25th PCM

AGENDA NOTES FOR THE 25TH MEETING OF THE PLANNING COMMITTEE TO BE HELD AT 11.00 A.M. ON APRIL 20, 1992 IN THE OFFICE OF THE NCR PLANNING BOARD, NEW DELHI.

AGENDA ITEM NO.1 : Confirmation of the Minutes of the 24th meeting held on February 28, 1992.

The 24th meeting of the Planning Committee was held on 28.2.1992 and the minutes of the same were circulated vide letter No.K-14011/12/92-NCRPB, dated 10.3.1992. The statement by Shri R.K. Gupta, Director (CP), Department of Telecommunications under Para 3, Page 5 of the minutes may be amended as under as suggested by Shri R.K. Gupta. The Planning Committee may kindly confirm the minutes with the following amendments.

As in the minutes

Shri R.K. Gupta of Telecom Board agreed with the contents of the proposal for telecom in U.P. Sub-region. He further mentioned that by the end of Eighth Five Year Plan, every Panchayat will have a telephone connection while all priority/DMA towns and sub-regional centres, service centres will be provided telecom facilities practically on demand.

As proposed to be amended

Shri R.K. Gupta of Telecom Commission agreed with the contents of the proposals for Telecom in U.P. sub-region. He further mentioned that every Gram Panchyat in U.P. shall be provided with telephone facility by 31st March, 1995. In regard to the Priority/DMA towns and Sub-regional Centres, telephone facility shall be provided practically on demand in the smaller telephone exchange systems by the end of the Eighth Five Year Plan and in the large telephone systems (more than or equal to 10000 lines), the waiting list shall be contained to two years' period by the end of the Plan. This is as per the objectives of the Eighth Five Year Plan of the Department.

AGENDA ITEM NO.2 : Review of the actions taken on the decisions of the last meeting held on 28.2.1992.

(i) Eighth Plan proposals for N.C.R. Development.

The Eighth Plan allocations are yet to be finalised by the Planning Commission. The allocations

proposed for the year 1992-93 are :

Plan : Rs.10 crores

Non-Plan : Rs.0.33 crores

(ii) Finalisation of Functional Plan for DMA

This item is being considered as a separate Agenda Item in this meeting.

(iii) Review of the Progress of the preparation of the Sub-Regional Plan by the participating States.

The Sub-regional Plan for Uttar Pradesh Sub-region was discussed in the last meeting of the Planning Committee held on 28.2.1992 and is being included in the Agenda of the forth-coming meeting of the NCR Planning Board for consideration.

The Draft Sub-regional Plans for Haryana and Rajasthan Sub-regions are under preparation by the respective States. The representatives of the participating States may apprise the Committee with the latest status of the preparation of Sub-regional Plan. The representative of Delhi Administration may also apprise about the status of Delhi Sub-regional Plan in the meeting.

AGENDA ITEM NO.3 : Finalisation of Functional Plan for DMA.

In the light of the comments/observations received from TCPO, DDA and NOIDA, the Draft Functional Plan for DMA has been revised and a new chapter on 'Action Plan for Development of DMA', as decided by the Planning Committee in its 23rd meeting has been included. The comments from the Director of Town Planning, Haryana received in February, 1992 had been examined and suitably incorporated in the Draft Report. The details in respect of landuses approved in the Master Plan of Delhi have not been received while Master Plans for Bahadurgarh and Kundli are under revision/preparation by Haryana Government. The Draft Functional Plan for DMA, as finalised with available data is at Annexure I for consideration and approval by the Planning Committee.

AGENDA ITEM NO.4 : Consideration of the Note regarding clarifications and justifications on violation of NCR Plan in U.P. Sub-region from the Government of Uttar Pradesh received vide Housing Department letter No.1010/37-and 1-92-3/NCR/92, dated 14.2.92 and circulated vide NCR Planning Board letter No.K-14011/12/92-NCRPB, dated 19.2.92.

The Note could not be considered in the last meeting held on 28.2.1992 for want of time. A letter indicating the comments of the TCPO has been received subsequently and is at Annexure II.

AGENDA ITEM NO.5 : Consideration of the Draft Development Plan of Faridabad - 2011.

The Government of Haryana has published the Draft Development Plan of Faridabad - 2011 on the 18th October 1991 for public objections and suggestions. The NCR Planning Board has received a copy of the Draft Development Plan of Faridabad - 2011. Draft comments have been prepared on the Draft Development Plan for consideration by the Planning Committee. The Draft Comments are at Annexure - III.

ANNEXURE - III

COMMENTS ON THE DRAFT DEVELOPMENT PLAN OF FARIDABAD-2011

Introduction :

In the Local Government Department Notification of 18th October, 1991, the opening paragraph mentions that the revised final development plan was published on the 23rd September, 1974 and Draft Development Plan was published on the 26th April, 1982. The notification dated 26th April, 1982, shows that the Plan was proposed to be amended to accommodate a population of 10 lakhs by 2001 A.D. This fact has not been incorporated in the introduction of the proposed amendment of the Plan, giving an impression that the Plan was revised for a population of 4.5 lakhs by 1994 A.D. and is now being revised to 17.5 lakhs by 2011 A.D. The NCR Plan - 2001 has assigned a population of 10 lakhs by 2001 A.D., as was also proposed in the Development Plan prepared and published on the 26th April, 1982.

Necessity for amendment of the Plan

Under the 'necessity for amendment of the Plan' considerations like (i) Pressure of Delhi, (ii) Employment Structure and Economic Activities, (iii) Recreational Activities, (iv) Pressure on non-agricultural land in the vicinity of Delhi, (v) Speculation in land dealings, (vi) Necessity for Industrial Housing have been included. In addition, consideration at serial (vii) makes a reference to the NCR Plan -2001 as follows:

"In consonance with the above trend the population of Faridabad-Ballabhgarh Complex has increased from 3.27 lakhs in 1981 to 6.13 lakhs in 1991 registering a growth rate of 85.75% during 1981-91. With these trends the population in 2001 is likely to cross 10 lakhs by 2001 as recommended by NCR. Keeping in view the directions in the NCR Plan to allow Metropolitan towns to grow at moderate growth and development of priority towns at faster rate of growth, it is proposed to assume a growth rate of 70% for the decade 1991 to 2001 and 2001 to 2011 against 85% during 1981 to 1991. For regulating the future growth, it is proposed to amend the development plan to accommodate about 17.5 lakhs population and necessary demand for Regional institutions and industries and other allied uses required upto 2011."

The NCR Plan - 2001 assigned a population for Delhi U.T., DMA towns (which include Faridabad-Ballabhgarh Complex) and Priority Towns and the rest of the NCR. These population assignments are reflective of the package of policies to be followed in various policy zones of the NCR. The revision of Master Plan with perspective of 2011 and revised population assignment will not only upset the overall framework of the Regional Plan - 2001 but would also pre-empt any action to be taken by the Board in future for the planning in the Region. In fact the NCR Plan-2001 is to be reviewed after 5 years of its notification dated 23rd January, 1989 and the Board has, in accordance with the provisions of the NCR Planning Board Act, 1985 already taken a decision to review the same. Such revision of Master Plan for DMA towns should be undertaken in conjunction with the exercise for the revision of the Regional Plan - 2001.

Proposals :

1. **Population Projection:**

The Draft Plan proposes a moderate growth rate of 70% for the decade 1991-2001 and 2001 - 2011 and the projected population of 17.5 lakhs has been assumed for the planning of Faridabad-Ballabhgarh Complex by 2011.

2. **Extension of urbanisable area:**

The justification for urbanisable proposals covering 12,105 acres to accommodate an additional population of 7.5 lakhs has been proposed as follows:

(i) The additional urbanisable area has been proposed on the east of Agra-Canal which is the only viable and feasible proposition.

(ii) Unauthorised constructions/colonies has already come up along the Delhi-Haryana Border on the east of Agra Canal which would become vulnerable for unauthorised activities.

(iii) The proposed Expressway connecting Faridabad-NOIDA-Ghaziabad on the east of Agra Canal will open up growth potential of the entire area.

(iv) It has been stated that a Gas based Thermal Plant has been proposed on Ballabhgarh-Tigaon road on the east of Agra Canal.

According to past trends, the projected population for 2011 works out to 21 lakhs. Therefore, the Draft Plan proposes curbing the growth of Faridabad-Ballabhgarh Complex by 3.5 lakhs. Such ad-hoc decision will lead to unbalanced growth in some part of the DMA, if not conceived in its totality. The proposed Gas based Thermal Plant on the east of Agra Canal as stated 2 (iv) has been shelved by the Department of Power. It is again, therefore, suggested that the revision of the Master Plan for 2001 should be undertaken in conjunction with review of the Regional Plan - 2001 NCR.

Circulation Pattern

Faridabad-NOIDA-Ghaziabad Expressways as contained in the NCR Plan with two links i.e. with the proposed byepass as well as sector dividing roads of 18,19, and 28,29 have been mentioned. However, this alignment has not been shown on the proposed land use Plan - 2011 A.D. Similarly the proposed Inner Grid linking Gurgaon on the west and the proposed expressway in the east of the Town has not been shown in the proposed landuse plan.

3. Extent of Various Landuses

i) To accomodate 17.5 lakhs population, an urbanisable area of 38,743 acres of land has been proposed. The 1982 Plan had proposed 22,495 acres of land to accommodate 10 lakhs population. To accommodate 7.5 lakhs additional population an area of 12,105 acres has been proposed.

ii) The revised plan contemplates to develop 7749 acres of industrial area by 2011 A.D. against 5118 proposed for 2001, thereby putting about 2631 acres of additionalland in this use. It has been given to understand that by now only 50% of the land earmarked for 2001 A.D. for industrial use has been developed. Besides this, addition of more area in the industrial use goes against the policy recommended in the Regional Plan which contemplates that in the long term perspective the growth of large and medium industries may have to be restricted in DMA towns. The setting up of large and medium scale industries have been permitted in the DMA towns only for a period of 10 years and in spirit this moratorium applies to areas which were developed prior to coming into force of the Regional Plan - 2001. Although this policy is to be reviewed after 10 years but any action or approval to develop additional area would pre-empt the review process as well. This

is a common knowledge that the DMA, because of contiguous development and high level of industrial activities, is highly prone to environmental pollution and if more industrial activities are allowed to grow it is likely to have serious impact on the quality of life in the National Capital and the surrounding areas.

iii) The sectors on the rocky terrain along the Badkhal-Surajkund Road as indicated in the Draft Plan should not be proposed for urbanisation.

4. **Phasing :**

The Draft Development Plan does not indicate any phasing conciding with the development proposals of 2001.

GENERAL COMMENTS

Recently, the National Capital Region Planning Board prepared a Functional Plan for Delhi Metropolitan Area specifying the future role, linkages, infrastructure requirements etc. in respect of all DMA towns with perspective upto 2001 within the framework of NCR Plan. Specific roles have been assigned to DMA town in the Functional Plan, having due regard to the overall integrated development of the Delhi Metropolitan Area. Similar exercise would have to be carried out in collaboration with the participating States of Uttar Pradesh and Haryana in assigning future role for perspective 2011. In our view, such an exercise would form part of the review of the Regional Plan - 2001 for NCR. The Board has also taken a decision to conduct a series of studies on various issues and facets of development of the entire NCR so that a clearer perspective emerges out of the data, analysis, performance, linkages and infrastructure and environmental issues leading to harmonised development of the entire region.

Therefore, any exercise beyond 2001 for DMA or Priority towns should await the review of the Regional Plan which would incorporate population and functional assignments etc., for the respective Sub-regions, DMA towns and the entire NCR.

ANNEXUR II-

TOWN & COUNTRY PLANNING ORGANISATION
(Govt. of India, Min. of Urban Development)

'E' Block, Vikas Bhawan
Indraprastha Estate

F.No.4-10/91-UT. New Delhi-110002, Dt.28.2.1992

To

Shri B.N. Singh,
Chief Regional Planner,
National Capital Region Planning Board,
7th Floor, 'B' Wing,
I.O.C Building, Janpath,
New Delhi.

Sub: 24th Meeting of the ~~Sp~~ Planning Committee of the NCR Planning Board to be held on 28th Feb.'92.

.....

Sir,

In connection with your letter No.K-14011/12/92-NCRPB dated 17th February'92 we are enclosing our observations on the Sub-Regional Plan of 2001 prepared by the Town & Country Planning Department, Govt. of Uttar Pradesh for U.P Sub-Region of NCR for your kind consideration and necessary action.

Yours faithfully,

(K.T. Gurumukhi)
Addl. Chief Planner

ANNEXURE - I

DRAFT

FUNCTIONAL PLAN
FOR
DELHI METROPOLITAN AREA

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

MARCH-1992

FUNCTIONAL PLAN :
DELHI METROPOLITAN AREA

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

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) **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, **and** 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.

b) **Project Plans :** Under Section 18 of the Act, a participating State or the Union Territory, may by itself or in colloboration, 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 :

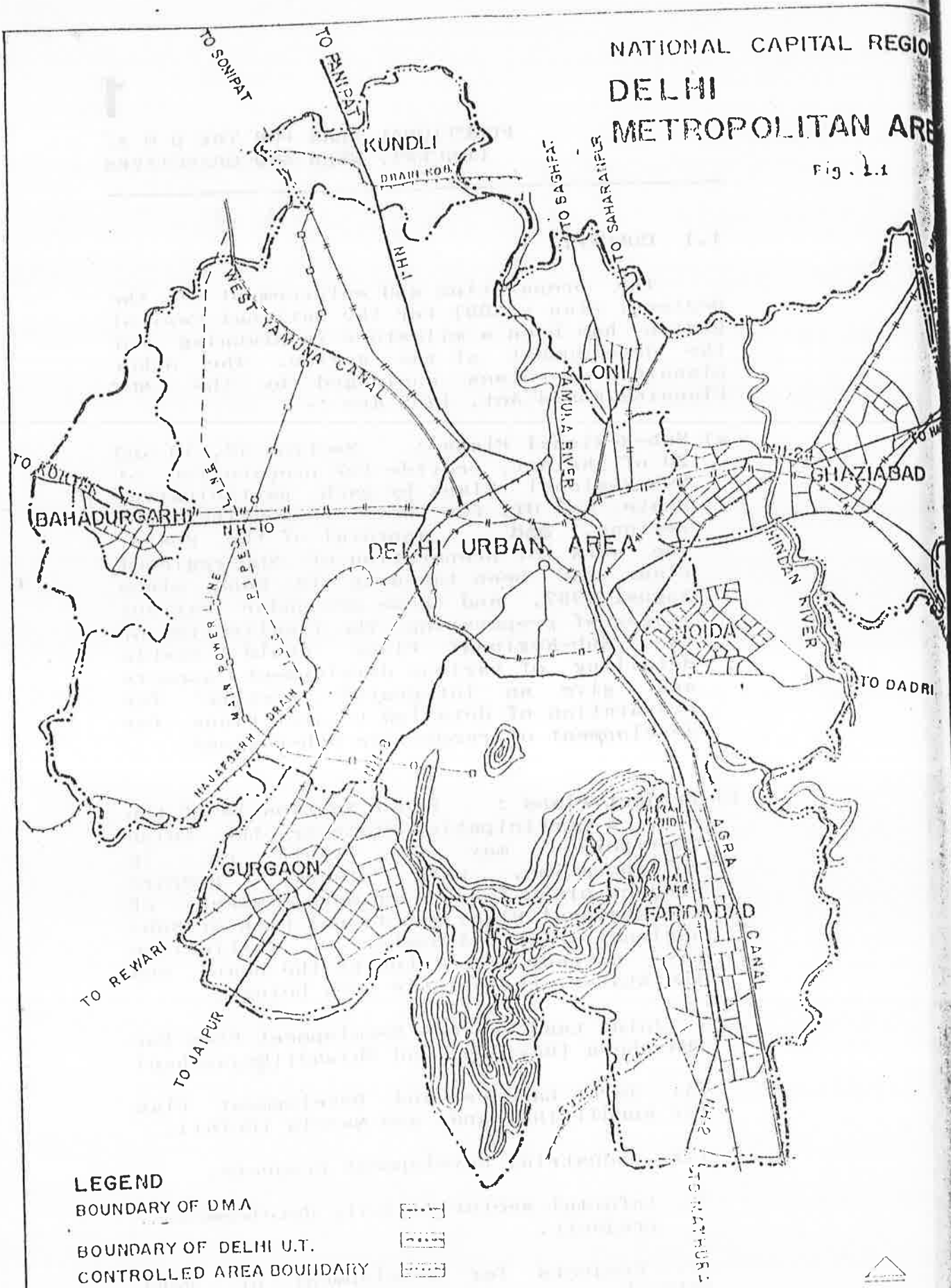
i. Joint Land Use and Development Plan for Dharuhera (Haryana) and Bhiwadi(Rajasthan)

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.


NATIONAL CAPITAL REGIO
DELHI
METROPOLITAN ARE
Fig. 1.1
TO SONIPAT
TO PANIPAT
KUNDLI
DRAIN ROD
NH-1
TO BAGHPAT
TO SAHARANPUR
WEST YAMUNA CANAL
LONI
YAMUNA RIVER
TO KOSLI
BAHADURGARH
NH-10
GHAZIABAD
DELHI URBAN AREA
PIPE LINE
MAIN POWER LINE
NAJAFGARH DRAIN
NH-8
HINDAN RIVER
NOIDA
TO DADRI
GURGAON
AGRA
FARIDABAD
CANAL
TO REWARI
TO JAIPUR
NH-2
TO MATHURA
LEGEND
BOUNDARY OF DMA
BOUNDARY OF DELHI U.T.
CONTROLLED AREA BOUNDARY

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 (1483 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. Sangtee, 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 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 1973.

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 would 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 empoyment 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 should remain in Delhi and offices requiring limited expansion should be shifted within the existing urban area and those need be closer to Delhi could be located in 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 were to be shifted to DMA and NCR.

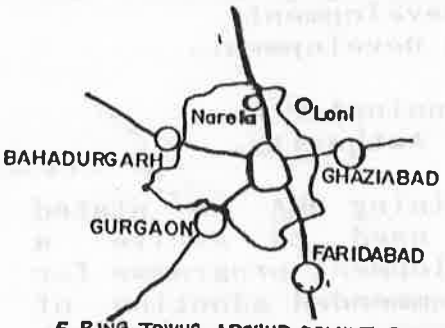
2. The industrial policy for the DMA should be geared towards dispersal from Urban Delhi. There was a need for restricting the growth of industries in Delhi through fiscal and other measures and to encourage the growth of industries in DMA and NCR. The Heavy industries should be discouraged in the towns of the DMA as well. 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 were directly

DMA IN EVOLUTION 1962-1990

Fig.1.2

1962 DELHI MASTER PLAN

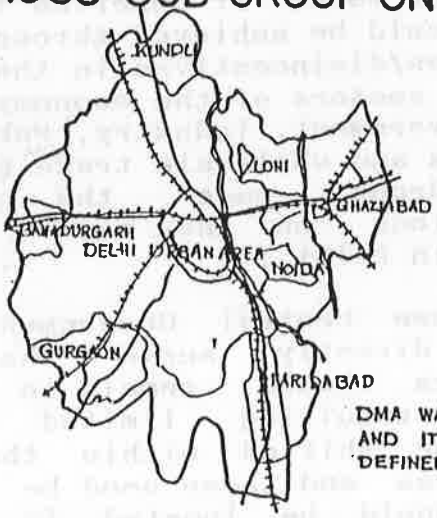


6 RING TOWNS AROUND DELHI TO BE DEVELOPED AS SELF CONTAINED SATELLITE TOWNS TO ABSORB OVER SPILL OF DELHI'S POPULATION.

1973 REGIONAL PLAN

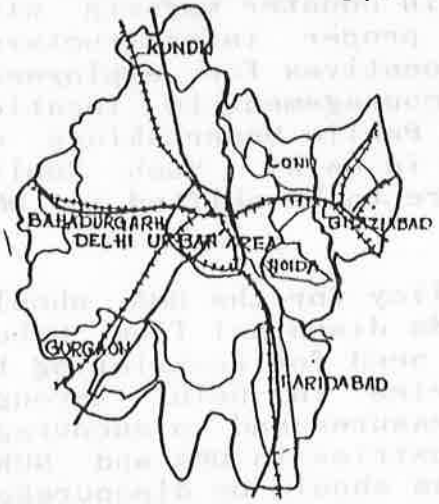
RING TOWNS TO BE TREATED AS IDENTIFIED REGIONAL CENTRES

1983 SUB GROUP ON NCR



DMA WAS RECOGNISED AS A SPECIAL AREA AND IT'S 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 ONE OF THE THREE POLICY ZONES FOR PLANNING AND DEVELOPMENT

consumed in Delhi should be distributed through Delhi. Other trades of primarily distributive character were to be located in DMA and NCR. The National markets should be located outside the Delhi 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 inmigration 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 UT and the remaining part of the Region (Fig 1.3).

The Plan has reiterated that 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 complimentarity with the objectives of Master Plan for Delhi. The Master Plan for Delhi 1990 (MPD-1990-2001), following this objective has similarly advocated an integrated approach in planning and developing this huge urban mass of DMA as one urban agglomeration.

1.5 OBJECTIVES

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

i) define the role 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.

2

DEMOGRAPHY

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 to 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

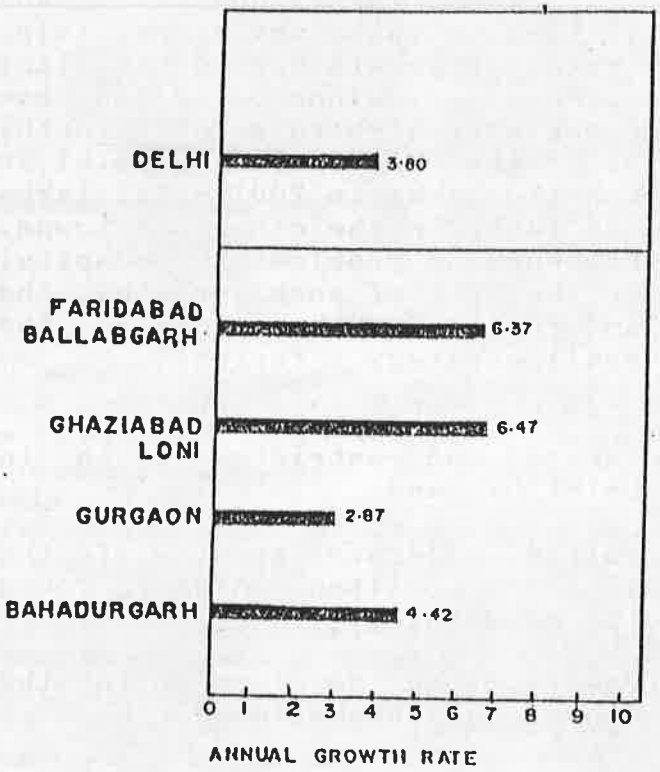
ii) Controlled moderate growth of the Delhi Metropolitan Area Towns (excluding Delhi UT).

iii) Infra-structure development in the DMA towns and the Region.

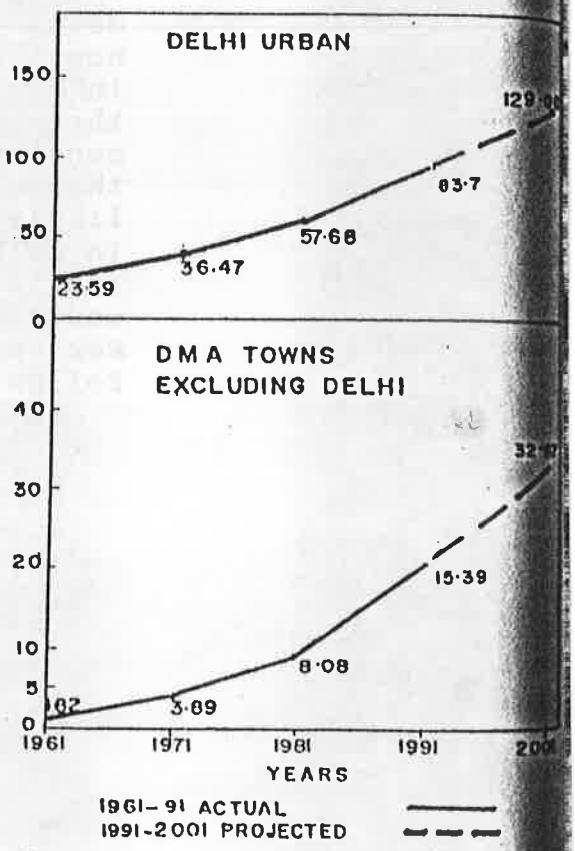
The Regional Plan -2001 for NCR expects that these measures, along with the large scale employment generation in the Priority Towns of the Region would be able to deflect 20 lakh migrant population from Delhi and contain the population of Delhi to 112 lakhs in 2001. The other DMA towns continuing with their projected growth of population would grow up to 38 lakhs from 8.08 lakhs in 1981 and 15.39 lakhs in 1991. In the process, however, the population of the entire DMA would be restricted to 150 lakhs, in place of the figure of 170 lakhs, projected by the Registrar General of Census.

Figure 2.1

ANNUAL POPULATION GROWTH RATE IN DMA TOWNS : 1971-91



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 1971-91

The development of DMA towns was initiated in the Sixties as part of the strategy of developing Ring towns around Delhi 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, 8.08 lakhs in 1981 and 15.39 lakhs in 1991. While the Delhi Urban Area registered an annual compound growth of 3.80% during 1971-91, Faridabad - Ballabhgarh registered 6.37%, Gurgaon 2.87%, Ghaziabad including Loni 6.47% and Bahadurgarh 4.42% respectively. The DMA towns, excluding Delhi, grew at the rate of 6.66% during the same period (Table 2.1 and Fig 2.1).

Table 2.1 : POPULATION GROWTH TRENDS OF DMA TOWNS 1961-2001

(POPULATION IN LAKHS)

Unit	Population				Compound Growth Rate %					Projected Popn. 2001		Population Assignment 2001
	1961	1971	1981	1991	1961-71	1971-81	1981-91	1961-91	1971-91	1961-91 basis	1971-91 basis	
1. Delhi U.T.	-	40.65	[illegible]	93.7[illegible]	[illegible]	4.26	4.12	4.34	4.27	132.60*	132.60*	[illegible]
2. Delhi Urban	23.59	36.47	57.2[illegible]	[illegible]	4.45	4.63	3.90	4.57	4.24	122.00*	128.00*	11[illegible]
Other DMA towns:												
1. Faridabad-Ballabhgarh	0.59	1.73	3.31	6.14	11.62	6.40	6.37	9.01	6.3[illegible]	11.14	11.40	10.00
2. Gurgaon	0.38	0.57	1.01	1.34	4.14	5.89	2.97	5.01	4.37	3.17	2.05	7.00
3. Bahadurgarh	0.15	0.26	0.37	0.57	5.65	3.59	4.42	4.62	4.00	0.60	0.84	2.00
4. Kundli	-	-	-	0.11	-	-	-	-	-	1.50	1.50	1.50
5. Ghaziabad-Loni	0.70	1.28	2.97	5.56	6.22	8.78	6.47	7.49	7.62	15.92	11.58	11.00
6. NOIDA	-	-	0.42	1.67	-	17.97	14.80	-	-	5.50	5.50	5.50
DMA (excluding Delhi)	1.82	3.89	8.08	15.39	7.89	7.56	6.66	7.32	7.12	37.89	32.87	37.00
DMA (including Delhi)	28.49	44.49	70.26	109.09	4.59	4.68	4.50	4.62	4.59	170.49	165.47	149.00

* Registrar General's Projections.

(ii) Growth trends 1991-2001 and Population Assignment 2001

The growth dynamism exhibited during 1971-81 by the DMA towns is not so pronounced during 1981-91. At the rate of growth they registered during 1971-81, the DMA towns, excluding Delhi, were expected to reach a population of 37.89 by 2001 A.D. (Table 2.1 and Fig.2.1). However, the declining growth trends observed in 1981-91 decade, indicate the possibility of the DMA towns, excluding Delhi, achieving a figure of only 32.07 lakhs as per 1971-91 growth rate, using 1991 population as the base. The growth rate has come down to 6.66% in 1981-91 as compared to 7.56% during 1971-81.

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 Sonipat, the rapidity of growth has not been visibly in consonance with the desired trend which needs to be corrected to ensure balanced growth of the DMA towns.

The Functional Plan for Delhi Metropolitan Area suggests comprehensive policies and action enabling greater decentralisation/de-concentration of economic activities from the core i.e. Delhi Union Territory, integrated development of infrastructure and improving the overall quality of life in the entire Delhi Metropolitan Area, with a view to achieving the balance between the core and Delhi Metropolitan Area towns excluding Delhi UT, as envisaged in the NCR Plan-2001.

3

EMPLOYMENT AND ITS GROWTH IN KEY SECTORS

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 visible between DMA towns and Delhi in all walks of life. As of 1987, every day about 3.12 lakh passenger trips were made between Delhi and DMA towns (Transport Sector Plan for NCR, Operations Research Group, Baroda, 1989). These trips were mainly undertaken to attend to work and the social needs,like medical and educational purposes. 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. At the same time 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 sorrounding Delhi also acts as a vast hinterland and feeder zone for Delhi's day to day needs. The analysis in the study on the "Distributive Trades in the National Capital Region" (Operations Research Group, Baroda, 1990) the characteristics of goods movement showed a very strong interaction between Delhi, NCR and outside NCR. This commodity flow has been noticed through major corridors which pass through the DMA towns.

3.1 EXISTING SCENARIO

a) DMA Towns

In the first master plan of Delhi (MPD) 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 - Ballabhgarh	15000	43000	23478	62572
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.

About 400 ha. of land was acquired by the Central Government in Ghaziabad as a follow-up action of MPD-1962. Though most of those 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 Indian Oil Corporation, National Thermal Power Corporation, Bharat Heavy Electricals Limited, Bharat Petro-chemicals Ltd, Institute of Chartered Accountants etc, most of these 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 Steel Aurhority of India Limited, Central Warehousing Corporation, Life Insurance Corporation, National Textile Corporation, Indian Oil Corporation, Geological Survey of India, etc. have come up. However, no worthwhile sucess 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 developed in these towns. The percentage workforce in the 'Other Services' sector is the highest (20.24) in Bahadurgrh. 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 as in Table 3.2.

The distribution of workforce for 1991 census in various categories for the DMA towns has not been published by the Census Organisation.

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	1257 (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 22.4% 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 - 1991
(Percentage in Brackets)

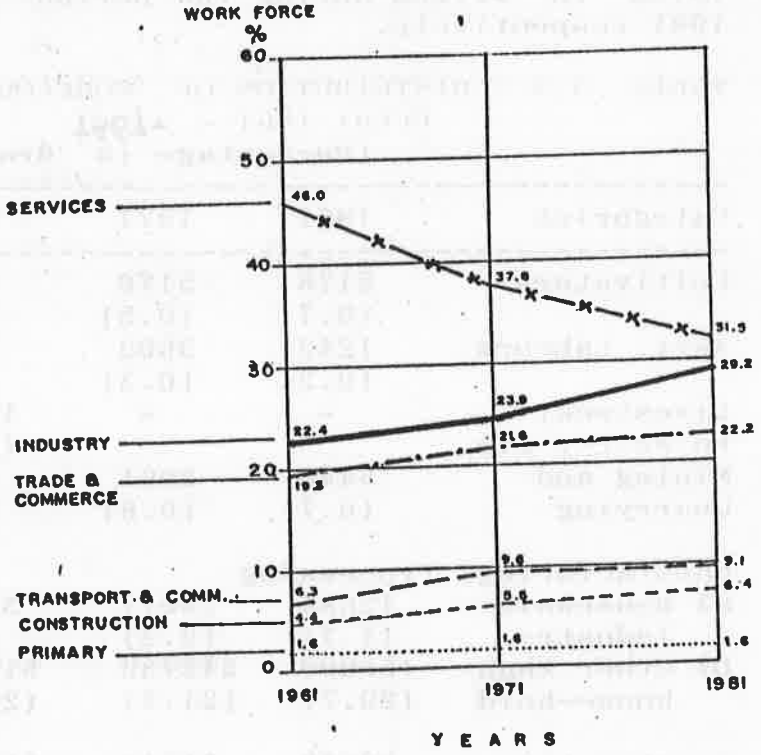
Categories	1961	1971	1981	1991
Cultivators	5178 (0.7)	5176 (0.5)	7727 1 (0.39)	10147 (0.38)
Agri. Labours	1242 (0.2)	3603 (0.3)	4772 (0.25)	7689 (0.29)
Livestock, Forestry, etc.	-	-	13091 (0.70)	
Mining and Quarrying	5446 (0.7)	9091 (0.8)	4745 (0.25)	
Manufacturing, Processing				
a) Household Industry	12684 (1.7)	25017 (2.2)	31349 (1.69)	112731 (4.24)
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)	2529541 * (95.09)
Total Workers	746815 (100.0)	1116937 (100.0)	1857545 (100.0)	2660111 (100.00)
Participation Ratio	31.65	30.62	32.20	31.76

Source : Census of India, 1961, 1971 & 1981

*Other workers (workers excluding cultivators, Agri. labourers and Household industry workers)

DISTRIBUTION OF WORK FORCE IN DELHI 1961-81

Figure 3.1



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.

The 1991 census figures show a participation ratio of 31.76% out of the total workforce, 95.09% are engaged in activities other than classified as cultivators, agricultural labourers and household industry against 97.47% in 1961. The detailed distribution of workforce in separate categories for 1991 census has not been published by the Census Organisation.

Significanly, huge complexes for accomodating the offices in Delhi UT have also 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

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 4.13 lakhs in 1981. Trend of occupational structure since 1961 is depicted in Fig. 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 were 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. 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	PROPORTION OF WORKERS (%) IN					
		PRIMARY	INDUSTRY	CONSTRUCTION	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	20.0
Faridabad/Ballabhgarh	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

Source: Regional Plan for NCR-2001.

4

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 may be usefully recounted here.

GHAZIABAD-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 1944 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 road near village Rasoolpur (GDA): 80 ha.

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 industries are as under:

i) Control within the Union Territory of Delhi
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. In this context changes if any, proposed in the Master Plan which go against the Regional Plan proposals should be got approved by the NCRPB.

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 not go with Regional Plan 2001 proposals for NCR. It is strongly felt that this area should not be taken up for development.

New Okhla Industrial Development Authority (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. Haryana Urban Development Authority (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 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 Modern Industrial Estate 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 (18',000-24,000 ha during 1981-2001) 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.

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 additionah 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 ma-terial. 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.

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. These proposals 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 trade 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 and 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	1989
Central Government	0.94	2.25	2.31
Delhi Administration	0.25	0.62	0.88
Local Bodies	0.34	1.09	0.83
Quasi-Government	0.06	1.41	2.16
TOTAL	1.59	5.37	6.18

Source : Delhi Statistical Hand Book - 1990

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 being pursued 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. In sofar 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 persued. 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 singificantly to employment, and offers income opportunites 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 meeds 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 hats 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 - 1991

The net livable residential units available in 1991 are estimated at 11.55 lakhs (Table 5.1) against an estimated population of 109.09 lakhs. Assuming an average household size of 5 persons, the shortage in housing units is estimated at 10.27 lakhs in 1991. In 1981, there was one housing unit for every 7.07 persons whereas in 1991, the situation deteriorated as there was one unit for every 9.45 persons.

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

	1971		1981		1981	Net growth 1971-81 (%)	Estimated ORH-1991	Liveable Units after 20% replace-ment(1991	Pop. 1991 Lakh	Demand for ORH in 1991 in lakhs @ 5 persons per ORH
	Pop.	ORH	Pop.	ORH	Liveable units after 20% replacement					
1. Delhi UT	4065698	664647	6220406	1090065	873652	31.45	1148402	918732	93.70	18.74
2. Ghaziabad including Loni	127700	17798	297429	53443	42754	140.22	102704	82163	5.56	1.112
3. NOIDA	-	-	-	-	-	-	-	30022	1.67	0.334
4. Faridabad-Ballabhgarh Complex	122817	22429	330864	67199	53759	139.58	128796	103037	6.14	1.228
5. Gurgaon	57151	8728	100877	16686	13349	52.94	20416	16333	1.34	0.268
6. Bahadurgarh	25812	4063	37488	6397	5118	25.97	6447	5158	0.57	0.114
7. Kundli	-	-	-	-	-	-	-	-	0.11	0.022
DMA TOWNS (excl. Delhi UT)	333480	53028	766658	143725	114980	116.83	258363	236712	15.39	3.078
DMA Towns	4399178	717675	6987064	1237790	988632	37.75	1406765	1155444	109.09	21.818

ii) Informal Sector Housing

Large scale inmigration 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 DMA

In 1991, the population of DMA towns was 109.09 lakhs. 13.61 lakhs are estimated to be squatters, and 34.87 lakhs are living in slums (Table 5.2). In Delhi alone, of the 1991 squatter and slum population of 48.48 lakhs in all the DMA towns as much as 44.08 lakhs i.e. 91% live. Taken individually, 12 lakhs out of 13.61 lakhs squatter dewellers of DMA, 32.08 lakhs out of 34.87 lakhs slum dwellers of DMA are found in the capital. Faridabad-Ballabgarh Complex figures the second with about 1.93 lakhs and Ghaziabad the third highest with 1.49 lakhs slum and squatter population, the last being in NOIDA. Thus, about 45% of the total population is estimated to be without adequate shelter facilities.

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	Persons living in JJ & Slums (%)
1. Delhi UT	93.70	1200,000	240,000	3208,000	641,600	47.07
2. Ghaziabad-Loni	5.56	20,000	4,000	129,000	25,800	17.98
3. NOIDA	1.67	6,020	1,204	-	-	3.60
4. Faridabad-Ballabhgarh	6.14	1,01,660	20,332	91,000	18,200	31.43
5. Gurgaon	1.34	29,150	5,830	44,000	8,800	54.48
6. Bahadurgarh	0.57	4,000	800	15,000	3,000	33.33
7. Kundli	0.11	-	-	-	-	
DMA(excl.Delhi)	15.39	160,830	32,166	279,000	55,800	28.59
DMA (Total)	109.09	1360,830	272,166	3487,000	697,400	44.44

Source: Respective Local Bodies

iv) Squatters and slums in Delhi

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 which had increased to 37% in 1981 and 47% in 1991 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 lasting solution to this problem.

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/jhonpri households from 62,600 in 1971 to a mere 20,000 in 1977. However, the number of jhuggi/jhonpri households increased again to 99,000 by 1981 - an increase of about 80,000 within just three years. Subsequently too, the 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 almost 14% of the total population.

5.2 DEVELOPMENT OF SHELTER

On the basis of population assignments the cumulative 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 1991, the number of livable housing units stood at 11.55 lakhs. Thus, by 2001, about 18.25 lakh more units including the backlog of 10.27 lakhs units upto 1991 would be required. 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 pragmatic 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 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 have to be made available.

It is estimated that the composition of the target groups for additional shelter facilties during 1991-2001 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 - 1991-96 and 1996-2001 should be attempted. In the house building activities, involvement of NGOs, cooperatives and other private building agencies should be thought of and their efforts pooled and coordinated. To moderate the mounting problems of population explosions and consequent shelter needs, especially in Delhi, generation of adequate employment opportunities together with provision of shelter in the form of work-cum-shelter projects in the DMA towns that might lure away some population from

Delhi is being thought of.

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.

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 effortts to attract remunerative enterprises, particularly relting to industry and other economic activities, and unless this trend is suitably regulted, the DMA towns may face severe backlog in the provision o 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 infrastrucutre and social facilities in these towns, corresponding to theh provision of employment opportunities and work places.

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.

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	
			(1991-96)	Rest of the period (1996-2001)
1. EWS:				
a)Slum upgradation	2.05	i) 2.05 (100%)	0.82	1.23
b)Sites & Services	6.15	i) 6.15 (100%)	2.46	3.69
2. LIG	5.48	i) 2.74 (50%)	1.096	1.644
		ii) 2.74 (50%)	1.096	1.644
3. MIG	2.74	i) 0.685 (25%)	0.274	0.411
		ii) 2.055 (75%)	0.822	1.233
4. HIG	1.83	ii) 1.83 (100%)	0.732	1.098
TOTAL	18.25	18.25 (100%)	7.300	10.950

Note : i) Institutional finance ii) Developed plots

6

TRANSPORT AND COMMUNICATIONS

6.1 EXISTING TRANSPORT CHARACTERISTICS

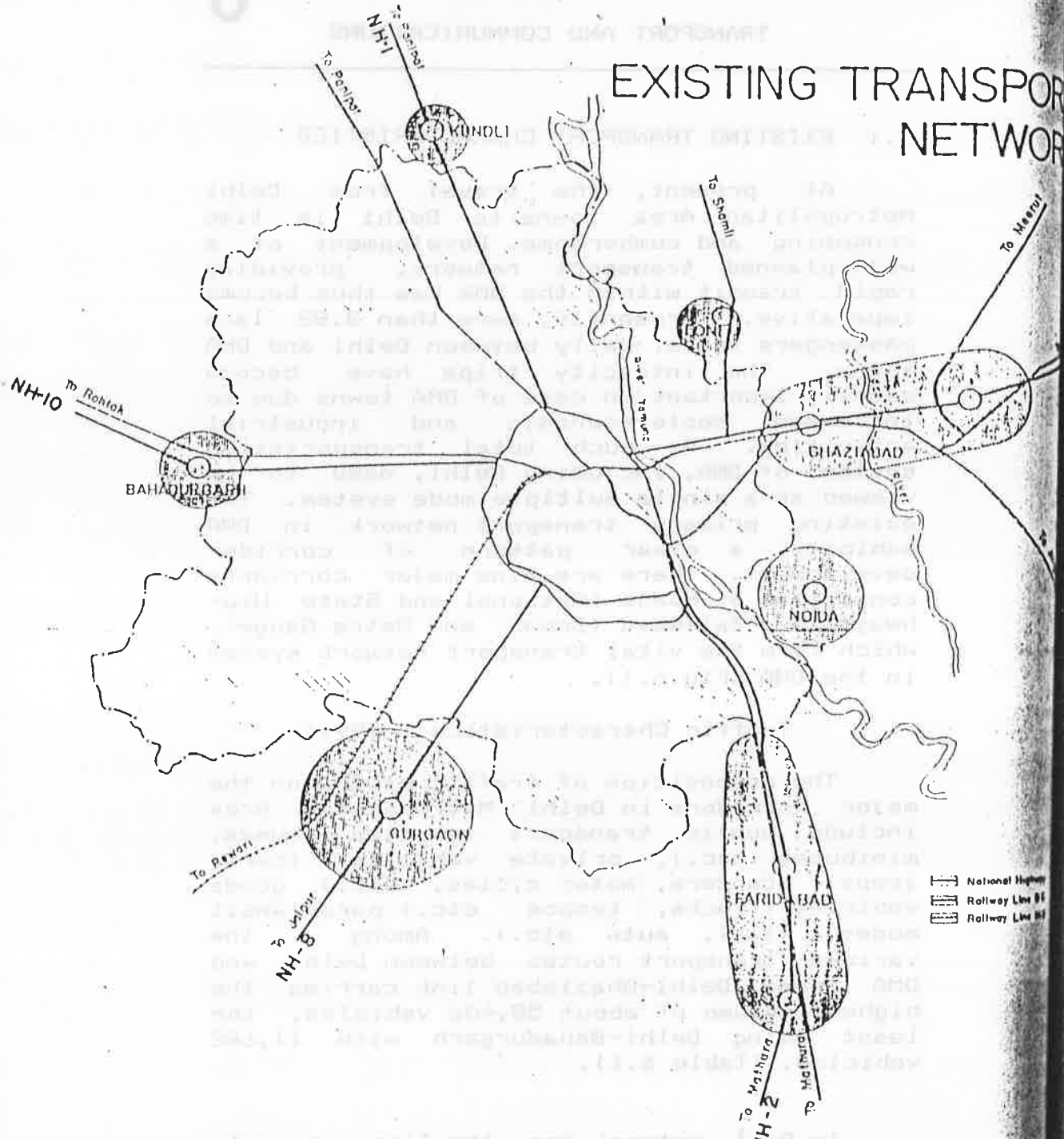
At present, the travel from Delhi Metropolitan Area towns to Delhi is time consuming and cumbersome. Development of a well-planned transport network, providing rapid transit within the DMA has thus become imperative. Presently, more than 3.82 lakh passengers travel daily between Delhi and DMA towns. 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. 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).

i) Traffic Characteristics - 1991:

The composition of traffic plying on the major corridors in Delhi Metropolitan Area include public transport vehicles (buses, minibuses etc.), private vehicles (cars, jeeps, scooters, motor cycles, etc.) goods vehicles (trucks, tempos etc.) paratransit modes (taxi, auto etc.). Among the various transport routes between Delhi and DMA towns, Delhi-Ghaziabad link carries the highest volume of about 58,406 vehicles, the least being Delhi-Bahadurgarh with 11,682 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


EXISTING TRANSPOR
NETWOR
NH-1
To Panipat
KUNDLI
To Shamli
To Meerut
TONE
River Yamuna
NH-10
To Rohtak
BAHADURGARH
GHAZIABAD
NOIDA
GURGAON
To Rewari
To Jaipur
NH-8
FARIDABAD
To Mathura
To Mathura
NH-2
National Highway
Railway Line BG
Railway Line MG

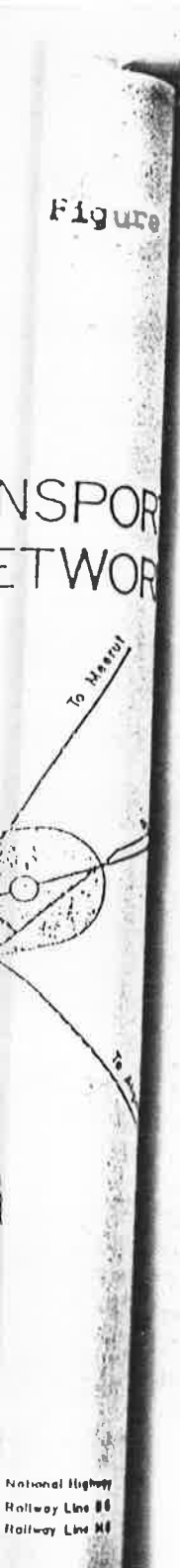


Table 6.1 : TRAFFIC MOVEMENT ON MAJOR CORRIDORS - 1991

Major Corridor	Total pass. vehicle	Total buses	Total goods vehicle	Total volume
1. Delhi-Faridabad	27017	2088	2635	31740
	(85.1)	(6.6)	(8.3)	(100.00)
2. Delhi-Gurgaon	11799	1156	4070	17025
	(69.3)	(6.8)	(23.9)	(100.00)
3. Delhi-Bahadurgarh	7232	1248	3202	11682
	(61.9)	(10.7)	(27.4)	(100.00)
4. Delhi-Ghaziabad	42174	4993	11239	58406
	(72.2)	(8.5)	(19.3)	(100.00)
5. Delhi-NOIDA	25594	2593	2294	30481
	(84.0)	(8.5)	(7.5)	(100.00)
TOTAL				1,49,334

ii) Travel characteristics:

The present daily passenger movement (inter-urban) by all modes is estimated at 3.82 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 between them (Table 6.2).

Table 6.2 : DAILY PASSENGER MOVEMENT BETWEEN DMA TOWNS AND DELHI U.T.- 1991

Between	Passengers by			
	Public & Private Buss	Personal Vehicles	Rail	Total
Delhi-Ghaziabad	30,560	35,472	31,675	97,707
Delhi-NOIDA	57,147	39,417	-	96,564
Delhi-Faridabad	41,565	54,965	18,337	1,14,867
Delhi-Gurgaon	29,206	15,669	7,337	52,212
Delhi-Bahadurgarh	6,289	6,981	6,163	19,433
Delhi-Kundli	519	730	-	1249
Delhi-Loni	10			
TOTAL	1,65,286	1,53,234	63,512	3,82,032
	(43.3)	(40.10)	(16.6)	(100.00)

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. Road-ways	Total Passen-gers
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 3,82,032 passengers, (Table 6.2) about 1,10,288 (i.e. 28.86%) travel by public buses, 54998 (i.e.14.39%) by private and chartered buses and 1,53,234 passengers (i.e. 40.11%) travel by private (personal) vehicles. The remaining 63,512 (i.e. 16.62%) 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 40.11% passengers travel by private and charted buses and private vehicles, and 59.88% passengers by public buses and the rail.

iii) Transport Facilities in DMA: 1991

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 Electric Multiple Units (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 [illegible] 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 1393. A number of private vehicles such as cars and taxies, charted 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 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 tranport scenario of DMA and would recommend for various improvements in the transport facilities in the 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 transporation 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 Integration of Mass Rapid Transit Network of Delhi with DMA Transport 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.

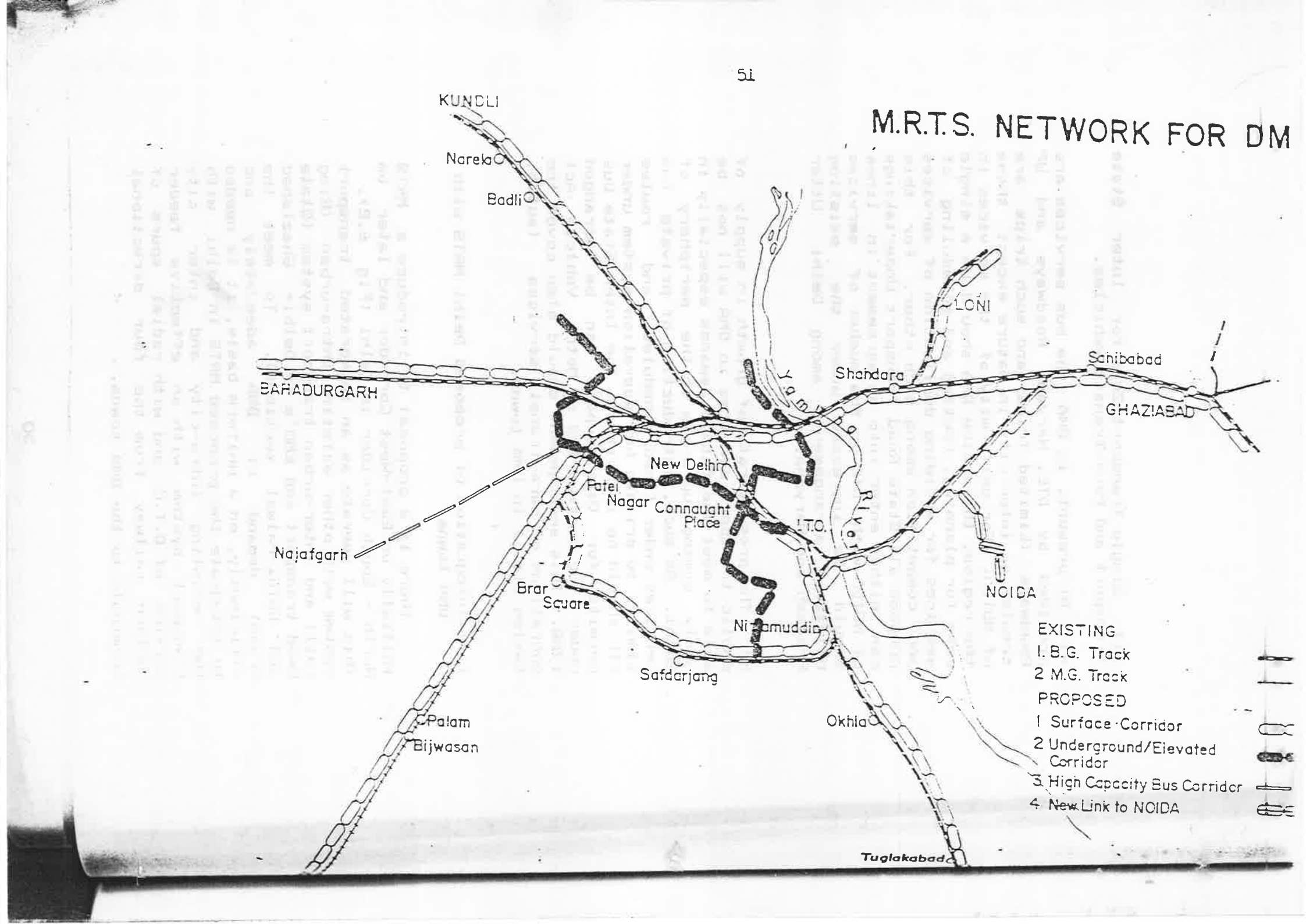
ii) Single Transport Zone for Inter State transport and Para-transit Vehicles.

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 (Ring rail) and inter-urban transport system (State Road transport and EMU's on Delhi- Ghaziabad 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.


M.R.T.S. NETWORK FOR DM
KUNDLI
Narela
Badli
BAHADURGARH
Najafgarh
LONI
Shahdara
Sahibabad
GHAZIABAD
Yamuna
River
New Delhi
Patel Nagar
Connaught Place
I.T.O.
NOIDA
Brar Square
Nizamuddin
Safdarjang
Palam
Bijwasan
Okhla
Tuglakabad
EXISTING
1. B.G. Track
2 M.G. Track
PROPOSED
1 Surface Corridor
2 Underground/Elevated Corridor
3 High Capacity Bus Corridor
4 New Link to NOIDA

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 the 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

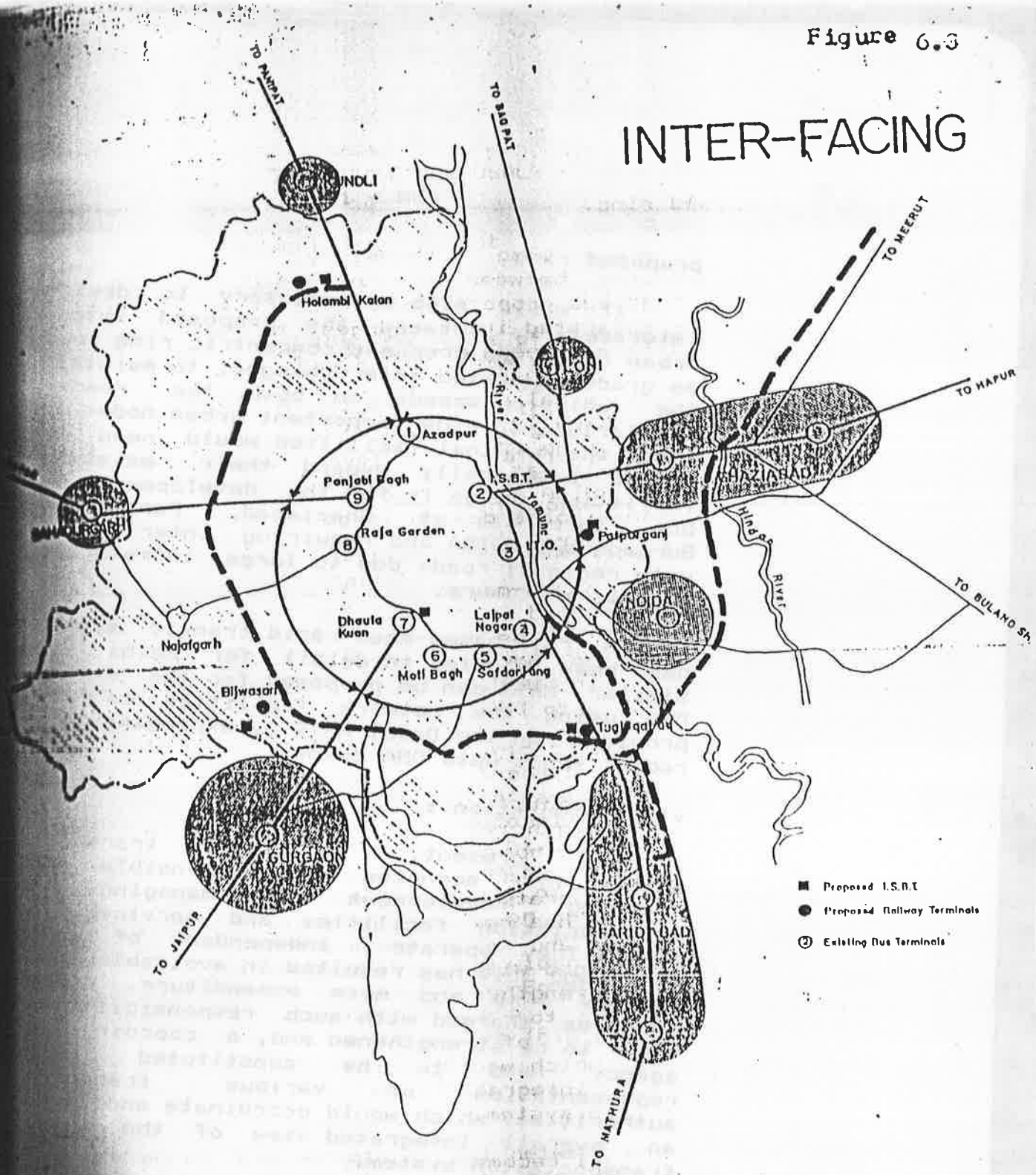
b) the consequent need for new terminals.

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 accessability 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 rd 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

Figure 6.3


INTER-FACING
TO PANIPAT
TO BAGPAT
TO MEERUT
TO HAPUR
TO BULAND SH
TO JAIPUR
TO MATHURA
SONDLI
Holambi Kalan
DELHI
Yamuna River
Hindon River
1 Azadpur
2 I.S.B.T.
3 I.T.O.
4 Lajpat Nagar
5 Safdar Jang
6 Moti Bagh
7 Dhaula Kuan
8 Raja Garden
9 Punjabi Bagh
Najafgarh
Bijwasan
Palpargani
Tughlaqabad
GHAZIABAD
NOIDA
GURGAON
FARIDABAD
Proposed I.S.B.T
Proposed Railway Terminals
Existing Bus Terminals

proposed ring.

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 sysuem for Delhi and DMA would be suitably incorporated in the Funcational 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 Bahalgarh and Baghpat, and strengthening and widening of existing alignment on Rohtak-Sonepat-Bahalgarh, Baghpat-Meerut and Jhajjar-Gurgaon-Faridabad stretches (Fig 6.4).

II. RAIL

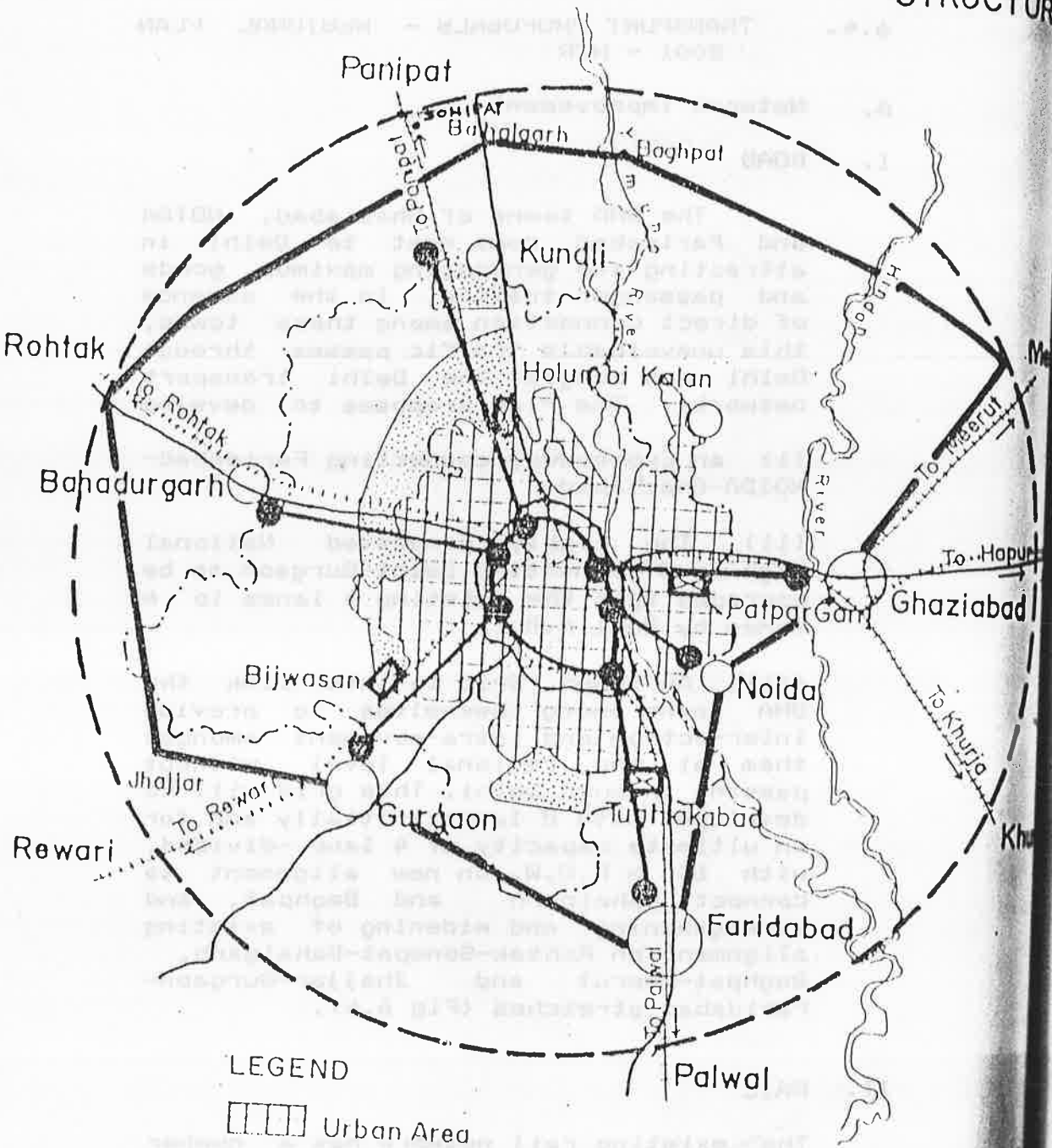
The existing rail network has a number of bottle-necks which can be removed to create larger capacity in the rail network and provide an efficient movement of commuter traffic between the DMA towns and Delhi by;

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.

PROPOSED
TRANSPORTATION
STRUCTURE



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. As of 1990, the total switching capacity available in the DMA was of the order of 574636 lines and the number of waiting list accumulated was 216925. The townwise switching capcity and waiting list position is as under:

Table 2.5.1 : 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 :Deptt. of Telecommunications.

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 as well 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 (1992-97) - (No. of lines)
Ghaziabad-Loni	64045
NOIDA	52700
Faridabad-Ballabhgarh	65700
Gurgaon	50223
Bahadurgarh	5640
Kundli	400
DMA excl.Delhi	2,38,308

Source: Deptt. of Telecommunication.

7

PUBLIC AND ESSENTIAL SERVICES

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 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 of Bahadurgarh, and the remaining towns are being served through underground sources. 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 area. 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 Ganga.

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 Delhi Water Supply and Sewage Disposal Undertaking, however, has been following a norm of 315 lpcd (70 gallons per capita a day). Looking to the fact that large additional raw water sources are not immediately in sight, these norms 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: Delhi depends on the Yamuna for raw water, though part of Delhi in the trans-Yamuna area, drawns from the Ganga . Tehri dam and Kishau dam in Uttar Pradesh, and Renuka dam in Himachal Pradesh, when complete, would supply major portion of Delhi's water needs by 2001. Production of potable water in October 1991 was of the order of 2129 mld through various treatment plants as given below, giving roughly a per capita production of 226 lpcd which is much short of the norm of 315 lpcd.

Treatment Plant	Capacity & present production: mld
Wazirabad	545
Chandrawal	408
Haiderpur	454
Bhagirathi(Shahdara)	454
Okhla	55
Ranneywells and Tubewells and Deep bore hand pumps	213
Total	2129

By March 1992, this capacity will go up by 15 mld.

By and large (as of October, 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 553 unauthorised but regularised colonies, water supply is available in 541 colonies, and in 4 more colonies, the water

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.	2129	2129	226	97% (except slums & new colonies)	Full	6170000 domestic	-
Ghaziabad-Loni	Tubewells (98) 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)	18.2	NIL	115	275000	50%	25000 Domestic 1500 others	1200 lpm near river 200 lpm away from river.
Gurgaon	Tubewells (45) Handpumps (NA) Standposts (280)	7-5	NIL	70	80%	30 sq km	15777 Domestic 4000 Industry	70 to 380 lpm
Bahadurgarh	Canal (7 days a month) Tubewells (8)	1-63	NIL	91	Full	Full	N.A.	N.A.
Sonipat	Handpumps	-	Not Available				-	

Figures in brackets indicate the number of source units.

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 486 unauthorised colonies, not yet regularised, (This number keeps on going up every year) with a population of fifteen lakhs out of which 69 are provided with regular water supply and for another 8 colonies, the works are in progress.

The D.W.S.& S.D.U. has so far installed 22 tubewells, 500 deep bore hand pumps, and 500 new public water hydrants. The Undertaking has a proposal to cover the rest of the colonies constructing 100 more tubewells and 1000 bore hand pumps, potable stand post and through tankers.

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 929 with a population of the 15 lakhs, 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. The yield of the present 50-60 metres deep tubewells is declining, besides some of them are also becoming brackish, 200-300 metre deep tubewells are to be explored. 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 availability in MLD (Oct.91)
	* 225 lpcd	** 315 lpcd	*** 360 lpcd	
112 (NCR Plan)	2520	3528	4032	2129
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 1995 which would demand at 315 lpcd, a total quantum of 3307 mld in 1995 and 3465 mld by 1997. Delhi has to depend for its raw water on the neighbouring states as the flows of the Yamuna are grossly inadequate, especially during summer months. The Undertaking indents raw water from the Bhakra Nangal against Delhi's share during summer. Ground water in Delhi is meagre and also unpotable for drinking except a few pockets. Tehri dam and Kishau dam in Uttar Pradesh, and Renuka dam in Himachal Pradesh are identified as the sources of raw water for Delhi. 300 cusecs (675 mld) water is earmarked for Delhi in Tehri storage, first phase of which is scheduled for completion by 1995 , 1558 mld (0.5 M A F) in Kishau and 1246 mld (0.37M A F) in Renuka dam. To augment the present production in order to meet this demand the following schemes have been proposed by the Undertaking.

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 Shahdara to treat 300 cusecs (675 mld) of water from the Tehri dam.

3) Construction of 100 mld treatment plant at South Shahdara to treat water from Upper Ganga Canal in anticipation of commitments by UP from Tehri.

4) Construction of 450 mld treatment plant at Haiderpur.

5) Sinking of Ranney wells for 10 mld of water.

For the 100 mld treatment plant of Nangloi, water will be drawn from Delhi Tail Distributory of Western Yamuna Canal carrier system in lieu of the water meant for irrigation use in Delhi. Govt. of Haryana is said to have been requested by Delhi Administration to release 70 cuses uniformly instead of 277 cusecs for a period of 8 days in a cycle of 32 days. Irrigation in Delhi can be met by treated sew-age effluent.

The Haiderpur treatment plant for 450 mld in fact is based on exchange of treated sewage effluent with Haryana.

Tehri, Kishau and Renuka Dams are included in the 8th Plan for implementation, but firstly, no firm time table for the implementation of the projects 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 new developments Narela, Rohini and Papankalan and as such the Western Yamuna Canal should also be taken into consideration. Similarly, needs

of the developments in the South of Mehrauli-Badarpur road, extension of villages and Abadies beyond Lal Dora limits of the rural villages, also need serious consideration.

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. Moreover, the second 450 mld water treatment plant planned at Haiderpur will be a reality only when additional raw water becomes available from Haryana. 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. This again is based on the assumption that 300 cusecs of water would start flowing in them. 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, additonal 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. Rate of water supply in the city is 189 lpcd (1990).

The population of the city complex including Loni, as of 1991, is estimated at 5.56 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 water 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 have been bored. Uttar Pradesh Government is said to have 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 at a likely cost of Rs.42 crores. However, no implementation schedule for the project has been intimated.

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 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 5.6 lakhs:

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)	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 onnections for all users to plug wastages.

GURGAON: The present source of water is ground water through 25 tubewells yielding 70 to 380 lpm each, and a total of 7.5 mld. Water is generally brackish and the static level is going down gradually. The supply is 70 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 Pai village, near Sonepat to Gurgaon at an estimated cost of Rs. 47 crores to supply 40 cusecs or 181 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	7.5
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 18.2 mld giving a per capita consumption of 115 lpcd. 50% of the city area and 2.75 lakh (45%) 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 60 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 Availability in MLD
225 (Minimum suggested for DMA towns in NCR Plan)	225	16.20
360 (Target suggested in NCR Plan)	396	

At the end of 1994-95, 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, since 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 and stored. HUDA and Municipal Water works have a storage capacity of 135 million litres for this purpose. Both together supply 4.63 mld, giving a consumption rate of 91 lpcd. Further scope to draw more water from Bahadurgarh minor and also from underground sources 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 Availability in MLD
225 (Minimum suggested for DMA towns in NCR Plan)	45	4.63
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 Availability in MLD
225 (Minimum suggested in DMA towns in NCR Plan)	38	NIL
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

Water is a crucial requirement and the sceanrio for the future, appears to be grim, particularly for Delhi and Faridabad. The situation would become comfortable in Gurgaon and Bahadurgarh in case the proposed canal is completed. It would be comfortable in Ghaziabad and NOIDA in case water from Ganga is released.

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. The total demand is of the order of 3,328 mld ..... while the supply was of the order of 2356 mld. Town-wise situation, however, reveals a dismal picture in the case of Gurgaon and Faridabad Complex.

By the year 2001, the demand may shoot up to 5364 mld for the assigned population 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 so because the chances of realising the proposals of local bodies and various water supply organisations, for augmenting the water suply seem remote. (Table 7.2)

- In the case of Delhi, the future supply of raw water is on the basic assumption of water becoming available from the 3

Table : 7.2 Water Quantum in MLD

Name of town	1990 Demand @	1990 Supply	2001 Demand at 360 lpcd	2001 Likely Availability MLD	Remarks population (in lakhs) 1990 Estimated	2001 Assigned
Delhi UT	2950	2129	4032	2070	90.0	112.0
Ghaziabad-Loni	180	127	396	267	5.8	11.0
NOIDA	60	60	198	80	2.68	5.5
Gurgaon	34	7.6	252	7.5	1.5	7.0
Faridabad-Ballabgarh	90	18.2	360	45	4.0	10.0
Bahadurgarh	13	4.63	72	4.63	0.58	2.0
Kundli	1.1	Nil	54	NA	0.05	1.5
	3328.1	2356.1	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. The requirement will also certainly go up since in the absence of steps to contain its population to 112 lakhs, it will go beyond the figure in 2001.

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 is in the initial stages.

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

dams, namely, Tehri and Kishau in U.P. and Renuka in Himachal Pradesh. The first two are under excution 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. The only solution is to persuade U.P. to release water from the existing supply from the Ganga and recoup it by boring tubewells as is being proposed for the supply to Ghaziabad. The possibility of using the existing Hindon river as the channel for carrying this water should also be explored. this will be economic and water can be obtained at the earliest.

- In the case of Ghaziabad - Loni, about 50 cusecs of water is expected from Ganga Canal. No programme for the project has ,however, been indicated.

- 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.

- 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 teh 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 vulnerable 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 Ganga. The issue of a proper conveyance system for Delhi and the other DMA towns also needs to be approached from a total angle to meet the requirements of all the DMA towns, including Delhi. The Central Water Commission should undertake studies on a priority basis about its need, fensibility and possible alignment, rather than leaving it to each town to plan its own programmes.

7.2 SEWERAGE

Provision of sewerage system is next only to water supply in importance lest the decay in environment will prove detr- imental to human well-being and health.

DELHI: About 1700 mld of sewage is generated in Delhi as of 1991. The capacity (October 1991) of the sewage treatment plants is around 1270 mld and the plants are at Okhla, Coronation Pillar, Keshopur, Rithala, Vasant Kunj and Shahdara, in addition to oxidation pond (54 mld). 17 nallahs carry the sullage to empty it into the river Yammuna 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 absoulute terms, the population unserved rose from 42 lakhs to 45 lakhs.

Of the 553 unauthorised regularised colonies, only in 201,sewerage facilities exist. The plan is to extend the sewerage facilities in all the remaining 352 colonies by the end of the 8th Five Year Plan at a cost of Rs. 50 crores.

Only 17 of the 44 resettlement ,colonies have sewerage system. In addition, in 10 colonies at a cost of Rs. 9.90 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 1997 at a cost of Rs 50 crores.

80 out of the 108 urban villages have sewerage system. 5 more are expected to be covered by the end of the current year and the remaining 23 by the end of the 8th Plan at a cost of Rs. 15 crores.

To the unauthorised non-regularised colonies which are about 486 in number, the present policy is to extend low cost sanitation facilities. So also at present more than 650 JJ clusters and the rural villages, the proposal is to cover them all by low cost sanitation measures.

The treatment capacity in Delhi is expected to reach 2265 mld by the end of the

8th Plan (1997) against the need for 2770 mld which is the likely generation of sewage according to the programme for supply of water. 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 depression zones, the problem of sewage disposal is acute, as deep cuttings and pumpings are involved in the sewage disposal system. At present, obnoxious industrial affluents also get discharged mostly into the Hindon river without any treatement, 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. The [illegible] could be generated is about 220 mld on the basis of the likely quantum of water supply.

NOIDA : The sewage is collected at intermediate sewage pumping stations, from where it is taken to the main sewage pumping station, before reaching the treatement plant site. At present, the sewage is treated through an oxidation pond. Another oxidation pond is under construction. The effluents from the oxidation pond are let into irrigation channel to reach finally the

river Yamuna. The proposal for sewage treatment plant has been there since long, which should be expedited by 1995. 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: At present 70% of the NIT area of Faridabad has been provided with sewerage system. Untreated sewage/sullage water at the end of system is pumped into open storm water drain and it reaches the tail of Gaunchi drain. The Gauchi drain meets the River Yamuna near village Bidukei near Haryana-UP border. Effluent of Faridabad town is mostly used by villages for raising vegetable crops.

Effluent of Haryana Urban Development Authority and old Faridabad area on eastern side on Railway line is pumped into oxidation ponds located near village Mirzapur. The treated effluent is used for irrigation and surplus is pumped into Gurgaon Canal. Various industries on Delhi-Mathura road dispose off their industrial as well as domestic effluent into Budha Nallah leading to River Yamuna near village Aminpur on Haryana UP border. 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 Sulab 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 functioning, One oxidation pond is under construction. The sewage is disposed of on land without treatment. In rainy season untreated or surplus sewage finds its way into the Yamuna through Najafgarh Drain.

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

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	3168	1270	2270
Ghaziabad-Loni	11	317	Nil	50
NOIDA	5.5	158	10	20
Gurgaon	7	201	Nil	70
Faridabad-Ballabgarh	10	288	18	40
Bahadurgarh	2	58	Nil	Nil
Kundli	1.5	43	Nil	Nil
Total	147	4223	1298	2450

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 4223 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.

sanchalayas 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.

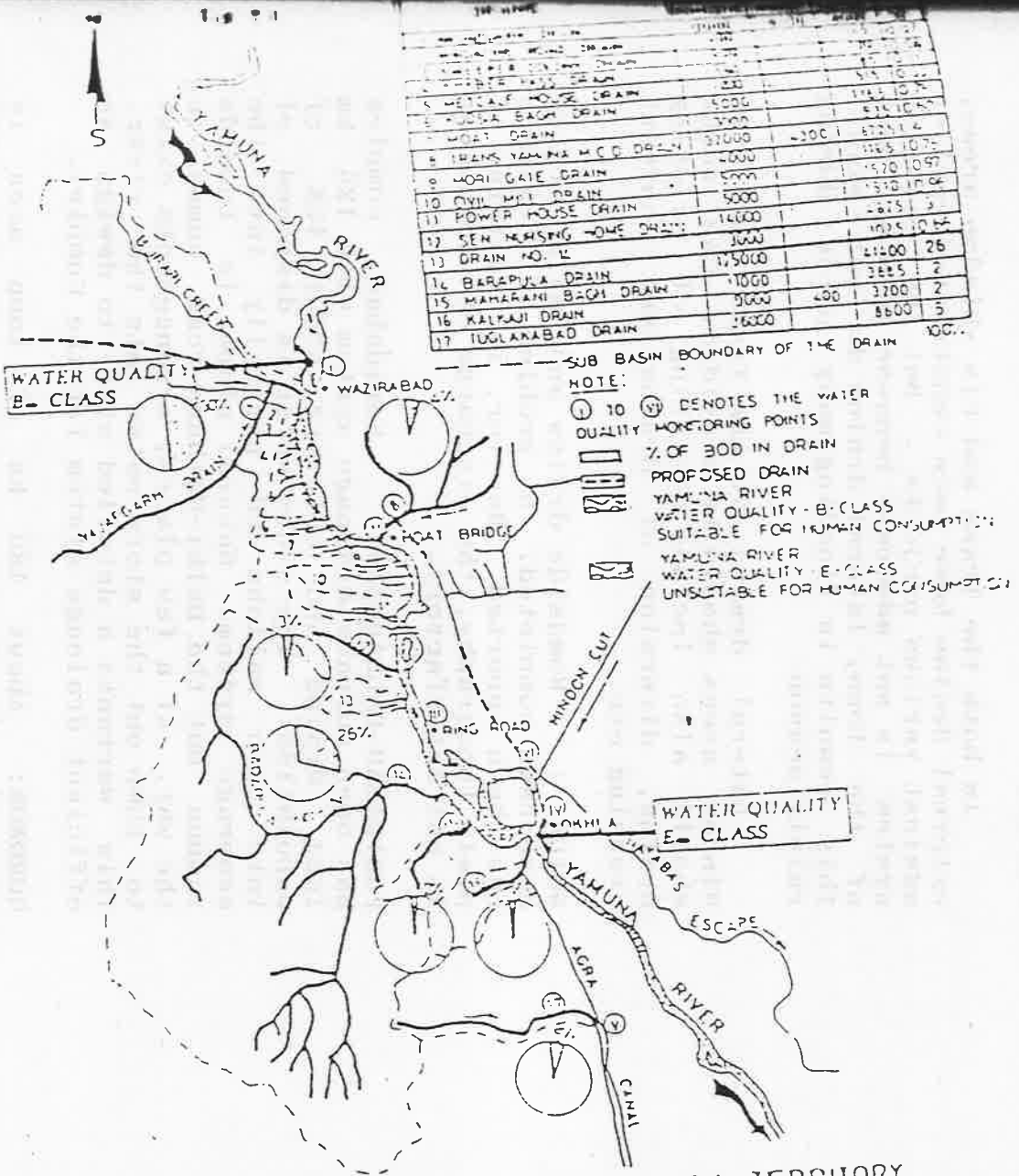
Till such time a proper treatment plant with adequate capacity is constructed, low cost sanitation measures should be adopted to improve and provide a healthy environment.

7.3 STROM 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 Nagafgarh drain in the south Badarpur drain originates from Delhi ridge and flows north-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 storm water discharge in Delhi are not local but have regional bearing covering areas in Haryana and Rajasthan. Najafgarh drain and Barapula Sushak 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



5 METCALF HOUSE DRAIN	5000				
6 SUJAN BAGH DRAIN	3000				
7 MOAT DRAIN	37000	-300			
8 TRANS YAMUNA M C D DRAIN	2000				
9 MORI GATE DRAIN	5000				
10 CIVIL MCT DRAIN	5000				
11 POWER HOUSE DRAIN	14000				
12 SEN NURSING HOME DRAIN	3000				
13 DRAIN NO. 12	175000				
14 BARAPULA DRAIN	11000				
15 MAHARANI BAGH DRAIN	9000	400			
16 KALKAJI DRAIN	16000				
17 TUGLAKABAD DRAIN					

DRAINS IN DELHI UNION TERRITORY

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 detailled studies.

GHAZIABAD : Presently only some open nallahs are serving as storm water drains. 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 system is not adequate because in most part of the town, lateral drains do not exist. This results in flooding many parts during rainly season.

Lateral drains in the Trans and Cis-Hindon 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 sufrace drainage system with 126 km long drains and covering about 45% of population. The storm water is disposed of into open nallahs 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 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 UT and Haryana to work out an integrated plan for a permanent solution to avoid drainage problem in Kundli and also in Delhi UT.

7.4 SOLIDWASTE DISPOSAL

DELHI: The city's solidwaste is dumped into the sanitary landfills and also in depressions. Presently, there are tow 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 tones 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 area

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

GURGAON: About 180 gm of garbage is produced a day per capita of which 140 gm is manged. 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. Disposal is through dumping on the open ground at the outskirt 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 forms 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 theh following estimates for assigned population:

in Tonnes

DMA Town	Managed in 1990 per day	Generation by 2001 AD per day	Per Capita of garbage in kg a day
Delhi	2700	7300	0.650
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 landfills, composting and incineration should be adopted. Production of gas from landfills, generation of electricty and compost manure besides recycled material 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.

The Regional Plan-2001 NCR, in view of the need to enable population to reside in the DMA towns and reduce their dependence on the Capital, 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 need consideration. Establishment of engineering and medical colleges in the DMA towns also merit consideration. The implementation of these proposals will automatically reduce pressure on similar institutions in Delhi.

Table 7.3 : Educational Facilities in DMA Towns

Town	COLLEGES					SCHOOLS			
	Art, Science, Commerce College	Medical	Engineering	Poly-Tecnic	Others	Higher Second ary/ Inter	Secon dary/ Matric	Junior Secon-dary Middle	Primary
Delhi UT	52	14			13	981		379	1797
Ghaziabad-Loni	1	-	-	-	1	16	17	37	76
NOIDA	1	-	-	-	-	-	-	-	-
Faridabad-Ballabgarh Complex	3	-	-	1	3	12	18	31	62
Gurgaon	2	-	-	-	4	4	11	16	21
Bahadurgarh	2	-	-	-	1	4	5	5	9
Kundli	-	-	-	-	-	-	1	1	3

Note : In addition Delhi UT has five Universities and institutions 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-Ballabgarh	3	16	-	-	-	1	-	-	432
Gurgaon	3	3	1	-	1	1	-	1	164
Bahadurgarh	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 stautory 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, Singrauli 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 1990-95 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 by 1990-95. In order to cater to the power requirements of the areas being developed by DDA and other agencies in the Trans-Yamuna Area, Sarita Vihar, Papankalan, Rohini, Vasant Kunj, etc. DESU is establishing 220 KV Substations near the load centres at Rohini, Shalimar Bagh, Vasant Kunj, Sarita Vihar, Wazirabad alongwith associated Transmission and Distribution System.

b) OTHER DMA TOWNS :

According to the Thirteenth Power Survey, the shortage at the end of 1994-95 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 dvelopment of the Region. The Ministry of Energy is of the opinion that the additional power demand in NCR during 1990-95 could be met from the Central reserves of the central stations located in and around NCR if necessary supplemented by a captive plant.

iii) PROBLEMS OF DISTRIBUTION

600 MW Gas Station at Bawana to be extended by 300 MW at Bawana, 40 MW Gas Station at Dadri with a possible extension by 400 MW are expected to be taken up during 1990-95. Possibility of privatisation in power generation should be

explored as in the case of Faridabad where Industrialist's 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. At the instance of the Department of Power, the Central Electricity Authority has undertaken an exercise to identify the gaps and weaknesses in the subsystems and plan for strengthening and extending the transmission and distribution systems. The Transmission and distribution requirements at the nodal growth centres - Priority and DMA towns including the load demands have already been tentatively arrived at. 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 has in collaboration with the NCR Power Constitutents finalised schemes for strengthening the Transmission and distribution network in the development of nodal centres for the 8th Plan.

8

LANDUSE

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	Perspective Year	Master Plan Population (in lakhs)	Population as assigned by NCR Plan 2001 (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

AREA IN HECTARE

Sl. No.	Town (Year)	Residential	Industrial	Commercial	Institutional	Parks & Open spaces	Transport & Communication	Others	Total Area/ Master Plan area
1.	Delhi	N O T A V A I L A B L E						-	
2.	Ghaziabad	3160.33	1949.63	48.55	132.62	642.50	647.58		6576.67
	(1982)	(48.05)	(29.56)	(0.73)	(2.01)	(9.81)	(9.84)		(100.00)
3.	Loni	455.72	46.75	0.60	2.50	45.00	47.06	-	597.63
	(1984)	(76.25)	(7.82)	(0.10)	(.04)	(7.53)	(7.88)		(100.00)
4.	NOIDA	960.50	668.34	52.00	30.86	54.00	300.00	74.14	2139.84
	(1989)	(44.89)	(31.23)	(2.43)	(1.45)	(2.52)	(14.02)	(3.46)	(100.00)
5.	Faridabad††	2261.53	904.00	71.35	N.A.	N.A.	N.A.	5870.39	9107.27†
	(1990)	(24.83)	(9.93)	(0.78)				(64.46)	(100.00)
6.	Gurgaon††	1868.85	366.94	27.99	N.A.	N.A.	N.A.	7108.22	9372.00†
	(1990)	(19.94)	(3.92)	(0.30)				(75.84)	(100.00)
7.	Bahadurgarh	296.48	205.87	N.A.	N.A.	N.A.	N.A.	982.47	1394.82†
	(1990)	(14.80)	(14.76)					(70.44)	(100.00)
8.	Kundli	-	43.50	-	-	-	-	-	1400.00†
	(1990)		(3.10)						(100.00)

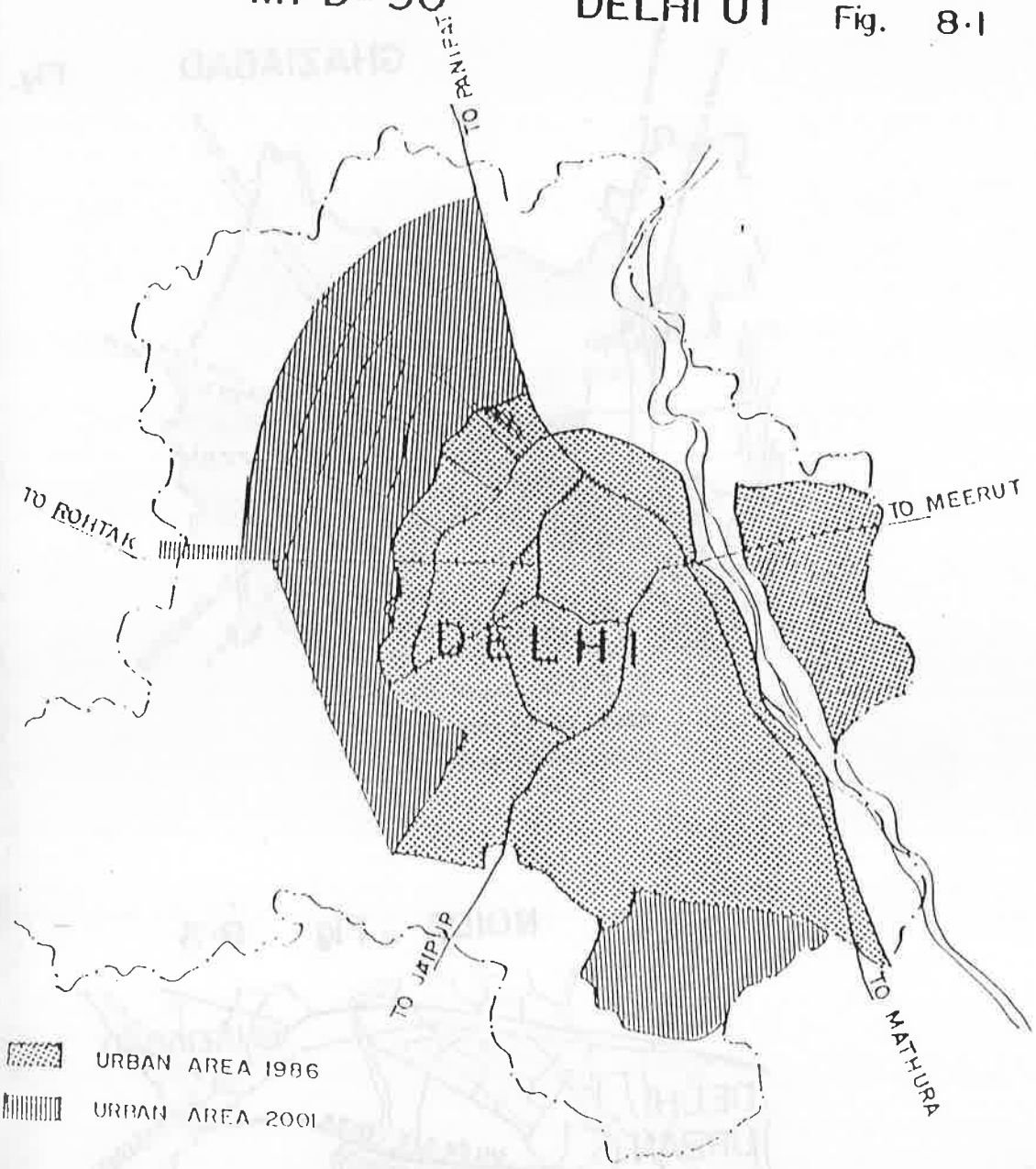
Note : † Total Master Plan area
†† Does not include old city area

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.

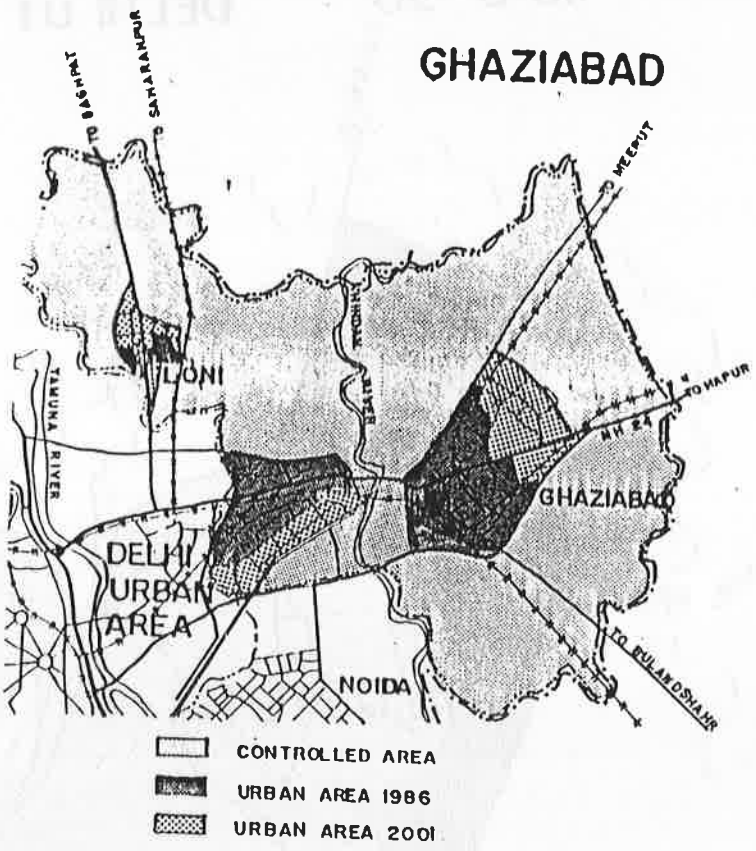
AREA IN HECTARE

ers	Total Area/ Master Plan area
	6576.67
	(100.00)
	597.63
	(100.00)
	2139.84
	(100.00)
	9107.27*
	(100.00)
	9372.00*
	(100.00)
	1394.82*
	(100.00)
	1400.00*
	(100.00)

MPD-90 DELHI UT Fig. 8.1



GHAZIABAD Fig. 8.2



NOIDA Fig. 8.3

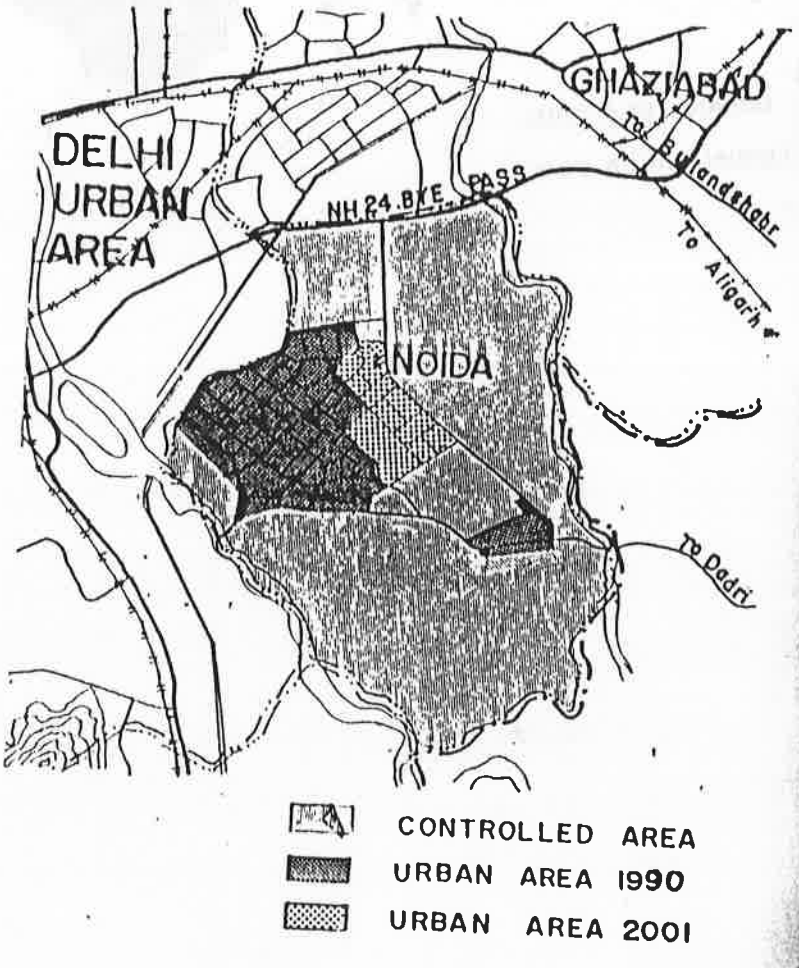
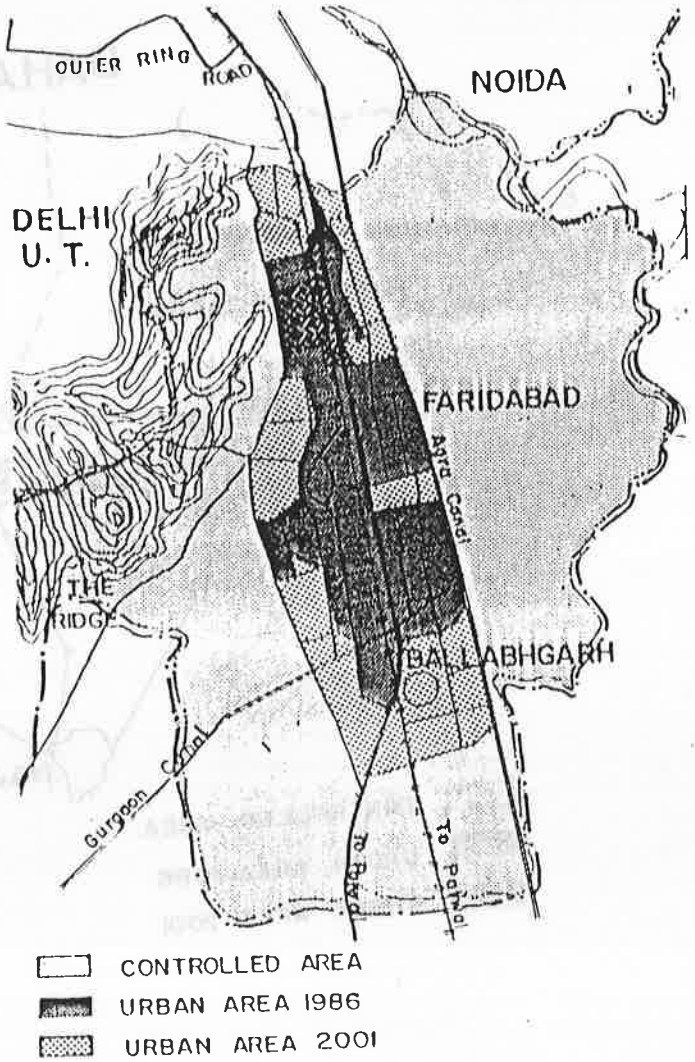


Fig. 8.2

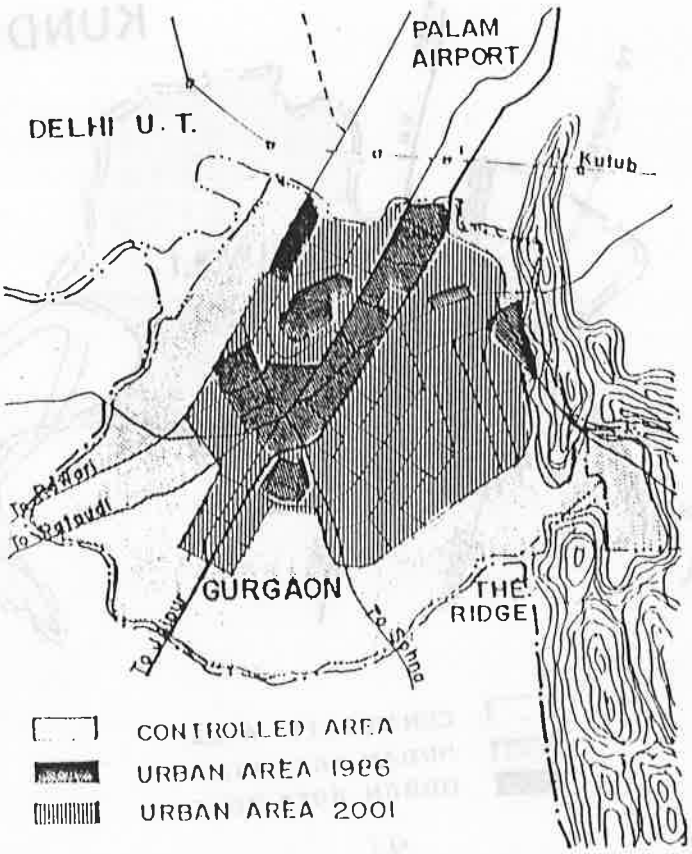
FARIDABAD

Fig. 8.4



GURGAON

Fig. 8.5



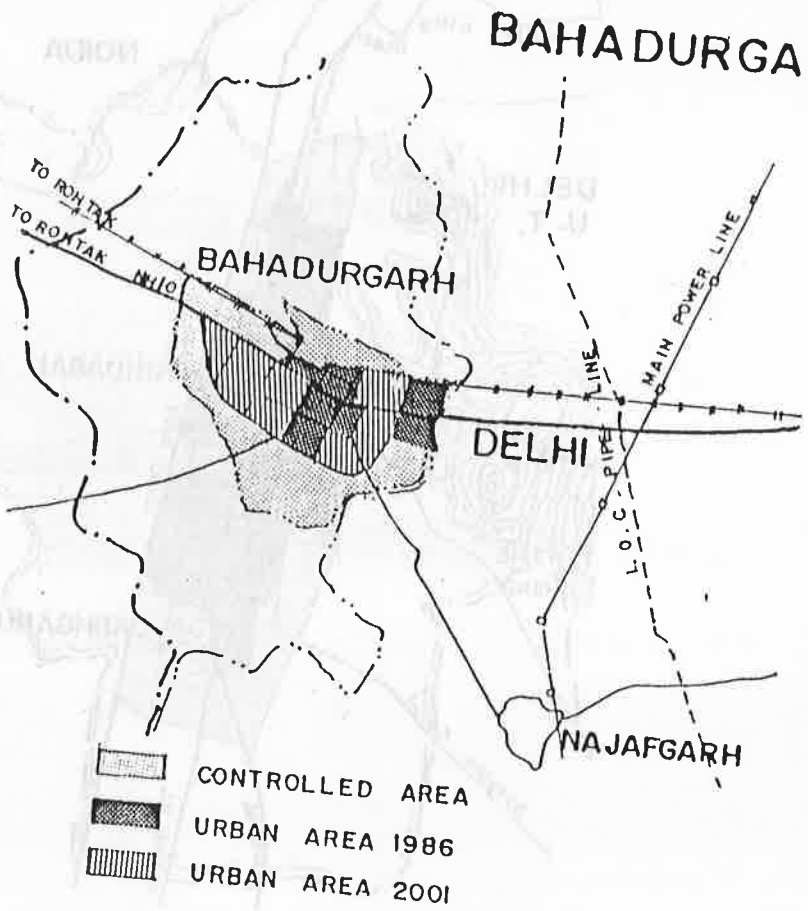

BAHADURGARH
TO ROHTAK
TO ROHTAK
NH10
BAHADURGARH
MAIN POWER LINE
DELHI
NAJAFGARH
CONTROLLED AREA
URBAN AREA 1986
URBAN AREA 2001

Fig.

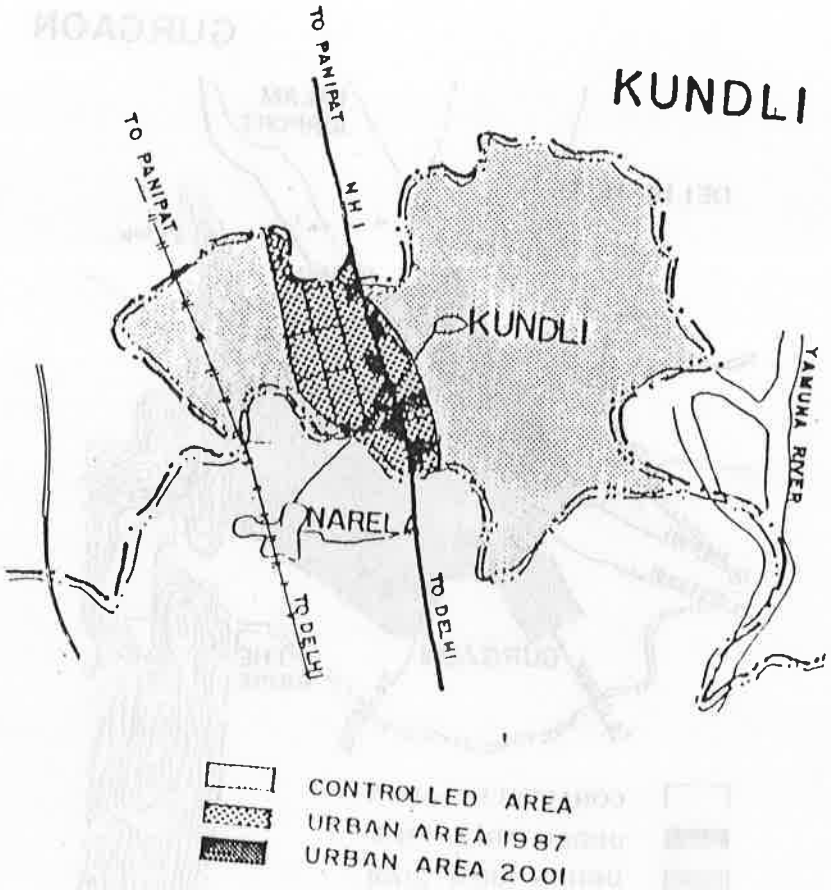

KUNDLI
TO PANIPAT
TO PANIPAT
NH 1
KUNDLI
YAMUNA RIVER
NARELA
TO DELHI
TO DELHI
CONTROLLED AREA
URBAN AREA 1987
URBAN AREA 2001

Fig. 8.7

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 of 1.0 lakh to 5.0 lakh population, a density of 110 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 culturable 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

i) Residential
ii) Commercial
iii) Industrial
iv) Government Offices
v) Recreational
vi) Public and Semi-Public
vii) Circulation
viii) Open spaces, Parks, Playground
ix) Grave yards/Cemeteries/burning Ghats.

b) Green belt/green wedge

i) Agriculture
ii) Gardening
iii) Dairying
iv) Social Forestry/Plantation
v) Quarrying
vi) Cemetries
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 new development areas in the respective towns (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 Requirement -Regional Plan-2001 (Ha.)
1.Delhi UT	112.00	177	177	63277
2.Ghaziabad Loni	11.00	125	111	8800
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 84.3 lakh urban population and had a gross density of 188 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, during 1990-95, the 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 indicatd 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 94968 ha. by 2001. This accounts for a gross density of 156 persons per ha. which is much higher than the present (1981) density of 90 persons per

SL.NO.	TOWN	RESIDENTIAL	INDUSTRIAL	COMMERCIAL	INSTITUTIONAL	PARKS & OPEN SPACES	TRANSPORT & COMMUNI-CATION	OTHERS	TOTAL MASTER PLAN AREA
1.	Delhi Uroan (2001)	29388.00 (50.00)	3527.00 (6.00)	2351.00 (4.00)	4702.00 (8.00)	11756.00 (20.00)	7053.00 (12.00)	- -	58777.00 (100.00)
2.	Ghaziabad (2001)	4436.84 (49.84)	1989.00 (22.34)	345.00 (3.88)	461.00 (4.18)	496.56 (5.58)	1134.94 (0.43)	38.05 (12.75)	8901.39 (100.00)
3.	Loni (2001)	552.00 (55.81)	21.00 (2.12)	168.00 (16.99)	68.00 (6.88)	-	180.00 (18.20)	-	989.00 (100.00)
4.	Noida (2001)	1600.00 (36.17)	989.00 (22.27)	191.00 (4.32)	720.00 (16.28)	292.00 (6.60)	435.00 (9.84)	200.00 (4.52)	4427.00 (100.00)
5.	Faridabad-Ballabgarh (2001)	4017.00 (44.10)	2001.62 (21.98)	341.70 (3.75)	86.23 (0.95)	1159.50 (10.73)	750.20 (8.24)	751.01 (8.25)	9107.26 (100.00)
6.	Gurgaon (2001)	4906.00 (50.17)	1536.00 (15.71)	255.00 (2.61)	350.00 (3.58)	850.00 (8.70)	1154.00 (11.80)	727.00 (7.43)	9778.00 (100.00)
7.	Bahadurgarh (1991)	695.00 (44.00)	481.00 (30.34)	89.91 (5.66)	71.28 (4.49)	123.36 (7.77)	126.36 (7.98)	-	1586.56 (100.00)
8.	Kundli (2001)	400.00 (28.58)	450.00 (32.15)	250.00 (17.85)	100.00 (7.14)	-	200.00 (14.28)	-	1400.00 (100.00)
Total (DMA)		45995.64 (48.43)	10995.57 (11.58)	3991.61 (4.20)	6588.51 (6.91)	14677.42 (15.46)	11033.50 (11.62)	1761.06 (1.81)	94963.31 (100.00)

Note: Figures in bracket indicates 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 beenobtained from Govt. of Haryana. Residential area includes 405 ha of old city area. 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.

ha. The landuse analysis of the proposed DMA urban mass reveals that DMA would be predominently 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 botonical 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 n 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, botenical garden, Marketing yard, low density institutional areas of National importance which may require more than 20 ha. on the outer periphery (Greater NOIDA).

Faridabad-Ballabhgarh	Central Government and Pub Sector Offices, Wholesale Mar for Iron & Steel 'and auto-part University, regional recreatio area, Modern Super Market.
Gurgaon	Central Government & Public Sect Offices, Wholesale Market for Ir & Steel, Marketing yar Institutions of higher learning a research, Modern Super Market.
Bahadurgarh	Central Government & Public Sect Offices, Higher level researc institutions.
Kundli	Wholesale Market for Fruits a Vegetables and Foodgrains.

8.5 Super-imposition of Regional Transport Network on the Master Plan

The NCR Plan - 2001 envisages construction of Expressways, Regional Roads (Inner and Outer Grid) augmentation of Rail Network. These roads and Rail Network pass through some of the Delhi Metropolitan Areas. It would, therefore, be essential that the alignment of the Regional Transport Network with the proposed right of ways are sumperimposed on the Master Plans of the DMA towns for which necessary amendments may be undertaken by the concerned Authorities.

9

ENVIRONMENT AND ECOLOGY

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 ENVIRONMENAL 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

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

Area	Fuel type	Fuel Consumption T/M	Emission of Pollutants (T/M)				
			Particulate	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 Tahirpur Industrial areas	Coal	422.1	4.221	3.200	18.995	4.221	0.633
	Furnace Oil	974.0	0.865	6.618	0.722	0.138	0.731
	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 Colony	Coal	732.0	7.320	5.563	32.940	7.320	1.098
	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	6.544	34.382	8.950	2.644
Loni Road, Motiram, GT Road	Coal	561.0	5.610	4.264	25.245	5.610	0.841
	Furnace 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			
DLF			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

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 has 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 watar 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.

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 violatng 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 autorities 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/M	Emission of Pollutants (T/M) Particulate	SO_2	CO	HC$	NO_x
Coal	21400	213,996	162,636	962,982	213,996	32,100
Furnace Oil	4522	3,414	26,115	2,847	0.543	33,915
LDO	19135	4,543	62,766	11,460	2,364	50,031
Bagasse	67500	640,000	-	-	-	40,500
Rice Husk	6415	51,318	-	-	-	3,849
Wood	1653	4,131	1,239	24,795	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, 537 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 matter 15.5%, hydrocarbons 15.4 %, Sulphurdioxide 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 T/M	Emission of Pollutants (T/M) Particulate	SO	CO	HC8	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
Loo	667.1	0.196	2.703	0.494	0.094	2.198
wood	2474.0	12.370	1.856	37.110	44.532	12.370
Rice Husk	3402.1	27.217				2.041
Total		129.686	114.005	420.292	129.610	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 earmaked 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.

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 UPSIDC 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-Rohtak 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 oooupled. Only 25 industrial units are functioning and as such the problem of pollution is not very aoute today.

9.2 REMEDIAL MEASURES :

a) Delhi U.T.

The primary pollutants in the oity are the hazardous and obnoxious industrial units, and the large and medium soale units looated in the non-oonforming areas mainly in the residential areas. Taking into aooount the question of oonforming/non-oonforming 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. Similiarly, 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 polioy 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 enoouraged to move to the NCR areas. The Delhi Administration is also in the prooess of asoertaining the possible industries whioh 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 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 has facilities for treatment of affluents. 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 disappearence 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 were 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.

10

ROLE AND DEVELOPMENT PROGRAMME FOR DMA TOWNS 1991-2001

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 which 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 of its socio-economic and political life. The city performs a variety of political, cultural and administrative functions 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 and, therefore, there is an inevitable need for planning the city in its regional context. The Master Plan for Delhi provides a lead in this direction by envisaging 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 other two prominent physical features dominating the city are the Ridge and the River Yamuna. Other features needing conservation are the architecutral features and buildings of old

1. The Delhi Development Authority and other agencies engaged in looking after Capital, have been making efforts to preserve this image and its features. 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 are 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 developments 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. The trans-Yamuna colonies are also generally breft of noticeable green spaces.

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 National Centre for Arts.

v) Demolition of 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 the space for parking of vehicles is available within the premises of the depot is very adequate.

iii) Landuses in Delhi UT :

Delhi which is inextricably linked to India's destiny has a proud historical

background and distinctive architectural heritage. Lutyen's Delhi was laid out with clearly demarcated zones of activities - the administrative complexes and the central vista which now form the Rashtrapati Bhawan, Central Secretariat, Parliament House and the nearby areas, few residential complexes, and the prestigious shopping and commercial complexes such as Connaught Place. The future landuse 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; cultural and administrative. The "Core Area" 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 Programes :

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 MPD 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 programmes in Delhi 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 shfted 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 Wholsale 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 made 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 adhoc policies of resettling squatters 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 be 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 housing demand particularly for the low income groups A comprehensive programme which would incorporate aspects like Site-and-Services and Environmental Improvement of Slums to benefit 100% of the EWS beneficiary population need to be conceived and pursued. In the resettlement colonies also there should be mixed and integratged development for all income groups, rather than for slum dwellers alone.

vii) Desirable Sectors of Growth for Future:

In order to maintain the identity and special 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 are established.

iv) A number of International Conferences such as UNCTAD, NAM, CHOGM etc were hosted by Delhi sucessfully. This role should be further strenthened 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 the chaotic conditions on the city's road network could be eliminated if the city adopts a modern communication system. Efforts should be 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.

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, 132% during 1971-81 and 98% during 1981-91. Spatially too, the town had expanded fast. The Regional Plan has assigned a population of 11 lakhs by 2001 to this township.

Ghaziabad is envisaged to develop predominently in the tertiary sector activities. The Regional Plan proposed a work participation rate of 30%, which would give a work force 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 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. This sizeable proposed development of industrial area at the doorstep of the DMA town of NOIDA would defeat the very objective of NCR Plan in reducing the population pressure in Delhi and controlled growth of Delhi Metropolitan Area. Besides, the Regional Plan-2001 does not envisage regional level infrastructure such as transport network for this area.

Recently, the State Government have notified the area falling within "Greater NOIDA" for the purposes of regulation, control of landuse and development under theh provisions of UP Industrial Area Development Act, 1976. The development of this area within the framework of the policies of the Regional Plan/Sub-regional PLan could be undertaken with landuses of low intensity such as botonical garden, university, institutions of national importance etc. which may require land more than 20 hectares each to save the land from intensive development.

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 is a large concentration of slum dwellers in the town; the number was 62,300 persons in 1981 which reached 1 lakh in 64 clusters in 1986 as per the 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 elsewhare. 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 for developing 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 its roads and would act as a facilitator in attracting more 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 predominently 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 large number of jhuggies have come up on the land of Industries Department and it appears that the jhuggi dwellers 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 predominently 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.

11

ACTION PLAN FOR DEVELOPMENT OF DELHI METROPOLITAN AREA

In the light of the development programme envisaged for the Delhi Metropolitan Area, a specific action plan need to be derived which would enlist various actions that need to be taken by the participating States/Development Authorities and the NCR Planning Board. Such action plan should encompass the requirements which would encourage effective perusal of the policies enlisted and also provide integrated solutions for the major problems faced by the Delhi Metropolitan Area. The components of such an action plan' are detailed below :

(i) Set up a DMA Economic Monitoring and Planning System

A DMA Economoic Monitoring and Planning System should be constituted within NCR Planning Board to develop an Information System on the DMA Economy and to work with concerned agencies to develop common action strategies concerning employment and economic issues for implementation.

(ii) Industries

(a) Joint Sector Estates for Hazardous and Polluting Industries :

Joint Sector Estates to be developed for location of hazardous and polluting industries outside DMA by Delhi Administration and the concerned participating States and the NCR Planning Board.

(b) Utilisation of available industrial infrastructure in DMA towns :

- Initiate action for setting up industrial units on plots lying vacant in Bahadurgarh by the private sector.

- Initiate action for full utilisation of the developed industrial Estates in Faridabad.

- Initiate action through special efforts to develop industrial Estates in Kundli.

(c) Curbing the industrial activities in Delhi, Ghaziabad and Loni :

- Initiate action to limit the industrial workforce in Delhi, Ghaziabad and Loni by deleting the proposals for development of industrial areas over and above the population assignment of the Regional Plan - 2001 and the Master Plan - 2001.

(d) GREATER NOIDA development proposals to be brought in conformity with the NCR Plan - 2001 and Uttar Pradesh Sub-regional Plan-2001 under finalisation at present.

(iii) (a) Regional Wholesale Trades

Expeditious development of wholesale trade activities in the following locations in a time bound manner through joint venture

approach by Delhi Administration, participating States and the NCR Planning Board :

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

- Creation of suitable machinery jointly by Delhi Administration, participating States and NCR Planning Board for relocation of identified wholesale trades.

(b) Development of Super-Markets and Marketing Yards.

Initiate action to develop setting up of modern super markets in Ghaziabad, Faridabad-Ballabhgarh and Gurgaon and Marketing Yards at NOIDA and Gurgaon.

(iv) Government and Public Sector Offices :

- Initiate action for location of Government offices on already acquired land for Central Government Offices in Ghaziabad.

- Vigorous pursuation of present policy and mechanism for screening the location of new Government offices by the Central Government.

- Time bound programme for shifting of the offices which do not qualify to remain in Delhi.

- Develop suitable mechanism for strict restriction of Institutions of National/Regional importance requiring area more than 2 ha. of land in Delhi.

(v) Informal Sector

Initiate action for development of informal sector manufacturing and trade activities in DMA towns through the provision of developed land, and such land to form an

integral part of all new developments. Action to identify formal-informal sector linkages, availability of credit, training and skill upgradation need to be simultaneously pursued.

(vi) Infrastructure development

(a) Power Supply

Identify areas of interrupted power supply and improve generation, transmission and distribution system.

(b) Telecommunications

The concerned Development Authority to initiate action for meeting the space requirements for setting up telephone exchanges as identified by the Telecom Board.

(c) Water Supply and Sanitation

- The concerned Development Authority to take full responsibility for planning, designing and implementation of water supply and sanitation systems in the DMA Towns within the over all framework of the DMA Functional Plan.

- Action to be initiated for re-cycling of waste water from sewage treatment plants for industrial use. Energy generation from sewage should also be explored.

- Initiate action to evolve mechanism for coordinating economic infrastructure with concerned agencies and Development Authorities and the NCR Planning Board.

(vii) Traffic and Transportation

- Improvement of Transport network

Development of Transport network proposals (both Road & Rail) as identified in the DMA Functional Plan and NCR Plan - 2001, in a time bound programme.

- Unified Transport agency for DMA

Initiate action to constitute Delhi Metropolitan Area Transport Agency to coordinate Transport services in Delhi Metropolitan Area.

- Augmentation of Transport Infrastructure (both Road and Rail) in the DMA towns.

- Integration of proposed Delhi MRTS with DMA towns.

- Improvement of Rail transport system between Delhi and DMA towns to facilitate a substantial shift in modal split from Road to Rail.

- Development of Inland Container Depot.

Initiate action to restrict Delhi ICD to handle container traffic for Delhi U.T. only and develop ICD for the region at Palwal.

(viii) Housing and Land Supply

Designate NCR Planning Board to be the nodal Agency for Housing Policy Formulation. At present, there is no agency for over all housing strategy formulation covering public, private and codperative efforts and for monitoring the changing needs in Delhi U.T. and DMA towns. NCR Planning Board would be the most appropriate authority to carry out this responsibility.

(ix) Development Planning

The Master Plans for Delhi Union Territory and all the six DMA towns should provide scope for incorporating the strategies of the Functional Plan in so far it relates to population, economic base, transport, community facilities, regional level infrastructure requirements, regional recreation and environment and ecology. The respective States to modify the existing Master Plans and bring it in conformity with the Regional Plan Policies and DMA Functional Plan.

(x) Coordination of Developmental Activities

Effective implementation of various proposals outlined in the Functional Plan particularly relating to drainage and sewerage disposal, interstate transport linkages and their inter-facing, development of wholesale trade markets etc. would require close coordination among the constitutent States and Delhi Administration. For this purpose, a DMA Coordination Committee need to be constituted with the representatives of Delhi Administration and the States of Uttar Pradesh and Haryana,

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

Town / Sector	Delhi	Ghaziabad	NOIDA	Faridabad	Gurgaon	Bahadurgarh	Kundli
1. POPULATION							
Population by 2001(Lakhs)	112.0	11.0	5.5	10.0	7.0	2.0	1.5
2. ECONOMIC ACTIVITIES							
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							
3. TRANSPORT							
- Railways		52.5 ha. provision to be made	181.5 ha. provision to be made.	118 ha. provision to be made	-	-	-
- Inner grid		Prov. to be made	Prov. to be made	Prov. to be made	Prov. to be made	Prov. to be made	Prov. to be made
- National Highway		-	-	"	Prov. for widening to be made	-	-

4. TELECOMMUNICATIONS

- No. of connections to be provided by 1995		38000	31000	49000	29000	2000	400
Towns	Delhi	Ghaziabad	NOIDA	Faridabad	Gurgaon	Bahadurgarh	
Sector							
5. INFRASTRUCTURE							
a) Water supply							
i) Present supply	2129	127	60	18.2	7.5	1.63	
ii) Demand by 2001							
- at 225 lpcd	2520	247	125	225	157	45	
- at 315 lpcd	3528	347 347	175	315	220	63	
b) Sewerage							
i) Present generation MLD	1700	100	48	22	8	3	
ii) Treated MLD	1270	NIL	NIL	18	ST	NIL	
iii) Generation by 2001 MLD	2270	340	140	250	170	50	
c) Drainage							
i) Drainage channels	Combined/ Separate	Open Nallahs	System exists	Open Drains	Combined system	Open Drains	
d) Solid waste management							
i) Genertion-1990 (Tonnes)	5800	110	40	112	29	12	
ii) Managed Qty.(Tonnes)	2700	80	40	100	25	?	
iii) Generation-2001 (Tonnes)	7300	300	150	290	125	55	
6. POWER							
- Power requirement by 2001		FORECASTING		under finalisation UNDER		FINALISATION	
7. LANDUSE							
- Density		Require marginal adjustment	-	Require marginal adjustment	Drastic reduction from 144 to	Drastic increase from 63 to	
Regional landuse requirements provision for :							
i)Central Govt. and Public Sector Offices		Yes	Yes	Yes	Yes	Yes	
ii)Wholesale Markets		Iron & Steel, Hardware, Super Market.	Super Market	Auto parts, Marketing yard, Steel yard, Super market	Iron & Steel Super Market	-	
iii)National level research instns.		Yes	Yes	Yes	Yes	Yes	
iv)University		Yes	-	Yes	Yes	-	

4. TELECOMMUNICATIONS

- No. of connections to be provided by 1995		38000	31000	49000	29000	2000	400
Towns	Delhi	Ghaziabad	NOIDA	Faridabad	Gurgaon	Bahadurgarh	Kund
Sector							
5. INFRASTRUCTURE							
a) Water supply							
i) Present supply	2129	127	60	18.2	7.5	1.63	NA
ii) Demand by 2001							
- at 225 lpcd	2520	247	125	225	157	15	38
- at 315 lpcd	3528	347	175	315	220	63	47
		347					
b) Sewerage							
i) Present generation MLD	1300	100	48	22	8	3	NA
ii) Treated MLD	1270	NIL	NIL	18	ST	NIL	NIL
iii) Generation by 2001 MLD	2270	340	140	250	170	50	40
c) Drainage							
i) Drainage channels	Combined/ Separate	Open Nallahs	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		-
iii) Generation-2001 (Tonnes)	7300	300	150	290	125	50	40

6. POWER

- Power requirement by 2001 — FORECASTING — UNDER FINALISATION

7. LANDUSE

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

v) Stadia — Yes

vi) Regional recreational area — Yes — Yes — Ye

8. SHELTER PROGRAMME IN DMA-2001

a) Housing requirement (in lakhs)

	Total No. of	1991-96	1996-2001
- EWS	8.20	3.280	4.920
- LIG	5.48	2.192	3.288
- MIG	2.74	1.096	1.644
- HIG	1.83	0.732	1.098
Total	18.25	7.300	10.950

BIBLIOGRAPHY

1. CENTRE FOR POLICY RESEARCH.
   NEW DELHI
   (NCERB-SPONSORED 1989)

2. CENTRAL POLLUTION CONTROL
   BOARD, NEW DELHI (1983)

3. DELHI DEVELOPMENT AUTHORITY
   NEW DELHI (1961)

4. DELHI DEVELOPMENT AUTHORITY
   NEW DELHI (1983)

5. DEPARTMENT OF PLANNING
   DELHI ADMINISTRATION

6. DEPARTMENT OF TOWN & COUNTRY
   PLANNING, GOVT. OF HARYANA (1978)

7. DEPARTMENT OF TOWN & COUNTRY PLANNING
   GOVT. OF HARYANA (1990)

8. DEPARTMENT OF TOWN & COUNTRY PLANNING.
   GOVT. OF HARYANA (1990)

9. DEPARTMENT OF TOWN PLANNING &
   ARCHITECTURE, NOIDA

10. DEPARTMENT OF TOWN & COUNTRY PLANNING,
    GOVT. OF UTTAR PRADESH

11. DIRECTOR OF CENSUS OPERATIONS,
    DELHI

12. DIRECTOR OF CENSUS OPERATIONS,
    DELHI

13. DIRECTOR OF CENSUS OPERATIONS,
    HARYANA

14. DIRECTOR OF CENSUS OPERATIONS,
    HARYANA

15 DIRECTOR OF CENSUS OPERATIONS,
   UTTAR PRADESH

STUDY ON INVESTMENT PLAN AND RESOURCE MOBILISTION
FOR NCR PLAN IMPLEMENTATION

DRY INVENTORY AND ESTIMATION OF POLLUTION
LOAD OKHLA AND SHAHDRA INDUSTRIAL AREA

MASTER PLAN FOR DELHI
(PERSPECTIVE 1981)

REPORT OF SUB-GROUP ON DELHI METROPOLITAN AREA
1981-2001

DELHI IN PROSPECT
DRAFT EIGHTH FIVE YER PLAN 1990-95, AND ANNUAL PLAN
1991-92, AT A GLANCE.

DEVELOPMENT PLAN, BAHADURGARH - 1991

DEVELOPMENT PLAN, FARIDABAD-BALLABGARH AREA-2001.

DEVELOPMENT PLAN GURGAON - 2016

MASTER PLAN NOIDA - 2001

GHAZIABAD - 2001 MASTER PLAN

CENSUS OF INDIA 1981 PART XIII A & B
VILLAGE & TOWN DIRECTORY
PRIMARY CENSUS ABSTRACT DELHI

CENSUS OF INDIA 1981 PART X A
TOWN DIRECTORY, DELHI

CENSUS OF INDIA PART XIII A & B
VILLAGE & TOWN DIRECTORY,
PRIMARY CENSUS ABSTRACT FOR FARIDABAD DISTRICT,
GURGAON DISTRICT, AND ROHTAK DISTRICT

CENSUS OF INDIA 1981 PART X A
TOWN DIRECTORY, HARYANA

CENSUS OF INDIA 1981 PART XIII A & B
GHAZIABAD DISTRICT

16. DIRECTOR OF CENSUS OPERATIONS. UTTAR PRADESH
CENSUS OF INDIA 1981 PART X A UTTAR PRADESH

17. MADRAS METROPOLITAN DEVELOPMENT DAUTHORITY. MADRAS
STRUCTURE PLAN FOR MADRAS METROPOLITAN AREA.

18. MINISTRY OF LAW & JUSTICE (LEGISLATIVE DEPARTMENT). GOVT. OF INDIA
THE NATIONAL CAPITAL REGION PLANNING BOARD ACT, 1985

19. MINISTRY OF URBAN DEVPLOPMENT. GOVERNMENT OF INDIA
NATIONAL HOUSING POLICY (DRAFT)

20. MINISTRY OF URBAN DEVELOPMENT. GOVT. OF INDIA (1990)
MASTER PLAN FOR DELHI PERSPECTIVE - 2001

21. MISRA. S P CONSULTANT (NCRPB SPONSORED) (1990)
IMPROVEMENT OF WATER SUSPSPSSLY, SEWERAGE & DRA... DELHI METROPOLITAN AREA - 2001 - PRESENT STATUS & RECOMMENDATIONS

22. NATIONAL CAPITAL REGION PLANNING BOARD (NCRPB SPONSORED) (1988)
REGIONAL PLAN - 2001 NATIONAL CAPITAL REGION

23. NATIONAL CAPITAL REGION PLANNING BOARD (1989)
REPORT OF THE WORKING GROUP ON URBAN SERVICES AND RESOURCE MOBILISATION BY LOCAL BODIES IN NCR

24. NATIONAL CAPITAL REGION PLANNING BOARD (1989)
REPORT OF THE WORKING GROUP ON INVESTMENT PLAN FOR VIII FIVE YEAR PLAN (1990-95).

25. NATIONAL INSTITUTE OF URBAN AFFAIRS. (IUSSE - SPONSORED)
FARIDABAD : A STUDY OF NEW AND EXPANDING TOWN

26 NATIONAL INSTITUTE OF URBAN AFFAIRS. (NCRPB-SPONSORED)
RESOURCE MOBILISATION BY LOCAL BODIES IN THE NATIONAL CAPITAL REGION.

27. OFFICE OF THE CHIEF COORDINATOR PLANNER. HARYANA SUB-REGION
PROJECT REPORT : PLANNING & DEVELOPMENT NEW TOWN. KUNDLI - 2001

28. OPERATION RESEARCH GROUP. BARODA (NCRPB SPONSORED) (1988)
TRANSPORT SECTOR PLAN FOR NATIONAL CAPITAL REGION.

29. OPERATION RESEARCH GROUP. BARODA (NCRPB SPONSORED) (1990)
DISTRIBUTIVE TRADES IN NATIONAL CAPITAL REGION.

30. REGISTRAR GENERAL & CENSUS COMMISSIONER. INDIA
CENSUS OF INDIA 1991 : PROVISIONAL POPULATION TOTAL: PAPER 2 OF 1991

31. SCHOOL OF PLANNING & ARCHITECTURE NEW DELHI (1987)
ENVIRONMENTAL IMPACT ASSESSMENT AND GUIDELINES FOR INDUSTRIAL DEVPLOPMENT IN THE NATIONAL CAPITAL REGION

32. SOCIETY FOR DEVELOPMENT STUDIES NEW DELHI (1987) (NCRPB SPONSORED)
INFORMAL SECTOR IN THE NATIONAL CAPITAL REGION

SUNDARAM, P.S.A. AND GAMBHIR J.C. — SECOND INTERNATIONAL SEMINAR: IMPROVING METROPOLITAN LIVING ENVIRONMENT THROUGH STRENGTHENING HOUSING SECTOR ACTIVITIES.

TATA ENERGY RESEARCH INSTITUTE, NEW DELHI (1991) — INTERIM REPORT ON ENVIRONMENT EFFECTS OF ENERGY PRODUCTION, TRANSFORMATION AND CONSUMPTION IN THE N.C.R.

TOWN & COUNTRY PLANNING ORGANISATION, NEW DELHI (1985) — A COMPENDIUM ON INDIAN SLUMS

REGISTRAR GENERAL AND CENSUS COMMISSIONER — CENSUS OF INDIA 1992,SERIES 1,PROVISIONAL POPULATION TOTALS. RURAL AND URBAN DISTIBUTION PAPER 2 OF 1991

REGISTRAR GENERAL & CENSUS COMMISSIONER GOVERNMENT OF INDIA — CENSUS OF INDIA 1991 SERIES 1, PROVISIONAL POPULATION TOTALS WORKERS AND THEIR DISTRIBUTION PAPER 3 OF 1991

NATIONAL CAPITAL REGION PLANNING BOARD — DATA, INFORMATION COLLECTED BY THE OFFICERS OF NCRPB FROM SECONDARY SOURCES. IN COORDINATION WITH THE OFFICERS OF THE PARTICIPATING STATE GOVERNMENTS, PLANNING CELLS, LOCAL BODIES, ETC.

MINUTES OF THE 25TH MEETING OF THE PLANNING COMMITTEE HELD AT 11.00 A.M. ON APRIL 20, 1992 IN THE OFFICE OF THE NCR PLANNING BOARD, NEW DELHI.

The list of the participants is annexed.

2. Member Secretary welcomed the participants to the Silver Jubilee (25th) meeting of the Planning Committee. At the outset, he mentioned that the Board had released Rs.21.25 crores during 1991-92 to the participating States, against an outlay of Rs.14.00 crores, which include the internally generated resources of the Board as well. The expenditures reported by the participating States was of the order of Rs.22.11 crores (Haryana Rs.0.20 crores, Rajasthan Rs.18.92 crores and Uttar Pradesh Rs.2.99 crores). Thus the participating States did not make matching share of the amount released to them. However, he mentioned that these figures may not necessarily reflect the actual expenditure made upto 31.3.1992 and requested the representatives of the participating States to send figures for the period ending on 31.3.1992 to the Board to enable updation of the same.

AGENDA ITEM NO.1 : Confirmation of the Minutes of the 24th Meeting held on February 28, 1992.

The minutes were confirmed together with the amendments suggested by Shri R.K. Gupta, Director, Telecom. Commission.

AGENDA ITEM NO.2 : Review of the action taken on the decisions of the last meeting of the Planning Committee held on February 28, 1992.

(i) Eighth Plan Proposals for NCR Development.

Member Secretary said that the proposed allocations of 1992-93 are Rs.10 crores for Plan and Rs.0.33 crores for Non-Plan which are quite meagre. He further stated that the allocations for NCR by the Central Ministries for the Eighth Five Year Plan were also not available. On a querry made by the Member Secretary, Shri B.L. Mehra, Additional Chief Town Planner, Rajasthan said that the Government of Rajasthan has allocated an amount of Rs.780.00 lakhs while the representatives of Haryana and Uttar Pradesh stated that no confirmed figures were available. Member Secretary suggested that the States may like to take up these issues in the next meeting of the NCR Planning Board.

(ii) Finalisation of Functional Plan for DMA

This item was discussed at Agenda Item No.3 in the meeting.

(iii) Review of the Progress of the preparation of Sub-Regional Plan by the participating States.

Member Secretary said that the Government of Uttar Pradesh has already made available the draft Sub-regional Plan for Uttar Pradesh Sub-Region to the NCR Planning Board Secretariat. This is being included in the Agenda of the next meeting of the NCR Planning Board for consideration.

The representatives of the Rajasthan stated that a formal document would be made available to the Board by 20.5.1992 which could be discussed in the next meeting of the Sub-Group constituted for the purpose.

Shri B.D. Gulati, Chief Coordinator Planner - (NCR) Haryana, said that the data in respect of the water supply, sanitation and other aspects had been collected and 10 Chapters of the Draft Report finalised. After completing the Draft Report, it is proposed to circulate the draft Report to the various Government Departments by the end of May, 1992 for their comments. He expected that the draft Sub-regional Plan for Haryana would be finally submitted to the NCR Planning Board by mid-June, 1992.

Dr. S.P. Bansal, Joint Director, Delhi Development Authority stated that the Steering Committee, Delhi Administration had recently met and has approved the time-frame for completion of the draft Sub-regional Plan for Delhi U.T, which is expected to take 9 months for its completion. He further stated that a Cell for this purpose has already started functioning from April 1, 1992, in DDA but is not yet fully operational. Member Secretary expressed concern in the delay of the preparation of the Sub-regional Plan for Delhi U.T. He desired that the matter should be taken up with the Lt. Governor of Delhi. He requested the representatives of Haryana and Rajasthan for expeditious completion of the respective Sub-regional Plans which have been over delayed.

AGENDA ITEM NO.3 : **Finalisation of Functional Plan for DMA.**

Shri B.D. Gulati, Chief Coordinator Planner, Haryana, expressed satisfaction that the suggestion for incorporating a chapter on "Action Plan for Development of Delhi Metropolitan Area" has been given effect to,

by including the same in the Functional Plan for DMA. However, he made the following observations :

i) On page 128, under Sub-para (b), he mentioned that 80% of the plots developed in Bahadurgarh were allotted for non-conforming industries to be shifted out of Delhi which could not materialise resulting in a large number of plots remaining unconstructed.

ii) On page 131, against the heading of Unified Transport Agency for DMA, it was agreed that the word 'Unified' shall be deleted and the heading would be 'Delhi Metropolitan Area Transport Agency'.

iii) On page 132, under, 'Coordination of Development Activities, Shri Gulati felt that the NCR Planning Board should be the Coordinating Agency for the development of DMA. Member Secretary, however, suggested that such a coordination would have to be achieved through involvement of Development Authorities of the DMA Towns, as has been the case with the Coordination Committee for DMA which has met several times in the past. It was agreed that a DMA Coordination Committee shall be constituted with the respresentatives of Delhi Administration, States of Uttar Pradesh and Haryana and Development Authorities of the DMA towns with NCR Planning Board as the convenor.

iv) On page 104, Shri Gulati informed that a notification had been issued by the Ministry of Environment on 9.1.1992 which prohibits constructions of various categories in areas falling in the Aravali Range. Member Secretary said that this matter needed further examination and should be dealt with separately as the DMA covers only a small portion of Aravali Range.

Dr. S.P. Bansal, Joint Director, DDA said that most of the suggestions made by the Delhi Administration have since been incorporated in the Functional Plan. However, he made the following suggestions which could be incorporated in the final document.

i) Earlier projections indicated that the population of DMA is likely to reach the figure of 37.89 lakhs and as such an assignment of 38 lakhs has been made for DMA in the Regional Plan. Projections based on

x) 1991 trend indicate that the DMA might reach only 32.67 lakhs by 2001 A.D. Thus, the population assignment will fall short by 5 lakhs as mentioned in the draft report. Member Secretary suggested that no change in assignment of population is required at this stage.

ii) The DMA Functional Plan as also the Regional Plan - 2001, envisages 35% participation rate for Bahadurgarh and Kundli which might not be possible to be achieved and needed revision. Member Secretary suggested that this should be looked into at the time of review of the Regional Plan - 2001.

iii) AGENDA On page 30 - under Delhi UT he mentioned that the Steering Committee for Delhi under the Chairmanship of Secretary had decided that wholesale markets in Delhi should be for meeting Delhi's requirement. It was agreed that the following would be suitably incorporated in para 2. "Any new wholesale market proposed in Delhi UT should be only to serve the local needs of Delhi UT."

iv) On page 81 - the last para should have a Summing up of the recommendations.

v) On page 85 - for Storm Water Drainage : should have a summing up of the recommendations.

vi) On page 86 - for Solid Waste Disposal : A title for the last para should be incorporated.

vii) On page 87 - for Eduction and Medicare : A summing up and recommendations should be incorporated by specifying regional level requirements through the Master Plans for DMA Towns.

viii) On page 90/91 for Power : The last para under iii) should be modified in the light of the new report of CEA titled "NCR Reqirement for Power".

ix) Landuse : Regarding landuse data for urban extension of Delhi it was mentioned that the landuse in respect of urban extension has been kept flexible and as and when the plans for specific schemes in urban extention are finalised, the break up of land use would be made available for reference.

x) It was brought to the notice of the Planning Committee that besides ICD at Tughlakabad, Railways have a Plan to expand the existing Ballast Siding which meet the needs of the Region and also areas beyond NCR. This activity is generating a traffic of 200 trucks every day. Shri Bansal stated that in view of the decision for the closing down the querries and crushing units in Delhi, there is a strong case for shifting this activity out of Delhi UT. Member Secretary agreed with the above suggestion for incorporation of the same in para (4) on Page 31. Member Secretary requested the representative to have a letter sent to NCR Planning Board from Delhi Administration in this regard.

AGENDA ITEM NO.4 : Consideration of the Note regarding clarifications and justifications on violation of NCR Plan in U.P. Sub-region from the Government of Uttar Pradesh received vide Housing Department letter No.1010/37-1-92-3/NCR/92, dated 14.2.92 and circulated vide NCR Planning Board letter No.K-14011/12/92-NCRPB, dated 19.2.92.

Member Secretary referring to the earlier discussion on the Sub-regional Plan of Uttar Pradesh said that the proposals contained in the Sub-regional Plan are not related to the clarifications and justifications on violations of NCR Plan in U.P.Sub-region which should be considered separately. He further stated that subsequent to the discussion on the Sub-regional Plan, the Town & Country Planning Organisation (TCPO) had sent their observations on the Sub-regional Plan - 2001 which also included observations on the violations. The observations of TCPO have been circulated in the meeting. He requested Shri Meshram, Chief Planner, TCPO to elucidate the observtions further.

Shri D.S. Meshram, stated that against the assigned population of 11 lakhs by 2001 for Ghaziabad - Loni Complex, the additional developments by UPSIDC in Loni and development of Hastinapuram and Indirapuram would make the population of Ghaziabad-Loni Complex more than the assigned population. Reacting to this Shri R.S. Mathur stated that the growth rate of population of Ghaziabad-Loni during 1981-91 has gone

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down as compared to the previous decade and in the note on clarifications on the violations of the State Government, the UPSIDC's proposal for development of industrial areas in Loni has not been included. He further stated that there are no violations of the NCR Plan in U.P. Sub-region when the so called 'violations' are considered in this context. Shri J.P. Bhargava reiterating the views of the Principal Secretary said that the proposals of U.P. Sub-regional Plan should be considered as the views of the State Government and the Plan does not include proposals of UPSIDC at Loni. Intevening in the discussion, Member Secretary said that the UPSIDC is going ahead and in fact has got the clearance of HUDCO for development of the land, 80% of which is proposed to be developed for residential purposes. Shri Mathur said that the UPSIDC and Industry Department of the State are required to obtain the clearance of the Housing Department before undertaking any development in the 'development areas' declared by the Government. Shri Meshram pointing to the proposed large scale industrial development in Greater NOIDA stated that such a township in close proximity to DMA would also not be in conformity to the NCR Plan and would increase the population assigned for U.P. Sub-region substanttially higher. Shri Meshram further mentioned that an integrated Township alongwith other facilities is proposed in Greater NOIDA. Member Secretary clarified that development of the Greater NOIDA area had been incorporated in the Sub-regional Plan with two Sub-regional Centres with the lowering down of population assignment to the extent of 3 lakhs (1.5 lakh each) and low density growth. Shri Meshram agreed with the postulations of the State Government.

AGENDA ITEM NO.5 : Consideration of the Draft Development Plan of Faridabad - 2011.

Member Secretary sought clarification from Shri B.D. Gulati about the operation of Act under which the Faridabad Development Plan has been published for inviting objections. Shri Gulati clarified that under Faridabad Complex (Regulation and Development) Act, 1971, the Chief Administrator with the previous approval of the Government is empowered to prepare and publish Development Plan for inviting objections with the prior approval by Local Government Department. Member Secretary said that opportunity for study of the Development Plan should have been offered to the Board as any development of the area is inextricably linked with the NCR Plan and its strategies. In fact, the publication of the Development Plan for Faridabad came to the notice of the Board through newspapers.

Shri B.N. Singh, Chief Regional Planner, NCR Planning Board, while presenting the comments on the Draft Development Plan of Faridabad-2011 stated that there is no mention of the Faridabad Development Plan - 2001 prepared and published on 26th April, 1982 in the draft document. He was of the view that the development Plan perspective should be in consonance with the NCR Plan - 2001. This is particularly important as the role of each of the DMA town need to be defined in the overall development perspective of Delhi and DMA and as such, assignment of populattion and functional characteristics also need to be assigned to each one of them after having an integrated look on the entire DMA. There were crucial ommissions of the recommendations of the NCR Plan such as alignment of Expressway, Inner Grid, etc. in the Draft Development Plan - 2011.

Shri J.P. Bhargava, said that the Draft Development Plan of Faridabad must be revised so as to conform the Regional Plan NCR - 2001 and Functional Plan for DMA. The Members were in agreement with the comments prepared on the Development Plan - 2011.

Member Secretary expressing concern over the notification/finalisation of the Master Plans of the towns in NCR without taking NCR Planning Board into confidence stated that such an approach may create problems in pursuing the strategies of the Regional Plan - 2001. It was agreed that the comments should be sent to the Government of Haryana for appropriate action.

The Meeting ended with a vote of Thanks to the Chair.

सं० के-14011/21/92-रा०रा०क्षे०यो०बोर्ड
राष्ट्रीय राजधानी क्षेत्र योजना बोर्ड, 7 वीं मंजिल,
बी विंग, जनपथ भवन, जनपथ नई दिल्ली-110001

दिनांक: 28-4-1992

प्रतिलिपि योजना समिति के सभी सदस्यों तथा बैठक में भाग लेने वाले अधिकारियों को प्रेषित।

(आर॰एन॰ सिंह)
मुख्य क्षेत्रीय नियोजक एवं सदस्य सचिव