DELHI 1999
A FACT SHEET

NATIONAL CAPITAL REGION PLANNING BOARD
INDIA HABITAT CENTRE, LODHI ROAD,
NEW DELHI-110003
FOREWORD

"DELHI-1999" is a presentation of the National Capital Region Planning Board to the planners in the city and outside, to state and to project, what will happen to Delhi in the next millennium. Planners are dreamers and dreamers do not concretise their dreams into reality! The NCRPB however, is a planning body that has tried to bring out the facts regarding this glorious city as it stands today - at cross-roads! We need not highlight the problems that we are facing of power, water, transportation, pollution et.al. The ground reality speaks of itself, what with a population that continues to expand, with facilities that continue to deteriorate. Everybody today, from the highest in this Capital city to the common man, speaks of the NCR as being the solution to the problems of Delhi. Delhi has to realise that it cannot stake its claim as the pride of India today, unless it chooses and decides to let go...... . Politics and economics hardly go together and yet we have a situation today where the political will must rise above all other considerations and decide once for all. Lutyen's Delhi and the Delhi of Independent India, have both to stand the test of time. Seventeen Delhis have come and gone and I leave you to decide whether the 18th Delhi will survive or not.

New Delhi
September 1, 1999

(SARITA J. DAS)
Member Secretary
NCR Planning Board
ACKNOWLEDGEMENTS

The document has been compiled by utilising data/information gathered from various sources of the Central and State Governments and from other analytical exercises carried out by the officers of the NCR Planning Board. The maps generated from NCR-GIS Centre have also been utilised in this document. The following officers and employees of the Board have worked laboriously for its successful preparation under the overall guidance of Smt. Sarita J. Das, M.A., L.L.B., D.P.M. (Lond.), IAS, Member Secretary of the Board.

Project Officers

Dr. N.B. Johri
Shri V.K. Thakore
Shri P. Sisupalan
Shri S. Surendra
Shri Utpal Deka

Shri Rajeev Malhotra
Shri J.N. Barman
Shri Manmohan Singh
Shri Suresh K. Rohilla

Planning Assistant

Shri M.P. Singh

Secretarial Assistance

Shri Sanjay Raghuvanshi
Smt. Veenu Grover

Smt. Reetu Sharma
Shri Ganesh Prasad Joshi

Production Assistance

Shri Harsh Kalia

Shri Davinder Kumar

New Delhi
September 1, 1999

(R.C. AGGARWAL)
Chief Regional Planner
NCR Planning Board
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1. GROWTH AND DEVELOPMENT OF DELHI
1. GROWTH AND DEVELOPMENT OF DELHI

Delhi has been evolving since the 10th century B.C. and 17 Delhi’s have so far come and gone in various locations within an area covering six by twelve miles. Gerald Breese in his book “Urban and Regional Planning for the Delhi—New Delhi Area, Capital for Conquerors and Country” published in 1974, has given the following table on the chronological order of development of Delhi. Simultaneously, the physical growth of Delhi from 1803 AD to 1969 AD have also been mapped by Breese and the location of the 17 Delhis indicated thereon.

1.1 Chronological Order of Development of Delhi: Seven-Seventeen Delhis

<table>
<thead>
<tr>
<th>Order</th>
<th>Date</th>
<th>Name of the Settlement</th>
<th>Founders</th>
<th>Present Probable Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1 900 B.C.</td>
<td>Indraprastha</td>
<td>Yodhista</td>
<td>Purana Quilla</td>
</tr>
<tr>
<td>II</td>
<td>2 1020 A.D.</td>
<td>Suraj Kund</td>
<td>Anang Pal</td>
<td>Near the road linking Mathura Road and Mehrauli Road by the same name.</td>
</tr>
<tr>
<td>III</td>
<td>3 1052</td>
<td>Lal Kot</td>
<td>Prithviraj Chauhan</td>
<td>Near Qutub Site</td>
</tr>
<tr>
<td>IV</td>
<td>4 1180</td>
<td>Quilla Rai Pithora</td>
<td>Prithviraj Chauhan</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 1288</td>
<td>Kilokheri</td>
<td>Muiz-ud-din Kaquabad</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 1301</td>
<td>Siri</td>
<td>Alauddin Khilji (1295-1315)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 1321-1323</td>
<td>Tughlaqabad</td>
<td>Gayasudin Tuglaq (1321-1325)</td>
<td>On the link road connecting Mathura Road and Mehrauli Road near Qutab Minar</td>
</tr>
<tr>
<td></td>
<td>8 1325</td>
<td>Adilabad</td>
<td>Mohammad Tuglaq (1325-1351)</td>
<td>Near Tughlaqabad</td>
</tr>
<tr>
<td>IV</td>
<td>9 1327</td>
<td>Jahanpanah (World’s Refuge)</td>
<td>Mohammad Tuglaq</td>
<td>Between Siri and Raipithora</td>
</tr>
<tr>
<td>V</td>
<td>10 1354</td>
<td>Ferozabad</td>
<td>Feroz Shah Tuglaq (1351-1388)</td>
<td>Near Ferozshah Kotia Stadium (no trace)</td>
</tr>
<tr>
<td>VI</td>
<td>11 1415</td>
<td>Khirabad</td>
<td>Khirakhan</td>
<td>(no trace)</td>
</tr>
<tr>
<td></td>
<td>12 1425</td>
<td>Mubarakabad</td>
<td>Mubarak Shah</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>13 1530 (1533?)</td>
<td>Dinpanah and Sher Garh</td>
<td></td>
<td>Purana Quila</td>
</tr>
<tr>
<td>VII</td>
<td>14 1638</td>
<td>Shahjahanabad (1638-1649)</td>
<td>Shahjahan (1628-1658)</td>
<td>Old Delhi (Walled City)</td>
</tr>
<tr>
<td></td>
<td>15 1912 (1911)</td>
<td>Delhi</td>
<td>British Capital</td>
<td>North of Walled City; Shahjahanabad; Old (Civil Lines) Secretariat etc.</td>
</tr>
<tr>
<td></td>
<td>16 1931 (opened)</td>
<td>New Delhi</td>
<td>British Capital (Designed by Lutyens and Baker)</td>
<td>Central Vista, Connaught Place and near about area</td>
</tr>
<tr>
<td></td>
<td>17 Aug. 15, 1947 – date</td>
<td>New Delhi</td>
<td>Capital of free India (subsequently designed by T.P.O., T.C.P.O., &amp; D.D.A.)</td>
<td>Delhi Urban Area</td>
</tr>
</tbody>
</table>
1.2 The Post Independence Era

After independence, the Delhi Improvement Trust, (DIT) which had started functioning way back in 1937, continued functioning till mid fifties. However, the limited role being played by the Trust and its failure to deliver a comprehensively planned urban environment, resulted in the DIT Inquiry Committee (Birla Committee) recommending the creation of a Central Authority for making plans, schemes and to administer them with adequate powers. Following the recommendations of the Committee, on the one hand Delhi Development (Provisional) Authority was created and on the other hand, Town Planning Organisation (TPO) was established by the Ministry of Health, under the chairmanship of the then Chairman, DIT in 1955.
1.3 Master Plan for Delhi

The TPO prepared the Interim General Plan for Delhi in 1956, ultimately culminating into the Master Plan of Delhi with the perspective year 1981, published in 1962 by the DDA. As an integral component of this Master Plan, the Existing Land use of Urban Delhi (based on Land use Inventory TPO, 1958), was published, which recorded an urbanized area of 42700 acres (17287.45 ha.) in 1958-59, constituting 11.7% of the total area of Delhi Union Territory, holding approximately 20 lacs urban population.

Source: MPD-1962
1.4 Master Plan for Delhi - Proposals for 1981

The Master Plan for Delhi 1962 proposed the development of 44,777 ha. of urbanisable area by 1981 in order to accommodate the assigned urban population of 46 lakhs. In addition, the Master plan also proposed the development of 9,838 ha. of land for various urban uses in the ring towns of Ghaziabad, Faridabad-Ballabgarh, Gurgaon Bahadurgarh, Loni & Narela in order to accommodate 4 lakhs of diverted population from Delhi in addition to their normal growth. In order to sustain this population a strong economic base was conceived through deflection of 1,15,000 workers in manufacturing and 50,000 union government employees from Delhi into these ring towns.

However, during this very period 3 more areas namely Patparganj, Sarita Vihar and Vasant Kunj covering 4,000 ha. were added to the MPD proposed 44,777 ha. area making Delhi Urban Area-81 (DUA-81) 48,777 hectares.
1.5 The Master Plan for Delhi 2001

The Master Plan for Delhi published in 1962 had a perspective year of 1981 when it was supposed to have come to an end. Further for the development of post 1981 Delhi, a modified Master Plan was supposed to be produced immediately thereafter. However, it was only in August, 1990 that a modified Master Plan for Delhi with perspective of 2001 was prepared and published. Along with the modified Master Plan only one landuse plan was published. It is not indicated on the plan whether it is an existing landuse plan or a proposed landuse plan with a target date.

DELHI LANDUSE PLAN - 2001

However, an examination of the above plan indicates that an area of approx. 48,777 ha. has been indicated as Urban area and the balance of the area outside it as rural. Comparing this, with the proposed land use plan 1981 (published as a part of the 1962 Master Plan, for Delhi ) indicates that the above land use plan (along with MPD 2001) is just a Delhi Urban area plan of 1981 wherein, in addition to the 1962 plan proposals of 44,777 ha. of urbanisable area, 4,000 ha. have been added covering the areas of Patparganj, Sarita Vihar and Vasant Kunj.
As a part of review exercise, the NCR Planning Board obtained the remote sensing IRS–1B data for the entire National Capital Region for the year 1993 which were digitally processed. The analysis of this data indicates a built up area of 60,340 ha. as against the built-up of 57,880 ha. in 1986.
1.7 Delhi 1999

The Board has acquired IRS–1C data for the National Capital Region taken on 21 March, 1999 from the National Remote Sensing Agency (NRSA), Hyderabad. The preliminary analysis of the data indicates that in March, 1999 the built up area in Delhi has increased to roughly 75,000 ha (including the built-up area of rural settlements), which is more than 50% of the area of NCT Delhi. This urban mass is probably the largest concentration of built up area as compared to its state, anywhere in the country and for that matter even the other metro cities/regions like Mumbai, Chennai and Calcutta.
2. PLANNING DELHI IN ITS REGIONAL CONTEXT
2. PLANNING DELHI IN ITS REGIONAL CONTEXT

2.1 Genesis of National Capital Region

The Govt. of India in 1961 set up a High Powered Board with the Union Home Minister as its Chairman to look after the need of the National Capital Region. Further, the Town and Country Planning Organization (successors of the TPO) started work on the preparation of Regional Plan in late sixties and early seventies. This ultimately led to the constitution of the National Capital Region Planning Board in 1985. This Board was created under the NCR Planning Board Act 1985, enacted by the Parliament with the concurrence of the states of Haryana, U.P. and Rajasthan.

2.2 Constitution of the Board

The Board consists of the following 21 members:

<table>
<thead>
<tr>
<th>Position</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Union Minister</td>
<td>Urban Development</td>
</tr>
<tr>
<td>Chief Ministers</td>
<td>U.P.; Haryana; Rajasthan and Delhi</td>
</tr>
<tr>
<td>Union Ministers</td>
<td>Railways; Surface Transport; Telecom &amp; Power</td>
</tr>
<tr>
<td>Lt. Governor</td>
<td>Delhi</td>
</tr>
<tr>
<td>Minister of State</td>
<td>Urban Development</td>
</tr>
<tr>
<td>Urban Development Ministers</td>
<td>U.P.; Haryana; Rajasthan</td>
</tr>
<tr>
<td>Chief Secretaries</td>
<td>Haryana; Rajasthan &amp; Delhi</td>
</tr>
<tr>
<td>Secretary</td>
<td>Min. of Urban Development</td>
</tr>
<tr>
<td>Secretary</td>
<td>Housing, U.P.</td>
</tr>
<tr>
<td>Chief Planner</td>
<td>T.C.P.O.</td>
</tr>
<tr>
<td>Member Secretary</td>
<td>NCR Planning Board</td>
</tr>
</tbody>
</table>

2.3 Functions of the Board

- The preparation of regional plan & functional plans and arrange for the preparation of sub-regional plans & project plans by the participating states
- Co-ordination, enforcement & their implementation through the participating states
- Evolving harmonised policies for land-use control & development of infrastructure
- Financing of selected development projects in NCR through central and state plan funds and other sources of revenue
2.4 NCR Constituent Areas

The National Capital Region notified as a schedule to NCR Planning Board Act, 1985, covers an area of 30,242 sq.kms. consisting of the NCT-Delhi, (1,483 sq.kms.), portions of Haryana (13,413 sq.kms.), U.P. (10,853 sq.kms.) and Rajasthan (4,493 sq.kms) surrounding Delhi.
2.5 The Regional Plan

The NCR Planning Board, as per its primary function and responsibility, drew up the Regional Plan with a perspective year 2001, which was notified on 23rd January, 1989. The core objectives of the Regional plan were:

- Reducing the pressure of population on Delhi.
- Achieve a balanced and harmonised development of the Region.

The Regional Plan seeks solutions of the problems through an inter-related policy framework of various sectors as depicted below:

THE REGIONAL PLAN-2001

NATIONAL CAPITAL REGION

POLICY ZONES

- Demography
- Settlement System
- Rural Development
- Landuse
- Environment and Ecology

ECONOMIC PROFILE

- Infrastructure Development
  - Physical
    - Transport
    - Telecommunications
    - Power Development
    - Water Supply, Sewage
    - Solid Waste Disposal
  - Social
    - Shelter
    - Education
    - Health

MANAGEMENT STRUCTURE FOR PLAN IMPLEMENTATION

STRATEGIES AND PRIORITY AREA DEVELOPMENT

12
2.5.1 NCR Landuse Plan, 1986-87

As a part of the Regional Plan-2001, the Board published the Existing Landuse 1986-87 for the National Capital Region.
2.5.2 Delhi 1986-87

As per the analysis of the Existing Land use Plan, 1986-87 of NCR, the built up area of Delhi had reached to 57,880 ha. constituting approximately 39% of the area of NCT Delhi which was more than 3 times of the urbanised area of 17,287 ha. in 1958-59.
2.5.3 Delhi as per Regional Plan-2001 Proposals

The Regional Plan-2001 had assigned a population of 112 lakhs (110 lakhs urban plus 2 lakhs rural) for NCT-Delhi by 2001. This assignment was done considering deflection of 20 lakhs people from coming into Delhi and to be located in the priority and selected DMA towns in the NCR. In order to accommodate the 110 lakhs population, the Regional Plan proposed the development of a total of 62,777 ha. of area within NCT-Delhi as the total urban plus urbanisable area, indicated on the plan below. The rest of the area outside the proposed urbanisable area within NCT-Delhi has been reserved as green belt/green wedge and is to be used only for non-urban uses viz. i) Agriculture, particularly high value cash crops, ii) Gardening, iii) Dairying, iv) Social Forestry/plantation, v) Quarrying, vi) Cemeteries, vii) Social institutions such as school, hospital and viii) Recreation or leisure.
3. EMERGING SCENARIO OF DELHI
3. EMERGING SCENARIO OF DELHI

3.1 Demographic Profile

The population of NCT-Delhi has been growing at an alarming rate. Delhi started as a small town with a population of hardly 4.1 lakhs in 1911 and grew steadily to reach a population of 9.2 lakhs in 1941 with the decadal growth rate averaging approx. 30%. The sudden influx of migrants raised the population from 9.2 lakhs in 1941 to 17.4 lakhs in 1951; registering a decadal growth approx. 90%. Then onwards in the next 4 decades the decadal growth rate has constantly been above 50% and had resulted into a population of 94.21 lakhs in 1991.

Recent projections have indicated that the population of NCT-Delhi is estimated as 134.2 lakhs in 1999 and if continued unchecked, is likely to reach 143.7 lakhs in 2001, 195.1 lakhs by 2011 and cross the 2 crore mark by the end of 2012 and 224.2 lakhs by 2021 A.D.

Source: Population projections for 2001 and 2011 have been made by Registrar General, Census of India and for 2021 the projections have been made by Shri K.S. Natarajan, Former Deputy Registrar General, Census of India.
3.2 Migration to Delhi

The population of Delhi is growing fast mainly because of immigration; between 1981-91 almost 50% of the population growth was contributed by migrants. The migration has taken place mainly from NCR states of Uttar Pradesh (49.91%), Haryana (11.82%) and Rajasthan (6.17%), and far off backward states like Bihar (10.99%).

STATEWISE MIGRATION: 1981-91

Source: Migration Tables Delhi, Census of India, 1991.

REASONS FOR MIGRATION

- 40% Family Ties
- 35% Employment
- 22% Education
- 3% Others

Source: Census 1981
3.3 Growth of Unauthorised Colonies, Jhuggies & Jhopries

Immigration has been a major factor contributing to the rapid population growth of Delhi. It is estimated that migrants account for about 50% of the population increase every year. While a majority of the migrants come in search of better employment and higher income opportunities, due to the acute scarcity of land, shelter and infrastructure, many of them encroach public land and all types of vacant spaces to put Jhuggies and Jhopries. The number of Jhuggies has recorded a tremendous growth from a meagre 12749 in 1951 to over 480,000 in 1994.

GROWTH OF JHUGGIES IN NCT DELHI

<table>
<thead>
<tr>
<th>Year</th>
<th>Jhuggies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>12749</td>
</tr>
<tr>
<td>1961</td>
<td>42815</td>
</tr>
<tr>
<td>1971</td>
<td>62594</td>
</tr>
<tr>
<td>1981</td>
<td>98709</td>
</tr>
<tr>
<td>1990</td>
<td>259344</td>
</tr>
<tr>
<td>1994</td>
<td>480929</td>
</tr>
</tbody>
</table>

Source: M.N. Buch Committee Report

The number of squatter settlements (Jhuggies & Jhopries) which was only 929 in January, 1990 increased to 1080 in 1994. Currently, it is estimated that the number of such clusters are about 1100 and their population is well over 30 lacs. This is projected to reach 32 lacs by 2001 and 45 lacs by 2011 A.D.

GROWTH OF SLUM POPULATION (Lakhs)

<table>
<thead>
<tr>
<th>Year</th>
<th>Slum Population (Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>15</td>
</tr>
<tr>
<td>1991</td>
<td>18</td>
</tr>
<tr>
<td>1994</td>
<td>24</td>
</tr>
<tr>
<td>1997</td>
<td>26.6</td>
</tr>
<tr>
<td>2001</td>
<td>32</td>
</tr>
<tr>
<td>2011</td>
<td>45</td>
</tr>
</tbody>
</table>

4. WHY DELHI CONTINUES TO GROW?
4. **WHY DELHI CONTINUES TO GROW?**

**Highest Per Capita Income (1995-96)**
Rs. 19,779 (India: Rs. 9,321)

**Lower Tax Regime**

**Job Opportunities**

*Source: Delhi Statistical Handbook, 1998*

The phenomenal surge of physical and economic growth of Delhi and the under development of the area outside Delhi, or, to be more specific, outside the Delhi Metropolitan area, is primarily a problem of relationship rather than a problem of scarcity. To give an example, the total journey time from Delhi to the farthest towns in the region is so short that no big centre of transportation and trading activities have developed in the outer ring of NCR. The entire region outside the Delhi Metropolitan Area is thus registering a relatively slow growth rate leading to a lop-sided development of the region characterised by the 'Metropolis-Satellite' syndrome, where part of the economic surplus of the periphery is extracted by the core and whatever development takes place in the periphery, mostly reflects the expanding needs of the core. Under this phenomenon, the region rather than adding or accelerating its growth went on supporting the growth and prosperity of Delhi whereby setting an uneven system tied up in a chain of 'Centre-Periphery' relationship. This relationship helped to raise the income levels in Delhi. Delhi with per capita income of Rs. 19,779 at current prices (1995-96), as compared to all India per capita income of Rs. 9,321, has the distinction of having highest per capita income in the country. Thus, ample job opportunities coupled with higher wages and earnings provide enough opportunities for the people to migrate and settle in Delhi.

Delhi, being the Capital city of the Nation, is the focal point of its socio-economic and political life. There are functions political, cultural and administrative peculiar to a Capital which attracts people. Besides this, it has also developed as a centre of International commerce, banking and insurance institutions and provides ample opportunities to the people for International commercial dealings.

It has been strongly argued at various forums that whereas there is a reasonable amount of uniformity in tax and tariff rates among the neighbouring States, the effective rates of tax and tariff are substantially lower in Delhi. These differentials in tax rates with added advantage of better social and physical infrastructure in Delhi have greatly influenced in past the decision making regarding location of industry and trade. The articles where the margin of profit is low and transportation costs are not so high, such variations result in attracting buyers from far-off places.
4.1 Growth of Employment (1951-91)

The growth of employment in important sectors of economy is indicated in the following graph:

![Graph showing growth of employment in NCT Delhi]


In the last four decades preceding 1991, Delhi has experienced a significant functional shift in its economic structure in favour of manufacturing and processing activities. In 1951, only 17% of the work force was employed in the manufacturing and processing activities which increased to 25% in 1991. This happened mainly at the expense of service sector which declined from 43.7% in 1951 to 33.05% in 1991. There has been no change in the trade and commerce sector, which has uniformly remained around 20-25%

**Employment in Various Sectors: Functional Shift**

![Pie charts showing employment distribution]

Source: Census of India, 1951-1991
4.2 Wholesale Trade and Commerce

In 1951, Delhi had 22.8% of its work force in trade and commerce which was second to the service sector. Though by 1981, it maintained more or less the same proportion of workforce (22.25%), it occupied the third position next to service and manufacturing. In 1991 the share of trade and commerce rose to 24.97%, again regaining second place after the service sector. In absolute numbers the workforce increased from 1.17 lakhs in 1951 to 6.73 lakhs in 1991. There has been a consistently parallel increase in the number of registered dealers over this period, specially from 1971 to 1997.

GROWTH OF REGISTERED DEALERS
1971-1997

Source: Delhi Statistical Hand Book, 1998
4.2.1 Distributive Trades

Most of the trades in Delhi have been established in 19th and 20th centuries. Due to the very fact that Delhi emerged as biggest consumption centre in whole of North India and it had strategic location with respect to transportation facilities, it gradually emerged as a big distributive centre and almost every wholesale trade generated from North India found its base in Delhi. The area of procurement and distribution cover a wide field and extends not only over to North India but for some commodities even to whole of India. Besides its strategic location, lower tax rates in Delhi as compared to the neighbouring States, lower Central Sales Tax on re-export of goods, lower wholesale prices etc. are some of the other important factors which have strengthened its distributive character in Delhi.
Most of wholesale trades are located in Old Delhi area, where the majority of the markets are located in close proximity to one another. This may be mainly due to the fact that they had to be located close to the Delhi Railway Station. This has the advantage that an outsider who comes to Delhi to buy three or four types of commodities needs to move only within a small area and make purchases. The wholesale activity in this part of the city has concentrated in an unplanned manner resulting in congestion, encroachment on public land, traffic bottlenecks and parking problems. Of late, more and more wholesale activities are being concentrated along the major transport arteries within NCT-Delhi like the Ring Road, NH-1 i.e. Delhi-Karnal road, NH-10 i.e. Rohtak Road and in East Delhi.

Source: NCRPB
4.3 Growth of Industries

There had been a phenomenal growth of industries in Delhi in the last 2-3 decades, where a sharp increase in the number of units from 26,000 in 1971 to 1,37,000 in 1999 has been recorded. Only 25,000 units out of total 1.37 Lakhs are functioning in the conforming industrial areas. Balance about 1.10 Lakhs units are in the non-conforming areas.

Source: Delhi Statistical Hand Book
The industrial employment during this period increased from 2.15 Lakhs to 11.36 Lakhs. Correspondingly, the investment increased from Rs. 190 crs. in 1971 to Rs. 2,524 crs. in 1996 while the production increased from Rs. 388 crs. in 1971 to Rs. 6,310 crs. in 1996.

**GROWTH OF INDUSTRIAL EMPLOYMENT**

**GROWTH OF INDUSTRIAL INVESTMENT & PRODUCTION**

![Graphs showing growth](image)

*Source: Delhi Statistical Hand Book*

The maximum number of industrial units are engaged in the manufacture of electrical machinery, apparatus, appliances & parts followed by manufacture of textile products (including wearing apparel other than footwear). Most of the factories are situated in West Zone followed by East, South & North Zones. Besides textile products, in which Delhi contributes about 20% in the total output at the National level, the other major industry groups in Delhi are manufacture of food products, printing and paper products, Rubber & Plastic products as well as chemicals and chemical products.

There are about 20 Industrial Estates developed by DDA and 8 by the Industries Department/DSIDC, as indicated on the Plan. These industrial estates have approx. 25,000 industrial plots.

The condition of roads and other infrastructure in the majority of these Estates is very poor. The unplanned growth in residential/non-conforming areas is predominantly traditional and low tech with low value addition, high and inefficient consumption of electricity (with large scale theft), heavy dependence on unskilled labour from neighbouring States, thus leading to tremendous congestion both in the work place and the community.
1. Wazirabad Industrial Estate
2. G.T. Karnal Road
3. Lawrence Road Industrial Estate
4. Udoyg Nagar Industrial Estate
5. Rajasthun Udyog Nagar Industrial Estate
6. S.M.A. Industrial Area
7. S.S.I. Industrial Area
8. DSIDC Nangloi Industrial Estate
9. Mangolpuri Industrial Estate
10. Okhla Industrial Area
11. Okhla Industrial Estate
12. Okhla Flatted Factory
13. Narain Industrial Estate
14. Mayapuri Industrial Estate
15. Badli Industrial Estate
16. Jhilmil Industrial Estate
17. Friends Colony Industrial Estate
18. Patparganj Industrial Estate
19. Mohan Co-operative Industrial Estate
20. Tilak Nagar Industrial Estate
21. Kirti Nagar Industrial Estate
22. Najafgargh Road Industrial Estate
23. Moti Nagar Industrial Estate
24. Birla Mill Site, G.T. Karnal Road
25. Jhandewalan Flatted Factories
26. Anand Parbat Industrial Estate
27. Shahdara Industrial Area
28. Narela Industrial Area
4.4 Convergence of Transport Networks

While many factors have contributed to the rapid growth of Delhi over the last decades, it would not be an exaggeration to say that transportation has played an important role in assisting and accelerating this growth. From times immemorial, Delhi has been on the cross road of major transport roads in Northern India. In the recent years, there has been a tremendous concentration of activities causing great convergence of goods and people. Five National Highways (NH-1, NH-2, NH-8, NH-10 and NH-24) converge on Delhi’s Ring Road.

CONVERGENCE OF NATIONAL HIGHWAYS

1. Inter State Bus Terminus
2. Sarai Kale Khan Bus Terminus
3. Anand Vihar Bus Terminus
4. Sanjay Gandhi Transport Nagar

Source: NCRPB
Delhi is also a major junction on the rail map of India. It is linked up with all parts of the country with direct and through rail services running to all metropolitan cities like Mumbai, Calcutta, Chennai, etc. Being the capital of the country and a major metropolitan city, it draws great inflow of people and goods from vast hinterland. Being a hub of economic activity it induces large daily commutation from the nearby towns specially from the Delhi Metropolitan Area and the National Capital Region. However, all the 8 rail transport corridors bring in more than 350 passenger and 40 odd goods trains discharging entire passenger traffic on 3 termini namely Delhi-main, New Delhi and Hazrat Nizamuddin.

**CONVERGENCE OF RAIL NETWORKS**

1. New Delhi Railway Station
2. Old Delhi Railway Station
3. H.Nizamuddin Railway Station
4. Sarai Rohila Railway Station
5. Container Depot - Tughlakabad

Further, being a major centre of trade and commerce, it imports and exports considerable quantity of goods in and out of Delhi and also causing a lot of inter-regional traffic passing through it, creating demand for transport related activities. The location of a permanent container depot at Tughlakabad (by shifting the existing temporary container centre from Pragati Maidan) and the coming of allied facilities like custom houses, warehouses and container handling facilities have further resulted in the movement of the entire container traffic from Northern India upto the container depot through roads and rail networks criss-crossing Delhi.
5. IMPLICATIONS
5. IMPLICATIONS

5.1 Water Supply

Every year various parts of Delhi face water scarcity. Delhi is dependent on raw water from distant sources and augmentation of raw water for Delhi has been a permanently unsolved issue i.e. escalating population cannot be matched by proportionate increase in the raw water availability. The water supply to citizens of Delhi is through water treatment plants i.e. Chandrawal (90mgd), Wazirabad (120mgd), Haiderpur (200mgd), Shahdara (100mgd) and rest through Ranney Wells/Tubewells.

![Map of Delhi showing water treatment plants](Source: DELHI JAL BOARD/WAPCOS)
5.1.1 Excessive Pressure on Delhi’s Water Supply

According to Delhi Jal Board, the current treatment capacity in the year 1999, is 2645 mld, and it is supplying water @ 232 mld. Against this, the demand for water is 4765 mld, based on MPD-2001 norm of 363 litres per capita per day for urban population and 100 lpcd for rural population. Thus against the present water demand, the shortage is approx. 45%. This shortage/gap is likely to increase to 47% by 2001 AD which will increase to 57% in 2021 AD inspite of including the additional water supply from Tehri dam which is under construction and likely to be commissioned by 2002.

![Graph showing availability, demand, and planned capacity of treatment plants.]

Source: Delhi Jal Board / NCRPB

However, the demand supply gap will become much wider in case water from Tehri dam is not made available as per original schedule. On the other hand, plans are underway in Delhi to install more and more water treatment plants without tying up the raw water sources. In fact, for the Kishau and Renuka dams in Himachal Pradesh, which are some of the proposed future water supply sources, even the project reports and investment decisions have not been taken up.
5.1.2. Levels of Water Supply

The Water Supply in Delhi is far from uniformly distributed. The NDMC area/Delhi Cantonment area gets average supply above 450 liters per capita per day while Narela/Najafgarh zone gets less than 80 liters per capita on an average with some parts getting less than 35 liters per capita per day water supply. Except the NDMC area the rest of the city has water problems i.e. low water pressure, erratic municipal water supply.

Source: Delhi Jal Board / NCRPB
5.1.3 Depletion of Ground Water

In order to meet the water demand - supply gap ground water withdrawal in the NCT Delhi has emerged as a common place phenomenon resulting in the ground water levels falling in the range of 20-30 meter below land surface in south and south western parts of Delhi. Over exploitation of ground water has disturbed the hydrological balance leading to decline in productivity of wells, increasing pumping cost, more energy requirement and brackish water upcoming etc.

Source: Central Ground Water Board
5.1.4 Ground Water Quality

Besides the quantity, quality of potable water is another serious concern as it directly affects the health of citizens. Instances have been noticed in the past where, in many places, the sewage water got mixed up with water supply thus contaminating it. The quality of ground water is also variable in space and depth. In the areas west of the ridge comprising blocks Najafgarh, Kanjhawala, Alipur, City (part) and Mehrauli (part) the salinity of ground water generally increases towards South-West and North-West direction being fairly high in areas around Dhausa, Raota in South-West and Auchandi, Kanjhawala and Tikri Kalan in North-West. Occurrence of high nitrate concentration are at several locations i.e. Saboli (Shahdara) and Kutabgarh (Kanjhawala) have nitrate contents above 1000 mg/l in ground water. Such high levels of nitrate concentration in shallow ground water could be due to leaching from solid wastes, discharge from sewage water etc. The ground water in vicinity of the landfill in Yamuna floodplains also have high nitrate concentration. Similarly Fluoride and other harmful chemical concentrations beyond permissible limits are observed in the ground water at several locations in Delhi.

Source: Central Ground Water Board
5.1.5 Future Water Supply to Delhi

The future raw water supplies for Delhi are proposed to be augmented through the following sources:

1. Bhakra storage
2. Sub-surface water
3. Tehri Dam
4. Renuka Dam
5. Kishau Dam
6. Lakhwar Dam

Of the above, so far only the first two sources are confirmed for water supply in the near future. The Tehri Dam is expected to be completed by 2002 AD and will be able to supply raw water at that stage. As far as the other three dams are concerned hardly any work has been started, in fact even the project reports and investment clearance are yet to be given for these projects. As such no raw water supplies can be foreseen in the near future from these dams. A flow diagram of the ultimate sources of water supply to different proposed treatment plans in Delhi has been drawn up by WAPCOS.

The total cost of the dams according to Central Water Commission (1996) was estimated to be Rs. 7714 crs. The cost component of the projects as have been given are of initial project estimates. The cost may escalate due to delay in execution, increase in cost of materials, manpower and priority of purposes.

Among the above proposed dams, Renuka and Kishau are under investigations and still to get clearances i.e. investment clearances, clearances from Ministry of Environment & Forests and Ministry of Welfare, etc. Tehri dam has been started but certain difficulties are being faced in the execution of the project due to paucity of funds, agitation by the local people and environmental groups. As per the schedule, stage I of the Tehri dam is to be commissioned by year 2002 AD provided that the carrier system is simultaneously put in position.
5.2 Sewage Disposal & Treatment

The existing sewage treatment plants in Delhi are—Okhla (124 mgd), Coronation Pillar (30 mgd), Keshopur (72 mgd), Rithala (40 mgd), Shahdra (35 mgd), Wazirabad Oxidation Ponds (6 mgd), Vasant Kunj (5 mgd), Yamuna Vihar (10 mgd) and Sen Nursing Home Nalla (2.2 mgd) with a total capacity of 324 mgd (1478 mld).
5.2.1 Discharge of Effluents in Yamuna

Delhi generates large quantities of sewage. At present, the total quantity of sewage generated is 2,871 mld while the total capacity of the sewage treatment plants in Delhi is 1,478 mld while the remaining untreated sewage (1,393 mld) finds its way into river Yamuna through the 19 major drains outfalling into the river carrying sewage and industrial effluents from the city. As a result, the water quality in the river has been deteriorating and the water in the river is at present unfit for animal drinking and agriculture use.

Source: WAPCOS

At present only about 75% of the population in Delhi is covered by sewerage facilities. The sewerage system is non-existent in large parts of trans-Yamuna area, all resettlement colonies and, of course, squatter settlements. The 113 urban villages possess internal sewage system. In other parts of the city sewage lines, laid decades ago are now unable to carry the increasing quantities of sewage and are in a state of virtual collapse. The trunk and branch sewers have settled at many locations and have not been repaired for a long time. This appears to be one of the major reasons for the overflow of sewage into the storm water drains and into the river Yamuna.
5.2.2 Common Effluent Treatment Plants in Delhi

Of the total sewage generated in Delhi, it is estimated that 218 mld (48 mgd) consists of industrial effluents. Delhi State Industrial Development Corporation Ltd. (DSIDC) has proposed construction of 15 common Effluent Treatment Plants CETP's in Delhi as per directions of the Hon'ble Supreme Court of India. The treated effluent will be discharged in the same drains in which it is flowing at present. The proposed locations of CETPs are as follows:

<table>
<thead>
<tr>
<th>No.</th>
<th>CETP Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anand Parbat Indl. Area</td>
</tr>
<tr>
<td>2.</td>
<td>Badli Indl. Area</td>
</tr>
<tr>
<td>3.</td>
<td>Nangloi</td>
</tr>
<tr>
<td>4.</td>
<td>G.T.K.Road Indl. Area</td>
</tr>
<tr>
<td>5.</td>
<td>Jhiliml Indl. Area</td>
</tr>
<tr>
<td>6.</td>
<td>Lawrence Road Indl. Area</td>
</tr>
<tr>
<td>7.</td>
<td>Mangolpuri Indl. Area</td>
</tr>
<tr>
<td>8.</td>
<td>Mayapuri Indl. Area</td>
</tr>
<tr>
<td>9.</td>
<td>Mohan Co-operative Indl. Area</td>
</tr>
<tr>
<td>10.</td>
<td>Najaigarh Indl. Area</td>
</tr>
<tr>
<td>11.</td>
<td>Naraina Indl. Area</td>
</tr>
<tr>
<td>12.</td>
<td>Okhla Indl. Area</td>
</tr>
<tr>
<td>13.</td>
<td>Okhla Indl. Estate</td>
</tr>
<tr>
<td>15.</td>
<td>Wazirpur Indl. Area</td>
</tr>
</tbody>
</table>

Source: WAPCOS
5.2.3 Sewage Treatment

Against the present requirement of treating approx. 2,871 mld. per day, Delhi has a treatment capacity of hardly 1478 mld. leaving about 48% of the sewage untreated to be discharged in raw form. On the basis of MPD-2001 water supply norms, the quantities of sewage estimated to be generated in 2001 will be 4,115 mld which will increase to 6,491 mld. in 2021 AD. While Delhi Jal Board by augmenting the existing capacity of sewage treatment plants and construction of new STP's will have a total treatment capacity of 2,290 mld, there will still be a wide gap, which may be about 59% in 2011 and is likely to increase to 65% by 2021 AD.

Source: Delhi Jal Board/WAPCOS/NCRPB
5.3 Solid Waste Management

In most localities of Delhi garbage/solid waste dumps are over flowing and the number of open garbage dumps in the bylanes, parks, drains and roadsides are on the increase. It contributes to the pollution of entire environment -air, water and soil. During 1999, estimated quantity of waste generated was 8,203 MT based on 0.61 kg per capita per day (average of NEERI norms for NDMC area - 0.67 kg/c/d and MCD 0.60 kg/c/d) and despite High Court's intervention and regular monitoring, the clearance/disposal was limited to 4,885 MT. The civic agencies MCD, NDMC, Delhi Cantt. Board are hard pressed and have failed to provide clean and healthy environment. It is estimated that with present growth of population and changing life styles quantity of waste generation would increase to 8,763 MT in 2001 and further to 11,899 MT and 13,676 MT by 2011 & 2021AD respectively. With the present capacity of the civic bodies limited to handling the above quantum of solid waste, the present gap of 40% is likely to increase to 44% in 2001, 59% in 2011 and 64% in 2021 AD.

Source : Central Pollution Control Board / NCRPB
5.3.1 Landfill Sites

All the collected solid waste in Delhi is disposed of in low lying areas at the landfill sites following conventional ways of dumping. Since 1950's over 12 large landfill sites have been packed with all sorts of non-biodegradable and toxic wastes of Delhi.

At present there are three landfill sites - Bhalaswa, Gazipur and Okhla. The base of none of these landfill sites are lined due to which continuous ground water contamination takes place. Neither the sites are prepared before using them for disposal-dumping of waste nor environment impact assessment has been carried out while selecting these sites.
5.4 Power

Power is indispensable for any development and for improving the living standards of the people. NCT Delhi has been facing frequent load shedding and power systems breakdowns almost every summer. The peak demand has been rapidly increasing both due to the continuous growth of population and the rise in living standards of the people. It has increased from 1,435 MW in 1991 to 2,600 MW in 1999. As per the DVB projections, this demand is expected to go up to 3,500 MW by 2002 and if continued in the same manner, it is likely to increase to 5,390 MW by 2021. The availability of power in 1999 was approx. 2,355 MW which is likely to increase to about 2,600 MW by 2002 AD. Unless drastic steps to reduce the T&D losses, from over 50%, caused mostly by theft and pilferage of power, unauthorised connections and non-billing, to the technical loss of 14-15% are taken and the power purchase agreement entered into with other states, by 2021, the gap between supply and demand is likely to be as high as 50%.

DEMAND SUPPLY GAP

Source: DVB/NCRPB
5.5 Transport

The phenomenal growth in population in the last few decades and the disparity in income level of the populace in Delhi has caused severe modal imbalance. Commuting in Delhi today is a nightmare experience for all-alike; be it the pedestrian, the motorist or the user of public transport. The current travel scenario indicates practically no use of the 120 kms. of Delhi's Rail Network and entire commutation dependent upon the road based transport.

**COMMUNICATION MODES**

- **37%** Buses
- **62%** Rail
- **1%** Personalized Modes

*Source: RITES Study (1999) for Ministry of Railways.*

There has been a gradual increase in the per capita trip rates from 0.72 PCTR in 1981 to 0.76 PCTR in 1999 and is likely to go up to approximately 1.05 PCTR by 2011. Proportionately the number of actual trips performed will increase manifolds.

**INCREASE IN INTRA-CITY TRIPS**

*Source: RITES Study (1999) for Ministry of Railways.*
5.5.1 Growth of Vehicles

The increase in the road based traffic demand has resulted in a phenomenal growth in the number of motor vehicles in Delhi, so much so that about 10,500 vehicles are added every month. Consequently, the number of motor vehicles in Delhi has increased from 5.73 lakhs in 1981 to 28.48 lakhs in 1998 and unless very serious steps are taken to improve the public transport, their number is likely to go upto 40 lakhs by 2001 and 60 lakhs by 2011. On the other hand, the road space has not increased proportionately. This present motor vehicles population in Delhi is more than that of Mumbai, Calcutta and Chennai put together. The result is extreme congestion on Delhi roads, ever slowing speeds, increase in road accidents, fuel wastage and environmental degradation.

![Graph showing growth of vehicles and road length](image-url)

**Source:**
1. Statistical Hand Book of Delhi
2. NCRPB

Page: 49
5.5.2 Modal Mix

The mix of various modes of transport that are required to meet the total urban transport demand in Delhi is inappropriate. In the absence of adequate and reliable public transport system in Delhi, a disproportionately high share of trips is carried by personalized transport modes, creating chaotic situation and causing over strain on the existing inadequate transport infrastructure. The composition of traffic in the city is heterogeneous one with the domination by two wheelers on the roads. In South Delhi, the personalized vehicles especially cars are the prime mode of commuting whereas in the Walled City areas modes like Rickshaws and Tongas are also popular. West and East Delhi residents rely more on public buses.

The following diagram indicates the modal composition of traffic in Delhi:

MODAL COMPOSITION OF TRAFFIC IN DELHI

Source: Statistical Hand Book of Delhi, 1998.

The above diagram indicates that 2/3rd of the registered vehicles are two wheelers. Whereas, cars and jeeps account for 24%, auto-rickshaws contribute 3% only, buses contribute 1% and goods carrying vehicles account for 5% of the total vehicular population.

The slow moving vehicle constitutes 3.5% of the total vehicular population in Delhi and its composition is indicated in the following diagram:

COMPOSITION OF SLOW MOVING VEHICLES

Source: Statistical Hand Book of Delhi, 1998
5.5.3 Vehicular Pollution

On an average the total amount of air pollutants received by the city daily is around 3,000 tonnes as compared to 100 tonnes a decade ago. Around 65% of these pollutants are produced by motor vehicle criss crossing the roads everyday. This is more than the sum of motor vehicles emissions of Mumbai (660 tonnes/day), Calcutta (311 tonnes/day) and Bangalore (254 tonnes/day) put together.


5.5.4 Emission Standards: Indian Vs. Western Standards

In the last two decades, diesel consumption has overtaken that of petrol in Delhi. According to a CPCB study, diesel is responsible for 100% of the particulate matter (SPM) produced by vehicles. Annual average maximum levels of SPM in Delhi’s air have increased from 7.6 times the permissible limit in 1987 to 16.7 times in 1995. Neither improving diesel quality nor upgrading engine technology can help avert the threat posed by toxic particulate emissions from diesel vehicles. The only option is to ban registration of new diesel cars.

India 1996 (Pré-Euro 1 norms)
India 2000 (Euro 1 norms)
India 2005 (Euro 2 norms)

The above table shows that Indian Vehicular emission standards are lagging behind European Standards by almost 8 years. But the April 29, 1999 Supreme Court Order has forced the Ministry of Environment and Forests to tighten the standards.
5.5.5 Congestion on Ring Road

Delhi is the confluence of no less than five national highways. Apart from the goods and commodities coming for local consumption, large quantities of freight move into Delhi only to be reloaded and sent to other destinations. Today about 80 percent of the total goods traffic movement is by road and only about 20 percent by rail. The result is that as per the traffic volume count of 1994, the Ring Road was handling between 73,000 to 1,34,000 PCUs per day averaging to about a lakh PCUs per day. In fact, the six lane cross-section of the existing Ring Road had already reached its saturation capacity of 75,000 PCUs per day in 1994. The traffic on average in next 12 years i.e. by 2011 has been projected to reach between 1.5 to 4 lakhs PCUs on the Ring Road requiring 8 to 24 lane to cope up with this type of traffic load, if smooth traffic movement is to be allowed.

**NETWORK LOADINGS ON RING ROAD**

*('DO NOTHING' SCENARIO)*

Source: NCRPB
5.5.6 Transport Demand

Delhi is the only mega-city, which has a mono-modal public transport system; it depends entirely on buses for the daily needs of its 134 lakh plus population. The transportation network in Delhi is predominantly road oriented. This road based transportation system meets a large proportion of the travel demand generated by both inter-urban and intra-urban traffic. With the population projected to touch 143.7 Lakhs by 2001 and the socio-economic activities expanding proportionately, the demand for buses will increase from 6,000 in 1991 to 36,000 in 2011. This requires overall augmentation of road and rail transport network to cater the need of urban traffic.

**PROJECTED TRANSPORT DEMAND (Lakh Trips/day)**
*(With Modified Phase-I of Delhi MRTS)*

![Bar chart showing transport demand projections for 2005, 2011, and 2025.]

*Source: Identification of Rail Projects for Commuter Travel in National Capital Region and Delhi - RITES Study, 1999 for Ministry of Railways.*

The estimated total passenger trips in 2005 are 157.15 lakhs within the Delhi Urban Area including the inter-city trips which are either generated from or attracted to Delhi from NCR. The estimated trips by public transport are 128.85 lakhs, which are around 82 percent of the total passenger trips. Commuters coming from NCR to Delhi area will also be using Northern Railway Network in Delhi.

Recent studies have shown that in the year 1998, the intra-city commuter load on the transport network of Delhi was around 1 Cr. trips a day, while inter-city trips between Delhi and the Regional Towns was around 20 lakhs trips per day. These numbers are likely to increase to 1.57 Crs. and 33 lakh respectively by 2005.
5.6 Non Dispersal of Industries From Delhi

At the time of preparation of the Master Plan for Delhi in 1962, there were only two planned industrial districts in Delhi. One was along the Najafgarh road developed by the erstwhile Delhi Improvement Trust, having both the extensive and intensive industries and the other was a small scale industrial estate near Okhla, developed by Govt. of India. The rest of the industries were scattered all over the city, most of which required relocation.

In the MPD-62, the component of the working force in the manufacturing activity by 1981 was estimated to be 4,40,300 in Urban Delhi and 1,14,700 planned to be deflected to the Ring Towns of Ghaziabad, Loni, Faridabad-Ballabgarh, Gurgaon, Bahadurgarh and Narela. In the Plan about 5% of the total developed area of urban Delhi in 1981 i.e. about 5,800 acres was allocated for industrial use. In addition to this, an area of about 2,800 acres was provided in UP to the east of Shahdara and altogether about 1,000 acres in Narela and other rural areas of Delhi.

PROPOSED DISPERSAL TO RING TOWNS

But unfortunately, no conscious attempt was made to shift the non-conforming industries from the heart of the city and the hazardous and objectionable industries continued at their locations aggravating the environment of the densely populated core areas of Delhi. Moreover, unauthorised growth of industries in non-conforming areas continued unabated. The result was that the developed industrial areas in the Ring Towns remained unused for a long time, which forced the respective agencies to allot the plots to new industries.
In the meanwhile NCR Planning Board was constituted in 1985 with the prime objective of de-congesting NCT-Delhi. The Regional Plan advocated a policy of strict control over the growth of industries in NCT Delhi keeping in view the availability of limited space, large scale immigration, pollution and strain on already deficient civic services. It was to fulfil this objective that the three participating States of NCR i.e. Haryana, Rajasthan and Uttar Pradesh were called upon to create adequate industrial infrastructure to accommodate re-location of industries functioning within NCT-Delhi and also to cater to the future requirements of industry in the region.
5.6.1 The Supreme Court Decisions

A major thrust in the direction of dispersal of industries came from the Hon'ble Supreme Court which issued orders for the closure of certain industrial units and asked them to get relocated in the conforming areas in NCR. In this context, the Supreme Court took note of the provisions of the Delhi Master Plan which has asked all such units to give their relocation plan within one year of the notification of the Master Plan in 1990 and shift thereafter in the next two years to the NCR. It also took note of the provisions of the NCR Planning Board Act, 1985 and the Regional Plan - 2001 drawn up by the NCR Planning Board. Some of the important orders issued by the Hon'ble Supreme Court in this regard are as under:

<table>
<thead>
<tr>
<th>SL.NO.</th>
<th>SUPREME COURT ORDER (DATE)</th>
<th>CONTENTS (INDUSTRIES TO BE SHIFTED/CLOSED DOWN)</th>
<th>CLOSING DATE</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>19.04.96</td>
<td>Non-conforming Industries (about 39,000 units)</td>
<td>01.01.97</td>
</tr>
<tr>
<td>2.</td>
<td>08.07.96</td>
<td>168 Industries</td>
<td>30.11.96</td>
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<td>3.</td>
<td>06.09.96</td>
<td>513 Industries</td>
<td>31.01.97</td>
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<td>4.</td>
<td>10.10.96</td>
<td>43 Hotmix Plants</td>
<td>26.02.97</td>
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<td>5.</td>
<td>26.11.96</td>
<td>246 Brick Kilns</td>
<td>30.06.97</td>
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<tr>
<td>6.</td>
<td>26.11.96</td>
<td>21 Arc/Induction Furnaces</td>
<td>31.03.97</td>
</tr>
<tr>
<td>7.</td>
<td>19.12.96</td>
<td>337 Industries</td>
<td>30.06.97</td>
</tr>
</tbody>
</table>

In the Master Plan for Delhi - 2001, which was published in August, 1990 the concept of shifting industries outside Delhi was practically given a go bye and instead the plan proposed the development of 16 new light industrial areas covering 1533 ha. and 265 ha. for extensive industries in the urban extension. These provisions of the Master Plan later on formed the basis for the Supreme Court, through its order dated 30.10.96, to permit the acquisition and development of new industrial area of 1300 ha. in NCT Delhi for relocation of industries which were to be closed down in the non-conforming areas.

This decision of the Hon'ble Supreme Court has not only resulted in upsetting the calculations of the utilisation of industrial estates being developed by the participating States of NCR viz. Haryana, Rajasthan and Uttar Pradesh but also jeopardised the entire dispersal process from Delhi. In fact, the industries who had applied for allotment of plots in NCR industrial areas, took refunds and surrendered the allotted plots.
6. NCR PLANS: SOLUTION TO DELHI’S PROBLEMS
6. NCR PLANS: SOLUTION TO DELHI'S PROBLEMS

6.1 Strategy for Development of New Townships

NCR Planning Board has approved a strategy for development of self-contained integrated townships in the vicinity of the selected DMA and Priority Towns, on the pattern of New Bombay and other developing townships like New Aurangabad in Maharashtra. The salient features of the strategy are as under:

a) Developing integrated new townships alongside the identified Priority/DMA towns for a total population assigned in accordance with the overall population profile of NCR as envisaged for the year 2001.

b) The townships to be so developed should be centred around core-economic activities i.e. the large/medium industries, major commercial & office complexes slated to be relocated out of Delhi as part of the overall dispersal strategy.

c) Higher-order social facilities of Regional or National importance such as educational institutions, universities, hospitals, sports complexes and tourists centres, may also be among the specific activities to be promoted in these townships.

d) Such major infrastructural works like the building of expressways, widening of national highways, laying of new railway lines and facilities for better telecommunications as also power distribution system at the sub-regional level, all of which are essential to the balanced and harmonious development of NCR, are intended to be dovetailed with the internal development activities in these townships and funded by the concerned ministries of Central Govt. through a special NCR Component Plan.
6.1.1 Development of Priority Towns and Delhi Metropolitan Area Towns

After considering various alternatives, and taking into account the financial, administrative, managerial and other constraints involved, the Regional Plan-2001 has proposed the induced growth in the 8 towns/urban complexes designated as 'Priority Towns'.

The Delhi Metropolitan Area, as envisaged, comprises the controlled areas of the contiguous towns around NCT Delhi and the extension of Delhi ridge in Haryana. The total area of DMA excluding Delhi is about 1,696 sq. km.

NCR SETTLEMENT PATTERN 1991-2001

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6.1.2 The Counter Magnet Areas

As part of its settlement strategy, the Regional Plan also envisages the planned development of 5 counter magnet areas, one in each State, beyond the boundaries of NCR viz. Patiala in Punjab, Hissar in Haryana, Bareilly in U.P., Gwalior in M.P. and Kota in Rajasthan.
6.2 Strategy for The Development of Transport Sector

The objectives of the Transport Sector Functional Plan for NCR are:

- To decongest the over loaded transport network of Delhi by bypassing the through traffic not destined to Delhi through a regional transport network.
- To develop a coordinated regional network to help induce rapid growth of NCR towns and allow fast, comfortable and cost effective regional commutation allowing greater dispersal of population and economic activities through out the region.
- To provide direction and priority for specific transport projects identified in the plan.
- To identify the implementing agencies and fixing the responsibility for the development of transport projects.
- To provide a broad financial strategy for financing the transport projects.

6.2.1 Development Proposals - Roads

In order to meet the future requirements of the region the functional plan has proposed:

i) Upgradation (4-laning) of the following National Highways

- National Highway No.1 - Delhi to Panipat
- National Highway No.24 - Delhi to Hapur
- National Highway No.2 - Delhi to Palwal
- National Highway No.10 - Delhi to Rohtak and Hansi
- National Highway No.8 - Delhi to Gurgaon (6 lane)

Gurgaon to Behror (4 lane)

ii) Construction of Expressways

a) Faridabad-Noida-Ghaziabad Expressway (56 km.)
b) Ghaziabad-Kundli Expressway (42 km.)
c) Kundli-Panipat Expressway (parallel to NH-1 - 90 km.)
d) Ghaziabad-Meerut Expressway (38 km.)
e) Perimeter Expressway (85 km.) along the western periphery of NCT-Delhi connecting NH-1 at Kundli and NH-2 at Faridabad
f) Elevated Expressway on the existing Ring Road in Delhi (52 km.)
g) Delhi-Loni-Noida-Surajpur-Bulandshahr-Khurja (To Aligarh - total 150 km.) on new alignment is suggested beyond 2001

iii) Widening (4-laning) of Grid Roads

a) Inner Grid:
   - On new alignments to connect Murthal to Baghpat, and
   - Strengthening and widening of existing alignments of Rohtak-Sonepat-Murthal, Baghpat-
     Meerut and Jhajjar-Gurgaon-Faridabad stretches.

b) Outer Grid:
   - Strengthening and widening of existing alignment of Palwal-Gohana-Rewari-Jhajjar, Rohtak-
     Gohana-Panipat, Meerut-Hapur-Bulandshahr-Khurja-Palwal, Khurja-NCR boundary (south),
     Meerut-NCR boundary (north) and Bhiwadi-Tijara-Kishangarh-Alwar stretches.

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6.2.2 Elevated Expressway on Ring Road

Since, the lateral expansion of the Ring Road does not seem to be possible at the ground level, the NCRPB in its Functional Plan has suggested an Elevated Expressway with another 6-lanes on top of the present Ring Road and a set of Peripheral Expressways to divert the through traffic from entering NCT Delhi. In that event the overall loading on the Ring Road can be brought to a manageable level of 12 lanes in two tiers.

**RING ROAD WITH ELEVATED EXPRESSWAY**

![Diagram of elevated expressway]

**CROSS SECTION OF ELEVATED RING ROAD**

6.2.3 Development Proposals - Rail

The Regional Rapid Transit System, a larger and broader complementary system, which would connect the central portions of Delhi with the NCR towns can provide relief to the over crowded core of Delhi and help in the dispersal of various activities to the NCR Towns. The Ministry of Railways and NCR Planning Board have recently got a study conducted by RITES to identify the Rail Projects for Commuter Travel in Delhi and NCR. The proposals are enumerated in the following tables:

### Proposed Rail Network Development Plan In Delhi

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PROPOSALS</th>
<th>(PHASE-I) 2005</th>
<th>(PHASE-II) 2011</th>
<th>(PHASE-III) 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Shahdara-Sahibabad</td>
<td>Dedicated BG double line &amp; electrified (on MRTS standards)</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2 Sahibabad-New Delhi Railway station</td>
<td>Dedicated BG double line &amp; electrified</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3 Holambi Kalan-Narela</td>
<td>Dedicated BG double line &amp; electrified (on MRTS standards)</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>4 Dayabasti-Bijwasan</td>
<td>Dedicated, electrified BG double line</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>5 Tilak Bridge-Tughlakabad</td>
<td>Dedicated BG double line electrified</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6 Southern Ring Rail from Tilak Bridge to Daya Basti</td>
<td>Strengthening</td>
<td>One more line (dedicated)</td>
<td>One more line</td>
<td></td>
</tr>
<tr>
<td>7 Patel Nagar to Shakurbasti</td>
<td>Dedicated BG double line electrified</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>8 Brar Square to Delhi Cantt. Station</td>
<td>Dedicated, Electrified BG double line</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>9 Terminal at Tilak Bridge</td>
<td>EMU Terminal</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10 Tilak Bridge-Patel Nagar-Najafgarh</td>
<td>MRTS</td>
<td>MRTS</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11 Tri Nagar-Barwala</td>
<td>MRTS</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12 Central Sectt.-Vasant Kunj</td>
<td>MRTS</td>
<td>MRTS</td>
<td>-</td>
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</tbody>
</table>
### Proposed Rail Network Development Plan In NCR

<table>
<thead>
<tr>
<th>SECTION</th>
<th>(PHASE-I) 2005</th>
<th>(PHASE-II) 2011</th>
<th>(PHASE-III) 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Narela-Sonepat</td>
<td>Strengthening</td>
<td>Dedicated BG double line electrified</td>
<td></td>
</tr>
<tr>
<td>2 Sonepat-Panipat</td>
<td>Strengthening, automatic colour light signalling</td>
<td>One more BG line electrified</td>
<td>One more electrified BG line (dedicated)</td>
</tr>
<tr>
<td>3 Nangloi-Bahadurgarh</td>
<td>Strengthening, automatic colour light signalling and electrification</td>
<td>Dedicated BG double line electrified</td>
<td></td>
</tr>
<tr>
<td>4 Bahadurgarh-Rohtak</td>
<td>Strengthening, automatic colour light signalling and electrification</td>
<td>One more BG line</td>
<td>One more BG line (dedicated)</td>
</tr>
<tr>
<td>5 Bijwasan-Gurgaon</td>
<td>Dedicated, Electrified BG double line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Gurgaon-Rewari</td>
<td>Strengthening &amp; electrification</td>
<td>One more BG line</td>
<td>One more BG line (dedicated)</td>
</tr>
<tr>
<td>7 Sahibabad-Ghaziabad</td>
<td>Dedicated BG double line electrified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Ghaziabad-Meerut</td>
<td>Strengthening and electrification</td>
<td>One more BG line</td>
<td>One more BG line (dedicated)</td>
</tr>
<tr>
<td>9 Ghaziabad-Hapur</td>
<td>Strengthening and electrification</td>
<td></td>
<td>One more line</td>
</tr>
<tr>
<td>10 Ghaziabad-Khurja</td>
<td>Strengthening</td>
<td></td>
<td>One more line</td>
</tr>
<tr>
<td>11 Tilak Bridge-Noida</td>
<td>Dedicated BG double line electrified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 NOIDA-Dadri</td>
<td></td>
<td></td>
<td>Dedicated BG double line electrified</td>
</tr>
<tr>
<td>13 Tughlakabad-Ballabhgarh</td>
<td>Dedicated BG double line electrified (new rail line)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 Ballabhgarh-Palwal</td>
<td>Strengthening</td>
<td>One more BG line</td>
<td>One more BG line (dedicated)</td>
</tr>
<tr>
<td>15 Shahdra-Shamli</td>
<td>Strengthening</td>
<td></td>
<td>One more line</td>
</tr>
</tbody>
</table>
6.3 Strategy for the Development of Power Sector

The main objective of the Functional Plan for the power sector is to provide a power supply system in the NCR towns which ensures availability of adequate and reliable power for industry, economic and business activities at par if not better than Delhi Metropolis. The plan has accordingly suggested the following strategies:

- NCR to be treated as a sub-grid of northern grid.
- To make NCR towns power cut free, at least 50% of the peak demand should be generated through captive power generation in NCR towns through private sector and the towns be islanded in case of grid failure.
- Improvement of Transmission & Distribution System by state electricity boards

As a first step in this direction, NCRPB is getting pilot project studies conducted for captive generation through the Central Electricity Authority for the towns of Ghaziabad, Manesar and Bhiwadi.
6.4 Strategy for Development of Telecom Sector

6.4.1 Uniform Local Call System in the whole of NCR

At present there exists a local call system (on level 91) between Delhi and DMA towns i.e. Delhi- Gurgaon; Delhi-Ghaziabad; Delhi-NOIDA; etc. It is proposed that all the towns in NCR should have local call system among each other as well as with Delhi. This facility in the first phase could be provided among DMA Towns i.e. Loni, Ghaziabad, NOIDA, Faridabad, Gurgaon, Bahadurgarh, Kundli and Delhi, while in the IIInd phase it could be extended to the entire NCR and cover all the regional towns.

6.4.2 Extension of MTNL Boundaries to cover entire NCR

In order to provide the entire NCR including Delhi with a uniform high level of telecom services, the boundaries of the MTNL should be enlarged to cover the entire NCR. In case it is not possible to immediately do so in the phase-I the MTNL boundaries may be extended to cover the DMA town areas and in the phase-II it may cover the entire NCR.

6.4.3 Single STD Code

In order to bring cohesiveness in the entire region, it will be necessary to place all the NCR towns on a single STD code i.e. 011, so that they are at par with Delhi as far as the calling areas outside NCR are concerned.
6.5 Strategy for Industrial Development

The objectives of the Functional Plan for Industry in NCR are:

i) To break the stranglehold of Delhi in terms of location of industries and creation of job opportunities in industrial activities.

ii) To prevent Low-Tech and allow restricted growth of only Hi-Tech industries in Delhi and recycle Low-Tech industries into Hi-Tech in a phased manner.

iii) To revitalise the economy of the stagnating urban centres and rural settlements in the Region.

In order to achieve these objectives following area specific policies have been proposed.

(a) NCT Delhi

The primary consideration for location of industry in Delhi should be availability of space, large scale in-migration, pollution and strain on already deficient services. With these considerations, Delhi should follow a policy which have following elements:

- Only those industries which are required either for marketing and market related activities and/or for providing consumer needs of Delhi's population should be allowed in Delhi.

- The requirements on civic services viz. Power, Water etc. should not exceed the standards and norms permissible for the residential areas.

- The industries should meet the standards laid down by the local pollution control authorities.

- Only Hi-Tech industries should be allowed in Delhi.

- In the existing industrial areas Low-Tech industries should be recycled into Hi-Tech.

(b) Delhi Metropolitan Area

- No hazardous and polluting industry should be allowed in DMA

- Hi-tech industries should be allowed in DMA.

(c) Rest of NCR outside DMA

- The towns selected for priority development should have a strong industrial content, and incentives comparable to those given to industries in centrally declared backward areas should be given to all types of industries.

- Modern Industrial Townships/Estates should be developed in the area outside DMA.

- Specific areas should be earmarked in the Region outside the DMA for relocation of polluting, hazardous, heavy and large and non-conforming industries proposed for shifting out of NCT-Delhi.
POTENTIAL LOCATIONS FOR INDUSTRIAL DEVELOPMENT
IN NATIONAL CAPITAL REGION

NCR Boundary
State Boundary
District Boundary
Tehsil Boundary
Major River

NORTH

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7. NCR PLAN: IN RETROSPECT AND PROSPECT
7. **NCR PLAN : IN RETROSPECT AND PROSPECT**

7.1 **Review of Regional Plan -2001**

The Regional Plan-2001 for NCR, approved by the NCR Planning Board on November 3, 1988 and notified on January 23, 1989, is being implemented by the member states of Haryana, Rajasthan, Uttar Pradesh and NCT-Delhi. The Plan-enabling legislation, the NCRPB Act, 1985, stipulate that this Regional Plan shall be reviewed periodically and, if necessary, revised. In compliance of this legal mandate, the NCR Planning Board had constituted a Steering Committee under the chairmanship of Sayed S. Shafi, a renowned spatial planner and former Chief Town Planner, Town & Country Planning Organisation of the Govt. of India, to guide this Review Exercise by analysing its policy parameters and suggesting the various mid-course corrections needed, if any, for its effective implementation.

The Review exercise mainly relied upon the voluminous data/information support available in the Board's Secretariat which were assembled through exhaustive studies/surveys conducted with the help of prominent research institutions and also its Geographical Information System (GIS) capabilities with which essential base maps in various scales were generated. The Review exercise also drew heavily from the Functional Plans which were already approved by the Board which spell out sectoral policy guidelines in respect of Industry, Transport, Telecommunications and Power as well as the Fiscal Plan for Resources for the Regional Plan.

In order to facilitate the Review Exercise, on the advice of the Steering Committee, the following 7 Sub-groups were formed which were chaired by eminent experts in their respective fields of specialization:

1. Policy Zones, Demographic Profile and Settlement Patterns  
   Chairman - Prof. J.H. Ansari, School of Planning & Architecture, New Delhi.

2. Economic Profile, Fiscal Plan and Development Resources  
   Chairman - Prof. M.C. Purohit, NIPFP, New Delhi

3. Regional Landuse, Environment & Eco-development and Rural Development.  
   Chairman - Shri R.C. Gupta, Former Professor (Regional Planning), School of Planning & Architecture, New Delhi

4. Physical Infrastructure  
   Chairman - Shri J.C. Gambhir, Former Commissioner (Planning.), DDA, New Delhi

5. Social Infrastructure  
   - Shri J.C. Gambhir, Former Commissioner (Planning), DDA, New Delhi

6. Transport and Circulation including major policies in the inter-connected areas  
   Chairman - Shri P.S. Bawa

   Chairman - Shri M.K. Dhar

The Review Report approved by the NCR Planning Board recommended the following policy parameters that should govern the formulation of a new Plan for Delhi and NCR-2021:

⇒ It is absolutely important that the practice of piecemeal and ad-hoc decisions should come to an end. As a corollary to this all development schemes currently been contemplated either by Dilraj Sarkar, the DDA or the participating States of the NCR and which proposals are clearly outside the approved plans viz. MPD-2001 and NCR Plan-2001 should not be taken up.

In fact, it is virtually impossible to discern the tearing hurry which tantamount to preempting the options left for the national capital and its region. It may be pointed out that almost all such schemes
outside the approved plans are, in fact, illegal. Moreover, in case they are taken up for implement-
ation, they would practically nullify the entire planning effort.

⇒ While the reasons for non-implementation and non-effectuation of the plan, have been pointed out in this report, in the main this has been so, because no systematic fixation of priority was ever established; time-bound programs were never formulated responding to the felt-needs of the various segments and communities within the metropolis and its metro-region.

It is, therefore, necessary to make the necessary modifications in the plan-enabling legisla-
tion to mandate systematic programming and fixation of priorities without which no long-term plan can be implemented in the envisaged time frame;

⇒ The Union Government has a special responsibility for the sound development of the national capital and its region, therefore, location of new offices, allied institutions and offices of the Public Sector Undertakings (PSUs) within Delhi should be completely stopped.

Offices and institutes, which have already been identified, should be shifted out the national capital territory of Delhi in the metropolitan area, but preferably in the metro-region.

In this connection, the relocation of Abattoirs (slaughter houses), Fish and Poultry from the congested central areas of Delhi (Shahjahanabad) to alternative locations must be undertaken on a top priority basis.

Also relevant, in this connection is the necessity of the relocation of certain wholesale trades that have strong storage component and have already been identified in earlier sections of this Report. Programmes need to be prepared and a time-bound schedule made for their relocation in a programmed manner in the designated towns and cities of the NCR.

⇒ In the interest of the future and survival of Delhi, makes it imperative that no massive investment, especially in short-time, should be made in Delhi that is bound to further enhance its magnetism. Example: development of ten or twelve, Five-Star deluxe hotels with a large Shopping Complex and a Convention Centre.

However, investments are nonetheless required to fill the increasing gaps in urban infrastruc-
ture and services including water supply, electricity, sanitation, flood control and drainage.

⇒ Operationalising and implementing the principle of Common Economic Zone (CEZ)

Although the idea was first mooted as far as back 15 years and was rapidly accepted, it was also endorsed as recently as September, 1997, it is yet to be taken up in a serious manner.

⇒ Finally, amendments and modifications required to be made in the plan enabling legislation, viz. DDA Act, 1957 and NCRPB Act, 1985.

It may be necessary to appoint a small Task Force to identify important changes as are required in the above laws, so that they become more responsive and are in tune with the changing realities.

⇒ To effectuate understanding and consideration of planning schemes, a small Standing Committee be formed between the technical personnel of the NCRPB and DDA.

They should review and reconcile their plans and schemes in close collaboration. While the terms of reference of this Committee could be worked out in due course, among others, the Chief Planners of the DDA, NCR PB, DDA’s Commissioner (Planning) later, Member Planning (as and when made) should be its member, including the Chief Planner, TCPO. Meeting may be held at least once in a month or as frequently as may be required.
Delhi is said to have crossed the 11 million population mark and is composed of many and diverse communities hailing from practically every region and state of the country. Despite the wonders of the media and communications, it is not easy to arrange meaningful articulation of their views and aspirations and, subsequently its reflection into tangible form of plans and policies. To do so realistically, and, with a degree of flexibility, is the art and skill of planning. Then, there are a number of groups each with their own interests and view points; their agendas are sometimes in conflict with each other. These, too, need to be resolved through enlisting their cooperation and participation. Yet this can best be accomplished at the local community level. And, though plans should help specific sub-areas and communities within metropolis and its region, these plans are but indications of the initial efforts which must be sustained to be meaningful, they require translation into attainable programmes covering the many areas, sub-regions and segments making up the metro-region. So goes spatial planning as a continuous quest, part of the eternal search for a better quality of life.

While the key to the future of Delhi lies in the sequential development of its metropolitan region, enough has not been done despite all the plans. A lot remains to be accomplished in the coming decades. The planning of the NCR is only the initial first step to the next and the following. The steps have to be taken in right earnest with implicit faith in the future of Delhi, for otherwise the nation's capital cannot survive, much less be in a position to perform the tasks the nation has promised its peoples in the next century and the new millennium.

7.2 The Regional Plan - 2021

The NCR Planning Board has already initiated action for the preparation of the Regional Plan-2021 for NCR. It has got the entire region surveyed through the Indian Remote Sensing Satellite / Indian Space Research Organisation. The data is now being analysed by NRSA at Hyderabad and would soon be fed into the Geographic Information System (GIS) at the NCR Planning Board Headquarters. Hydro-Geomorphological studies are also being undertaken through the IRS satellite data to determine the water availability in the region in view of the fact that water is an essential ingredient for industrial and other economic activities which are pre-requisites for the region's development and its inadequacy might have serious repercussions on the region's environment. Simultaneously, studies of the various important sectors like Demography, Transportation, Infrastructure, etc. have also been initiated so as to give appropriate policy re-orientation to the new Regional Plan - 2021.

The Regional Plan-2021 will give emphasis on development of infrastructure such as transportation, telecom, power supply, water supply, sewerage, drainage, solid waste management, etc. within the Region. Further, emphasis will be to shift the economic base activities from Delhi to the Region. This will help in shifting of population from Delhi to other parts of the Region. Location of industries will be suggested on the basis of carrying capacity of the environment for sustainable development. More emphasis will be given to rural development in order to retain the economic activities within the rural areas and migration from rural areas to Delhi in search of jobs within the Region. An investment plan will be prepared on the basis of Regional Plan which will be dovetailed with the Five Year Plans. This will help in successful implementation of RP-2021. Respective Departments/ Ministries/State Govts. will be associated with the preparation of RP–2021 in order to dovetail the plans with the Five Year Plans.