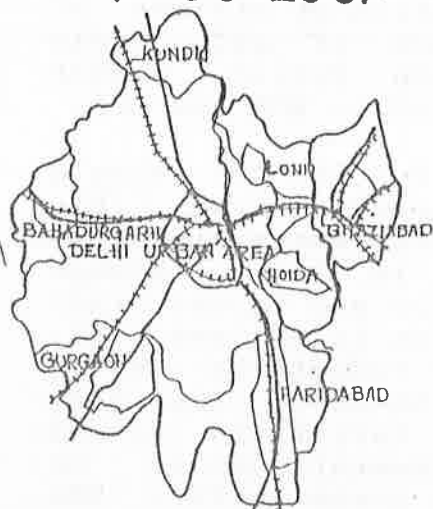
RING TOWNS TO BE TREATED AS IDENTIFIED REGIONAL CENTRES

## 1983 SUB GROUP ON NCR



DMA WAS RECOGNISED AS A SPECIAL AREA AND ITS ADMINISTRATIVE BOUNDARIES WERE DEFINED.

## MPD: 1990-2001



1. ADMINISTRATIVE BOUNDARIES OF DMA AS DEFINED BY SUB-GROUP WERE ADOPTED.
2. PLANNING DEVELOPING DMA AS ONE URBAN AGGLOMERATION

## 1989: NCR PLAN FOR 2001



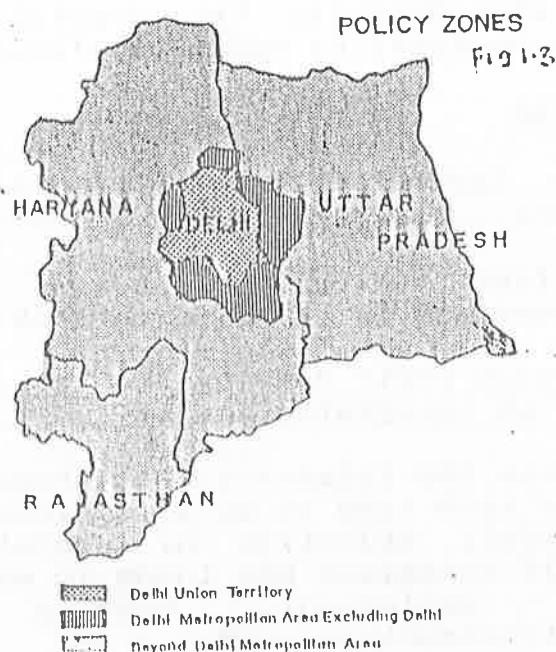
DMA IS RECOGNISED AS ONE OF THE THREE POLICY ZONES FOR PLANNING AND DEVELOPMENT

distributive in character are to be located in DMA and NCR. The National markets should be located outside the metropolitan area. Considering the nature of the activity, the Dry Port should be carefully located within the NCR and not necessarily in DMA.

The Sub-Group also suggested suitable housing, infrastructure and taxation policies which would encourage movement of population to the DMA and NCR and discourage immigration into these areas. DMA in its evolutionary stages is depicted in Fig. 1.2.

#### 1.4 NEED FOR FUNCTIONAL PLAN FOR DMA

The Regional Plan 2001 for the National Capital Region, after taking into consideration the socio-economic parameters including the growth rate and development potentials, has identified DMA, excluding Delhi UT as a distinct zone which would require a package of policy measures different in degree and mix from that for the two other Policy Zones viz. Delhi and the remaining part of the Region beyond DMA. (Fig. 1.3)



However, in terms of functional needs for regional landuses, the DMA, including Delhi will have to be planned in an integrated manner due to limited availability of land in Delhi UT. Such an integrated planning is also necessary to meet the needs of commuters in the contiguous urban sprawl

of DMA towns, infra-structure requirements for integrated development and to achieve complementarity with objectives of Master Plan for Delhi. The Master Plan for Delhi 1990 (MPD-1990-2001) has also rightly advocated an integrated approach in planning and developing this huge urban mass of DMA as one urban agglomeration.

There is a large degree of commutation now between Delhi and the towns of DMA and due to the prohibitive cost of shelter in the Delhi Urban Area, more and more people are likely to seek residence on its periphery and the DMA towns. The present emphasis in these towns, however, is towards efforts to attract remunerative enterprises, particularly relating to industry and other economic activities, and unless this trend is suitably regulated, the DMA towns may face severe backlog in the provision of non-remunerative basic services affecting their growth as viable entities. Reversion of this trend, and development of these towns into self-contained towns is possible only by adequate provision of housing and related infrastructure and social facilities in these towns, corresponding to the provision of employment opportunities and work places.

### 1.5 OBJECTIVES

In the light of the above, it is necessary to :

- i) define the roles of each of these towns and in relation to Delhi;
- ii) design their development programme in an integrated manner;
- iii) phase the inter-sectoral programmes for each town so as to achieve the overall objective of developing self contained DMA towns in matters of employment, housing and infrastructure; and
- iv) identify dominant regional and local functional requirements and corresponding landuses.

The Functional Plan for the Delhi Metropolitan Area primarily aims to achieve the above objectives.

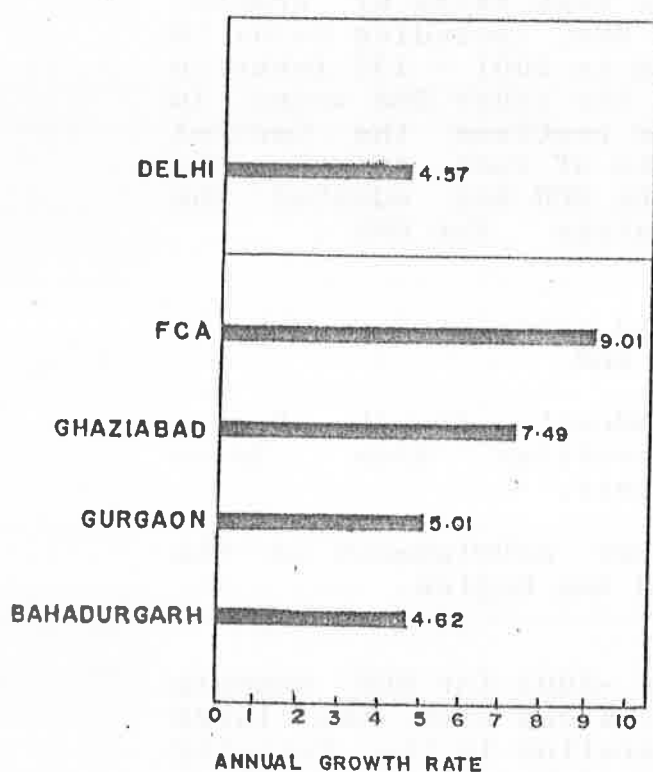
In response to the strategy of developing Ghaziabad-Loni, Faridabad, Gurgaon, Bahadurgarh and Narela 'Ring Towns' as enunciated in the MPD-1962, the State Governments of Uttar Pradesh and Haryana initiated large scale acquisition and development of land for industrial and housing activities in these towns resulting in very high rates of growth during the last three decades. Moreover, since Delhi too has continued to register high rates of growth, the population of the DMA, including Delhi is likely reach 170 lakhs in 2001 - 132 lakhs in Delhi and 38 lakhs in the other DMA towns. In view of the enormous problems the Capital would face in the wake of such growth, the Regional Plan for the NCR has adopted the following overall strategy for DMA :

- i) Decelerated and restricted growth in the Delhi UT; and
- ii) Controlled moderate growth of the Delhi Metropolitan Area Towns (excluding Delhi).
- iii) Infra-structure development in the DMA towns and the Region.

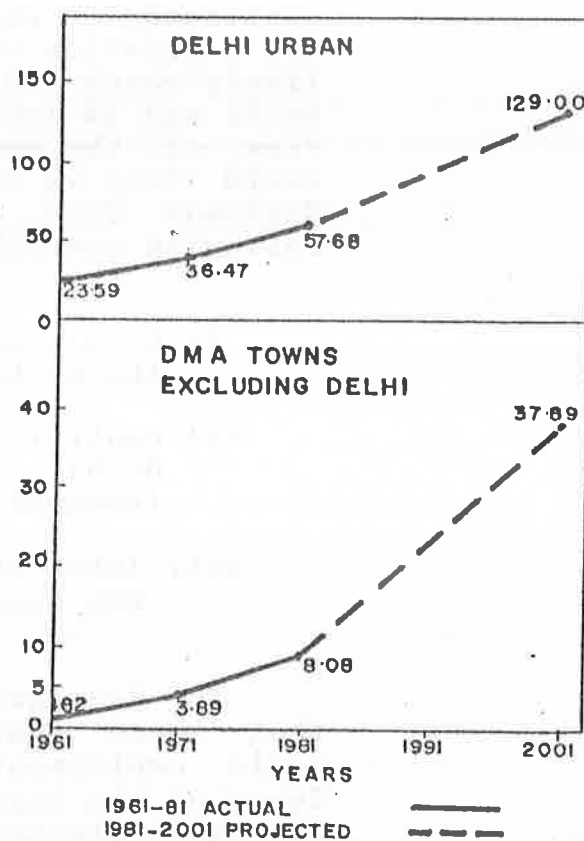
The Regional Plan -2001 for NCR expects that these measures, along with the large scale employment generation in the Priority Towns of the Region would be able to deflect 20 lakh migrant population from Delhi and contain the population of Delhi to 112 lakhs in 2001. The other DMA towns continuing with their projected growth of population would grow up to 38 lakhs. from the 1981 level of 8.08 lakhs.

Figure 2.1

# ANNUAL POPULATION GROWTH RATE IN DMA TOWNS: 1961-81



# POPULATION GROWTH



## 2.1 DEMOGRAPHIC GROWTH TRENDS

With Delhi Urban Area in its core, the DMA has exhibited extraordinary dynamism in its growth in the recent decades. This rapid growth has been mainly due to industrial development around Delhi, creation of NOIDA township across UT border by Uttar Pradesh, inclusion of Narela town within Delhi Urban Area and, spurt in the concentration of industrial and institutional activities along the National Highways leading to Gurgaon and Faridabad - Ballabhgarh from Delhi.

### i) Growth trends 1961-81

The development of DMA towns was initiated in the Sixties as part of the strategy of developing ring towns around Delhi Metropolis in the context of the projected population of 46 lakhs for Delhi Urban Area (this was subsequently revised to 53 lakhs in 1973). In 1951, the total population of the ring towns was 1.25 lakhs, and they had a weak economic base. The MPD-1962 proposed strengthening of their economic base through industrialisation and location of Government offices by deflecting part of such activities from Delhi. In this context, a total population of 7.70 lakhs was assigned (excluding Narela) to these towns by 1981. The DMA towns excluding Delhi reached a figure of 1.82 lakhs in 1961, 3.89 lakhs in 1971 and 8.08 lakhs in 1981. While the Delhi Urban area registered an annual compound growth of 4.57% during 1961-81, Faridabad - Ballabhgarh registered 9.01%, Gurgaon 5.01%, Ghaziabad including Loni 7.49% and Bahadurgarh 4.62% respectively. The DMA towns, excluding Delhi, grew at the rate of 7.72% during the same period (Table 2.1 and Fig 2.1).

## ii) Growth trends 1981-2001

The dynamism exhibited during 1961-81 by the DMA towns is expected to continue in the succeeding decades. At the rate of growth they registered during 1971-81, the DMA towns, excluding Delhi, are expected to reach a population of 37.89 by 2001 A.D. (Table 2.1 and Fig.2.1).

Table 2.1 : POPULATION GROWTH TRENDS OF DMA TOWNS 1961-1981

Unit	Population(in lakhs)			Compound Growth Rate %			Population 2001(lakhs)
	1961	1971	1981	1961-71	1971-81	1961-81	
1. Delhi U.T.	-	40.60	62.20	4.33	4.36	4.34	132.60
2. Delhi Urban	23.59	36.47	57.68	4.45	4.69	4.57	129.00
Other DMA towns:							
1. Faridabad- Ballabhgarh	0.59	1.78	3.31	11.68	6.40	9.01	11.14
2. Gurgaon	0.38	0.57	1.01	4.14	5.89	5.01	3.17
3. Bahadurgarh	0.15	0.26	0.37	5.65	3.59	4.62	0.60
4. Kundli	-	-	-	-	-	-	1.50
5. Ghaziabad- Loni	0.70	1.28	2.97	6.22	8.78	7.49	15.98
6. NOIDA	-	-	0.42	-	17.97	-	5.60
DMA(excluding Delhi)	1.82	3.89	8.08	7.89	7.56	7.72	37.89
DMA (including Delhi)	28.40	44.49	70.26	4.59	-	4.63	170.49

## 2.2 POPULATION ASSIGNMENT FOR DMA TOWNS:

Recognising the potential of the DMA in relieving the population pressure in Delhi, and also the problems Delhi would face in case of over-growth of the DMA, the Regional Plan for NCR has recommended allowing the projected level of growth in the other DMA towns and suggested the following population assignments. (Table 2.2).

Table 2.2 : POPULATION ASSIGNMENT BY NCR PLAN

DMA TOWNS	Popu. 1981 (lakhs)	Pop. Assigned 2001 (lakhs)
1. Delhi UT	62.20	112.00
2. Ghaziabad- Loni	2.97	11.00
3. NOIDA	0.42	5.50
4. Faridabad- Ballabhgarh	3.31	10.00
5. Gurgaon	1.01	7.00
6. Bahadurgarh	0.37	2.00
7. Kundli	--	1.50
Rural	-	1.00
DMA excl. Delhi UT	8.08	38.00
Total DMA	70.28	150.00

Against the desired growth trend as reflected by the assignment of population in the Regional Plan-2001 for NCR, some of the towns such as Ghaziabad, and NOIDA have shown high growth trends and capacity for population accommodation. On the other hand in towns such as Gurgaon, Bahadurgarh and Kundli, the rapidity of growth has not been visibly in consonance with the desired trend. As such, while keeping the overall population size of the DMA towns excluding Delhi to 38 lakhs, there may be a need to reassign the population among the DMA towns after the results of 1991 Census are known.





## EMPLOYMENT AND ITS GROWTH IN KEY SECTORS

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In its regional setting, Delhi and the DMA have, over a period of time, developed a great deal of mutual dependency. A strong interaction is explicitly visible between DMA towns and Delhi in all walks of life. As of 1987, every day about 3.12 lakh passenger trips are made between Delhi and DMA towns (Transport Sector Plan for NCR, Operations Research Group, Baroda, 1989). These trips are mainly undertaken to attend to work and the social needs like medical and educational purposes. On the one hand, Delhi with the availability of higher level infrastructure facilities, its entrepot and distributive character, marketing facilities etc remains attractive for people living in DMA towns, on the other hand, a large number of workforce living in Delhi also commute to the industrial areas of DMA towns. Since Delhi is a big consumption centre the region surrounding Delhi also acts as a vast hinterland and feeder zone for Delhi's day to day needs. In a study on the "Distributive Trades in the National Capital Region" (Operations Research Group, Baroda, 1990) an analysis of the O-D characteristics of goods movement showed a very strong interaction between Delhi, NCR and outside NCR. This commodity flow is through major corridors which pass through the DMA towns.

### 3.1 EXISTING SCENARIO

#### a) DMA Towns

In the first master plan of Delhi prepared in 1962, as part of the ring town development strategy specific proposals for creation of employment opportunities to the tune of 1,64,000 by 1981 in Government and Public Sector offices and industry in these towns, were made. The recommended workforce in these activities and the actuals as of 1981 were as in Table 3.1.

Table 3.1 : RECOMMENDED WORKFORCE - MPD AND  
ACTUALS - 1981

Town	Recommended		Actuals-1981	
	Govt. & Public sector offices	Industry	Other Services	Industry
Ghaziabad	20000	50000	31911	24720
Loni	-	2000		
Faridabad	15000	43000	23478	62572
Ballabhgarh				
Gurgaon	5000	5000	9882	6380
Bahadurgarh	-	4000	2891	3404
Narela	10000	10000	-	-
Total	50000	114000	68162	97076

**Industrial Sector :** The industrial base in this area got further strengthened with the coming up of the industrial township of NOIDA, just on the eastern periphery of Delhi in Uttar Pradesh in the year 1975. The magnitude of the industrial progress in the DMA towns can be judged from the fact that Ghaziabad and Faridabad accommodated 60% and 45% of the registered factories, and 64% and 66% of the factory employment of Uttar Pradesh and Haryana Sub-regions respectively. The two important factors which helped the State Governments in this endeavour were the policy of restriction of large and medium scale industries in Delhi as recommended in the Master Plan, and the nearness of Delhi with marketing and supporting facilities.

**Government & Public Sector :** As regards Government and Public sector offices, out of the six DMA towns, three towns viz Ghaziabad, Faridabad and Gurgaon being district headquarters have substantial work force. The percentage of workforce in this sector varies from about 21% in Faridabad to about 39% in Gurgaon. Significantly, huge complexes for accomodating these offices in Delhi UT have come up during the last five years and more are coming up on sites allotted by the Government itself.

A. Newly constructed complexes

- i) Central Government Offices Complex, Lodi Estate
- ii) Scope Complex I at Lodi Estate
- iii) Scope Complex II at Laxmi Nagar
- iv) Jawahar Vyapar Bhawan, Janpath.

B. Complexes under construction

- i) India Habitat Centre, Lodi Estate
- ii) Bikhaji Kamaji Complex

About 400 ha. of land was acquired by the Central Government in Ghaziabad as a follow-up action of MPD-1962. Though most of the land stands allotted, it has been only partially utilised. About 180 ha. of land which has been allotted to Lal Bahadur Shastri National Academy is lying vacant. In NOIDA, although plots have been allotted to various important Public Sector Undertakings and Institutions like IOC, NTPC, BHEL, BPCL, Institute of Chartered Accountants etc, in most of the cases plots are lying vacant. A number of Central Government offices of the Ministry of Communications, Agriculture and Cooperation, Commerce, etc and Institutions like Management Development Institute, National Oil Seeds and Vegetable Oil Seeds Development Board have come up in Gurgaon. In Faridabad too, a number of Central Government and Public Sector Offices and Institutions such as SAIL, CWC, LIC, NTC, IOC, GSI, etc. have come up. However, no worthwhile success has yet been achieved in efforts to shift or locate new Central Government and Public Sector Undertakings away from Delhi.

**Trade and Commerce :** Along with industrial development, trade and commerce activities also fairly developed in these towns. The percentage workforce in the 'Other Services' sector is the highest (20.24) in Bahadurgarh. It is quite low (10.63) in case of Faridabad-Ballabhgarh.

The proportion of workforce in DMA towns in different categories as of 1981 Census was as in Table 3.2.

Table 3.2

## DISTRIBUTION OF WORK FORCE IN DMA TOWNS - 1981

(Percentage in Brackets)

S.No.	Category of workers	Ghaziabad-Loni	Faridabad-Ballabhgarh	Gurgaon	Bahadurgarh
1.	Cultivators	1857 (2.15)	3385 (3.02)	270 (1.07)	559 (5.30)
2.	Agriculture Labour	1622 (1.88)	1303 (1.16)	187 (0.74)	296 (2.81)
3.	Livestock, forestry, fishing, etc.	839 (0.97)	408 (0.36)	322 (1.27)	29 (0.31)
4.	Mining and quarrying	31 (0.04)	526 (0.47)	28 (0.11)	6 (0.10)
5.	Manufacturing, repairing, etc.				
	(a) Household	2365 (2.74)	3115 (2.77)	947 (3.76)	319 (3.02)
	(b) Other than household	22,355 (25.93)	59,457 (52.97)	5433 (21.50)	3085 (29.25)
6.	Construction	3215 (3.73)	4675 (4.17)	1176 (4.65)	311 (2.95)
7.	Trade and Commerce	12,129 (14.07)	11,930 (10.63)	4681 (18.54)	2135 (20.24)
8.	Transport, Storage, Communication.	9903 (11.48)	3966 (3.53)	2338 (9.25)	915 (8.61)
9.	Other Services	31,911 (37.01)	23,478 (20.92)	9882 (39.11)	2891 (27.41)
TOTAL WORKERS		86,227	1,12,243	2,05,234	10,546
PARTICIPATION RATIO		30.30	33.92	31.20	28.13

Source - Census of India - 1981.

b) Delhi UT

The growth pattern of economic activities in the DMA towns has not had any appreciable impact on the proliferation of these activities in Delhi, since employment in the three major employment sectors viz Industry, Government and Public Sector Offices, and Trade and commerce in Delhi has grown unabated (Table 3.3). Particularly employment in manufacturing and trade & commerce has grown from 23.9% to 29.1% and 19.3% to 22.25% during the period 1961 to 1981 respectively.

Table 3.3 : DISTRIBUTION OF WORKFORCE IN  
DELHI 1961 - 1981  
(Percentage in Brackets)

Categories	1961	1971	1981
Cultivators	5178 (0.7)	5176 (0.5)	7727 (0.39)
Agri. Labours	1242 (0.2)	3603 (0.3)	4772 (0.25)
Livestock, Forestry, etc.	-	-	13091 (0.70)
Mining and Quarrying	5446 (0.7)	9091 (0.8)	4745 (0.25)
Manufacturing, Processing			
a) Household	12684 (1.7)	25017 (2.2)	31349 (1.69)
Industry			
b) Other than house-hold	155099 (20.7)	242733 (21.7)	510748 (27.49)
Construction	32540 (4.4)	61517 (5.5)	118699 (6.39)
Trade and Commerce	143809 (19.3)	239719 (21.6)	413430 (22.25)
Transport and Communication	47387 (6.3)	107324 (9.6)	168457 (9.07)
Other Services	343430 (46.0)	422667 (37.8)	584663 (31.47)
Total Workers	746815 (100.0)	1116937 (100.0)	1857545 (100.0)
Participation Ratio	31.65	30.62	32.20

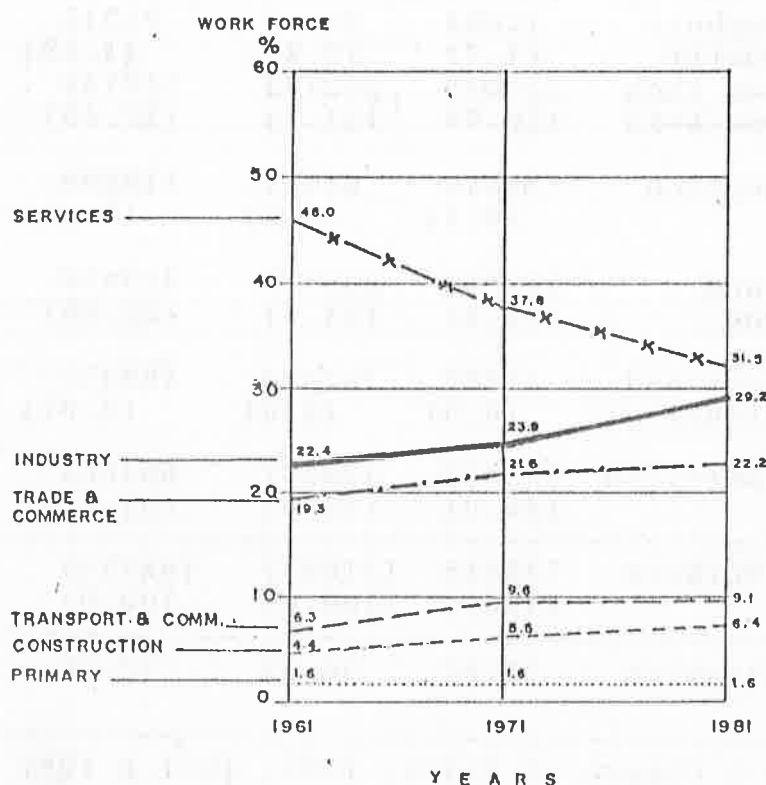
Source : Census of India, 1961, 1971 & 1981

The consistent growth in industrial activities in Delhi over the years has brought a change in the functional character of Delhi. In 1951, Delhi was mainly an administrative centre with 46% of its workforce engaged in administration. This declined to 31.5% in 1981. Whereas, the industrial workforce which was only 17% in 1951 rose to 29.1% in 1981. However, in absolute numbers the employment in administrative services sector grew more than four times from 1.59 lakhs in 1961 to 6.31 lakhs in 1988.

Facilitated by the converging transport network pattern and the agglomeration economies, the wholesale trade activities have concentrated in the city. The percentage workforce in trade and commerce had almost remained same in the last three decades. However, in absolute figures, it has almost become three times from 1.44 lakhs in 1961 to 4.15 lakhs in 1981. Trend of occupational structure since 1961 is depicted in Fig. 3.1.

**DISTRIBUTION OF WORK FORCE  
IN DELHI 1961-81**

**Figure 3.1**



### 3.2 REGIONAL PLAN POLICIES

#### a) DMA towns :

It has been brought out in the Regional Plan - 2001, NCR that since Delhi, is limited in its territorial extent, as opposed to the DMA towns having relatively extensive areas for expansion, there are inherent advantages of planning the Delhi Metropolitan Area, including Delhi UT, as one urban agglomeration. This has been reiterated by MPD-2001.

It has been envisaged in the Plan that the DMA towns would attract economic activities at a greater scale, and thus the participation rate would be much higher in 2001, than that obtaining in 1981. These towns would continue to generate employment opportunities in industries and being at take-off stage of physical development; they would also have the potential for employment opportunities in construction, trade and commerce, transport and service sectors.

#### b) Delhi U.T.

In order to achieve a balanced economic base in Delhi the Regional Plan proposes to have strict control over industrial activities in Delhi by permitting only small scale industries. However, it foresees increase in over-all participation rate.

### 3.3 WORKFORCE ASSIGNMENT IN REGIONAL PLAN

#### a) DMA Towns :

The Regional scenario shows that the basic character of the regional economy is expected to be more diversified in future since more than 70% of the population would be engaged in non-agricultural occupations. The economy of the DMA towns has also shown a shift towards 'manufacturing' and 'industrial' from its earlier concentration on 'primary sector'-based activities. Taking cognisance of these changing tendencies and keeping in view the development pattern envisaged for the DMA, the Regional Plan has proposed the following work participation rates and employment mix in major activities for 2001 for the DMA towns and Delhi (Table 3.4).



b) Delhi UT:

The planning process in Delhi, the core of the DMA, would be guided by the Master Plan Delhi - 2001 which has been prepared keeping in view the overall framework and policies enunciated in the Regional Plan 2001. The participation ratio which is likely to increase from 32.20% in 1981 to 35% by 2001, and the break up of the workforce in different occupational categories recommended in the MPD-2001 is, by and large, the same with minor adjustments, as proposed in the Regional Plan-2001 (Table 3.4).

Table 3.4 : PROJECTED OCCUPATIONAL STRUCTURE, DMA TOWNS - 2001

TOWNS	PROPOSED PARTICIPATION	PRIMARY	INDUSTRY	CONSTRUCTION	PROPORTION OF WORKERS (%) IN		
					TRADE & COMMERCE	TRANSPORT STORAGE & COMMUNICATION	SERVICES
Delhi	35	1.5	29.0	5.0	32.0	11.0	31.5
Ghaziabad	30	0.5	38.0	6.0	15.0	10.0	30.0
NOIDA	35	2.0	40.0	6.0	20.0	12.0	29.0
Faridabad/Ballabgarh	35	2.0	45.0	6.0	16.0	7.0	24.0
Gurgaon	35	2.0	40.0	10.0	16.0	10.0	22.0
Bahadurgarh	35	6.0	30.0	4.0	25.0	10.0	25.0
Kundli	35	2.0	40.0	10.0	16.0	10.0	22.0

## ECONOMIC ACTIVITIES

The three major employment generators in Delhi are industries, wholesale trade and commerce and Central Government and Public Sector Offices. For dispersal and development of economic activities in the Region, it is necessary that as against strict control envisaged for Delhi UT in the Regional Plan, the DMA towns should show dynamism and increased level of activity in these sectors.

## 4.1 INDUSTRY

## A) EXISTING SCENARIO

## i) DMA Towns

An account of the present level of developments in industrial sector in each of the DMA towns as follows:

GAZIABAD-LONI : In the Master Plan-2001 for Ghaziabad the total industrial area earmarked in Ghaziabad (both Cis-Hindon and Trans-Hindon) is 1989 ha. Of this, 1534 ha. of land had been fully developed upto 1981 by UPSIDC and the Directorate of Industries as per details given below :

INDUSTRIAL AREA	HECTARES
1. Ghaziabad Road (Site I)	279.43
2. Loni Road (Site II)	124.33
3. Meerut Road (Site III)	142.09
4. Sahibabad (Site IV)	585.09
5. Kavi Nagar	138.46
6. Meerut Road (Sector 22)	46.64
7. Loha Mandi	21.15
8. South Side of G.T. Road	187.68
9. Loni Industrial Estate (By DOI)	9.23
TOTAL	1534.11

Besides this, 410 ha. of land was also developed in private sector totalling to 1943 ha. Thus, 98% of the land earmarked for industrial use in the Master Plan has been fully developed. In addition, an area of 240 ha. of land is being acquired in two industrial pockets as per details below :

- i) Mahrauli Industrial area: 167 ha.  
(on Hapur bypass road)
- ii) Industrial area on Meerut: 80 ha.  
road near village  
Rasoolpur (GDA)

In the Master Plan - 2001 for Loni, the land designated for industrial use is 21 ha. The total land developed under industrial use by 1984 was of the order of 46.63 ha. In addition, the UPSIDC has proposed an industrial estate named 'Tronica' over 555 ha. in an area shown as green belt in the Master Plan of Ghaziabad-Loni.

**NOIDA:** In NOIDA, out of 985 hectares of land earmarked for industrial use, an area of about 688 hectares has so far been developed. Out of total 6650 industrial plots to be developed so far, 5106 plots have been fully developed and 4000 occupied. Out of these plots, the number of industrial units that have come up and functioning are 3735 (3675 small scale and 60 medium scale). Thus, 56% of the developed plots have been fully utilised so far.

**FARIDABAD:** In Faridabad Master Plan, 2000 ha. of land has been proposed to be developed for industrial use. Out of which about 50% i.e. 905 ha. of land has been acquired and developed. In this land, 1022 plots have been developed, allotted and possession given. Out of 1022 plots, construction has taken place on 949 plots, and 73 plots are lying vacant.

**GURGAON:** In Gurgaon 1535 ha. of land has been proposed in the Master Plan for industrial use. Out of this land 726 ha. of land has been acquired. The total area developed by HUDA and HSIDC is 367 ha. Out of the total 1630 plots, 1130 plots are developed of which 1114 have been allotted, and possession has been given to 1110 plot holders. There are 690 plots where construction has been completed and 440 plots are lying vacant.

**BAHADURGARH:** In Bahadurgarh, three industrial areas have been developed as per the provisions of the approved Master Plan which are Modern Industrial Estate (MIE) Part I and Part II) measuring 162 ha., old

industrial area measuring 43 ha. In the old industrial area all the 85 plots have been allotted, whereas, in MIE Part I & II, out of 2318 plots, only 1987 plots have been allotted. However, in the Modern Industrial Estate, construction has been done on only 127 plots. Thus, out of total 2403 plots in the two industrial estates, only 210 plots (about 8.74%) are such where industrial activities are taking place.

**KUNDLI:** Haryana State Industrial Development Corporation (HSIDC) has developed an industrial estate of 43 ha. with 198 plots in 1983. Out of these, only 64 plots have been allotted so far of which 53 are occupied, and only 25 industrial units are functioning thereon.

#### ii) Delhi UT

Delhi is now one of the largest centres of industrial activities in the country. Whereas there were only 8000 industrial units in Delhi in 1950-51, there are now as many as 80,000 units. The employment in the industrial sector has risen during the last four decades from 69,000 to nearly 700,000 and the value of production from just Rs. 35 crores to well over Rs.4000 crores annually.

### B) REGIONAL PLAN POLICIES

The policies proposed in the Delhi U.T. and DMA towns with regard to location of industry are as under:

#### i) Control within the Union Territory of Delhi

The present policy of not promoting location of medium and large scale industries within Delhi should be continued.

#### ii) Control outside Delhi but within the DMA

While in the long term perspective, the growth of large and medium scale industries in DMA towns may have to be restricted, these industries may be permitted in the DMA towns for a period of 10 years, whereafter the policy shall be reviewed. The emphasis will be on promoting growth of large and medium scale industries in priority towns in preference to DMA towns.

### C) DEVELOPMENT STRATEGY AND PROPOSALS

#### i) DMA towns

In the light of the existing situation the emerging scenario of industrial development in each town would be as under :

**GHAZIABAD-LONI:** In Ghaziabad, out of the total land earmarked in the Master Plan for industrial use about 98% of the land has been fully developed, and about 60% of the developed plots have been put to industrial use. Proposals for development of additional land of 240 ha. which is in the process of acquisition would be over and above the Master Plan recommendations, Enhancement in the area is likely to affect the assigned population for Ghaziabad by 2001 AD, and would go against the recommendations of Regional Plan 2001 and should not be permitted.

In case of Loni, the area developed under industrial use (46.63 ha.) has already become more than twice the area designated in the Master Plan (21 ha.). The proposal to develop a huge area of 555 ha. for industrial use in addition to this area would amount to gross violation of the Master Plan, and the Regional Plan 2001 for NCR. It is strongly felt that this area should not be taken up for development.

**NOIDA:** In NOIDA, out of the total land earmarked in the Master Plan for industrial use, 70% land has been developed and about 56% of the developed plots have been fully utilised. As such, looking to the pace of development in the past, in the remaining period of the Plan, it is expected that land earmarked in the Master Plan would be fully utilised. The proposed large scale development at the periphery of NOIDA by the UPSIDC under the Greater NOIDA Industrial Authority is not in conformity with the Regional Plan.

**FARIDABAD :** In Faridabad, about 50% of the land earmarked for industrial use in the Master Plan has been developed, and about 94% of the developed plots have been put to use. With this pace, it is expected that, in the remaining period of the plan, land earmarked in the Master Plan would be fully utilised.

Some of the industrial units in Faridabad have occupied only a marginal proportion of the allotted land and in the name of expansion, they are holding vast areas for a considerable period. HUDA is contemplating to make full use of the plots by giving an opportunity to plot holders to sub-let the plots for industrial use or use the vacant portions for residential use of their employees. Definite steps to ensure time-bound completion of this programme should be taken by HUDA.

**GURGAON :** In Gurgaon, about 20% of the land earmarked for industrial use in the Master Plan has been developed and only about 40% of the developed plots have been put to use. The industrial development in Gurgaon has, thus, grown at a slower pace. Efforts will have to be made to achieve the expected level of industrial development in Gurgaon by removing the bottlenecks, particularly, availability of power and to some extent water.

**BAHADURGARH :** In Bahadurgarh, about 43% of the land earmarked for industrial use in the Master Plan has been developed and only about 9% of the developed plots have been put to use. As such the pace of industrial development in Bahadurgarh is very slow.

In the old industrial area, all the plots have been allotted and have been put to use, whereas in MIE Part I and II, although about 86% plots stand allotted, construction has taken place in only about 5% of the plots. In this area, most of the plots were allotted to non-conforming industrial units of Delhi when there was a pressure to shift the non-conforming units outside Delhi. But later on, the units continued to remain in Delhi and, therefore, the plots in these areas remained unutilised. However, it would be appropriate to delink the shifting of these units from Delhi and devise measures for promoting the growth of industries in Bahadurgarh.

**KUNDLI :** In the land use plan for 2001 AD for Kundli which is under preparation, it is proposed to develop about 445 ha. of land for industrial use. Keeping in view the fact that only about 10% of this area is developed at this stage and only about 13% of the

developed plots in this area has been put to use, it seems difficult to achieve master plan targets unless special efforts are made in this direction.

ii) Delhi U.T.

The requirements for land and infrastructure in MPD-2001 have been worked out for a population of 128 lakhs against 112 lakhs proposed in the Regional Plan - 2001. Besides this, Delhi Administration has taken a policy decision not to develop new industrial estates in Delhi. Keeping these aspects in view, the workforce figures in the manufacturing sector should be brought down to 11.37 lakhs as against 13.30 lakhs as proposed in MPD-2001. The existing hazardous and noxious, heavy and large scale industrial units and non-conforming extensive, light and service industries which have been suggested in NCR/DMA/Industrial use zones in MPD-2001 should be identified and detailed project reports to effectuate shifting should be prepared by the concerned units/Delhi Administration. For co-ordinating and implementing the policies relating to industrial dispersal and to effectuate shifting of industries as envisaged in the NCR Plan and MPD-2001, a suitable machinery should be evolved. The possibility of undertaking joint collaboration with the NCR Planning Board and the concerned States for developing industrial areas/estates should also be explored.

## 4.2 WHOLESALE TRADE & COMMERCE

### A) EXISTING SCENARIO :

#### i) DMA Towns

In DMA towns, for day to day retail requirements, trade & commerce facilities are sufficient to make them self-contained. Some of the towns in DMA have large markets dealing in foodgrains, fruits and vegetables etc. Some of these markets also function as production and processing/fabricating centres for a variety of items such as iron and steel, building materials, garments, auto-parts etc, and have close linkages with locally available skilled labour force. These towns are however, deprived of any major wholesale trading activities which are concentrated in Delhi.

#### ii) Delhi U.T.

The wholesale activity in Delhi is located mainly in the congested parts of the old city and has grown in unplanned manner resulting in congestion, traffic bottlenecks, encroachment on public land and parking problems.

The major part of the commodities which are brought to Delhi are distributed outside Delhi. Their distributive character is evident from the fact that about 60-80% of some of the major commodities which reach Delhi are re-exported to areas outside Delhi.

### B) REGIONAL PLAN POLICIES

The policies proposed in the Regional Plan 2001 - NCR for Delhi UT and the DMA towns with regard to location of wholesale trade and commerce are as under :

#### i) Decentralisation of wholesale trade and commerce in Delhi.

There should not be any special advantage in terms of preferential treatment or lower taxes by way of incentives to wholesale trades in Delhi vis-a-vis the adjoining States. Those wholesale trades which are hazardous in nature such as plastic and PVC goods, chemical, timber, food grains, iron and steel and building material



and require extensive space may be decentralised by developing suitable additional locations outside Delhi.

#### ii) Development outside Delhi within DMA

There are certain wholesale trades and storages in Delhi which are hazardous because of their location in congested areas and also due to bulk handling activities relating to plastic and PVC goods, chemicals, timber, food grains, iron and steel and building material. These wholesale trades in addition to new trades and related activities should be encouraged to be developed in the DMA towns.

The possibility of developing modern Super Markets should be explored in the Delhi Metropolitan Area towns.

### C) DEVELOPMENT STRATEGY AND PROPOSALS

#### i) DMA Towns

1) The task of suggesting alternative locations involves, firstly, identification of trades in Delhi which have distributive character and secondly, selection of appropriate locations for these trades. A study was undertaken by the NCR Planning Board through Consultants for identification of such trades and suggesting alternative locations. The Study took into consideration 8 wholesale commodity groups viz. foodgrains, textiles and readymade garments, autoparts and machinery, iron and steel, building material, timber, fruits and vegetables, and fuel oils. It has been revealed in the Study that most of the traders in these commodities have shown preferences for DMA towns as alternative choice of location. The Study, after taking into consideration various other factors such as existing commodity flow of direction, nature and magnitude of present trade, potentials of the town, etc. has recommended the following locations in the DMA towns for some of these trades:

Ghaziabad	-	Iron and Steel, Hardware
Faridabad	-	Autoparts
Gurgaon	-	Iron and Steel
Kundli	-	Fruits and Vegetables, foodgrains.

Besides these locations, MPD-2001 has also recommended locations for some of these trades in DMA Towns. These locations should be developed expeditiously in a time bound programme.

2) In order to raise general level of trading activities the possibility of developing Modern Super Markets should be explored in the DMA Towns.

3) Marketing yards which could be used both for exhibition and marketing of the local products should be developed in these towns. This would not only encourage industrial development but would also help in buying the necessary inputs locally.

ii) Delhi U.T.

1) The workforce in trade and commerce sector should be brought down to 8.62 lakhs as against 9.76 lakhs as proposed in MPD-2001 by taking 112 lakhs as assigned population for Delhi.

2) The MPD-2001 has proposed a large number of regional level distribution markets at 4 locations on the major entry routes, and as many as 10,513 wholesale shops in 11 regional-cum-local markets mostly falling in the peripheral areas of Delhi U.T. It is felt that this would seriously aggravate the problem of congestion, and would result in contiguous development. These distribution centres, therefore, should not be developed within Delhi UT, and should be developed in DMA towns. The possibility of joint collaboration with the NCR Planning Board and the concerned States for developing such areas should also be taken into consideration.

3) A suitable machinery needs to be evolved for identification of wholesale trade, warehousing etc. for decentralisation, and to obtain cooperation of the traders for developing alternative locations for them in DMA towns.

4) The proposed Inland Container Depot (ICD) at Tughlakabad on a site of 39 ha. will be the biggest ICD in the country with an estimated through put of 2.4 lakh Twenty feet Equivalent Unit (TEUs) per annum. It is expected to generate a workforce of 75,000 in various formal and informal activities leading to the additional population growth of 2.5 lakhs in Delhi. Besides this, by generating a total traffic of about 5000 vehicles of all types per day, it would impose alarming load of road based traffic within the limited carriageways on Mathura Road and Mehrauli -Badarpur Road alongwith unmanageable parking and warehousing requirements. It is thus logical to consider location of the ICD away from Delhi. NCR Planning Board has proposed Palwal with its arterial rail and road linkages to Bombay, Madras and eastern parts of the country as an ideal loction for the project. This would also help considerably in the economic growth of the region and the growth of the regional transport network. Work on development of the ICD is going on at a very fast pace making a virtual mockery of the efforts being made by various agencies to reduce congestion in Delhi and the NCR Plan.

### 4.3 GOVERNMENT AND PUBLIC SECTOR OFFICES

#### A) EXISTING SCENARIO :

##### i) DMA Towns:

In the Master plans of DMA towns prepared by the respective States, adequate land has been reserved for institutional and Government and Public Sector Office use which is being developed in phases. The land measuring 400 ha. in Ghaziabad and 80 ha. in Faridabad which were acquired by the Central Government as a follow up measure of the recommendation of the first Master Plan-Delhi have been partly utilised for this purpose.

##### ii) Delhi UT:

The employment in the Public Sector offices is consistently increasing in the Capital. Among the four categories of employment, there has been considerable increase in the quasi-Government employment which has grown from a mere 6000 in 1961 to 2.19 lakhs in 1988. The growth of employment in the four categories is as in Table 4.1.

Table 4.1: WORKFORCE IN GOVERNMENT AND PUBLIC SECTOR OFFICES

( in Lakhs )			
Category	1961	1981	1988
Central Government	0.94	2.25	2.29
Delhi Administration	0.25	0.62	1.00
Local Bodies	0.34	1.09	0.83
Quasi-Government	0.06	1.41	2.19
TOTAL	1.59	5.37	6.31

Source : Delhi Census Hand Book - 1989

## B) REGIONAL PLAN POLICIES:

The policies proposed in the Delhi UT and DMA Towns with regard to location of Govt. and Public Sector offices are as under:

### i) Strict control within the Union Territory of Delhi.

With regard to Government offices, the present policy and mechanism for screening the location of new Government offices should be continued. The main criterion for location of offices in the Capital should be that they perform ministerial functions, protocol functions or liaison functions which, by their nature, cannot be performed anywhere else except in the National Capital. The existing offices which do not perform any of the above functions should be identified and shifted from Delhi. In the case of Public Sector offices, there is an urgent need to scrutinise the list of existing offices and allow them to retain only very small establishments to cater for ministerial and liaison functions. The rest of the establishments should be shifted out of Delhi. The accommodation which may thus become available could be used to cater to the needs of the essential growth of Central Government offices. A High Powered Committee appointed by the Central Government has already made recommendations in this regard which are under pursuance by the NCR Planning Board and the Ministry of Urban Development.

### ii) Control outside Delhi but within the DMA

A similar control on the opening of new Central Government and Public Sector offices in the DMA towns should be exercised. Relocation or expansion of Government offices which have ministerial, protocol or liaison functions which make it incumbent upon them to be located in Delhi alone should be allowed to be located in the DMA towns. Insofar as Public Sector undertakings are concerned, the restrictions on their opening new offices or expanding the existing ones should apply equally to the DMA also. Rest of them have to go out to the Priority Towns to be developed in the NCR or in the Counter Magnet areas identified by the Board.

### C) DEVELOPMENT STRATEGY AND PROPOSALS:

#### i) DMA Towns:

As a first step, the strategy should be to utilise the unutilised land in Ghaziabad and Faridabad. However, more land can be acquired and developed at these places and in other DMA towns depending upon the demand. Infact, institutions which require large areas (more than 2 ha.) could be located on the outer areas of the DMA towns within the controlled areas particularly in NOIDA and Gurgaon.

#### ii) Delhi U.T.

- (1) The workforce in this sector should be brought down to 12.35 lakhs as against 13.67 lakhs as proposed in the MPD-2001.
- (2) The present policy and mechanism for screening the location of new Government offices and expansion of existing offices in Delhi should be vigorously pursued. A time bound programme should be prepared for shifting of the offices which do not qualify to remain in Delhi in the light of the criteria laid down in the Regional Plan - 2001 for NCR.
- (3) Institutions of National/Regional importance with extensive areas (Say 2 ha. or more) should not be located in Delhi. They should be considered for location in DMA/Priority Towns.

#### 4.4 INFORMAL SECTOR

Informal sector contributes significantly to employment, and offers income opportunities to a substantial proportion of the economically active population in urban areas. In view of the important position of informal sector in the economy of Delhi and DMA towns, special efforts will have to be made to improve the performance of this sector. The Municipal Bodies and Development Authorities in Delhi and other DMA towns can take a lead and identify actual locations, specific needs and take up programmes, as suggested in the following paragraphs :

- 1) Development or reservation or zoning of special areas where such people can work in better environment. The informal sector in this way can be incorporated in trade in the planned development of various use zones particularly, near mass activity centres, trading and entertainment places.
- 2) The traditional style of retail shopping in the form of weekly markets or hata is very popular in Delhi and most of the DMA towns. These retailing activities take place systematically at various places central to large population on vacant land or road sides. Since these retail markets serve large section of people, specially lower and middle income groups, they should be encouraged. Parking and open spaces in the regular markets or near work centres can be utilised for this purpose.
- 3) To promote employment and productivity in the informal sector, special training programmes should be organised. These training programmes should aim at developing the ability of the urban poor and slum dwellers to earn their livelihood through upgradation of their skills and entrepreneurship.
- 4) Provision of facilities like worksheds work-cum-shetter in slums, and localities of poor, and site and service projects for employment generation activities will be very useful in ensuring the success of the schemes undertaken for promotion of informal sector activities .

## 5.1 PRESENT HOUSING STOCK IN DMA TOWNS

For estimating the stock of occupied residential houses (ORH) in the DMA, the normal life span of a house has been taken as 50 years and thus the replacement need has been assumed @ 2% per annum. During 1971-1981, the population of DMA towns increased from 43.99 lakhs to 69.87 lakhs i.e. an increase of 58.83%. The corresponding ORH stock increased from 7.18 lakh units to 9.89 lakh units. i.e., an increase of 37.74% (Table 5.1). Thus, during 1971-81, the pace of growth of population was at a rate much higher than the corresponding net increase in housing stock.

## i) Supply and Demand - 1990

The net livable residential units available in 1990 are estimated at 10.68 lakhs (Table 5.1) against an estimated population of 105.91 lakhs. Assuming an average household size of 5 persons, the shortage in housing units is estimated at 10.50 lakhs in 1990. In 1981, there was one housing unit for every 7.07 persons whereas in 1990, the situation deteriorated as there was one unit for every 9.91 persons.

Table 5.1 GROWTH OF POPULATION AND OCCUPIED RESIDENTIAL UNITS 1971-90

	1971		1981		1981	Net	Estimated	Livable	Bst.	Demand	Gap-
	Pop.	ORH	Pop.	ORH	Livable	growth	ORH-1990	Units	Pop.	for ORH	1990
					units	1971-81		after 18%	1990	in 1990	(lakhs)
					after 20%	(%)		replace-	Lakh	in lakhs	
					replacement			ment(1990)			
1. Delhi UT	4065698	664647	6220406	1090065	873652	31.45	1033574	847531	89.10	17.820	9.345
2. Ghaziabad including Loni	127700	17798	297429	53443	42754	140.22	92433	75795	6.33	1.266	0.508
3. NOIDA	-	-	-	-	-	-	-	30022	2.25	0.450	0.150
4. Faridabad-Ballabgarh Complex	122817	22429	330864	67199	53759	139.58	115916	95051	5.78	1.156	0.206
5. Gurgaon	57151	8728	100877	16686	13349	52.94	18374	15067	1.69	0.338	0.187
6. Babadurgarh	25812	4053	37488	6397	5118	25.97	5802	4758	0.46	0.092	0.044
7. Kundli	-	-	-	-	-	-	-	-	0.30	0.060	0.060
DMA TOWNS (excl. Delhi UT)	333480	53028	766658	143725	114980	116.83	232525	220593	16.81	3.362	1.155
DMA Towns	4399178	717675	6987064	1237790	988632	37.75	1266099	1068224	105.91	21.182	10.500



## ii) Informal Sector Housing

Large scale immigration of people from country side to urban areas in search of employment opportunities offsets attempts to check the growth of slums. By and large, the migrants get employment in informal sector activities. In the context of urban development, informal sector has to be viewed as an integral part of the process of spatial planning.

## iii) Squatters and slums

In 1990, the estimated population of all the DMA towns was 105.91 lakhs, and out of this, 13.61 lakhs are estimated to be squatters, and 34.87 lakhs are living in slums (Table 5.2). Thus, about 45% of the total population is estimated to be without adequate shelter facilities.

The housing situation in the Capital city is particularly alarming as a significantly large part of its population is estimated to be living in jhuggies/jhonpris and slums. In 1971, such population accounted for 36% of the total population in the UT, in 1981 it had increased to 37% and by 1990 estimates put it at nearly 50%. The efforts made so far to mitigate the housing problem of the jhuggi/jhonpri and slum dwellers through resettlement of jhuggies and urban renewal programmes for slum improvement etc have not provided any worthwhile solution to this problem.

Table 5.2 : SQUATTER AND SLUM POPULATION IN DMA TOWNS

	Est. Popn. 1990 lakhs	Squatter Pop.1990	J.J. Units @ 5 persons/ unit	Slum pop. 1990	Units in slum
1. Delhi UT	89.10	1200,000	240,000	3208,000	641,600
2. Ghaziabad- Loni	6.33	20,000	4,000	129,000	25,800
3. NOIDA	2.25	6,020	1,204	-	-
4. Faridabad- Ballabhgarh	5.78	1,01,660	20,332	91,000	18,200
5. Gurgaon	1.69	29,160	5,830	44,000	8,800
6. Bahadurgarh	0.46	4,000	800	15,000	3,000
7. Kundli	0.30	-	-	-	-
DMA(excl.Delhi)	16.81	160,830	32,166	279,000	55,800
DMA (Total)	105.91	1360,830	272,166	3487,000	697,400

During 1971-80, about 148,000 families from squatter settlements were resettled in 44 planned residential areas. This gigantic programme brought down the number of jhuggi/jhonpuri households from 62,600 in 1971 to a mere 20,000 in 1977. However, the number of jhuggi/jhonpuri households increased again to 99,000 by 1981 - an increase of about 80,000 within just three years. Subsequently too, a number of jhuggies continued to grow to reach 150,000 households in 1985, 225,000 in 1987 and 240,000 by 1990. This accounts for a population of 13 lakhs living in 652 basties.

## 5.2 DEVELOPMENT OF SHELTER

The demand for housing units by 2001 in the DMA towns is estimated to be of the order of 29.80 lakh units. As against this, it is estimated that as of 1990, the number of liveable housing units stood at 10.68 lakhs. Thus, during the period 1990-2001, about 19.11 lakh more units would be required to remove the gap. Such a large additional requirement is particularly on account of the significant size of the squatters and slum dwellers in the DMA towns, who are to be provided with adequate shelter facilities.

Over 45% of the projected additional requirement during 1991-2001 is to house the slum and jhuggi dwellers of Delhi who in 1990 numbered about 44 lakhs. Thus, a large proportion of the estimated housing demand by 2001 is indeed the requirement to house the predominantly migrant population who are primarily low skilled, unemployed and unable to afford a formal house, and consequently squat on the public land/slums. It is therefore obvious that any number of resettlement and/or regularisation programme in Delhi alone would not be able to solve the problem of housing in Delhi unless a practical policy is followed to meet the demands of this sector. An arithmetical exercise to arrive at figures of land required and hence the corresponding acquisition and development programme, would only bring more migrants in search of work. At the same time, the role of the other DMA towns in easing this problem, by alternately accommodating a sizeable share of this population should be recognised. The DMA

towns now having visibly developed the capabilities of holding the population assigned to them with commensurate comprehensive living environment as envisaged in the Regional Plan, it would be only appropriate that this positive trend is effectively utilised to ease the problem of housing in Delhi.

The Regional Plan stipulates that priorities be fixed in dealing with different segments of the population in various categories to provide housing facilities and proposes that the housing programmes should aim at:

- i) making available developed land at affordable prices.
- ii) introduction of minimum needs programme to ensure an environment of minimum urban normative levels; and
- iii) provision of easy access to institutional finance.

### 5.3 PRIORITIES IN SHELTER DEVELOPMENT

In fixing the priorities for an action programme for providing adequate shelter facilities in the DMA, the following aspects have been given due consideration :

- i) the migrants who are the most vulnerable to various housing deficiencies are to be given top priority as they constitute a major chunk of the slum population;
- ii) the potential migrants from urban centres to Delhi would need gainful employment opportunities and they would have to be provided with reasonable hygienic and sanitary conditions for living;
- iii) persons in the lower and middle income groups to be provided with institutional financial support; and
- iv) for those in the category of HIG developed house sites to be made available.

It is estimated that the composition of the target groups for additional shelter facilities during 1990-2001 in the DMA would be:

- i) EWS (100% of the beneficiaries for Sites & Services and Slum Improvement) 45%
- ii) LIG (50% of the beneficiaries for institutional financial support and 50% for developed plots) 30%
- iii) MIG (25% of the beneficiaries for institutional financial support and 75% for developed plots) 15%
- iv) HIG (100% of the beneficiaries for developed plots at market price) 10%

Accordingly, an action programme phased over 2 periods - the Eighth Five Year Plan period 1990-95 and the rest of the period upto 2001 should be attempted. The number of shelter units/plots proposed to be developed and the number of expected beneficiaries in various categories proposed to be covered are indicated in the Table 5.3.

Table 5.3 SHELTER PROGRAMME IN DMA - 2001

(Figures in Lakhs)

Category of Beneficiary	Total number of units	Total number of beneficiaries (Households)	Number of Beneficiaries proposed to be covered during	
			VIII Plan (1990-95)	Rest of the period (1996-2001)
1. EWS:				
a) Slum upgradation	2.15	i) 2.15 (100%)	0.86	1.29
b) Sites & Services	6.45	i) 6.45 (100%)	2.68	3.87
2. LIG	5.73	i) 2.865 (50%)	1.146	1.719
		ii) 2.865 (50%)	1.146	1.719
3. MIG	2.87	i) 0.718 (25%)	0.287	0.431
		ii) 2.152 (75%)	0.861	1.291
4. HIG	1.91	ii) 1.91 (100%)	0.764	1.146
<b>TOTAL</b>	<b>19.11</b>	<b>19.11 (100%)</b>	<b>7.644</b>	<b>11.466</b>

Note : i) Institutional finance ii) Developed plots

In order that the shelter requirements in the DMA towns are adequately met by the year 2001, it would be necessary to evolve and implement commensurate residential land development programmes in a stipulated time frame. While there is broadly a need to accelerate the pace of land development in respect of the towns in Haryana and Uttar Pradesh, there is a need to moderate the trend in respect of Delhi.

### 6.1 EXISTING TRANSPORT CHARACTERISTICS

At present, the travel from Delhi Metropolitan Area towns to Delhi is time consuming and cumbersome. Development of a well-planned transport network, providing rapid transit within the DMA has thus become imperative. Presently, more than 3.12 lakh passengers travel daily between Delhi and DMA towns. The intracity trips have become equally important in case of DMA towns due to increased socio-economic and industrial activities. As such total transportation system of DMA, including Delhi, need to be viewed as a single multiple mode system.

#### i) Traffic Volume on Existing Transport Network - 1987.

The existing primary transport network in DMA exhibits a clear pattern of corridor development. There are nine major corridors consisting of Roads (National and State Highways) and Railways (Broad and Metre Gauge), which form the vital transport network system in the DMA (Fig.6.1). Among the various transport routes between Delhi and DMA towns, Delhi-Ghaziabad link carries the highest volume of about 42,751 vehicles, the least being Delhi-Bahadurgarh with 6,974 vehicles. (Table 6.1).

In Rail network too, the line capacity in and around Delhi is heavily strained. In the NCR, 75% of the goods traffic and 65% of the mail/express and passenger trains are handled in this intensely worked Delhi Area. As DMA towns do not have adequate loading and unloading facilities, most of the goods trains are unloaded in Delhi, resulting into heavy goods traffic on road network of DMA.

Figure 6.1

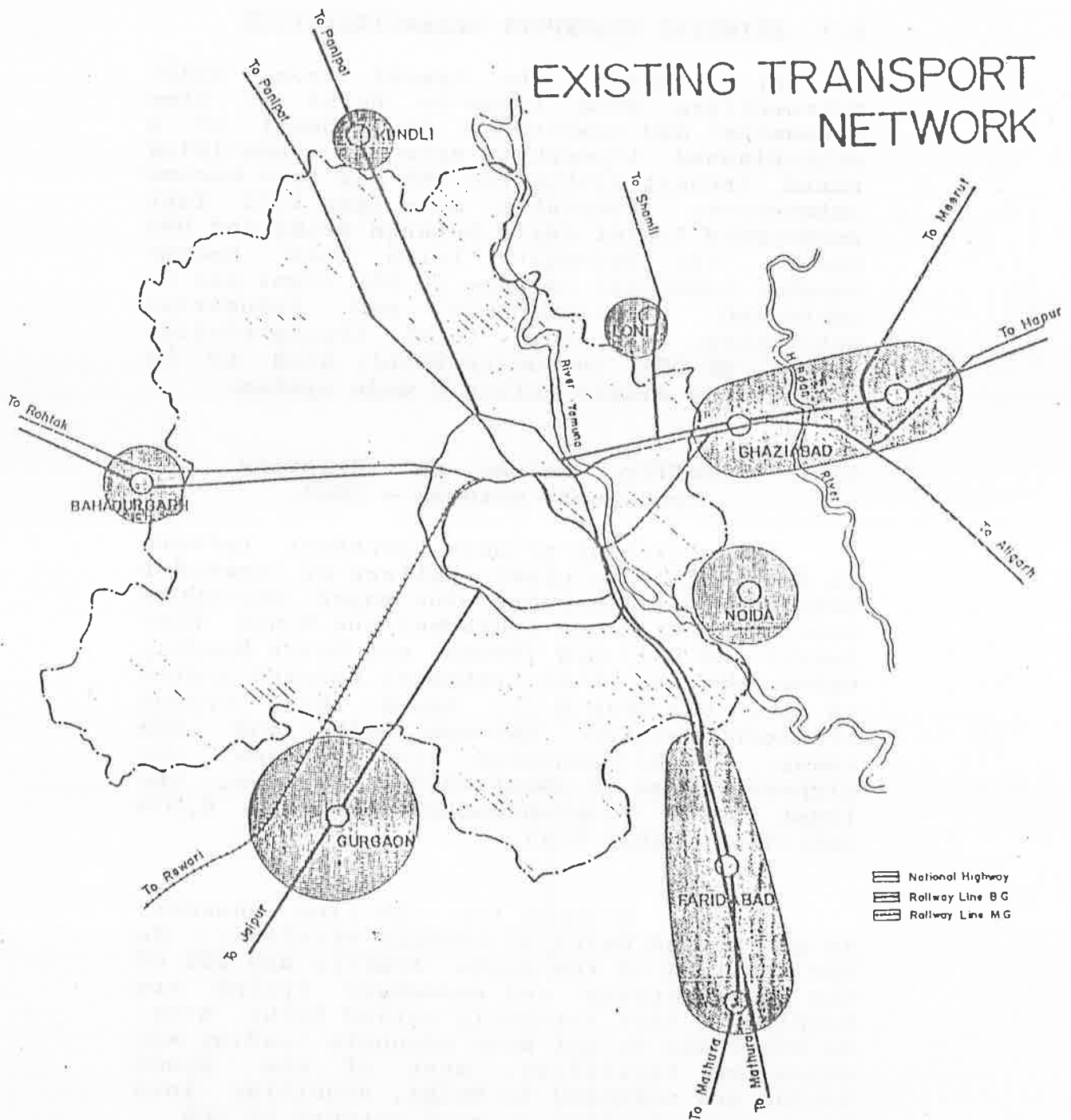


Table 6.1 : TRAFFIC MOVEMENT ON MAJOR CORRIDORS - 1987

Major Corridor	Total pass. vehicle	Total buses	Total goods vehicle	Total volume
1. Delhi-Faridabad	21585 (71.2)	1936 (6.4)	6795 (22.4)	30316 (100)
2. Delhi-Gurgaon	9407 (62.7)	1483 (9.9)	4105 (27.4)	14995 (100)
3. Delhi-Bahadurgarh	3708 (53.2)	753 (10.8)	2513 (36.0)	6974 (100)
4. Delhi-Ghaziabad	28714 (67.2)	2605 (6.1)	11432 (26.7)	42751 (100)
5. Delhi-NOIDA	16677 (82.1)	1633 (8.0)	2007 (9.9)	20307 (100)
TOTAL				1,15,343

ii) Travel characteristics

The present daily passenger movement (inter-urban) by all modes is estimated at 3.12 lakhs between Delhi and DMA towns. Such a large interaction of DMA towns with Delhi by public and private modes shows the high degree of interdependence (Table 6.2).

Table 6.2 : DAILY PASSENGER MOVEMENT BETWEEN DMA TOWNS AND DELHI U.T.- 1987

Between	Passengers by			
	-----			
	Public & Private		Personal	
	Buss	Vehicles	Rail	Total
Delhi-Ghaziabad	35,000	20,800	46,200	1,02,000
Delhi-NOIDA	61,000	18,400	-	79,400
Delhi-Faridabad	35,600	25,600	8,500	69,700
Delhi-Gurgaon	27,000	12,600	6,500	46,100
Delhi-Bahadurgarh	6,475	2,936	5,000	14,411
Delhi-Kundli	412	100	-	513
TOTAL	1,65,487 (53.02)	80,436 (25.87)	66,200 (21.2)	3,12,124 (100)



Number of passengers travelling daily by road transport facilities in organised sector within DMA are as in Table 6.3.

Table 6.3 : NUMBER OF PASSENGERS TRAVELLING BY SCHEDULED BUS TRIPS

Between	D.T.C. Haryana Roadways		U.P. Roadways	Total Passengers
Delhi-Faridabad	17,118	9,600	-	26,718
Delhi-Gurgaon	4,891	13,080	-	17,971
Delhi-Ballabhgarh	1,400	1,600	-	3,000
Delhi-Ghaziabad	17,337	-	262	17,577
Delhi-NOIDA	(Intra - Urban Service)			
Delhi-Kundli	N.A.	N.A.	N.A.	N.A.
TOTAL	40,746	24,280	262	1,10,288

Out of the total 3,12,124 passengers, about 1,10,288 (i.e. 35.33%) travel by public buses, 55,199 (i.e. 17.68%) by private and chartered buses and 80,436 passengers (i.e. 25.77%) travel by private (personal) vehicles. The remaining 66,200 (i.e. 21.21%) travel by rail through 100 trains of various classifications. Out of these trains, only about 24 trains run during peak hours. In other words, nearly 43.46% passengers travel by private and chartered buses and private vehicles, and 56.54% passengers by public buses and the rail.

### iii) Existing Transport Facilities in DMA - 1987

The existing transport facilities in DMA consist of buses run by State Transport Corporations of Uttar Pradesh, Haryana and Delhi; buses run by private owners and chartered buses by various transport companies during fixed hours; shuttle trains and EMUs between DMA Towns and Delhi and various other long journey passenger and Mail or Express trains.

Transport facilities between Delhi and NOIDA in the public sector are provided by DTC only. As these services cater to the passenger movement from various parts of

Delhi to NOIDA and nearby areas, these have been considered as intra-city services. Such trips from different parts of Delhi to NOIDA amount to approximately 1000. A number of private vehicles such as cars and taxis, chartered buses and those run by private transporters on different routes, and long journey buses run by State Transport Corporations on regional routes touching Delhi and DMA towns, are in addition to the scheduled trips and share a considerable proportion of the passenger movement in the DMA.

A detailed study on the improvement of transport facilities in the DMA with a view to suggest a Mass Rapid Transit System is now under progress by RITES. This study would throw further light on the existing transport scenario of DMA.

## 6.2 TRANSPORT POLICIES IN THE REGIONAL PLAN

In the context of the developments proposed in the DMA towns in the Regional Plan, it has been estimated that about 5.25 lakhs passengers would travel on different corridors from and to DMA towns by public transport, private vehicles and rail by 2001. A high percentage of passengers travel by unorganised modes of travel daily, between Delhi and DMA towns causing delays, loss of energy, pollution and accidents. This shall get further aggravated in the coming years in the light of the enhanced role envisaged for these towns. As such, total transportation system of DMA must be viewed as a single multiple mode system and the strategies for transportation planning in DMA should essentially be based on the principle of modal split manipulations, i.e. shifting traditional motor oriented transport to favour mass transport system by giving priority for its development and augmentation. The existing infrastructure should be optimised for maximum output in terms of capacity and efficiency of traffic operations and for better transport environment.

In the above context, the objectives to achieve an efficient and responsive transportation system in DMA should be as follows :

- a) interconnection of DMA towns among each other, and with the Capital by efficient and effective network system for free movement;
- b) provision of shortest and free movement network to inter-connect the maximum traffic attracting and generating, urban nodes in the DMA to diminish the centrality of Delhi;
- c) decongestion of Delhi roads and terminals by diverting the bypassable long distance through traffic;
- d) provision of suitable fast sub-urban operating system for efficient and effective movement of commuters and for boosting up of the development of economic activities in the urban nodes of the DMA; and
- e) integration of road and rail network system in Delhi, DMA and rest of the Region in NCR with appropriate inter-facing facilities.

The operational details of the transport strategy for DMA would be evolved based on the recommendations of the said study by RITES on Mass Rapid Transit Network.

### 6.3 OPERATIONAL POLICIES FOR IMPROVEMENT OF TRANSPORT SYSTEM IN DMA :

Following are some of the policies to improve the Transport system, operating in DMA.

#### i) Uniform Transport Policy and Rational Fare Structure:

To avoid concentration of people and economic activities in Delhi and to promote them in DMA towns, it is essential that the transportation system should be based upon a rational fare structure and a uniform transport policy in Delhi, U.P and Haryana.

ii) Single Transport Zone for Inter State transport and Para-transit Vehicles.

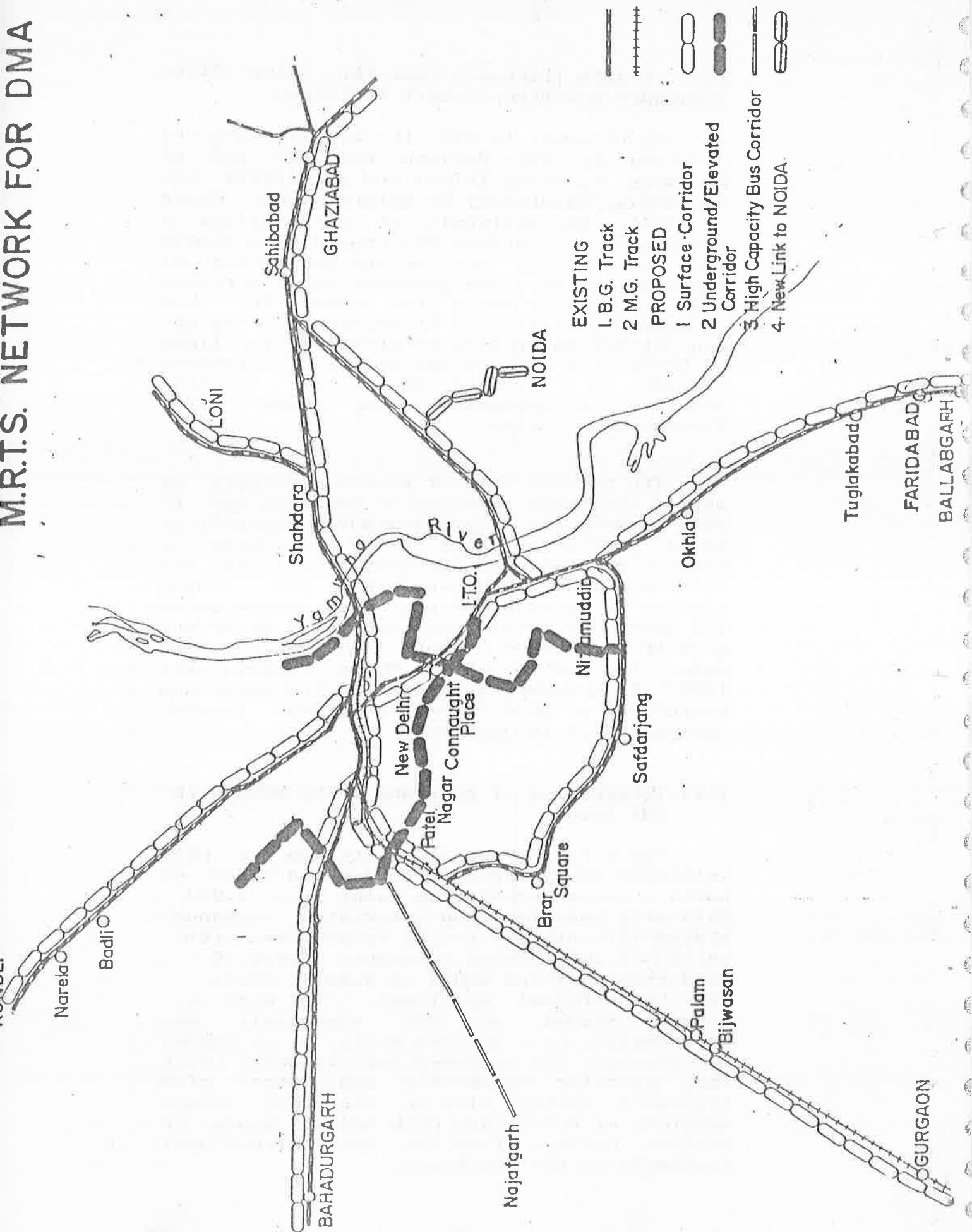
a) At present, in DMA the bus services are provided by DTC, Haryana Roadways and UP Roadways (Limited Trips) and such trips are treated as inter-city in nature except those of NOIDA. For uniformity of the services in the region, the entire DMA should be a single zone for planning, routing and scheduling of services for avoiding duplication of services and competition among each other. For this purpose all State Road Transport Undertakings can either enter into an agreement in lines of NOIDA with DTC or the number of services should be increased under the existing bilateral arrangements among Delhi Uttar Pradesh and Haryana.

b) The present rate of growth in supply of public transport services in DMA will not be able to meet the future demands especially in newly coming up areas on the periphery of Delhi. As such, introduction of private bus services under fixed schedules and routes similar to private bus operation system under DTC should be identified. The Inter State bus permits for this purpose can be arranged under the Section-108 of Motor Vehicle Act 1988. This arrangement should also cover the operations of para-transit services (autos, taxies etc.,) in DMA towns.

iii) Integration of proposed Delhi MRTS with DMA towns:

There is a proposal to introduce a MRTS initially on East-West Corridor and later on North - South Corridor in Delhi (Fig 6.2). This will operate as an integrated transport system with other existing intra-urban (R; rail) and inter-urban transport system (S' Road transport and EMU's on Delhi- Ghazi. and Delhi-Palwal sections). To meet the travel demand of DMA adequately and efficiently, on a uniform basis, it is needed to integrate the proposed MRTS in Delhi with the existing intra-city and inter city transport system with an effective feeder service of D.T.C. and with radial spurs of surface railway from the four directional terminals to the DMA towns.

Figure 6.2



- iv) Augmentation of Transport Infrastructure (both road and rail) in the DMA towns:
- a) If the available capacities of the Rail Corridors within the DMA and Delhi Urban Area is to be optimised and utilised for, providing intra-urban and inter-urban services, it would be necessary to carry out certain programmes like increasing terminal capacities, remodeling of the yards, laying of dedicated tracks for suburban services, and integrating the two network systems so as to enable optimum utilisation with minimum cost investment.
  - b) It is also necessary to augment the capacity of existing transport terminals and identifying sites for new bus terminals outside the Delhi Union Territory for catering the needs of growing traffic between Delhi and new areas under DMA.
  - c) In order to provide immediate relief to commuters from newly developed peripheral areas of Delhi, a short range programme should be worked out and it should consist of allowing paratransit vehicles, extension of existing DTC bus routes (point to point service) and stopping of trains at new locations etc.
  - d) Measures should be taken for development of low capacity public transport modes like mini buses, vans etc. to serve needs of the DMA towns other than Delhi.
  - e) In DMA towns other than Delhi, Scientific traffic management measures are almost non-existent. A large number of unlicensed vehicles ply on roads, and encroachments reduce road width to nearly half. The slowest and fastest vehicles share the same carriage way, severely hampering mobility. As such, it is essential to promote traffic management measures and identifying transportation requirements of the city. Once corridors and land requirements have been indicated, land could be reserved, though construction work could be taken up in phases only when the stage of development warrants such facilities.

#### v) Inter-Facing

The synthesis which would be required between inter and intra urban movements can only be achieved through a proper planning of inter-facing facilities. The two major points for consideration are:

- a) the effects of the inter-urban movements on intra-urban circulation pattern, and
- b) the consequent need for new terminals,

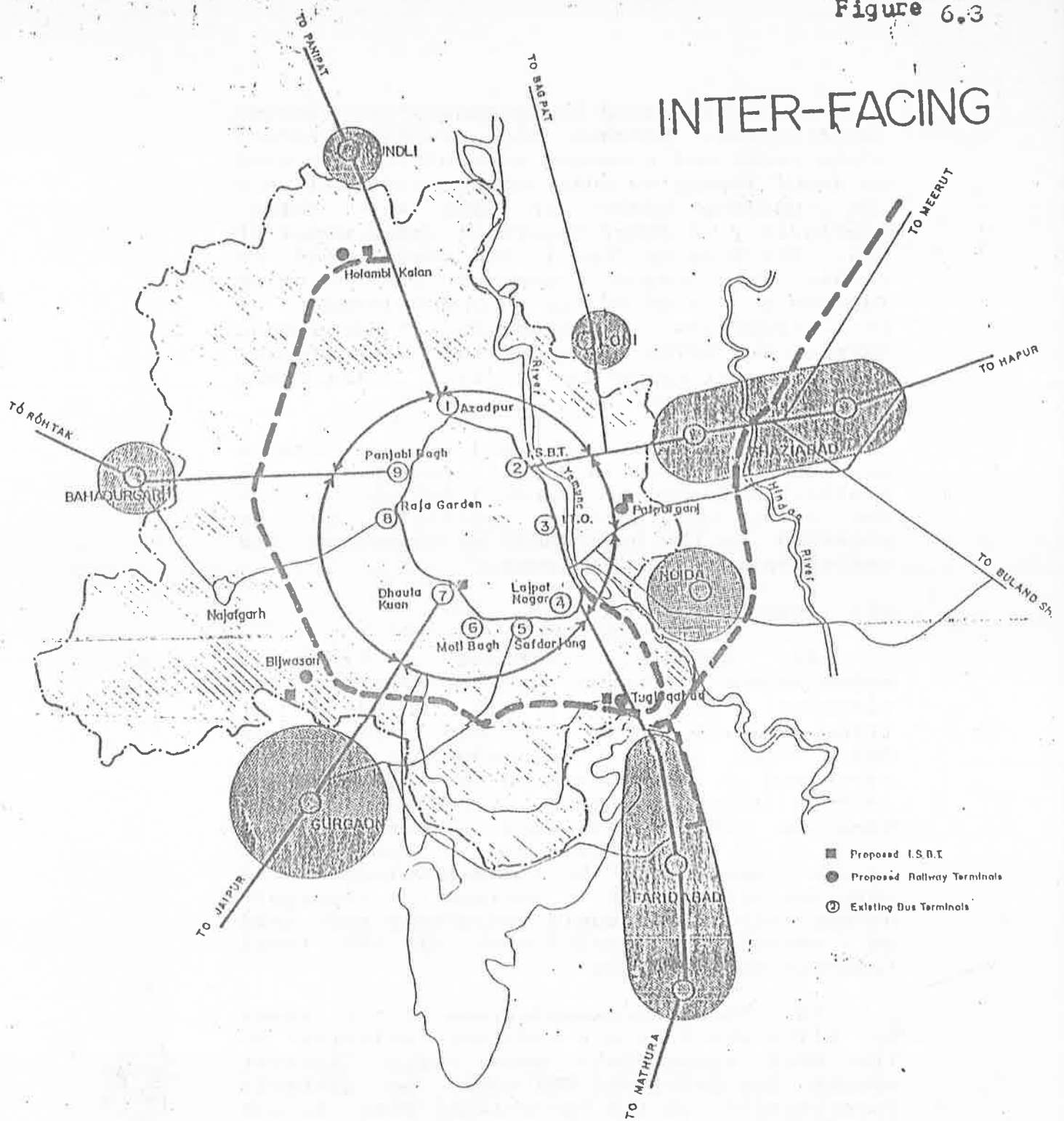
The problem of circulation is mainly expected to be felt in Delhi rather than in other towns, because most of the other towns would be served through a bypass road (as proposed) which would mitigate the problem of through traffic. The projected daily traffic by 2001 which would use Delhi's network will be 144% more than the existing traffic.

The existing Outer ring and the Ring road in Delhi which are the main arteries for collection and dispersal of inter-urban traffic will not be able to cope up effectively taking into account the two to four fold increase in inter-urban traffic in the future. Similar will be the problem in rail network in catering to the needs of the future passenger and goods movement. As such an additional concentric ring road of a limited access type and preferably not having any major points of origin/destination for the regional traffic would be needed.

In fact, the integration of the regional network with that of urban area network specially for Delhi should be examined from the point of view of accessibility to the four integrated metropolitan passenger terminals and freight complexes proposed in Delhi Master Plan-2001, which will also serve DMA. These terminals and complexes (Fig 6.3) should be along the proposed concentric ring and also connect the existing outer ring road so that the inter-urban traffic would flow either through these regional roads or proposed expressways and, follow the proposed ring upto its metropolitan passenger terminals/freight complexes. It would branch off using the existing connections nearest to the proposed terminals/complexes and to the proposed ring.

Figure 6.3

# INTER-FACING





It would also be necessary to design intersections between the proposed inter-urban roads and proposed concentric ring road as grade separated inter-changes, to maintain the uniform speeds on both the roads. Similarly, in other important urban nodes of DMA, the terminal facilities would need to either drastically expand their existing facilities or go in for the development of bus terminals at Ghaziabad, Faridabad, Gurgaon and NOIDA and requiring inter-facing with regional roads due to large intra-urban traffic in future.

A rail based-mass rapid transit system has been studied in detail for Delhi. A similar MRTS can be proposed for the entire DMA using the network facilities to be provided in the Delhi MRTS by expanding its radial spurs upto DMA towns.

vi) Integration :

At present, various transport authorities/ agencies are responsible for planning, development and managing of transportation facilities and services in DMA. They operate independent of each other and this has resulted in avoidable long journey time and more expenditure. The agencies charged with such responsibilities need to be strengthened and, a coordinating agency need to be constituted with representation of various transport authorities, which would coordinate and take an overall integrated view of the total transportation system.

The final recommendations of the study by RITES which is now underway relating to the most appropriate mass rapid transit system for Delhi and DMA would be suitably incorporated in the Functional Plan before its finalisation.

#### 6.4. TRANSPORT PROPOSALS - REGIONAL PLAN 2001 - NCR

##### A. Network Improvement

##### I. ROAD

The DMA towns of Ghaziabad, NOIDA and Faridabad come next to Delhi in attracting and generating maximum goods and passenger traffic. In the absence of direct connection among these towns, this unavoidable traffic passes through Delhi and congest the Delhi transport network. The Plan proposes to develop

(i) an Expressway connecting Faridabad-NOIDA-Ghaziabad.

(ii) The highly congested National Highway 8 connecting Delhi-Gurgaon to be upgraded from the existing 4 lanes to 6 lanes by 2001 A.D.

(iii) An Inner Grid to inter-link the DMA towns among themselves to provide inter-action and intra-movement amongst them at the regional level without passing through Delhi. This grid will be developed with 2 lanes initially and for an ultimate capacity of 4 lane -divided, with 60 m R.O.W. on new alignment to connect Bahadurgarh and Baghpat, and strengthening and widening of existing alignment on Rohtak-Sonepat-Bahadurgarh, Baghpat-Meerut and Jhajjar-Gurgaon-Faridabad stretches (Fig 6.4).

##### II. RAIL

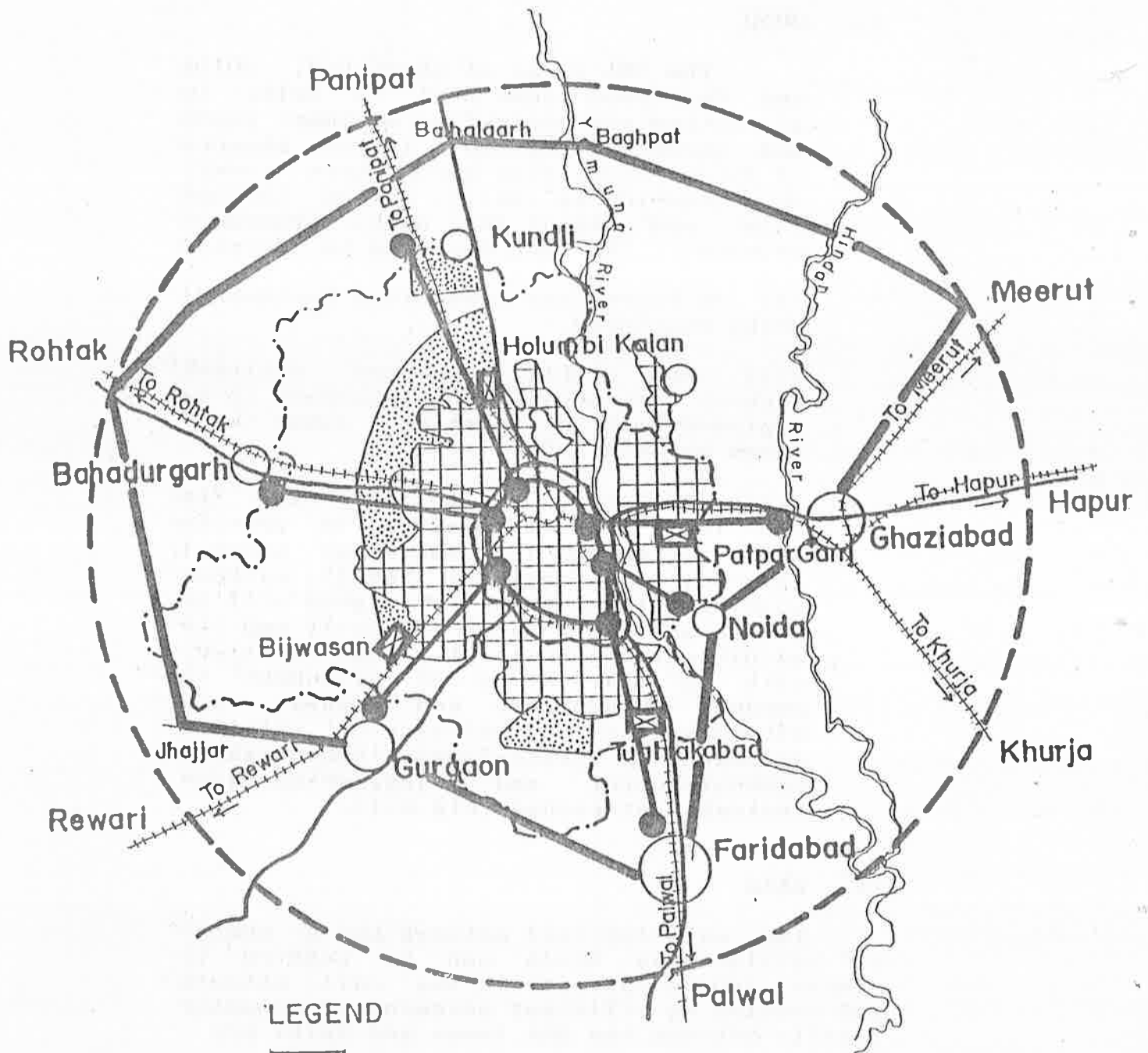
The existing rail network has a number of bottle-necks which can be removed to create larger capacity in the rail network and provide an efficient movement of commuter traffic between the DMA towns and Delhi by;

i) Increasing substantially the carrying capacity of existing passenger trains by adding additional number of coaches.


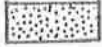


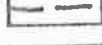
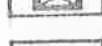

ii) Rationalising the movement of freight traffic to avoid their concentration in Delhi at present.

Figure 6.4

# PROPOSED TRANSPORTATION STRUCTURE



## LEGEND

-  Urban Area
-  Urbanisable Area-2001
-  Intra-City Rail
-  Inter-City Rail
-  Regional Rail By-Pass
-  Metropolitan Terminals
-  Inner Grid-Road

iii) Eliminating the existing bottlenecks on short stretches by providing additional facilities such as

- provision of an additional pair of lines on (Palwal) Faridabad-Delhi section.
- laying of a single Broad gauge line between Delhi-Gurgaon-Rewari-Alwar, and
- an additional pair of lines between Delhi-Ghaziabad-Khurja.

iv) Developing terminal facilities at four directional locations at Anand Vihar, Tuglakabad, Bijwasan and Holumbi Kalan in Delhi (Fig 6.4).

## 6.5 EXISTING TELECOMMUNICATION SYSTEM

Provision of telecom facilities would be most crucial to create conducive conditions to enable the DMA towns to become self-contained in matters of work places and residences. This could also help to a considerable extent in reducing the number of business trips. As of 1990, the total switching capacity available in the DMA was of the order of 574636 lines and the number of persons in the waiting list accumulated was 216925. The townwise switching capacity and waiting list position is as under:

Table 6.4 : Telecommunication capacity in DMA towns (1990)

	Capacity	Waiting list
Delhi UT	541400	181251
Ghaziabad	13640	4494
Loni	200	Nil
NOIDA	7400	7673
Faridabad	5100	12476
Ballabhgarh	1800	1868
Gurgaon	4096	8247
Bahadurgarh	600	916
Kundli	400	Nil
-----		
DMA excl. Delhi	33236	35674
Total DMA	574636	216925
-----		

Source : Department of Telecommunications  
Govt. of India to NCR Planning  
Board on the 8th Plan proposals.

## 6.6 TELECOM DEVELOPMENT POLICIES

In recognition of the crucial role the Telecommunications has to play in enabling decentralisation of activities from Delhi UT and their organised development in the DMA towns, the Regional Plan has enunciated the following policy for Telecommunication development in DMA.

- i) full automation of telephone services
- ii) replacement of all life expired exchanges and related accessories
- iii) provision of telephone and telex facilities practically on demand

- iv) extension of subscribers dialling facilities
- v) connection of DMA towns with Delhi by reliable cable or radio media
- vi) provision of reliable trunk services either by direct dialling or through demand services among the DMA towns
- vii) extension of telegraph office facilities
- viii) replacement of all the manual and mechanical exchanges in Delhi and other DMA towns by electronic exchanges.

## 6.7 DEVELOPMENT PROPOSALS

The Department of Telecommunications (DOT) is in full agreement with the enhanced role the DMA towns need to play and the need for provision of telecommunication facilities as envisaged in the Regional Plan. Accordingly, an ambitious programme has been chalked out for provision and augmentation of telecom facilities in DMA. The expected capacity by the end of the VIII Plan as proposed by the DOT in the DMA towns (excl. Delhi) is as under:

Augmentation programme of  
Tele-communication facility in the  
DMA towns during VIII Plan.

	Expected Switching Capacity at the end of VIII Plan
Ghaziabad-Loni	38000
NOIDA	31000
Faridabad	49000
Gurgaon	29000
Bahadurgarh	2000
Kundli	400
	-----
DMA excl. Delhi	149400
	-----

Source : Deptt. of Telecommunication, Govt. of India to NCR Planning Board on the 8th Plan Proposals.



## PUBLIC AND ESSENTIAL SERVICES

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Public and essential services are under severe strain in the D.M.A. Towns including Delhi and the situation would get aggravated in the times to come due to increased levels of population and economic activities. It is extremely necessary to take an integrated view of the entire situation and suggest short term and long term steps, and also corrective measures to prevent future deterioration.

### 7.1 WATER SUPPLY IN DMA TOWNS

#### i) Status of water supply in DMA towns

The DMA is endowed with two perennial rivers, namely, the Yamuna and the Hindon that traverse its central part. Besides, DMA is served by Western Yamuna Canal and Upper Ganga Canal. Supply from surface water sources is confined to Delhi and part Bahadurgarh. The yields of tubewells vary from town to town: 70 to 138 lpm in Gurgaon and 200 to 1200 lpm in Faridabad. A study on infrastructure in DMA towns conducted by the Board through a Consultant indicated that the water-table in the DMA has been sinking continuously to as much as 12 metres over the years, resulting in reduced yield rates, and also deterioration in the quality of water. This is supported by a report from HUDA in case of Faridabad that the draw-down level of the groundwater has sunk by 12 metres during the last two decades. Groundwater in Bahadurgarh, major part of Gurgaon, Ghaziabad and to some extent in NOIDA is brackish, and it is becoming increasingly poorer in quality and availability. According to local sources in Delhi, the tubewells have started yielding brackish and polluted water, particularly in the trans-Yamuna areas. In the years to come availability of water from the ground water source is likely to get reduced further. This coupled, with the increased requirement of water, would force increased dependance on surface water from the Yamuna and the Ganges.



The Regional Plan NCR - 2001 has proposed a norm of 225 lpcd to start with to reach a target of 360 lpcd by 2001 in DMA. The DWS&SDU, however, has been following a norm of 315 lpcd (70 gallons per capita a day). However, looking to the fact that large additional raw water sources are not immediately in sight, this may have to be revised downwards. The table below indicates the present situation of water supply in the towns of the D.M.A. (Table 7.1)

DELHI: Production of potable water in January 1991 was of the order of 2070 mld through various treatment plants as given below, giving roughly a per capita production of 230 lpcd which is much short of their norm of 315 lpcd.

Treatment Plant	Capacity & present production: mld
Wazirabad	495
Chandrawal	405
Haiderpur	450
Bhagirathi	450
Ranneywells and Tubewells	270
TOTAL	2070

By and large (as of January, 1991), there is no scarcity of water in Delhi except certain pockets at the tail end of the distribution system in south-west Delhi and rural areas. There is also no problem of raw water for any of the water treatment plants. The position, however, is different in J.J. Colonies, resettlement and unauthorised colonies, and even, such unauthorised colonies which have been regularised.

Out of 543 unauthorised but regularised colonies, water supply is available in 511 colonies, and in 4 more colonies, the water mains are being laid. In the rest of the colonies, which are located in rural areas, skeleton water supply, through deep bore hand pumps, tubewells and public water hydrants has been extended.

There are 467 unauthorised colonies not yet regularised (This number keeps on going up every year) out of which 49 are provided with regular water supply and 105 through extension of hydrants, 4 more are being provided with hydrants and for 24, the work

Table: 7.1 WATER SUPPLY POSITION IN DMA TOWNS - 1990-91

DMA Towns	Sources of Supply	Quantity produced in MLD	Quantity treated in MLD	Per capita supply in lpcd	Population covered	Area covered	No. of connections	Yield/minute
Delhi	Yamuna, Ganga Canal, Tubewells/ Handpumps/Ranney wells.	2070	2070	230	97% (except slums & new colonies)	Full	6170000 domestic	-
Ghaziabad-Loni	Tubewells Handpumps	127	NIL	189	Part	Full	N.A.	N.A.
NOIDA	Tubewells	60 (Chlorination)	60	225	Full (except slums)	Full	20000	N.A.
Faridabad	Tubewells (70) Handpumps (150) Standposts (40)	27	NIL	140-150	275000	50%	25000 Domestic 1500 others	1200 lpm near river 200 lpm away from river.
Gurgaon	Tubewells (45) Handpumps (NA) Standposts (280)	9	NIL	60	80%	30 sq km	15777 Domestic 4000 Industry	70 to 380 lpm
Bahadurgarh	Canal (7 days a month) Tubewells (8)	4.1	NIL	70	Full	Full	N.A.	N.A.
Kundli	Handpumps	-	-	Not Available	-	-	-	-

\* Figures in brackets indicate the number of source units.

is expected to be started shortly. For the rest, there is no programme yet with the DWS & SDU as there is no additional quantum of raw water available.

In all the 44 resettlement colonies, potable water is being supplied and more than 1.28 lakh individual connections have been given. In addition, 558 new public water hydrants, 650 deep bore handpumps and 31 tubewells have also been installed after June 1988 in these colonies.

In the J.J. Clusters, numbering 776, the responsibility of water supply lies with the Slum Wing of the Delhi Development Authority. The Slum Wing has installed about 680 deep bore hand pumps in these clusters. Nearly 3000 public hydrants existed in these clusters even before June 1988. The Water Supply Undertaking has also allowed 588 public water hydrants in 189 JJ Clusters on the request of Slum Wing of the Delhi Development Authority. All the 108 urban villages and 219 rural villages, and 413 Harijan Basties have been provided with water supply by the Water Supply Undertaking. During summer, however, the villages at the tail-end of the distribution system face scarcity of water. Water supply is supplemented in these villages through tankers, and syntex tanks.

#### Demand forecast and proposals by Water Supply Undertaking & Delhi Development Authority

The raw water requirements and treatment capacity for different population scenarios and norms by 2001 A.D. would be as under:

Population in Lakhs	Water Demand in MLD by 2001 at			Present availabi- lity in MLD
	*	**	***	
	225 lpcd	315 lpcd	360 lpcd	
112 (NCR Plan)	2520	3528	4032	2070
128 (MPD-2001)@	2880	4032	4608	
132 (Projected population)	2920	4158	4752	

\* Minimum suggested for DMA in NCR Plan 2001.

\*\* Standard followed by DWS&SDU.

\*\*\* Maximum suggested by NCR Plan-2001.

@ Master Plan for Delhi - 2001.

ii) VIII PLAN PROPOSALS AND TENTATIVE PROVISIONS FOR DELHI

The Perspective Plan for Delhi by the Delhi Development Authority has projected a population of 104 lakhs by the end of 8th Plan which would demand at 315 lpcd a total quantum of 3307 mld. To augment the present supply in order to meet the demand at the end of the 8th Plan, the following schemes have been proposed by the Delhi Administration during the 8th Plan:

- 1) Construction of 90 mld water treatment plant at Bawana. The scheme is reported to be in the process for approval.
- 2) Construction of second 450 mld water treatment plant at north Shahdra. The Government of Uttar Pradesh has agreed to reserve 300 cusecs (675 mld) of water in the Tehri dam for Delhi's water supply. Further augmentation of Delhi's water supply would depend upon the following proposals:

- A drawal of 0.5 million acre feet (1558 mld) from Kishau dam on the river Tons in U.P.
- A drawal of 0.4 million acre feet (1246 mld) from Renuka Dam on the River Giri in Himachal Pradesh.

The cost of the Tehri Dam project at 1981 prices is of the order of Rs.1573 crores of which Delhi's share was Rs.16.32 crores which has gone upto Rs.36.06 crores at 1990 prices.

- Kishau Dam which has been approved and is under construction is at a total estimated cost of Rs.1053 crores at 1987 prices of which Rs.187.35 crores is Delhi's share.
- Renuka Dam in Himachal Pradesh has an estimated cost of Rs.372 crores at 1987 prices. The feasibility study for the project is yet to be completed.

The Tehri and Kishau Dams are included in the 8th Plan for implementation, but firstly, no firm time table for the implementation of the project is available which will depend on the allocation of funds every year. Secondly, even if the implementation of the dams is to be in time, the more difficult component is the carrier system to convey water to Delhi. This has not been worked out as yet. A Committee set up by the Ministry of Urban Development to decide the possible alignment of carrying system has recommended the Eastern Yamuna Canal and the Uttar Pradesh Government has been asked to work out the details and the time factor for the project. The DWS and SDU, at the same time feels that the parts of Delhi which need priority attention for supply of water include newly coming up Narela, Rohini and Papankalan and as such the Western Yamuna Canal should also be taken into consideration. Incidentally, the States of Rajasthan and Haryana are also willing to make payment from the system for supply of water to these States.

The outlay proposed by the Delhi Administration for water supply both urban and rural in Delhi during the 8th Plan (1990-95) and Annual Plan (1991-92) and the recommendations of the Working Group of the Planning Commission are as under. The proposals for VIII Plan are still under discussions.

Rs in lakhs

	8th Plan		Annual Plan (1991-92)	
	Proposed	Recommended	Proposed	Recommended
Rural Water Supply (MNP)	1000	1000	300	300
Urban Water Supply	93913	30818	9724	7115
Total	94913	31818	10024	7415

It may be seen that out of Rs.949 crores proposed by the Delhi Administration during the 8th Plan, the Working Group has recommended only Rs.318 crores and, for 1991-92 out of 100 crores, only Rs.74 crores has been recommended. The Working Group of the Planning Commission has also observed that the distribution of water supply being uneven at present should be made more rational and realistic and, preventive maintenance should be strengthened to minimise the line losses which is 20% now. The Working Group, appreciating the approach of the Delhi Administration for advance action to augment raw water sources, recommended provision of Rs.600 crores as its share for construction of Tehri, Kishau and Renuka dams on pro-rata basis to the respective States. During 1991-92, a provision of Rs.16 crores as Delhi's share for these dams has been recommended by the Working Group subject to the condition the resources being available, and clearance of the projects by the Ministry of Water Resources and the I&CAD of the Planning Commission. It may thus be seen that in the over all context of resource constraints, the performance may fall far short of expectations in tapping additional raw water for Delhi during the 8th Plan.

### iii) MAJOR PROJECTS OF DDA

The DDA's new development areas at Dwarka might require for the estimated population of 12 lakhs, 382 mld of water whereas only about 100 mld of water from Haiderpur and Nangloi plants has been earmarked by the Undertaking for Dwarka. Rohini extension (Phase III, IV, & V) will accommodate 8.5 lakh population demanding 270 mld of water. But water supply plant for only three sectors in Phase II has been approved. Narela to accommodate more than 14.2 lakh population would require 450 mld,

and the works of treatment plant are only in the proposal stage. The proposal includes semi-urban area of Alipur also. Patparganj area covering Cooperative Group Housing Societies of Mayur Vihar and Dallupura-Kondli Complex is estimated to demand 90 mld of water and the works are not yet completed. Part of Mayur Vihar complex gets water from 2 ranney wells and from south Delhi mains. The water supply situation in the area may improve only when the second treatment plant of 450 mld capacity in north Shahdara is completed by 1995. For Vasant Kunj, which has been developed in non-conforming area, only 3.5 mld of water is being released by the Undertaking. This colony may get its required supply only when the 2nd 450 mld water treatment plant at Haiderpur is completed.

#### OBSERVATIONS:

1. Delhi will continue to face shortage of raw water at least till 1995 even if the proposed Tehri project is on schedule. Since there is no firm schedule at the moment, additional raw water from the source cannot be expected even till 2001.

2. There are no reasonable chances of getting additional raw water from Yamuna and from Haryana in exchange of treated sullage water.

3. There is total lack of coordination between the development plans of DDA and the programmes of the DWS & SDU.

4. Major development proposals of DDA in Narela, Rohini, Dwarka, Vasant Kunj, Patparganj and Mayur Vihar are likely to suffer set back either due to non-availability of raw water or non-availability of treated water.

GHAZIABAD: Groundwater is the only source of water supply at present. There are 98 tubewells yielding 127 mld of water supplying 25 mld for non-domestic use and 102 for domestic uses. The present rate of water supply in the city is 189 lpcd.

The population of the city as of 1990 is estimated at 5.40 lakhs and the assigned population for 2001 AD is 11 lakhs. The requirement of water by 2001 A.D. will be as follows:

At per capita supply of (lpcd)	Cis-Hindon (6.60 lakhs population) 2001 A.D. MLD	Trans-Hindon including Loni (4.40 lakhs population) 2001 A MLD	Total in MLD
--------------------------------	--	--	--------------

225 (Minimum suggested for DMA towns in NCR Plan)	148.5	99.0	247.5
360 (Target suggested in NCR Plan)	237.6	158.4	396.0

\*Present Availability : 127 mld - overall and 102 mld for domestic

Projects under execution and proposals: In order to supply water to newly developed colonies at Vasundara, Vaishali and Kaushambi in the Trans-Hindon area, a separate scheme is under execution. Two tubewells along Meerut road have been bored for this purpose to yield 3.6 mld of water. To supplement the supply and also to cover Indirapuram, a scheme to bore 28 tubewells in the Cis-Hindon area 9 km away, is under execution and, 10 tubewells have already been bored. On completion, the scheme would supply 89.10 mld of water.

Financial aid is also being provided by World Bank for Ghaziabad water supply scheme. Under this programme, supply of water to Sectors 1 to 12 of Trans-Hindon area where tubewells are not successful, and also reorganisation of water supply in Patel Nagar and Kaila Bhatta area in Cis-Hindon side are covered. The project envisages 17 tubewells at Tila Mode and conveyance of it over 14 km by gravity, and construction of 3 zonal water



mains alongwith laying of distributive mains. Out of these, 2 zonal water mains have been commissioned already with 10 tubewells. 5 more tubewells are almost ready. 31.44 mld of water will become available on completion of this project in the Trans-Hindon area. In Cis-Hindon area, 4 tubewells and reorganisation of distribution mains are taken up, and of which 2 tubewells are already bored.

Govindrapuram water supply scheme comprises 4 tubewells, of which 2 tubewells are bored. Uttar Pradesh Government has approved release of 50 cusecs of water from Ganga Canal for Ghaziabad. The water will be tapped at Mussorie Fall and will be replenished through tubewells to be constructed by Irrigation Department. The project is under finalisation by U.P. Jal Nigam and it would cost Rs.42 crores and is likely to be implemented soon.

With the detection of fresh potable underground drinking water in Kaushambi area, further efforts are reported in progress to ensure tapping maximum quantity of local underground water in Trans-Hindon area.

All these new efforts are estimated by the Ghaziabad Development Authority to add amount 140 mld of supply taking the total supply to 267 mld. The deficit thus would be 129 mld at 360 lpcd. If the proposal to receive 50 cusecs from Ganga canal materialises, that would offset the shortage by 122 mld leaving a marginal 7 mld of supply uncovered by 2001 AD. However, the underground water sources, over time, deplete in quantity and quality, and thus cannot be totally depended upon for time to come. This would require long term solution in identifying surface water sources in terms of drawing more raw water from Ganges or recycling of waste water after proper treatment. The later could meet the requirements, other than drinking.

NOIDA: Groundwater is being tapped through 56 tubewells. Against the installed capacity of 80 mld, the present production is 60 mld supplying 225 lpcd average. Another 20 standposts also supply water at 100 lpcd in limited localities. The entire town

population except slum population is catered to by proper water supply system. One ranney well has recently been constructed, and another is under construction.

This industrial township would require normally more per capita supply than a residential urban centre as the industrial requirement is much more than for domestic use. By 2001 AD, the town will require for a population of 5.5 lakhs:

At a supply of (lpcd)	Water Demand in MLD in 2001 AD	Present Availabi- bility in MLD
225 (Minimum suggested for DMA towns in NCR Plan)	125	60
360 (Target suggested in NCR Plan 2001)	198	

At present, 15 out of the 56 tubewells are throwing up brackish water. The quality of water is deteriorating over the passage of time. For adequately supplying the town with potable water, locating a surface water source is inescapable. Exchange of treated sullage for raw water from Irrigation Department or sharing of water from an independent canal to DMA from the Ganges could be possible solutions. Moreover, NOIDA should meter water connections for all users to plug wastages.

GURGAON: The present source of water is ground water through 45 tubewells yielding 70 to 380 lpm each, and a total of 9 mld. Water is generally brackish and the static level is going down gradually. The supply is 60 lpcd. In all, 80% of the population has access to organised water supply system.

The State Public Health Engineering Department and the Haryana Urban Development Authority have taken up a project to bring surface water from the Delhi Branch of West Yamuna Canal over 73 km from Fai village near

Sonepat to Gurgaon at an estimated cost of Rs. 47 crores to supply 70 cusecs or 175 mld. The requirement of water for the population of 7 lakhs assigned in the Regional Plan would be as indicated below:

At a supply of (lpcd)	Water Demand in MLD in 2001 AD	Present Availability in MLD
225 (Minimum suggested for DMA towns in NCR Plan)	157.5	9
360 (Target suggested in NCR Plan-2001)	252	

Till such time the canal water becomes available, resort would have to be undertaken to more tubewells alone.

**FARIDABAD-BALLABHGARH:** The source of water supply is ground water. The city gets water supply through 70 tubewells. There are also 150 handpumps. The total supply is 27 mld giving a per capita consumption of 100 to 140 lpcd. 50% of the city area and 2.75 lakh population have access to water supply system.

The Faridabad complex administration and the HUDA have proposals to augment the supply through 5 ranney wells yielding another 18 mld. The draw down of the water table during the last 2 decades is about 12 metres according to the HUDA. Since the water table is going down and the area is not fit for tapping groundwater, a surface water source should be identified. The demand for 10 lakh population at suggested norms is as follows:

At a supply of (lpcd)	Water Demand in MLD in 2001 AD	Present Availabi- bility in MLD
225 (Minimum suggested for DMA towns in NCR Plan)	225	27
360 (Target suggested in NCR Plan)	396	

At the end of 8th Plan, the Ranney wells project may add another 18 mld. The city would have to augment its water supply substantially for which, a canal as in the case of Gurgaon, or exchanging treated sullage with raw water from Irrigation Department, should be considered on priority basis as these schemes have long gestation periods.

**BAHADURGARH:** The town depends upon Bahadurgarh Minor Canal from Bhalot distributary passing near Rohtak town, and, tubewells. Canal water is received only for 7 days in a month. HUDA and Municipal Water work projects have a storage capacity of 135 million litres. Both together supply 4.1 mld, giving a consumption rate of 70 lpcd. Further scope to draw more water from Bahadurgarh minor and also from underground is limited. There is a proposal to tap the canal being taken to supply Gurgaon to meet the supply of Bahadurgarh (30 cusecs) also.

By 2001 AD, for 2 lakh population, the town would need:

At a supply of (lpcd)	Water Demand in MLD in 2001 AD	Present Availabi- bility in MLD
225 (Minimum suggested for DMA towns in NCR Plan)	45	4.1
360 (Target suggested in NCR Plan)	72	

KUNDLI: Presently, there is no water supply sysem in Kundli. Only groundwater is tapped through handpumps. For the assigned population of 1.50 lakhs by 2001, the requirements would be:

At a supply of (lpcd)	Water Demand in MLD in 2001 AD	Present Availabi- bility in MLD
225 (Minimum suggested in DMA towns in NCR Plan)	38	NA
360 (Target suggested in the NCR Plan)	54	

Groundwater availability is, generally adequate to meet the future needs of the assigned population.

#### iv) FUTURE SCENARIO

The picture that emerges by 2001 AD would be as follows:

As of 1990 the overall water supply scenario in the DMA towns is not very unsatisfactory at a norm of 225 lpcd for all DMA towns except Delhi where it is 315 lpcd. The total demand is of the order of 3,213 mld against which the supply was of the order of 2297 mld. Town-wise situation, however, reveals a dismal picture in the case of Gurgaon and Faridabad Complex. (Table 7.2)

By the year 2001, the demand may shoot up to 5364 mld for the assigned population of the DMA towns at a norm of 360 lpcd for all DMA towns including Delhi. The likely availability on the basis of information from the various local bodies and authorities, would be only about 2475 mld which is less than half the requirement. This is particularly because the chances of realising the proposals of local bodies and various water supply organisations for augmenting the water suply seem remote for the following reasons:

Table 7.2

Water Quantum in MLD

Name of town	1990		2001		Remarks population (in lakhs) 1990 2001	
	Demand @	Supply	Demand at 360 lpcd	Likely Availa- bility MLD		
Delhi UT	2835	2070	4032	2070	90	1.12
Ghaziabad-Loni	180	127	396	267	5.80	11.0
NOIDA	60	60	198	80	2.66	5.5
Gurgaon	34	9	252	9	1.5	7.0
Paridabad- Ballabgarh	90	27	360	45	4.0	10.0
Bahadurgarh	13	4.1	72	4.1	0.58	2.0
Rundli	1.1	Nil	54	NA	0.05	1.50
	3213.1	2297.1	5364	2475		

@ For Delhi UT at 315 lpcd and for others at 225 lpcd.

Note:1) In Delhi, the proposals to get raw water from Tehri, Kishau and Renuka dams may not materialise by 2001 as the execution of the former two projects is in the initial stage whereas for the last one, the feasibility is still under evaluation.

2) For Ghaziabad, the supply may not improve beyond augmentation through tubewells as the proposal to tap Ganges for 50 cusecs is still in the contemplation stage only.

3) For Augmentation of water supply in Gurgaon and Bahadurgarh, HUDA pins its hope only on the 73 km long Gurgaon canal becoming functional. But as on date, the project being still in the initial stage, it is very unlikely the project gets completed by 2001.

4) For Kundli water supply, there is no concrete proposal so far.

- In the case of Delhi, the future supply of raw water is on the basic assumption of water becoming available from the 3 dams, namely, Tehri and Kishan in U.P. and Renuka in Himachal Pradesh. The first two are under execution and the last one is still to be taken up. Looking from the overall resource constraints and normal gestation period of large dams of this nature, the supply of raw water as proposed for Delhi may not materialise by 2001 A.D.
- In the case of Ghaziabad - Loni, about 50 cusecs of water is expected from Ganga Canal. The present indication shows that this may not be realised in the foreseeable future.
- As regards NOIDA, the town has to depend on ground water fully. As on date, more than 25% of the existing tubewells have failed. As the large scale developments in and around NOIDA would also tap the ground water, water table will fall fast affecting the quantum and quality of water over the years.
- To supply Gurgaon with water, a project is under execution by way of constructing a canal for 73 km length from the Delhi Branch of Western Yamuna Canal. The project is in the beginning stage of its implementation. It is the main source of water supply to Gurgaon in future. Again the chances of it becoming operational by 2001 seem doubtful.
- For Faridabad-Ballabhgarh Complex, the main source of water supply is the ground water. The Draw Down of ground water table since recent past has been faster, and the chances of many tubewells drying up are quite likely. As of today, there is also no proposal for any canal water supply to the town complex.
- Bahadurgarh town has a serious problem of water supply and its future depends on tapping the Gurgaon canal presently under execution. Till the canal project is completed which may take years, Bahadurgarh would continue to suffer from scarcity of water as its ground water is brackish and un-potable.

v) RECOMMENDATIONS :

The supply of water for the entire DMA has become a valuerable factor and recourse will have to be taken to augment drinking water supply by diverting water from irrigation use and drawing additional water from the future projects on the River Ganges. The issue of a proper conveyance sytem for Delhi and the other D.M.A. towns also needs to be approached from a total angle to meet the requirements of all the D.M.A. towns, including Delhi. The Central Water Commission should undertake studies on a priority basis about its need, feasibility and possible alignment, rather than leaving it to each town to plan its own programmes.



## 7.2 SEWERAGE

Provision of sewerage system is imperative next only to water supply for lest the decay in environment will prove detrimental to human well being and health.

DELHI About 1650 to 1850 mld of sewage is generated in Delhi at present. The present capacity of the sewage treatment plants is around 1125 mld and the plants are at Okhla, Coronation Pillar, Keshopur, Rithala, and Shahdara in addition to oxidation ponds. 17 nallahs carry the sullage to empty it into the river Yamuna in its stretch between Wazirabad barrage and Okhla barrage. In 1981, 70% of the population did not have access to regular municipal sewerage and this at the end of 7th Plan improved to 50%, but in absolute terms, the population unserved rose from 42 lakhs to 45 lakhs.

Of the 544 unauthorised regularised colonies, only in 189, sewerage facilities exist. The Plan is to extend the sewerage facilities in all the remaining 355 colonies by the end of the 8th Five Year Plan at a cost of Rs. 50 crores.

Only 15 of the 44 resettlement colonies have sewerage system. In addition, in 12 colonies at a cost of Rs. 12 crores, sewerage system is being taken up. These are expected to be completed by the end of 1992. The remaining 17 colonies will also be covered by 1995 at a cost of Rs. 53 crores.

76 out of the 108 urban villages have sewerage system. 7 more are expected to be covered by the end of the current year and the remaining 25 by the end of the 8th Plan at a cost of Rs. 28 crores.

To the unauthorised non-regularised colonies which are about 500 in number, the present policy is not to extend sewerage facilities. So also in the present 652 JJ clusters, sewerage system will not be extended. Regarding the rural villages, since the per capita supply of drinking water is between 50 and 65 lpcd which is much below the minimum needed 140 lpcd for sustaining sewerage system, it is not technically feasible to provide water carrying sewerage facilities in these villages.

The treatment capacity in Delhi is expected to reach 1370 mld by the end of the 8th Plan. It may, thus be seen that according to the water supply programme, sewerage generation at 80% of the likely water supply could be about 1660 mld. However, people in the JJ clusters and unauthorised colonies accounting for more than 20% of the population would not be covered by the sewerage system according to the present policy. It may, therefore, leave a very huge gap of waste water untreated by the end of the 8th Plan and beyond.

**GHAZIABAD :** Trunk sewers covering about 20% of the Cis-Hindon area and 30% of the Trans-Hindon area have been laid. In all, about 80% of the area has been provided with branch sewers. The topography of the city being largely flat with drainage depressions in certain zones, the problem of sewage disposal is acute as deep cuttings and pumpings are involved in the sewage disposal system. At present, obnoxious industrial effluents also get discharged mostly into the Hindon river without any treatment. Residential areas in many parts get flooded with sewage at the risk of human health and environment. During monsoon, parts of the city remain water logged for days together. Absence of intermediate and main sewage pumping stations create sewage pools in residential areas. There are open sewers which need to be covered. These actions require priority attention to ameliorate impending risk to human health and environment.

Three projects by GDA with an aggregate estimate of Rs. 36 crores are with HUDCO for financing. For the newly coming up Trans-Hindon Area, the GDA has planned an integrated sewage disposal system including a treatment plant. The work is in progress. The effluent from the industrial areas need special treatment before disposing it into the river course or on land. This would require a detailed study to design an efficient sewerage network system to this fast growing city. By 2001, the sewage that would be generated is about 220 mld on the basis of the likely quantum of water supply, but the treatment facility of the capacity does not seem to become available then.

**NOIDA :** The sewage is collected at intermediate sewage pumping stations from where it is taken to the main sewage pumping stations before reaching the treatment plant site. At present, the sewage is treated through an oxidation pond. Another oxidation pond is under construction. The effluents from the oxidation pond is let into irrigation channel to reach finally the river Yamuna. The proposal for sewage treatment plant has been there since long.

There is a proposal to construct sewage treatment plant which should be expedited during the 8th Plan. The sullage that may be generated by 2001 AD is 65 mld on the basis of the most probable quantum of water supply.

**FARIDABAD COMPLEX:** The town complex has a separate sewerage and storm water drainage system in operation. The total flow of the sewage in the complex is about 22 mld. About only 50% of the population has access to the sewerage system. 18 mld of sewage is being treated through oxidation pond within the Complex. Though only 20% of the sewage is let off into the river course, the pollutant load being obnoxious and toxic is dangerous for any use. In Ballabgarh zone, the sewage is being let into the Agra Canal rendering it harmful down-stream. The efforts by HUDA to construct a sewage treatment plant in Faridabad may come soon. The FCA and HUDA are together examining the possibility of going for a second treatment plant. The PHED and HUDA have also prepared proposals to set up Sulabh Sauchalayas in the squatter settlements.

The entire sewerage system should be designed to cope with 2001 AD need of sewage generation in the three parts of the complex as well as areas developed by HUDA. Low cost sanitation measures should be extended in the slum and squatter settlements as a short term measure.

**GURGAON :** Combined sewerage system exists in part of the city. Nearly 5 lakh litres of sewage is generated every day and 60% population is covered by the proper sewerage system over 2 sq km area. Three sanitary latrines covering a population of 200 and, 1000 septic tanks for 5000 population are provided at present. The treatment plant at

Dhanwapur for 70 mld is not properly functioning. One oxidation pond is under construction. The sewage is disposed of on land without treatment.

Source of water supply being meagre, it may not be possible to improve the water carrying sewerage system as it needs enough liquid to dilute and carry the sewage. Low cost sanitation measures including Sulabh sauchalayas and septic tanks may have to be adopted and extended to improve the sanitation system.

BAHADURGARH : Only 60% of the population has access to sewer system. About 2.87 mld of sewage is generated and used for irrigation purposes without treatment. At present there is no treatment plant in the town. Treatment plant requires to be constructed to treat the sewage before disposing it of on land. Temporarily, low cost sanitation measures could be thought of.

KUNDLI : No sewer system exists in the town. The sewage joins the Drains number 8 and 6 without being treated.

Till such time a proper treatment plant with adequate capacity is constructed, low cost sanitation measures should be adopted to improve and provide a healthy environment.



The overall picture that emerges for 2001 AD is as under:-

Name of the Town	Assigned population by 2001 AD in lakhs	Likely generation of sewage in MLD in 2001 AD	Present capacity of treatment in MLD	Likely Capacity of treatment by 2001 AD for which proposals are in hand
Delhi Urban	110	1660	1125	2025
Ghaziabad-Loni	11	220	Nil	NA
NOIDA	5.5	65	10	20
Gurgaon	7	7	Nil	70
Faridabad-Ballabgarh	10	36	18	40
Bahadurgarh	2	3	Nil	Nil
Kundli	1.5	NA	Nil	Nil
Total		1991	1153	2155

On the basis of likely realistic situation in respect of water supply, the sewage that might be generated (at 80% of the likely water supply) is of the order of 1990 mld. Except in Delhi, there is hardly any effective treatment arrangement in other DMA towns. In NOIDA, on the basis of a second oxidation pond being under construction, the treatment capacity may go upto 20 mld by 2001 AD. In Gurgaon, the 70 mld capacity treatment plant lying non-functional may become functional by 2001 AD. If the second treatment plant under contemplation by HUDA and FCA comes through, the treatment capacity may go up to about 40 mld in Faridabad Complex. Except large portions of Delhi sewage that may be treated, in all the other DMA towns, the position of sewage treatment will remain unsatisfactory even by the turn of the Century.

### 7.3 STORM WATER DRAINAGE

Drainage has two components - storm water discharge and flood protection. Delhi Metropolitan Area is drained by the rivers Yamuna and Hindon, and a number of drains such as Najafgarh, Nangloi, KS Nagar, Mangolpur drain, and in Delhi UT west Juan drain, Padamda drain and Gandhi drain which join together, and flow through Bahadurgarh to meet the Najafgarh drain in the south. Badarpur drain originates from Delhi ridge and flows north-westward through Gurgaon to reach Najafgarh depression. In south, Buria nalah originates from Delhi ridge and runs south-eastward touching the northern part of Faridabad to meet the Yamuna. Dasna drain runs through Ghaziabad and joins the river Hindon at a place south of Ghaziabad. (Fig. 7.1)

DELHI: Flood protection and stormwater discharge in Delhi are not local but have regional bearing covering areas in Haryana and Rajasthan. Najafgarh drain and Barapula Kushak drains draining the urban area of Delhi run to their capacity in monsoon months. The flood affected catchment area of the Najafgarh drain is over 2630 sq km and that of the Yamuna drainage zone is 3276 sq km in Delhi UT.

The drainage channels in Delhi are not sufficient to carry heavy storms. Flood waters entering the Territory from the Haryana side could be managed through construction of drains, namely, Najafgarh drain, and new supplementary drain to the Najafgarh drain. Possibility of a new major drain in the south through Haryana or Delhi to carry the discharge from Sahibi basin needs examination. The drainage System should be planned with adjoining states and implemented in an integrated manner which would require detailed studies.

GHAZIABAD : Presently only some open nullahs are serving as storm water drains. Often, the storm water finds its way into the sewers.

In both the Trans and Cis -Hindon areas, external drains have been constructed earlier against various projects. But the existing

Fig 7.1

DRAINS	FLOW KLD		TOTAL BOD kg/day	%
	DOMESTIC	MOUST		
1 NAJFECARH DRAIN	1250000	18100	178000	1.20
2 MAGAZINE ROAD DRAIN	400		115	0.07
3 SWLEPER COLONY DRAIN	400		130	0.08
4 KHYBER PASS DRAIN	560		185	0.11
5 METCALF HOUSE DRAIN	1200		515	0.33
6 KUDSA BAGH DRAIN	5000		1165	0.75
7 MOAT DRAIN	3000		935	0.60
8 TRANS YAMUNA H.C.D. DRAIN	32000	4300	62251.4	
9 MORI GATE DRAIN	4000		1165	0.75
10 CIVIL MILL DRAIN	5000		1520	0.97
11 POWER HOUSE DRAIN	5000		1510	1.04
12 SEN MANSING - ONE DRAIN	10000		2625	1.7
13 DRAIN NO. 12	10000		1075	1.04
14 BARAPULA DRAIN	15000		41200	26
15 MAHARANI BAGH DRAIN	10000		2885	2
16 KALKAJI DRAIN	3000	400	3700	2
17 JUGLAKHABAD DRAIN	16000		8600	5

NOTE:  
① 10 ② DENOTES THE WATER  
QUALITY MONITORING POINTS  
% OF BOD IN DRAIN  
PROPOSED DRAIN  
YAMUNA RIVER  
WATER QUALITY - B-CLASS  
SUITABLE FOR HUMAN CONSUMPTION  
YAMUNA RIVER  
WATER QUALITY - E-CLASS  
UNSUITABLE FOR HUMAN CONSUMPTION

--- SUB BASIN BOUNDARY OF THE DRAIN

WAZIRABAD

WATER QUALITY  
B-CLASS

WATER QUALITY  
E-CLASS

system is not adequate because in most part of the town, lateral drains do not exist. This results in flooding many parts during rainy season.

Lateral drains in the Trans and Cis-Indon areas should be provided. The works should also include desilting of existing drains, diversion of drains and culvert crossing etc.

NOIDA : Roadside drains and main drains have been completed. No problem of drainage has been reported. However, in sectors of plain topography, the discharge of stormwater is not satisfactory.

FARIDABAD-BALLABGARH: Faridabad complex has open surface drainage system with 126 km long drains and covering about 45% of population. The storm water is disposed of into open nullahs and partially into the sewerage system. Natural slope is towards Yamuna but the Delhi-Mathura road comes in the way. At a few places, arrangements exist to pump out the storm water into the river. This warrants a detailed study to design an efficient drainage system for the Complex.

GURGAON: About 480 ha of town area is covered under drainage scheme. It covers 40% of total population. Drainage is combined with sewerage system in the old town area, and for new developments, HUDA has separate system. Presently, no serious drainage problem exists in the city.

Though drainage is not a serious problem in the city, measures to avoid storm water pools and stagnations have to be initiated to avoid health hazard.

BAHADURGARH: The town has open surface drains covering about 80% of area and population. Water from drains is pumped into open fields. Bahadurgarh is said to be flood-prone, as topography of the town is saucer shaped.

In north-eastern part of Bahadurgarh areas along the railway line and in west of MIE parts I and II along Mangeshpur drain are water logged.



Effective drainage system need to be designed and provided for to avoid stagnation of storm water in the city area.

KUNDLI: The drainage of the entire area is through drain No. 8 traversing the town. Part of Kundli area drains into Delhi U.T. This requires a joint approach by Delhi U.T. and Haryana to work out an integrated plan for a permanent solution to avoid drainage problem in Kundli and also in Delhi U.T.

#### 7.4 SOLIDWASTE DISPOSAL

DELHI: The city's solidwaste is dumped into the sanitary landfills and also in depressions. Presently, there are two mechanised compost plants (MCD) one each run by MCD and the NDMC located near Okhla Sewage Treatment Plant. Nearly 0.65 kg of garbage is produced by each person in Delhi, and nearly two-thirds of the waste is being managed properly.

GHAZIABAD: The per capita generation of garbage is on an average 275 gm a day of which only 200 gm is managed. Around 30-35 tonnes of solid waste is not being properly disposed of. It is being dumped in open grounds causing serious environmental problems in the city.

NOIDA: Nearly 36 tonnes of solid waste is produced a day at 275 gm per capita a day. The garbage is dumped in select sites outside the city's built up areas.

FARIDABAD-BALLABGARH: The complex produces fairly big quantity of garbage at 290 gm per capita a day of which over 260 gm is managed. Disposal is through landfilling.

GURGAON: About 180 gm of garbage is produced a day per capita of which 140 gm is managed. The waste is dumped in open grounds.

BAHADURGARH: The town generates garbage at 270 gm a day per capita of which about 150 gm is properly disposed of. The disposal is through dumping on the open-ground at the outskirts of the town.

Except part of the solidwaste in Delhi, in other DMA towns, the solidwaste is not properly managed. Disposal of wastes of hospitals, slaughter houses, fruits and vegetable markets, dairy farms require special care to be exercised.

An indication of the magnitude of arrangement required to manage the garbage by 2001 in each of the DMA towns may be had from the following estimates for assigned population:

In Tonnes			
DMA Towns	Managed in 1990 per day	Generation by 2001 AD per day	Per Capita of gar- bage in kg a day
Delhi	2700	7300	0.65
Ghaziabad-Loni	80	300	0.275
NOIDA	40	150	0.275
Faridabad Com.	100	290	0.290
Gurgaon	25	125	0.140
Bahadurgarh	7	55	0.270
Kundli	-	40	0.270

★ Recycling of garbage, scientific management of solidwastes in the form of sanitary landfill, composting and incineration should be adopted. Production of gas from landfills, generation of electricity and compost manure besides recycled materials could be useful and economic methods in the management of garbage.

## 7.5 EDUCATION AND MEDICARE:

The general level of availability of education and medical facilities in the DMA towns is, by and large, satisfactory to meet the requirements of the local population. (Tables 7.3 and 7.4 ). However, none of these towns has medical or engineering colleges.

However, in view of the need to enable population to reside in the DMA towns and reduce their dependence on the Capital, the Regional Plan has proposed provision of higher order educational and medical facilities in the DMA towns based on an assessment of the regional needs rather than that of the individual towns. In the light of the same, location of a University in Ghaziabad and another in either Gurgaon or Faridabad needs consideration. Establishment of engineering and medical colleges in the DMA towns also merit consideration.

Table : 7-3 Educational Facilities in DMA Towns

Town	COLLEGES				SCHOOLS		
	Art, Science, Medical Commerce College	Engineering	Poly-technic	Others	Higher Second ary/ Inter	Secon dary/ Matric dary	Junior Primary Middle
Delhi UT	52	14		13	981	379	1797
Ghaziabad-Loni	4	-	-	1	16	17	76
NOIDA	1	-	-	-	-	-	-
Faridabad-	3	-	-	1	12	18	62
Ballabgarh Complex							
Gurgaon	2	-	-	4	4	11	21
Behadurgarh	2	-	-	1	4	5	9
Kundli	-	-	-	-	-	1	3

Note : In addition Delhi UT has five Universities and institutioned deemed as Universities.

Table : 7-4 Medical Facilities in DMA Towns

Town	Hospi- tals	Dispen- saries	Health Centres	Primary Health Centres	T B Clinic	Family Planning Centres	Nursing Homes	Others	No. of Beds
Delhi UT	49	609	107	8	10	183	NA	-	NA
Ghaziabad & Loni	4	6	1	-	6	-	1	1	357
NOIDA	2	-	-	-	-	-	1	-	300
Faridabad-	3	16	-	-	-	1	-	-	432
Ballabgarh									
Gurgaon	3	3	1	-	1	1	-	1	164
Babadurgarh	1	3	-	-	-	1	-	-	30
Kundli	-	1	-	-	-	-	-	-	8

## 7.6 POWER

### i) PRESENT POWER REQUIREMENT AND SUPPLY

Power is a pre-requisite for any development and rather it is the barometer of the level of development. The NCR States are experiencing shortage of power year after year, and unless the problem of power scarcity is reasonably solved and power is supplied uninterruptedly as the Regional Plan for NCR envisaged, the development process would be seriously hampered.

#### a) DELHI :

Delhi Electric Supply Undertaking, a statutory body have to meet the power requirements of all developments and industrial growth in the entire Union Territory of Delhi. The DDA which is the main agency for development of land in Delhi is accelerating construction activities and its development programmes are in areas south of Hindon Cut, Papankalan, Madan Pur Khaddar, North of Wazirabad Road, Mehrauli, Kingsway Camp, Rohini, Narela etc.

The maximum demand for power in Delhi was 1435 MW in January 1991. The Thirteenth Power Survey Committee of the Central Electricity Authority has projected the demand to 2389 MW by the end of the 8th Five Year Plan. Apart from the DESU's Stations at Rajghat and Indraprastha, Badarpur Thermal Power Station, Barasuil Hydel Station, Signrauli Super Power Station, and the Northern Regional Grid supply power to Delhi. In order to meet the growing demand, DESU has set up Gas Turbines for 180 MW and has established 135 MW Thermal Power Replacement at Raj Ghat Power House. The Gas Turbines have now been modified for adoption of natural Gas.

Drawal of power from the Northern Grid results in low voltage forcing sometimes load shedding to maintain the voltage. The Central Electricity Authority has framed project feasibility report for installation of 600 MW Gas Turbine with provision for Extension to 900 MW at Bawana by 1994-95. The 400 KV Ring taken up by DESU will improve the power supply position in Delhi during the

8th Plan according to DESU. The 400 KV Ring around Delhi would enable DESU to draw its share of power from the Centrally sponsored Generating Stations. DESU proposes for a target of 1260 MVA during the 8th Plan. In order to cater to the power requirements of the areas being developed by DDA and other agencies in the Trans-Yamuna Area, Savita Vihar, Papankalan, Rohini, Vasant Kunj, etc. DESU is establishing 220 KV Substations near the load centres at Rohini, Shalimar Bagh, Vasant Kunj, Sarita Vihar and Wazirabad alongwith associated Transmission and Distribution System.

b) OTHER DMA TOWNS :

According to the Thirteenth Power Survey, the shortage at the end of the 8th Five Year Plan in Haryana would be of the order of 40% and in Uttar Pradesh 25%. The demand for power by 2000 A.D. will be enormous being almost double the present load. It is reported that a large number of industrial plots in the DMA towns are lying vacant for want of adequate power and voltage stability.

ii) POWER DEVELOPMENT STRATEGY

The NCR Plan envisages that power being the pre-requisite for any development, it should be made adequately available at all points of consumption in NCR in order to achieve the objectives of induced development of the Regional Centres to ultimately have the balanced development of the Region. The Ministry of Energy is of the opinion that the additional power demand in NCR during the 8th Plan could be met from the Central reserves of the central stations located in and around NCR and, if necessary, supplemented by a captive plant.

iii) PROBLEMS OF DISTRIBUTION

In Faridabad, 800 MW Gas Station, and another 800 MW Gas Station at Bawana, 840 MW Gas Station at Dadri with a possible extension by 400 MW are expected to be taken up during the 8th Plan. Possibility of privatisation in power generation should be explored as in the case of Faridabad where Industrialists' Association is proposing a joint project for power generation. The

Department of Power is of the strong opinion that while the additional power for NCR might be found from the Central Stations, the transmission and distribution system including sub-systems will have to be strengthened to improve the quality and stability of power supply. Since power is the State subject, the respective State Electricity Boards have to take appropriate action in this respect.

#### iv) POWER FORECAST

The Central Electricity Authority is in the process of forecasting the load requirements of NCR which would be completed by June 1991. The power demand for the Delhi Metropolitan Area will be more precisely known then. The load forecast, the Central Stations that would spare power and/or need for a captive Plant, and the sharing formula being attempted by CEA would become available in the later half of 1991, and that would be suitably incorporated in the functional Plan for DMA subsequently.

Land is a vital but limited and non-renewable resource. The phenomenal increase in population in and around Delhi, and, development of industrial and other activities on the traffic arteries radiating from Delhi exert tremendous pressure on land resulting in its premature and speculative sub-division for various uses in the Delhi Metropolitan Area. The prime agricultural land in this process is being engulfed by unintended urban growth. This necessitates to adopt rational measures to use the land optimally and adopt conservation measures in areas sensitive to undesirable development.

### 8.1 LANDUSE SCENARIO

#### i) Present status of Master Plans :

The present status of preparation of the Master Plans for DMA towns indicates that Master Plans for Ghaziabad-Loni, NOIDA and Faridabad are approved, while Draft Master Plans for Gurgaon and Kundli are under consideration by the Government of Haryana, Bahadurgarh Master Plan is under revision. (Table 8.1)

Table 8.1 STATUS OF MASTER PLANS OF DMA TOWNS

Sl.No.	Towns	Perspec- tive Year	Master Plan Population by NCR Plan (in lakhs) 2001	Population as assigned by NCR Plan (lakhs)	Status	Remarks
1.	Delhi	2001	128.00	112.00	Approved	Pop. assignment higher than the Regional Plan assignment.
2.	Ghaziabad-Loni	2001	11.00	11.00	Approved	
3.	NOIDA	2001	5.50	5.50	Approved	
4.	Faridabad- Ballabgarh	2001	10.00	10.00	Approved	
5.	Gurgaon	2016	15.00	7.00		Draft Master Plan prepared.
6.	Bahadurgarh	1991	1.00	2.00		Revision in Progress.
7.	Kundli	2001	1.50	1.50		Draft Master Plan prepared.



## ii) Landuse Pattern :

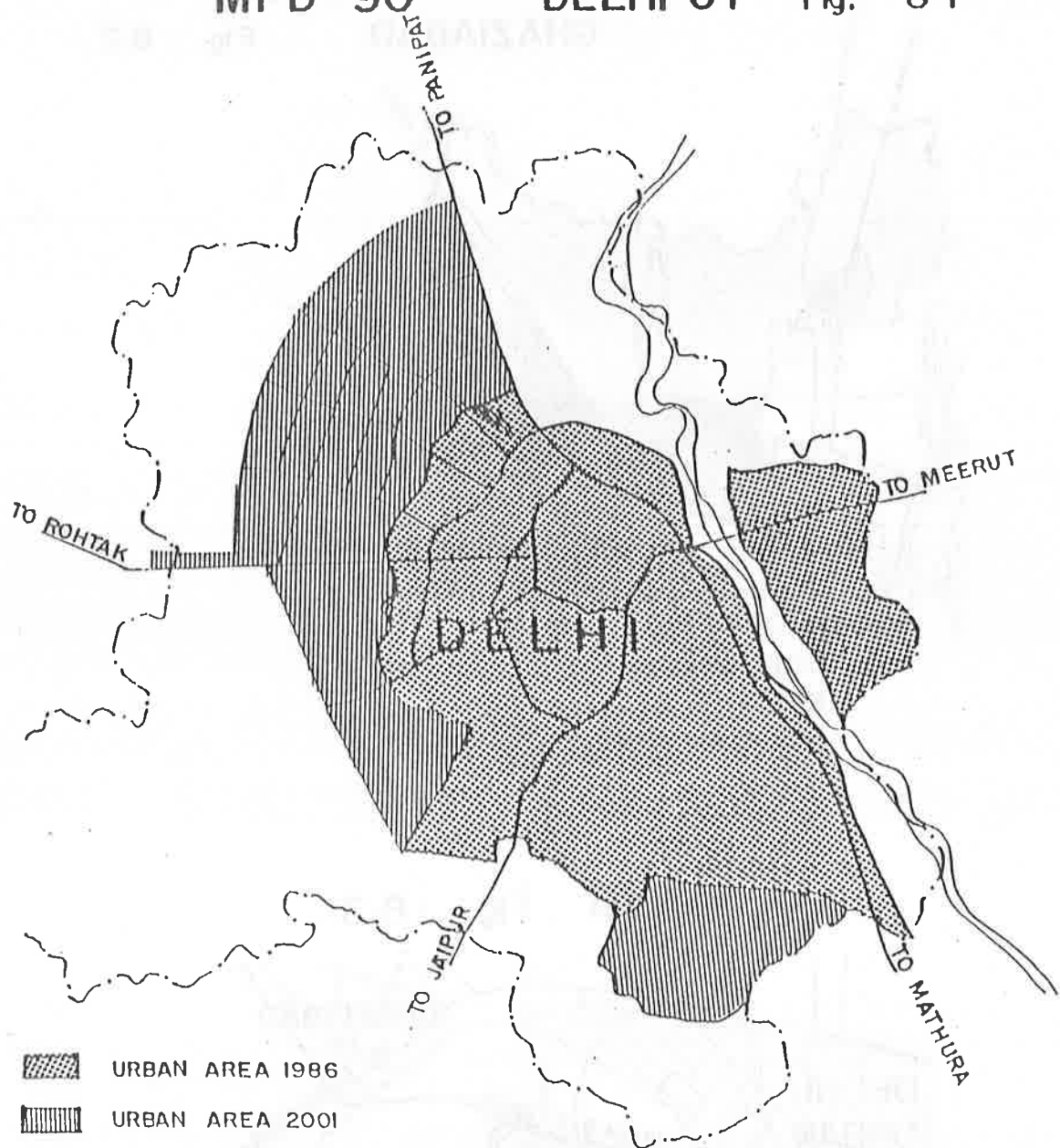
Though, all the DMA towns are predominantly residential in nature, some of them have secondary sector activities as the major economic activity. (Table 8.2)

Table 8.2 : LAND USE PATTERN

Table 8.2 : LAND USE PATTERN								AREA IN HECTARE	
Sl. No.	Town (Year)	Residen- tial	Indust- rial	Commer- cial	Institu- tional	Parks & Open spaces	Transport & Communica- tion	Others	Total Area/ Master Plan area
1.	Delhi								
2.	Ghaziabad (1982)	3160.33 (48.05)	1949.63 (29.56)	48.55 (0.73)	132.62 (2.01)	642.50 (9.81)	647.58 (9.84)	-	6576.67 (100.00)
3.	Loni (1984)	455.72 (76.25)	46.75 (7.82)	0.60 (0.10)	2.50 (.04)	45.00 (7.53)	47.06 (7.88)	-	597.63 (100.00)
4.	NOIDA (1989)	960.50 (44.89)	668.34 (31.23)	52.00 (2.43)	30.86 (1.45)	54.00 (2.52)	300.00 (14.02)	74.14 (3.46)	2139.84 (100.00)
5.	Faridabad†† (1990)	2261.53 (24.83)	904.00 (9.93)	71.35 (0.78)	N.A.	N.A.	N.A.	5870.39 (64.46)	9107.27† (100.00)
6.	Gurgaon†† (1990)	1868.85 (19.94)	366.94 (3.92)	27.99 (0.30)	N.A.	N.A.	N.A.	7108.22 (75.84)	9372.00† (100.00)
7.	Bahadurgarh (1990)	206.48 (14.80)	205.87 (14.76)	N.A.	N.A.	N.A.	N.A.	982.47 (70.44)	1394.82† (100.00)
8.	Kundli (1990)	-	43.50 (3.10)	-	-	-	-	-	1400.00† (100.00)

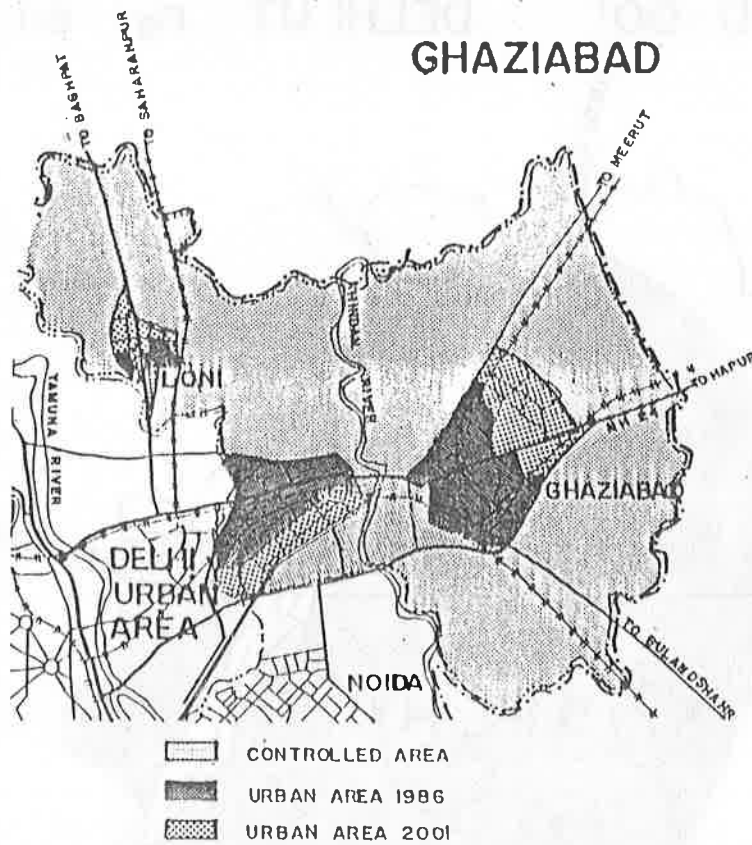
Note : † Total Master Plan area  
 †† Does not include old city area

Landuse plans of the DMA towns indicating controlled area, urban area 1986 and urban area 2001 along with broad distribution of uses are as in figures 8.1 to 8.7.

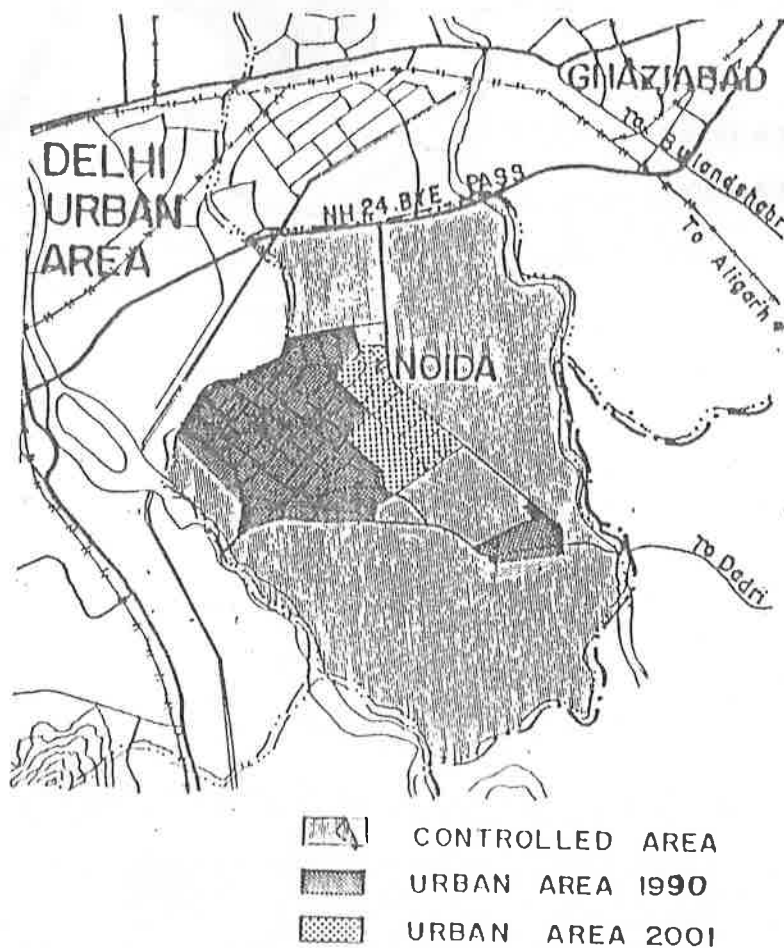


# GHAZIABAD

Fig. 8.2

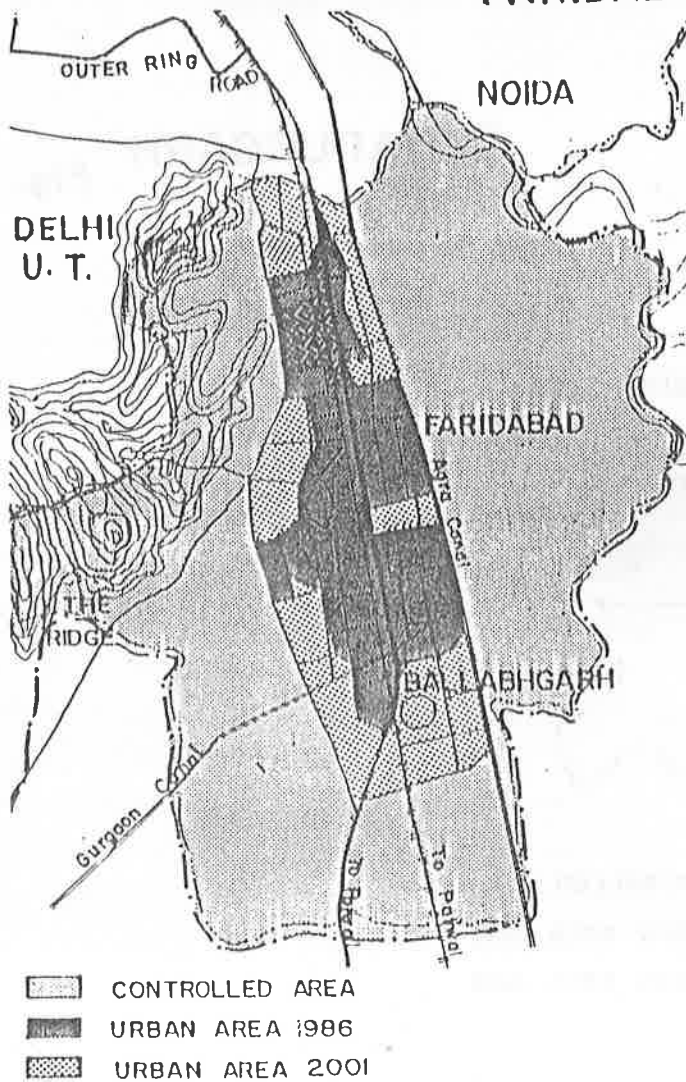


# NOIDA Fig. 8.3



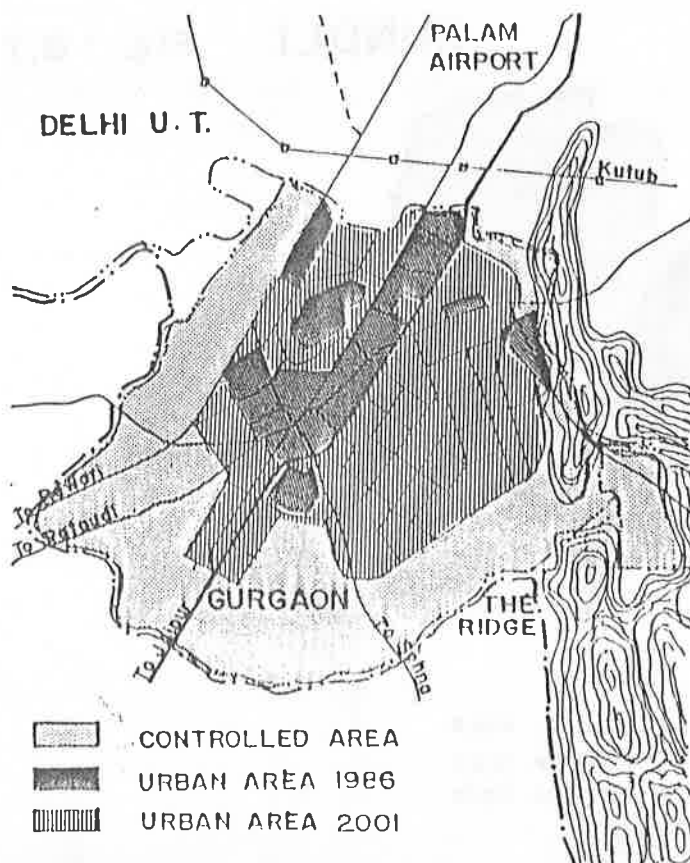
FARIDABAD

Fig. 8.4



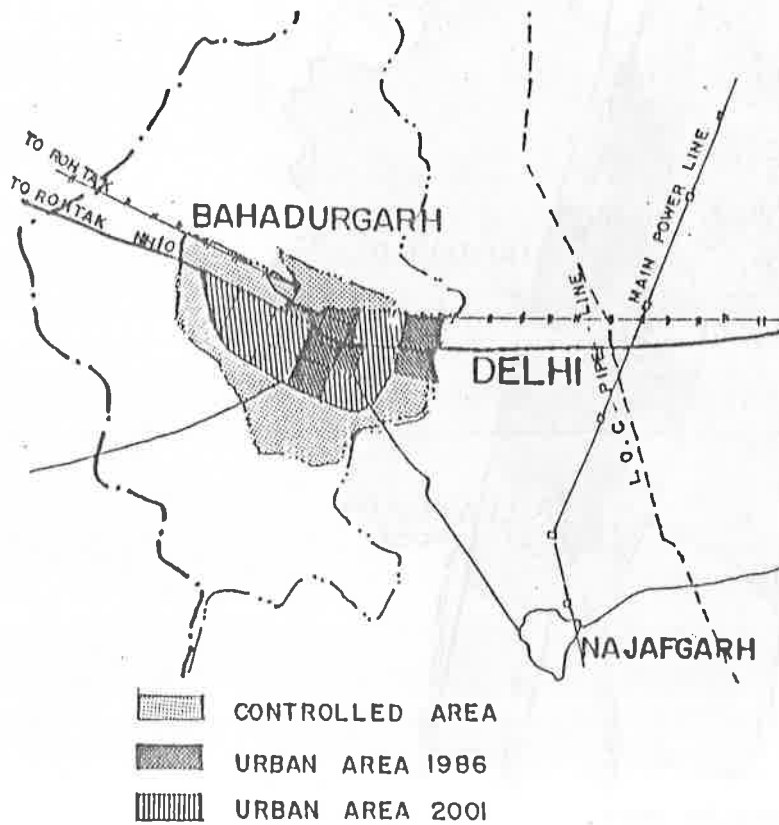
GURGAON

Fig. 8.5



# BAHADURGARH

Fig. 8.6



# KUNDLI

Fig. 8.7

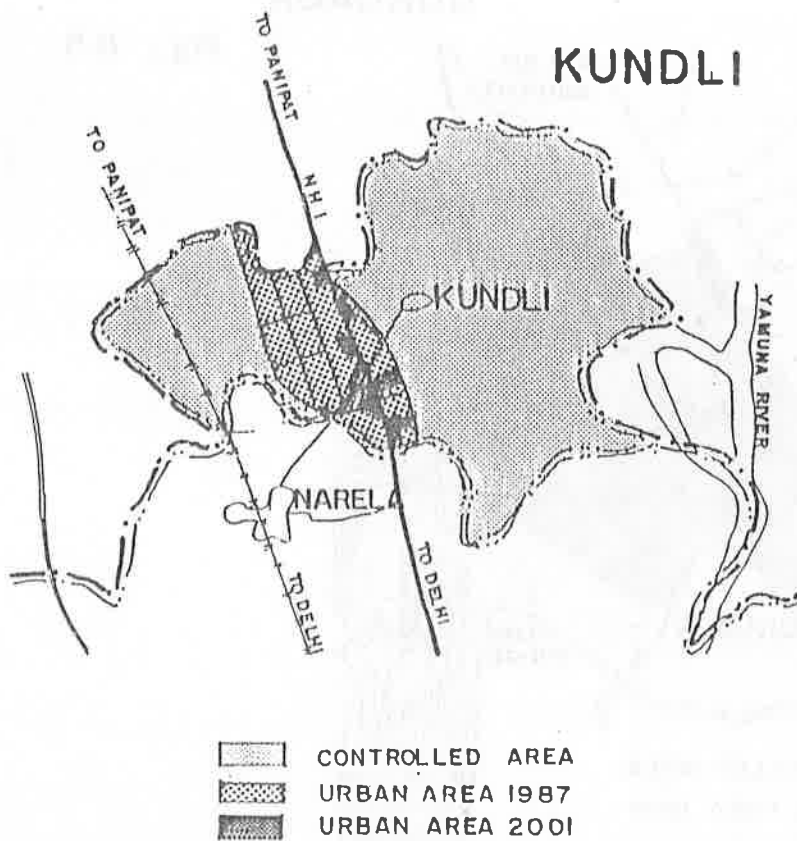


Table 8.4 : LANDUSE PROPOSALS IN MASTER PLANS OF DMA TOWNS

Sl.No.	Town	Area in Ha.				
		Residential	Industrial	Commercial	Institutional	Parte & Transport Open & Communi- Spaces cation
						Others Total Master Plan area.
1.	Delhi Urban (2001)	29358.00 (56.40)	3527.00 (1.02)	2351.00 (0.60)	170.00 (0.05)	705.00 (1.15)
2.	Bahadurgarh (2001)	4456.88 (42.34)	113.94 (1.05)	113.94 (1.05)	43.00 (0.40)	180.88 (1.65)
3.	Gurgaon (2001)	5528.00 (53.00)	1688.00 (16.17)	1688.00 (16.17)	43.00 (0.40)	939.00 (9.00)
4.	Rohtak (2001)	1688.00 (16.17)	407.00 (4.10)	407.00 (4.10)	115.50 (1.12)	939.00 (9.00)
5.	Bahadurgarh (1999)	3555.00 (31.38)	835.80 (7.49)	835.80 (7.49)	123.36 (1.12)	140.00 (1.25)
6.	Gurgaon (2001)	405.00 (3.58)	405.00 (3.58)	405.00 (3.58)	123.36 (1.12)	140.00 (1.25)
7.	Rohtak (2001)	4945.14 (48.50)	4945.14 (48.50)	4945.14 (48.50)	14459.15 (140.73)	9949.55 (96.65)
8.	Total (DMA)	4945.14 (48.50)	4945.14 (48.50)	4945.14 (48.50)	14459.15 (140.73)	9949.55 (96.65)

Note: Figures in bracket indicate percentage to total Master Plan area.

Landuse break up for Delhi Urban Area has been derived from Delhi Master Plan-2001. Figures for Gurgaon have been derived from Draft Gurgaon Master Plan 2010 AD. Area for Gurgaon includes the old city area of 405 ha. As the development process in Bahadurgarh town is very slow, it is presumed that by 2001 the landuse requirement would be same as that in 1991 as prescribed by the Master Plan.

## 8.2 LANDUSE POLICIES FOR DMA

Landuse proposals of DMA should be within the framework of the Regional Plan Policies. The Plan broadly suggests the following density norms for the DMA towns:

a) Urban Centres more than 1.0 lakh population, a density of 150 persons/ha

b) Urban Centres more than 5.0 lakh population, a density of 125 persons/ha

The other landuse policies enunciated in the Regional Plan which have a direct relevance to DMA towns are:

i) All barren lands, rocky areas and unculturable waste lands should be afforested/planted.

ii) Urban extensions would have to be largely met from the agriculture land and other non-urban uses. It is necessary to institute measures for the protection of prime agricultural land and to ensure against its needless conversion.

iii) Special attention should be given to check the damage to natural features like the ridge and the River Yamuna.

iv) To avoid haphazard development and ensure orderly development of the rapidly developing urban areas, preparation of Zoning Regulations has been suggested. The landuse zones and suggested major economic activities are as under:

## a) Urbanisable area

- Residential
- Commercial
- Industrial
- Government Offices
- Recreational
- Public and Semi-Public
- Circulation
- Open spaces, Parks, Playground
- Grave yards/Cemeteries/burning Ghata.



b) Green belt/green wedge

- i) Agriculture
- ii) Gardening
- iii) Dairying
- iv) Social Forestry/Plantation
- v) Quarrying
- vi) Cemeteries
- vii) Social Institutions, School, Hospitals
- viii) Recreation.

c) Green buffer along the major Transport Corridors - a width of 100 metres on either sides along the National Highways and, a width of 60 metres on either sides along the State Highways. These areas should be afforested under the control of Forests Department.

### 8.3 LANDUSE PROPOSALS

i) Density norms and Land Requirements:

In view of the scarcity of the non-renewable land resource in general, and the need to evolve compact urban forms enabling provision of cost effective essential service network, the density norms suggested for the DMA towns in the Regional Plan should be followed. At present Master Plans of all the DMA towns except NOIDA need marginal adjustments in their density standards and this could be achieved by suitably stipulating the density of the newer areas. (Table 8.3)

Table 8.3 : DENSITY NORMS FOR DMA TOWNS

Town	Assigned Population -NCR Plan	Density in Regional Plan-2001 NCR	Master Plan	Land Reg- uirement -Regional Plan-2001 ( Ha.)
1.Delhi UT	112.00	177	177	63277
2.Ghaziabad	11.00	125	111	8800
Loni				
3.NOIDA	5.50	125	124	4400
4.Faridabad	10.00	125	110	8000
5.Gurgaon	7.00	125	144	5600
6.Bahadurgarh	2.00	110	63	1818
7.Kundli	1.50	110	107	1363

The pace of development undertaken by the Development Authorities in the DMA towns has been tremendous in the recent years.

DELHI UT: The total area of Delhi UT is 148300 ha. Out of this 44,777 ha. had been earlier included in urbanisable limits prescribed in Plan. This area as per 1981 census accommodated about 54.5 lakh urban population and had a gross density of 122 persons per ha.

The Regional Plan - 2001 for NCR, has assigned a population of 112 lakhs for the Delhi UT with 110 lakhs for urban Delhi. Delhi Master Plan - 2001 recommendd a most probable population of 122 lakhs for urban Delhi 2001 but advocated that through effective measures during the course of the implementation of the Plan, attempts should be made to restrict the population of Delhi U.T. at the lower level of 112 lakhs. Studies have revealed that Delhi Urban Area - 81 urbanisable limit by the year 2001 would be able to accommodate about 82 lakhs population by judicious in-fill and selective modification of densities. The remaining 30 to 40 lakhs population could be accommodated by keeping the urban development spread within about fourteen thousand hectares only. In the light of this, the Eighth Five Year Plan Programme of developing 8810 ha. of land should be scaled down to about half the level i.e. 4400 ha. In fact, the land acquisition and development programme should be phased out, and at every stage, the demand and supply position of land should be reviewed to facilitate adopting rational and realistic approach in the future. This would promote substantially the urban expansions in the DMA towns and allow them to fulfil their assigned role.

The landuse proposals as provided in the Master Plans of the DMA towns are as indicated in Table 8.4.

As per the Master Plans of the DMA Towns the urbanisable area in DMA including Delhi UT would be in the order of 92692 ha. by 2001. This accounts for a gross density of 158 persons per ha. which is much higher than the present (1981) density of 90 persons per ha. The landuse analysis of the proposed DMA



urban mass reveals that DMA would be predominantly residential (48%) with adequate parks and open spaces (15%). The industrial use would account for 11% overall in the DMA. Usewise, except Kundli, the other DMA towns will have major part of their areas under residential use. All but Delhi have industries as the second largest user of land, with only Kundli as an exception where in industries are expected to spread over larger areas than other uses.

#### 8.4 REGIONAL LEVEL LANDUSE PROPOSALS

The DMA towns as proposed would serve not only the local population but large population of their hinterlands too. The regional level activities proposed to be located in DMA towns are wholesale markets, Central Government and Public sector offices, higher level educational institutions including universities and national level research institutions, regional recreational facilities such as botanical gardens, stadia etc. Adequate provision for land needs to be consideration to the regional requirements in addition to the town requirements. The possible/ideal location for such facilities in the light of various studies undertaken by the Board and also as a result of discussions held with the respective local bodies, Development Authorities and the State Government are as under:

##### DMA TOWNS

##### ACTIVITIES

Ghaziabad-Loni

Central Government and Public Sector Offices, Wholesale Market for Iron & Steel, Hardware and Building Materials, Institutions of higher learning, University, Exhibition ground, Stadium, Regional recreational area such as the lake (near Loni), Modern Super Markets.

NOIDA

Central Government and Public Sector Offices, Higher level educational institutions, botanical garden, Marketing yard, low density institutional areas of National importance which may require more than 20 ha. on the outer periphery (Greater NOIDA).

Faridabad- Central Government and Public  
Ballabgarh Sector Offices, Wholesale Market  
for Iron & Steel and auto-parts,  
University, regional recreational  
area, Modern Super Market.

Gurgaon Central Government & Public Sector  
Offices, Wholesale Market for Iron  
& Steel, Marketing yard,  
Institutions of higher learning and  
research, Modern Super Market.

Bahadurgarh Central Government & Public Sector  
Offices, Higher level research  
institutions.

Kundli Wholesale Market for Fruits and  
Vegetables and Foodgrains.

The Delhi Metropolitan Area and its vicinity are endowed with numerous natural features. The major ones are the Ridge, extension of Aravalli Range in Alwar (Rajasthan) and the river Yamuna. The hill forests of Alwar and Behror have been classified as reserved and protected forests. The Sariska Wild Life Sanctuary covering an area of 492 sq km is located in the dense forests of Alwar tehsil. The Aravallis also accommodate a thick forest cover in Gurgaon district and the Sultanpur Bird Sanctuary over an area of 117 ha. is located near Gurgaon. The prominent lakes in the Region are the Siliserh, Kaduki, Badkal and Surajkund. Besides Yamuna, the other important rivers are Hindon, Kali and Sahibi. With the unabated encroachment, these natural features are under constant threat of environmental devastation.

#### 9.1 ENVIRONMENTAL STATUS IN THE DMA

##### a. DELHI U.T.

The green image of the national capital is under severe strain and in some of its areas the image seems to be lost. The World Health Organisation (WHO) has placed Delhi among the highly polluted cities of the world. Delhi records 12 times the national average for respiratory ailments which result from air pollution. The motor vehicles and the industrial units remain the major pollutants in the city.

**Motor vehicles:** Fifty per cent of the air pollution in Delhi results from vehicle emission. A study by the Indian Institute of Technology, Delhi, at the behest of the Delhi Administration (Impact of Surface Transport on Air environment of Delhi, 1987) found that only 18% of the DTC buses and 10% of the trucks that ply on the Delhi roads have the standard smoke intensity of 65% on Hartridge scale. Nearly, 41% of the DTC buses and 50% of the trucks and, all Tempos monitored by the Indian Institute of Technology had a smoke intensity average of 90%.

**Industries :** The smoke emitted by the Indraprastha, Rajghat and Bardarpur thermal power plants have been identified as a major source of pollution in the Capital. These power plants in Delhi account for as much as 82% of the total industrial pollution in Delhi. Though the Electrostatic precipitators (ESP) to trap the fly-ash are fitted in these power plants, the Kalpavish Environmental Action Group has found that these ESPs are working at less efficiencies than intended. Of the 15,000 polluting industries nearly 5000 industrial units including hazardous units such as chemicals, electro and nickel plating and plastics are in the non-conforming areas. Each 500 tonnes Crusher throws 3 tonnes of suspended particulate matter daily and, the dust concentration around them varies from 3000 to 8000 micro grains per cubicmetre of air. This is 15 to 40 times the limit prescribed by the Central Pollution Control Board. A project entitled 'Dry Inventory and Estimation of Pollution load in Okhla and Shahdara Industrial Areas' which involved an inventory Survey on industrial pollution was conducted by the Central Pollution Control Board in select industrial areas in Delhi in 1983. The study areas were Okhla Industrial Area (Phase I, II, & III), Jhilmil Tahirpur Area, Friends colony and Loni road-Moti Katra-G T Road. The fuel type, consumption rate and emission of pollutants in the study areas are indicated in the Table. 9.1. The study has identified 54 industries as highly polluting in Okhla Industrial area, 67 in Shahdara Industrial Area, 26 in Jhilmil Tahirpur Industrial area, 30 in Friends colony Industrial area and 11 in Loni Road-Moti Katra- G T Road Industrial Area.

**Water Pollution:** The river Yamuna has a high level of water pollution. About 1200 million litres of domestic and industrial wastes containing about 100 tonnes of BOD is let into the Yamuna every day from Delhi alone. Nineteen major storm water drains meet the river in Delhi of which five namely Najafgarh, Civil mill, Power House, Sen Nursing Home and one from Okhla Sewage Plant contribute more than 95% of the Yamuna's total BOD load. The thermal plants discharge waste oils and chemicals and some of the industries discharge dangerous pollutants into the river.

Table 9.1 : ENERGY PATTERN AND POLLUTION LOAD IN THE INDUSTRIAL AREAS of DELHI

Area	Fuel type	Fuel Consump- tion T/M	Emission of Pollutants (T/M)				
			Parti- culate	SO 2	CO	HCS	NO 2
Okhla Industrial Area - Phase I							
	Coal	215.6	2.156	1.638	9.702	2.156	0.323
	Furnace						
	Oil	51.0	0.045	0.346	0.378	0.007	0.328
	LDO	10.0	0.003	0.041	0.007	0.001	0.027
	Wood	6.2	0.031	0.005	0.094	0.113	0.375
	TOTAL		2.235	2.030	9.841	2.277	0.716
- Phase II							
	Coal	245.5	2.455	1.866	11.048	2.455	0.368
	Furnace						
	Oil	12.0	0.011	0.082	0.009	0.002	0.090
	LDO	20.9	0.006	0.085	0.016	0.003	0.057
	Wood	2.5	0.013	0.002	0.038	0.045	0.015
	TOTAL		2.434	2.034	11.109	2.505	0.530
- Phase III							
	Coal	4.0	0.004	0.030	0.180	0.040	0.006
	Furnace						
	Oil	18.0	0.016	0.122	0.013	0.003	0.135
	TOTAL		0.056	0.153	0.193	0.043	0.141
Shahdara Industrial Area							
Jhilmil	Coal	422.1	4.221	3.200	18.995	4.221	0.633
Tahlnour	Furnace						
Industri-	Oil	974.0	0.865	6.618	0.722	0.138	0.731
al areas	Wood	4.0	0.020	0.003	0.060	0.072	0.024
	TOTAL		5.106	9.821	19.776	4.431	1.388
Friends	Coal	732.0	7.320	5.563	32.940	7.320	1.098
Colony	Furnace						
	Oil	134.5	0.119	0.914	0.100	0.019	1.009
	Wood	89.5	0.447	0.067	1.342	1.611	0.537
	TOTAL		7.887	6.644	34.382	8.950	2.644
Loni Road,	Coal	561.0	5.610	4.264	25.245	5.610	0.841
Motiram,	Furnace						
GT Road	Oil	626.5	0.557	4.256	0.464	0.088	4.700
	TOTAL		6.166	8.520	25.709	5.698	5.540
Najafgarh	Road		794.500	75.300			
Lawrance	Road		1402.000	20.400			
Wazirpur			254.100	182.000			
Kirti Nagar			66.100	300.000			
DLP			55.700	2.100			
Moti Nagar			33.400	1.100			

Source : Dry Inventory and Estimation of Pollution Load in Okhla and Shahdara Industrial Area, Central Pollution Control Board, 1983

**Ridge Area degradation:** According to a study conducted by the School of Planning and Architecture (SPA), New Delhi, in 1989 about 40% of the Ridge has been lost having been encroached upon for construction activities. A number of schools, CRPF camps, Govt. Buildings, Religious Institutions have come up on the ridge area violating the Delhi Master Plan statutory provision of preservation of the ridge as natural forests. More recently, the construction of Transmission Towers on the ridge near Delhi University is another attempt to destroy the only natural environment, of that scale available to Delhi. In fact, as of 1990, the total ridge area in Delhi is 7,777 ha. approximately as under :

Northern Ridge -	87 ha.
Central Ridge -	854 ha.
Southern Central Ridge(Mehrauli)	626 ha.
Southern Ridge -	6200 ha.

The main reasons for haphazard planning and development in Delhi has been the multiplicity of authorities in-charge of the area and absence of concrete action plan for saving the ridge. Presently, the Forest Conservancy Department, Land and Building Department of Delhi Administration, DDA in Delhi and State Forest Department, Development Authorities of Faridabad and Gurgaon are responsible for looking after the ridge area. There exists a considerable confusion among the Authorities about control on the ridge area in Delhi. For example, the Central Ridge in Delhi, is originally owned by the Land & Development Office (L&DO) under the Ministry of Urban Development. The L&DO entrusted the CPWD with the maintenance of the ridge but subsequently some areas of the ridge came to be maintained by the DDA, NDMC and MCD. However, there is no clear documentation with the L&DO or with the MCD, NDMC or DDA to show which area is to be maintained by whom. This has led to substantial degradation of the Central ridge. Further, the L&DO itself had made allotment of land for various purposes inspite of the fact that the Ridge has been declared as Reserved Forest and any diversion of the land for non-forestry purposes is an offence under the law.

b. Other DMA towns:

**Ghaziabad:** There are a number of industrial complexes comprising forging units, rolling mills, paper plants, metallurgy plants, pharmaceuticals, rubber industries and electro-plating. A study by the Tata Energy Research Institute (Environmental Effects of Energy Production, Transformation and Consumption in the National Capital Region, 1991) has found that of the 812 registered factories in Ghaziabad district, 109 industrial units are air polluting. Coal followed by fuel oil is the largest fuel used here. Carbon monoxide (CO) emerges as the largest single pollutant (40.1%) followed by particulate matter (32.7%). The type of fuel used by industries, fuel consumption and emission of pollutants in Ghaziabad are given below:

Fuel type	Fuel consumption T/H	Emission of Pollutants (T/H)				
		Particulate	SO	CO	HCS	NO
Coal	21400	213,996	162,636	962,982	213,996	32,100
Petroleum Oil	4522	3,411	26,115	2,817	0.543	33,915
LDO	19136	4,543	62,766	11,460	2,364	60,031
Duganoe	67600	640,000	-	-	-	40,500
Rice Husk	6416	61,318	-	-	-	3,849
Wood	1663	4,131	1,239	21,796	28,101	9,093
Natural Gas	-	-	-	-	-	-
LPG	135	0.030	0.001	0.033	0.012	0.162
Charcoal	-	-	-	-	-	-
Total	-	817,743	259,111	1002,891	245,175	173,025

Source : Interim Report on Environmental Effects on Energy Production, Transformation and Consumption in the National Capital Region, Tata Energy Research Institute, New Delhi (1991).

A study by the School of Planning & Architecture, New Delhi on the 'Environmental Impact Assessment & Guidelines for Industries Development in the National Capital Region (1987) on the basis of the sensitivity indices, has categorised the environmental condition in industrial areas of Ghaziabad as 'bad'.

**FARIDABAD-BALLABHGARH COMPLEX :** There are about 1800 polluting industries and amongst them, 337 industries including electroplating processors are more polluting. There are a number of private owned electroplating units in the residential areas seriously endangering the health of the residents. Traces of Zinc have been found in the water drawn from the borewells and, this poses an alarming health hazard to many in the city.

Moreover, in the absence of sewage treatment, the raw sewage is let into the drains damaging the environment. The study by the School of Planning & Architecture, New Delhi (1987) has categorised the industrial area as "highly sensitive" and the environmental condition in the industrial area as 'bad'.

The Tata Energy Research Institute in its study (1991) has categorised 330 units in Faridabad district as air polluting. The energy consumption pattern indicates coal (38.8%) as the main fuel used by industries followed by furnace oil (31.0%). Carbon-monoxide remains the single largest pollutant of air over Faridabad. In the total pollutant emission of 839.4 tonnes per month, Carbon-monoxide forms 45%, particulate matters 15.5%, hydrocarbons 15.4 %, Sulphur dioxide 13.6% and oxides of nitrogen 10.5%. The details on the fuels used by industries, and the emission in Faridabad district are indicated below:

Fuel type	Fuel consumption		Emission of Pollutants (T/M)			
	T/M	Particulate	SO	CO	HCB	NO
Coal	8393.5	83.935	63.791	377.708	83.935	12.590
Furnace Oil	6719.0	5.968	45.650	4.980	0.949	59.285
Lao	667.1	0.196	2.703	0.494	0.094	2.198
wood	2474.0	12.370	1.866	37.110	44.532	12.370
Rice Husk	3402.1	27.217				2.041
Total		129.686	114.005	420.292	129.510	88.484

Source : Interim Report on Environmental Effects on Energy Production, Transformation and Consumption in the National Capital Region, Tata Energy Research Institute, New Delhi (1991).

**GURGAON :** In Gurgaon, the polluting industries are mainly ceramics, rubber and iron works. For want of adequate power supply, even the large industries are using diesel generators which aggravate the smoke pollution hazards.

The study by the School of Planning & Architecture, New Delhi (1987) on the environmental sensitivity and status in the industrial complexes of Gurgaon indicated a high environmental sensitivity index to Gurgaon and categorised the environmental condition obtaining in industrial complexes of Gurgaon as 'Adverse'. Still, Gurgaon has



maintained the image of a pollutionless town. This has been mainly due to the slow pace of industrial development in Gurgaon. Only 20 per cent of the land earmarked for industrial use in the master plan has been developed and only about 40% of the developed plots have been put to use. The Regional Plan-2001, NCR too has envisaged a major shift in the occupational structure of the town from that of 'service' to 'industry' by 2001. The workforce assigned in industrial activities is 40% by 2001 against the 1981 figure of 25.3%. The master plan proposes to develop and accommodate non-polluting units primarily of electronic industries in Gurgaon.

**Proposed Amusement Park:** In addition, an Amusement Park on the outskirts of Delhi over 1600 ha, flanking Bhondsi-Damdama-Abheyapur Sohna Road, West of Delhi-Alwar road is proposed to be developed by the Government of Haryana. About 80 Ha. of the land is reportedly cultivable while the remaining area forms part of the hilly tract. If implemented, the environment in this area may suffer degradation.

**NOIDA:** Development of industries in pre/determined zones and in phases have to a great extent reduced the pollution intensity in NOIDA. 70% of the industrial land has been developed and 56% of the developed plots fully utilised. A systematically phased programme of industrial development would see through the full utilisation of industrial area in NOIDA by 2001 AD. The School of Planning & Architecture, New Delhi (1987) study too has categorised the NOIDA industrial areas as low sensitive and the environmental conditions in the industrial areas as 'tolerable'. However the proposed large scale development outside the periphery of NOIDA by UFSIDC is not in conformity with the Regional Plan-2001, NCR.

**BAHADURGARH :** To its total size, Bahadurgarh has extensive areas under industries. The industrial area near railway station with about 100 small and large industries and private industries north of the Delhi-Rohatak road causes air and water pollution. Though HUDA has constructed a sewage treatment plant, major part of the sullage is disposed

of on land as the plant has not become functional. The SPA study categorised the industrial areas of Bahadurgarh as moderately sensitive and the environmental condition in such complexes as 'bad'.

KUNDLI: Of the 198 industrial plots developed by the Haryana State Industrial Development Corporation (HSIDC), so far only 64 plots have been allotted and 53 of them occupied. Only 25 industrial units are functioning and as such the problem of pollution is not very acute today.

## 9.2 REMEDIAL MEASURES :

### a. Delhi U.T.

The primary pollutants in the city are the hazardous and obnoxious industrial units, and the large and medium scale units located in the non-conforming areas mainly in the residential areas. Taking into account the question of conforming/non-conforming and overall compatibility of industries in Delhi, the Master Plan for Delhi (1990) has proposed that the hazardous and noxious industrial units and new heavy and large industrial units shall not be permitted in Delhi. In addition, no new extensive industrial units shall be permitted (in existing identified extensive industrial areas). Regarding the existing hazardous and noxious industries, the Plan proposes shifting them on priority basis within a maximum time period of three years. Similarly, the existing heavy and large industrial units shall shift to Delhi Metropolitan Area and the National Capital Region keeping in view the NCR plan and National Industrial policy of the Government of India. In addition, the Plan also proposes shifting of the existing non-conforming extensive industrial units to the extensive industrial use zone within a maximum period of 3 years after the allotment of plots by various Government Agencies. In this regard, the Delhi Administration has decided, rightly, that no new industrial estates are to be developed in Delhi. Further, the hazardous and pollutant industries will not be allowed either the benefit of adhoc registration or offered accommodation in alternative industrial areas from their original non-conforming locations.

Rather, these industries would be encouraged to move to the NCR areas. The Delhi Administration is also in the process of ascertaining the possible industries which may like to shift to the Kundli township voluntarily, or by way of expansion of the existing units in Delhi or by way of setting up of new ventures. As shifting has not been contemplated within Delhi, large and medium and hazardous/obnoxious industries will need to be closed down in Delhi or shift to designated areas in the NCR. So far no exercise has been undertaken for identifying the industries which should be shifted. As such, the Delhi Administration should immediately identify such industries and initiate actions for the shifting of such industrial units. This would not only reduce pollution in the city but also improve the quality of life of the citizens as such lands vacated are intended to be primarily used for community purposes.

2. At present none of the industrial areas developed by DDA have facilities for treatment of effluents. The Delhi Administration has made an initial attempt in deciding to instal a common effluent treatment plant in Wazirpur Industrial Area. Under this scheme, 50% of the cost would be borne by the Delhi Administration and the balance by the polluting industries in the respective estate. A second industrial area identified for such a plant is Mayapuri Industrial Area. In addition to such joint plants, the Delhi Administration has a scheme for individual units involving subsidy upto 50% of the cost of the pollution control equipment subject to a maximum of Rs.50,000.

In the light of identification of a number of polluting industries in the existing industrial areas in the study by the Central Pollution Control Board (1986), individual industry based measures should be detailed out and such polluting industries should be compelled to adopt the suitable pollution control measures. Joint treatment plants should be installed in all the polluting industrial areas.

3. In the light of extraordinary pollution level attained by the river Yamuna, there is an urgent need to check pollution in the river Yamuna on the lines of Ganga Action Plan for the river Ganga. Channelisation of the river Yamuna, pollution control and river front development of Yamuna could form a composite project.

4. In view of the rapid deterioration and disappearance of the ridge area in Delhi and its environs, the following measures should be adopted which could check further damage.

i) Setting up a wild-life sanctuary in the ridge in collaboration with Delhi Administration and Government of Haryana.

ii) Imposing ban on conversion of forest areas into parks and encroachment from construction activities.

iii) Conservation of peripheral areas of the ridge into parks which can act as a buffer zone for the ridge.

iv) Removing unauthorised developments in the ridge area.

v) Intensive afforestation measures of the denuded pockets in the ridge.

vi) Entrusting the responsibilities of preservation of the ridge areas to a single authority.

#### b) Other DMA Towns

1. The towns of Faridabad, NOIDA and Ghaziabad are primarily industrial based. As such the pollution levels, intensity and the environmental status in these towns range from 'tolerable' to 'bad'. However, industrial development in these towns have been in organised industrial estates and as such joint pollution control measures such as joint sewage treatment plants by the Industrial Associations with institutional funding should be attempted. The Local Bodies may collaborate with the Industrial Associations in installing joint treatment plants on the lines of Delhi Administration.

### 9.3 NCR PLAN POLICIES AND PROPOSALS

In order to improve the quality of environment and enhance the liveability of the towns of the National Capital Region in general and Delhi and the DMA towns in particular, a number of measures have been proposed in the Regional Plan-2001, NCR. Some of them are as under :

1) The level of air pollution being severe in particularly urban industrial areas and major transport corridors, the pollution impacts have to be identified through appropriate field research studies so that the levels and types of industrialisation can be established.

2) Water Pollution : No industry should be permitted to discharge its effluents over land or into other water bodies without treating it to requisite pollution control standards and the new industrial areas should be developed with proper effluent treatment facilities in-situ.

3) Sewage disposal : Detailed schemes should be prepared at local level for sewage treatment for all the DMA towns and in towns where regular sewerage schemes are not available, low cost sanitation system for individual family or community may be adopted as a short-term measure.

4) Permission for location of new industries should take into consideration the pollution propensity of individual industries.

5) Afforestation programmes should be undertaken on all barren and uncultivable land by the concerned agencies.

6) Coordination Committee : A Coordination Committee for prevention and control of pollution of water, land and air should be established for the NCR which would coordinate activities of the State Pollution Control Boards and Environmental Committees constituted at the local levels and provide them with technical assistance and guidance

to carryout and sponsor investigations and research relating to problems of water and air pollution and prevention, control and abatement of such pollution. It would also advise enforcing law for treatment of liquid effluents from domestic areas, industrial and commercial areas for making them fit for recycling and also to promote solid waste management for extracting its nutrient value.

## ROLE AND DEVELOPMENT PROGRAMME FOR DMA TOWNS 1991-2001

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In the light of the need to develop the Delhi Metropolitan Area as a viable entity wherein the constituent units are mutually supportive and complimentary to each other, and it functions as an integrated whole, it is necessary to identify the role each town should play in achieving this goal. Such specified role should recognise the inherent advantages each town is bestowed with in certain areas of activities and the overall objective of making them self-contained in matters of work places and housing. In addition, an inter-sectoral programme for each town should be specified which would enable the achievement of the individual town's goal, within the overall DMA perspective.

### 10.1 FUTURE ROLE OF DMA TOWNS

Some of the major issues of spatial development in the NCR, which the Regional Plan aims to tackle, arise from the heavy concentration of population and economic activities in the UT of Delhi. This phenomena has led to wide-spread deficiencies in its infrastructural facilities and imbalances in the development of both the Delhi Metropolitan Area and the rest of the Region. The analysis made in the previous chapters shows that even essential facilities like water and sewerage would be under increasing severe pressures and the quality of life may seriously deteriorate in times to come in the DMA towns. At the same time there is need for the DMA towns to achieve self-containment in terms of employment opportunities, shelter and other infrastructural facilities so as to absorb some of the population and economic activities from Delhi UT to relieve the pressures on the core city. More specifically, in order that the DMA towns can perform these designated functions, they should :



- i) Develop as self-contained towns in terms of work-places, housing and community facilities;
- ii) Develop such economic activities as requiring de-concentration from the core city; and
- iii) Establish linkages among themselves and with the Core city through well-developed transport and telecommunication network.

In fulfilment of these objectives, the specific future role of each DMA town would be as follows:-

## 10.2 DELHI UT

### i) Centre of National Focus

Delhi, the capital city of the nation is the focal point its the socio-economic and political life. There are functions political, cultural and administrative peculiar to a Capital and they along with certain support functions like transport and telecommunications should get top most priority. It is of paramount importance to plan its development efforts, through carefully articulated development policies and programmes so that the city is adequately equipped to perform its premier functions. Delhi, with its well developed transport links with the rest of the country, has also got strong linkages and inter-dependency with the Region which underscores the inevitable need for planning the city in its regional context. The Master Plan for Delhi envisages that the Delhi Metropolitan Area including Delhi UT should be considered as one urban agglomeration for purposes of planning.

### ii) Green Image of Delhi :

One of the features which strikes a visitor to Delhi is its large green spaces, shady trees and flowering shrubs, which give the city a green image. The Delhi Development Authority and the other development agencies engaged in looking after the Capital, have been making serious efforts to preserve this image. However, the future signs appear to be rather ominous. Some of the reasons which are threatening



this green image are recapitulated below and all out efforts is needed to preserve the green image of Delhi which has made it one of the most beautiful Capital cities of the world:

- i) Shrinking area of the ridge and other natural forests.
- ii) Large unauthorised development taking place in the Capital, which, when followed by regularisation, hardly leave enough space for maintaining the greenery in the colony.
- iii) Large multi-storeyed structures coming up around the Connaught Place area, which will slowly turn this into a concrete jungle.
- iv) Reduction in the area presently occupied by lawns around India Gate due to setting up of a car park behind Vigyan Bhavan and the construction of the Indira Gandhi Centre for Arts.
- v) Demolition of existing barracks constructed during the second world war and their replacement by multi-storeyed structures without devoting sufficient spaces for greenery.
- vi) Construction of the Inland Container Depot at Tughlakabad where large scale parking will take place in the adjoining regional green area, since very inadequate space for parking of vehicles is available within the premises of the depot.

iii) Landuses in Delhi UT :

Delhi which is inextricably linked to India's destiny has a proud historical background and distinctive architectural features. Lutyen's Delhi was laid out with clearly demarcated zones of activities - the administrative complexes and the central vista which now forms the Rashtrapati Bhawan, Central Secretariat, Parliament House and the nearby areas, few residential complexes, prestigious shopping and commercial complexes

such as Connaught Place. The future land use plans in Delhi should facilitate the preservation of this functional predominance of Lutyen's Delhi. The Plan should also demarcate a "Core Area" which should be exclusively reserved for essential functions of the Capital such as political, including international and diplomatic activities and administration. The "Core Areas" should include the areas covered by Lutyen's Delhi and other nearby extensions, extending generally upto the existing Ring road. This "Core Area" already has prestigious cultural complexes but land should also be reserved in the "Non-Core Area" for cultural activities at the regional and national level.

iv) Phasing of Land Acquisition and Development Programmes :

The Regional Plan 2001, NCR has suggested restricting the population of the Union Territory to 112 lakhs by 2001. The Master Plan of Delhi states that through effective measures of implementation, attempts should be made to restrict the population to the lower limit of 112 lakhs though the planning efforts in the MFD are geared to serve a population of 128 lakhs. It is necessary for Delhi to take cognisance of the fact that the other DMA towns have reached the take off stage and are fully geared up to absorb the population and economic activities which would be deflected from Delhi in the context of its envisaged restrictive growth strategy. In order that the population policy of both the Regional Plan and the Delhi Master Plan converge to the desired goal, there is a need to phase the land acquisition and development programme of the DDA keeping in line with the envisaged restricted growth pattern for the city.

v) Restriction on Employment Generating Activities :

Specifically, there has to be a definite restriction on employment generating activities in Delhi. Since the offices of the central government and public sector undertakings are identified as having the potential of generating large scale employment, only such offices which perform ministerial and protocol functions should be

permitted to be located in Delhi and the others should be encouraged to be shifted outside.

**Restriction of Industrial Activities :**  
Industrial growth in Delhi also need to be restricted and only small scale units of non polluting nature which absorb less manpower and energy but more skill and technology need be encouraged.

**Decentralisation of Regional Wholesale Trade & Commerce :** In order to reduce the congestion within Delhi as a result of concentration of wholesale trade activities, alternative/additional wholesale markets should be developed in the DMA towns. Necessary fiscal measures like rationalising the tax structure, market fees and charges are also required to be taken so that the avoidable transfer of trade between DMA towns and Delhi could be prevented and the consequential pressures on transport network and storage space reduced.

#### vi) Pragmatic Programmes for Shelter :

There is a need for Delhi UT to recognise the fact that the problem of the unending stream of migrants, particularly of the low income groups, cannot be met by pursuing ad hoc policies of resettlement of squatter settlements and regularisation and improvement of unauthorised colonies and slums. A pragmatic housing programme involving active participation of private sector, Co-operatives and individuals at large should be evolved. The role of Delhi Administration and the DDA should more of a facilitator in aspects of land acquisition and development, ensuring institutional financial support, regulating construction programme and timely provision of essential infrastructure. Past experience indicates that the adhoc efforts of resettlement of squatters and regularisation of unauthorised colonies have not offered a finite solution to Delhi's growing low income housing demand. A comprehensive programme which would incorporate Site-and-Services and Environmental Improvement of Slums to benefit 100% of the EWS beneficiary population need to be conceived and pursued.

vii) Desirable Sectors of Growth for Future:

In order to maintain the identity and characteristics of the city as the National Capital, it would be desirable to develop the following types of activities in Delhi in future.

- i) Delhi should be developed as a centre of International commerce, banking and insurance Institutions. It should also have extensive facilities for International and National commercial exhibitions such as trade fairs and trade conferences etc.
- ii) The city should develop as a focal point to exhibit and expose the diversity and variety of the country's rich cultural heritage to the International tourist community. In addition, it should also be enriched with befitting tourist attractions and resorts.
- iii) The city has already hosted a number of prestigious International sports events and in the process an appreciable network of sports infrastructure have been developed. It would only be appropriate that this role of the city is further strengthened in this line and additional facilities of International standards to host bigger International events is established.
- iv) A number of International Conferences such as UNCTAD, NAM, CHOGM etc were hosted by Delhi successfully. This role should be further strengthened by establishing adequate network of Diplomatic Centres, Trade Representations and International Conference Facilities.
- v) The city still depends on physical movement of people for every basic requirement. Delhi needs to be developed as a city with most modern transport system. A modern Mass Rapid Transport System is an immediate necessity for the city. Further, it should become an important focal point in the International air route and its accessibility through air linkage with other important National cities should be strengthened.

vi) A considerable amount of chaotic conditions on the city's road network could be eliminated if the city adopts a modern communication system. Efforts should to integrate the marketing centres, work places, residences and service centres to the common public through an effective communication network so that the avoidable physical movement is reduced considerably or even eliminated. The city should strive to achieve a position of nerve centre of International communication network and with a proper backward linkage to the important centres within the country it would enhance the country's access to the World information system - both print and electronic media.

vii) The city should develop as the seat of International commercial dealings. A number Public Sector Institutions such as EIL, RITES, NTPC, IRCON etc are involved in providing International Consultancy facilities and also executing projects in many countries. Such Organisations should encouraged to locate their Corporate Head Quarters in the city to encourage their operations.

### 10.3 GHAZIABAD - LONI

The growth strategy for DMA stipulates a normal growth for Ghaziabad-Loni. The population of this township had registered a fast rate of 82% in 1961-71, and 125% during 1971-81. Spatially too, the town had expanded fast. The Regional Plan has assigned a population of 11 lakhs by 2001 to Ghaziabad - Loni.

Ghaziabad is envisaged to develop predominantly in the tertiary sector activities. The Regional Plan proposed a work participation rate of 30%, which would give a workforce of 3.3 lakhs by 2001 and out of this, the work force proposed to be engaged in the tertiary sector is over 55%. Ghaziabad has also been identified as a suitable centre for locating wholesale trades of iron and steel, and hardware as it has already got a large skilled work force and infrastructure engaged in fabrication of iron and steel items.

With an assigned population of 11 lakhs by 2001 and the location of NOIDA on its south with a population assignment of 5.5 lakhs, in addition to its own, Ghaziabad should reserve land for activities of regional character. Possibilities of locating an International Stadium in Indirapuram, and an Exhibition/fair ground somewhere on the outer periphery of DMA near Ghaziabad should be looked into. In addition to establishing new regional recreational areas, the Master Plan should also identify existing regional recreational areas for their conservation and development such as the lake near Loni.

#### 10.4 NOIDA

NOIDA could be called an extension of East Delhi rather than an independent town. This township has considerable potential for absorbing population and economic activities. The Regional Plan has assigned a population of 5.5 lakhs by 2001. It is envisaged to be developed as a centre having industrial concentration having transport and telecom network connections. It is also expected to have well developed trading and commercial facilities including higher order facilities like Export Processing Zone to serve the Regional commercial needs.

These developments are expected to reach the proposed work participation rate of 35% which will result in the estimated work force of 1.93 lakhs. Out of this, 1 lakh would be in the tertiary sector and about 0.9 lakh in the secondary sector.

The only means of commutation between Delhi and NOIDA are DTC buses and private vehicles. In 1987 total number of passenger vehicles were reported to be 16677 and the buses including chartered buses as 1623. Total number of commuters were reported to be 79400 of which 61000 were the bus passengers and 18400 travelled by private vehicles. If no other means of mass rapid transit system is developed between Delhi and NOIDA, the projected number of commuters by roads by 2001 would be 1.5 lakhs of which 1 lakh would be by buses and another 50000 by other private passenger vehicles. In the light of that and to enable the industrial units function efficiently, there is a need to remove the transport bottlenecks in NOIDA.

This town should be linked with Delhi and Ghaziabad by a railway line and an additional bridge over Yamuna in addition to the Nizamuddin bridge and the proposed connection through Okhla barrage would enable easy access to NOIDA and encourage workforce and population to settle in NOIDA itself rather than commute from Delhi.

In this regard, for a speedy implementation of the GHAZIABAD-NOIDA-FARIDABAD Expressway, land requirement as per the alignment should be identified and notified for acquisition immediately.

Greater NOIDA : Land in the south-east of NOIDA being in close vicinity to Delhi, and NOIDA on either side of the DSC Dadri-Surajpur-Challera road is quite vulnerable for unauthorised development. The UPSIDC has acquired land on a large scale in Surajpur and Kasna villages for intensive industrial development. If this area on the doorstep of the DMA town of NOIDA is developed intensively, unauthorisedly for industrialisation, it would frustrate not only the development policy enunciated for the DMA but would defeat the very basic policy of the NCR Plan viz. achieving a balanced development of the whole region subserving to contain Delhi's explosive size. The NCR Plan does not favour an intensive development near Delhi except in locations identified in the Regional Plan. This area could be suitably utilised for landuses of low intensity such as botanical garden, university, institutions of national importance etc. which may require land more than 20 hectares each.

#### 10.5 FARIDABAD BALLABHGARH COMPLEX

The Faridabad - Ballabhgarh complex is primarily conceived as an industrial centre. It is proposed to have a total work participation rate of 35% (3.47 lakhs) by 2001. The proportion of workers in the industrial activities is expected to be 45%, the highest among all the DMA towns.

The Regional Plan has assigned a population of 10 lakhs to this township which also agrees with the existing Development Plan. The Faridabad-Ballabhgarh Complex is also envisaged to play a vital role in the

dispersal and development of economic activities in the Region.

There are large concentration of slums in the town. In 1981 survey, the number was 62,300 persons, which reached the figure of 1 lakh in 64 clusters in the 1986 survey by the FCA. It is necessary to prepare a comprehensive plan for upgradation of existing slums and by granting land tenure rights either in the same locations or elsewhere. Alternate locations should be identified and the programme should have a component of finance for construction of houses too.

This township has been identified as an ideal centre for locating certain wholesale trades such as iron and steel and auto-parts. Being an industrial area of a multitude of products, many of the local industrial units produce goods that are required by other industries in the area itself. At present, the goods produced are sent to Delhi from where they are bought back by other industrial units in Faridabad. There is a great potential and felt need of the industrialists of Faridabad to develop a marketing yard in Faridabad itself which could be used both for exhibition and marketing of their products to avoid this transfer of trade. Establishment of a Joint power plant as envisaged by the Faridabad Industries Association would foster industrial development in Faridabad further. A joint sewerage treatment plant by the industrialists of Faridabad with financial assistance arranged by NCR Planning Board would go a long way in reducing land pollution.

To enable organised development of the town, there is an urgent need for a comprehensive transport plan for the town which should indicate the rail over bridges required in the town, requirement of local bus transport system in the light of its linear character etc.

#### 10.6 GURGAON

Gurgaon is envisaged to be a service town along with emphasis on industrial activities of non-polluting nature. Already it has started attracting prominent



industrial/administrative establishments of public sector undertakings and private corporate bodies. Along with the large scale housing programmes being undertaken there, both by HUDA and private developers, this town is poised to play its important role in the deconcentration of population and economic activities of Delhi.

The Regional Plan has assigned a population of 7 lakhs for Gurgaon by 2001. However, the past growth trend of this town has been rather modest. In order that the town is well equipped to serve the assigned population and in view of the need for having a viable economic base for the town, the development strategy envisages a shift in the composition of the workforce - from the dominance of tertiary sector to industrial sector activities (50%) by 2001. The proposed non-polluting industrial estates primarily with electronic industries is a right step in the direction of ensuring a better quality of life to its residents. The town has also been indentified as a suitable regional centre for locating wholesale trade in iron and steel. The NH-8 bypass which is operational has benefitted the town in easing the congestion in Gurgaon roads and would act as a facilitator in attracting institutional and industrial activities into Gurgaon.

#### 10.7 BAHADURGARH

The Regional Plan has assigned a population of 2 lakhs to Bahadurgarh by 2001. The town is envisaged to have a balanced activity structure with about 30 per cent of the workforce employed in industry and 25% each in trade and commerce and other services with an overall work participation rate of 35 per cent. Thus a major chunk i.e. 42,000 of the total workforce of 70,000 would be in the tertiary sector and therefore, the town would have to develop predominantly as a centre for institutional network, trade, commerce and services.

Bahadurgarh is situated on NH-10 at a distance of 37 km. from Delhi. However, the urban area of Bahadurgarh extends outward starting from the Delhi-Bahadurgarh boundary. Therefore, the area closer to this boundary is under severe pressure of haphazard development. There is a need for the

development authorities of Delhi and Bahadurgarh to plan the development of this zone on a collaborative basis so as to regulate and guide the growth in the desired direction. Further, a substantial number of jhuggies have come up on the Industries Department land and appears to have settled permanently. Immediate measures may be taken to rehabilitate them elsewhere and release the land for public uses. As Bahadurgarh is envisaged to have a substantial size of service sector activities, and also because of its close proximity to Delhi and easy accessibility through the National Highway, it would also be desirable to develop residential complexes on a large scale in this township so as to relieve the housing pressures of Delhi.

#### 10.8 KUNDLI

Kundli is envisaged to be developed predominantly as an industrial town. A high work participation rate of 35% is proposed which is expected to result in a total employment of 53,000 by 2001.

In view of the large scale development being proposed in Narela, located within the Delhi UT, and closer to Kundli, an integrated planning effort is being made for both these centres.

It is also envisaged that the town would have to develop predominantly in the tertiary sector and therefore, the centre for tertiary activities is being developed.

# 10.1.1 IMPORTANT STATISTICS AND OUTLINES OF DEVELOPMENT PROGRAMME FOR DMA TOWNS 1991-2001

Towns	Delhi	Ghaziabad	NOIDA	Faridabad	Gurgaon	Bahadurgarh	Kundli
Sector							
<b>1. POPULATION</b>							
Population by 2001(Lakhs)	112.0	11.0	5.5	10.0	7.0	2.0	1.5
<b>2. ECONOMIC ACTIVITIES</b>							
a) Employment :							
Participation rate 2001(%)	35	30	35	35	35	35	35
Workforce by 2001 in(lakhs)							
- Industry		1.25	0.77	1.58	0.98	0.21	0.21
- Construction		0.20	0.12	0.21	0.25	0.03	0.05
- Trade & Commerce		0.51	0.39	0.56	0.39	0.18	0.08
- Transport & Communications		0.33	0.23	0.25	0.25	0.07	0.05
- Service sector		0.99	0.39	0.84	0.54	0.18	0.12
b) Industry				-Marketing Yard -Steel yard			
c) Wholesale trade & Commerce		-Iron & Steel -Hardware	-	Auto parts	Iron & Steel	-	-Fruits & Vegetables, -Foodgrains
d) Govt & Public Sector offices							
<b>3. SHELTER</b>							
a) Housing requirement(in lakhs)							
- BWS	6.26	0.65	0.36	0.47	0.56	0.16	0.14
- LIG	4.18	0.43	0.24	0.32	0.38	0.11	0.09
- MIG	2.09	0.22	0.12	0.16	0.19	0.05	0.05
- HIG	1.39	0.14	0.08	0.11	0.13	0.04	0.03
<b>4. TRANSPORT</b>							
- Expressways		52.5 ha. provision to be made	184.5 ha. provision to be made	118 ha. provision to be made	-	-	-
- Inner grid		Provn. to be made	Provn. to be made	Provn. to be made	Provn. to be made	Provn. to be made	Provn. to be made
- National Highway		-	-		Provn. for widening to be made	-	-
<b>5. TELECOMMUNICATIONS</b>							
- No. of connections to be provided by 1995		38000	31000	49000	29000	2000	400

Towns	Delhi	Ghaziabad	NOIDA	Faridabad	Gurgaon	Bahadurgarh	Kundli
Sector							

## 6. INFRASTRUCTURE

a) Water supply							
i) Present supply	2070	127	60	27	9	4	NA
ii) Demand by 2001							
- at 225 lpcd	2520	300	125	225	157	45	38
- at 270 lpcd	3024	360	150	270	189	54	40
- at 315 lpcd	3528	420	175	315	220	63	47
b) Sewerage							
i) Present generation MLD 1650-1850		100	48	22	8	3	NA
ii) Treated MLD	1125	NIL	NIL	18	57	NIL	NIL
iii) Generation by 2001 MLD 2820		340	140	250	170	50	40
c) Drainage							
i) Drainage channels	Combined/ Separate	Open Mallahs	System exists	Open Drains	Combined system	Open Drains	NA
d) Solid waste management							
i) Generation-1990 (Tonnes)	5800	110	40	112	29	12	-
ii) Managed Qty. (Tonnes)	2700	80	40	100	25	7	-
iii) Generation-2001 (Tonnes)	7300	300	150	290	125	55	40

## 7. POWER

- Power requirement by 2001      F O R E C A S T I N G      B E I N G      D O N E      B Y      C B A

## 8. LANDUSE

- Density	Require marginal adjustment	-	Require marginal adjustment	Drastic reduction from 144 to	Drastic increase from 63 to	Marginal adjustment required
Regional landuse requirements provision for :						
i) Central Govt. and Public Sector Offices	Yes	Yes	Yes	Yes	Yes	
ii) Wholesale Markets	Iron & Steel, Super Hardware, Market Super Market.		Auto parts, Iron & Steel Marketing Super Market, yard, Steel yard, Super market		-	Fruits & Vegetables, Food grain
iii) National level research instns.	Yes	Yes	Yes	Yes	Yes	
iv) University	Yes	-	Yes	Yes	-	
v) Stadia	Yes					
vi) Regional recreational area	Yes	Yes	Yes	Yes	-	

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