

Background Paper on Issues related to Land Economics

Urbanisation, Development and Housing Requirements in the National Capital Region (NCR)

Prepared by

Jatinder S. Bedi

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List of Acronyms

BPO	Business Process Outsourcing
CMAs	Counter-Magnet Areas (CMAs)
<u>CNCR</u>	Central National Capital Region
CPWD	Central Public Works Department
DDA	Delhi Development Authority
DJB	Delhi Jal Board
DLF	Delhi Land & Finance
DMA	Delhi Metropolitan Area
DMC	Delhi Municipal Committee
DTC	Delhi Transport Corporation
DTP	District Town Planning
DVB	Delhi Vidyut Board
EDC	External Development Charges
EWS	Economically Weaker Section
FAR	Floor Area Ratio
GDA	Ghaziabad Development Authority
GoI	Government of India
Greater NOIDA	Greater New Okhla Industrial Development Authority
GT Road	Grand Trunk Road
HDRUA	Haryana Development and Regulation of Urban Areas
HUDA	Haryana Urban Development Authority
IDC	Infrastructure Development Charge
IHD	Institute of Human Development
IL&FS	Infrastructure Leasing & Financial Services Limited
IT	Information Technology
JJ	Jhuggi Jhopri
JnNURM	Jawaharlal Nehru National Urban Renewal Mission
Km	Kilometre
L&DO	Land and Development Office
LG	Lieutenant-Governor
LIG	Lower Income Group
MCD	Municipal Corporation of Delhi
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MoHUPA	Ministry of Housing and Urban Poverty Alleviation
NCRPB	National Capital Region Planning Board
NCT	National Capital Territory
NCT-Delhi	National Capital Territory Delhi
NDMC	New Delhi Municipal Council
NH	National Highway
NOIDA	New Okhla Industrial Development Authority
NSS	National Sample Survey
OGs	Out Growths
PLPA	Punjab Land Preservation Act
PPP	Public-Private Partnership
RCs	Regional Centres
ROW	right-of-way
RP	Regional Plan, NCR
Sq km	Square kilometres
Sq mt	Square metres
TG-12	Technical Group for 12 th Five-Year Plan
UAs	Urban Agglomerations

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Jatinder S. Bedi¹

The mechanism adopted to keep the rise in property prices under check until 2000 was the active participation of the public sector in keeping supply ahead of demand. This seems to have worked well in keeping property prices under control and meeting the housing requirements of the middle and high-income groups living in NCT Delhi. The EWS and lower income stratum, however, faced a shortage. This, along with flexibility in unauthorised construction regarding plot size, etc., explains the huge growth in unauthorised construction. After 2000, the DDA took a deliberate decision to abstain from any major land development process and thus builders took full advantage of it by converting single-storey houses into multi-storey buildings. Though the supply of houses during 2001-11 increased at a steeper rate than in 1991-2001 while the population increase in NCT Delhi was lower than in 1991-01 because other NCR regions also got developed during the latter period at a much faster pace, the supply management was done by these players in such a manner that the price of property rose manifold. The easy and concessional availability of loans for housing, coupled with tax incentives to homebuyers and aggressive initiatives by the public sector to improve infrastructure such as metro and road transportation, encouraged final users to purchase houses even at extraordinarily high prices and served as a bonanza for vested interest groups that collaborated to hike prices. Despite the big push that the private sector might have provided to the development process, the public sector should not have withheld from ensuring that rules of free and fair market mechanism were not broken especially because land, transport and other facilities were provided to builders (allowed to be acquired) at rates much below the market rate keeping in mind the importance of providing housing to the masses in order to improve social welfare.

It is, therefore, surprising that after such an experience the supply control for future development has been handed over to builders through the land pooling policy scheme. The massive expansion plans during 2011-21 over and above the excessive supply created compared to expansion in the number of households during 2001-11 is likely to considerably ease property prices, but not before the major portion of the agreed amount is received from customers by the builders regarding their major housing and commercial projects currently underway. There, however, would always be a shortage in certain segments in which purchasing power is low.

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JEL Classification: O18, R14, R21, R31, R52

¹For correspondence with the author, please contact: jsbedi1964@gmail.com.

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I. Background

India has recorded a relatively slow but stable rate of growth in its urban population. The annual exponential growth rate of the urban population increased from 3.2 per cent during 1961-71 to 3.8 per cent during 1971-81, but declined to 2.73 per cent during 1991-2001 before increasing marginally to 2.76 per cent during 2001 to 2011. During this period, the share of the urban population in the total population increased gradually from 18.0 per cent in 1961 to 27.8 per cent in 2001 and further to 31.2 per cent in 2011ⁱ. The increase in urbanisation rate was relatively high during 2001-11, and the number of towns also significantly increased from 5,161 in 2001 to 7,935 in 2011. In addition, 475 places with 981 Out Growths (OGs) were identified as Urban Agglomerations (UAs)ⁱⁱ in the 2011 Census as against 384 UAs with 962 OGs in the 2001 Census. The urban population of India was estimated at 37.7 crore out of a total of 121 crore in 2011. Kundu (2006) estimated the contribution towards urban expansion of various factors: 59.4 per cent due to natural growth of the population, 6.2 per cent due to the emergence of new cities and towns, 21 per cent due to rural to urban migration, and 13 per cent due to reclassification of rural areas as urban, which otherwise might not have been part of new cities and towns during the period 1991-2001.

The concentration of the urban population in India can be assessed from the fact that the top 54 cities with million plus population account for 13.4 per cent of India's population and 43 per cent of urban India's population. Of this, the top 10 cities accounted for 8.4 per cent of the country's population and 26.9 per cent of the urban population during 2011. The urban population of four major metropolitan cities namely, Mumbai, Kolkata, Chennai and Delhi together account for 15.4 per cent of the urban population and 4.8 per cent of India's population, while three mega-cities with 10 million plus population, namely, Greater Mumbai with an urban population of 184 lakh, followed by Delhi with an urban population of 163 lakh and Kolkata with an urban population of 141 lakh account for 12.9 per cent of India's urban population.

However, there is change at the top if we follow the concept of Urban Agglomeration (UA). An Urban Agglomeration is an extended city comprising the built-up area of the central core and any suburbs linked by continuous urban area. The Central National Capital Region (CNCR) with 5.8 per cent of urban population at 219.2 lakh during 2011 is ranked first, ahead of the 207 lakh population of the Mumbai Metropolitan Region comprising Mumbai, Navi Mumbai, Thane, Vasai-Virar, Bhiwandi and Panvelⁱⁱⁱ. As the number one UA and as the capital city, it is extremely important to understand the housing requirements of the CNCR. Apart from Delhi, it included Gurgaon-Manesar (9 lakh population), Faridabad-Ballabgarh (14.1 lakh), Bahadurgarh (1.7 lakh), Sonapat-Kundli (3.6 lakh), Noida (6.4) and Ghaziabad-Loni (21.5 lakh) during 2011. The CNCR was earlier termed as ring towns/ Delhi Metropolitan Area (DMA). But since the CNCR area is expanding to far-flung areas, the concept of the National Capital Region has assumed importance. Apart from the CNCR, it also covers Greater Noida (1.1 lakh population), Meerut (14.3), Panipat (4.4), Rohtak (3.7), Palwal (1.3), Rewari-Dharuhera-Bawal (1.4), Hapur-Pilkhua (2.8), Buandshahr-Khurja (2.7), Baghpat-Baraut (1.5), Alwar (3.4), Greater Bhiwadi (1.1), Shahjahanpur-Neemrana-Behror (4.3) and urban towns with less than 1 lakh population in the region (20.9 lakh). The entire population residing in Urban NCR accounts for 284.1 lakh, which is 7.5 per cent of the country's urban population.

Objectives of the Study: This paper focuses on the implications of various land use policies being adopted in India with special reference to Delhi and the NCR region. This is linked with changes in policies related to the acquisition of large tracts of land by public sector agencies, changes in Floor Area Ratio (FAR) for various types of construction activities, land pooling policy, land acquisition policy, etc. It examines how far the economic reforms coupled with several changes in land use policies have helped spread development to neighbouring areas surrounding Delhi such as the Central National Capital Region (CNCR) and other National Capital Region (NCR) areas and how far this has been successful in overcoming the housing shortage and easing the overburdened infrastructure of

Delhi. The study, thus, reviews the overall housing demand and compares it with its supply in NCT Delhi and the NCR over time to draw relevant policy implications.

These aspects are discussed in eleven sections. The next (second) section reviews the administrative set-up in Delhi to deal with the formulation and implementation of land policies for housing requirements. Section III reviews the land use policies and their implications for Delhi and the NCR. Section IV studies the growth of the population in NCT Delhi. Section V looks at the growth of the population in the NCR. Section VI reviews the additional demand and supply of occupied houses in NCT Delhi during 1991-2001 and 2001-11. Section VII reviews the Technical Group on the urban housing shortage (TG-12) and the National Capital Regional Board estimates to rework the housing shortage in NCT Delhi for the year 2011. Section VIII reviews the shortage of houses in NCR Delhi as estimated from Census 2011 data. Section IX reviews the planned development in the housing sector as per the Master Plan 2021 in NCT Delhi and how this is likely to reduce the housing shortages. Section X reviews the implications of economic reforms coupled with several changes in land use policies in helping to spread development to new areas such as the Central National Capital Region (CNCR) and other National Capital Region (NCR) areas and the likely scenario by 2021. Section XI provides a summary of the main findings of the study and policy implications.

II. Administrative Set-up in Delhi and NCR dealing with formulation and implementation of policies related to Residential Housing

The Indian Constitution lays down a division of functions and powers between the central and state governments and also a Concurrent List (common functions). The Constitution (74th Amendment) Act has further delegated several of these functions to urban local bodies. Functions such as housing, urban development, water supply and civic services fall within the purview of the state governments, and they are legally competent to formulate and execute schemes and policies for human settlements, mobilise resources and implement various programmes (Ministry of Urban Development, Government of India). The housing and special assistance department is responsible for housing policy, land ceilings, rent control, reconstruction of old and dilapidated buildings, slum upgrading, and supervision of foreign-aided projects. The State Urban Development Departments are in charge of the Town and Planning Department, Urban Development Authority, urban water supply, sewerage and sanitation (Administrative Staff College of India (ASCI) (2011). The state government is empowered to enforce necessary laws and frame policies that support its governing functions. Despite the constitutional position, the central government plays a significant role in the governance of urban areas since the country has adopted a strategy of development through centralised planning. Apart from the outlays for housing and urban development made in the State Plans, the central budget makes provision for outlays on schemes of special importance and for assistance to specialised housing and urban institutions. This is, of course, over and above the direct expenditure on schemes in special territories like Delhi.

The central ministries control much of the public investments in the national capital. With India's independence in 1947, the resultant migration increased Delhi's population from 9 lakh to 17 lakh by 1951. Open spaces were occupied by migrants and civic services virtually collapsed. The two local bodies at that time, the Delhi Improvement Trust and the Municipal Body, were not equipped to cope with the situation. In order to plan Delhi and to check its rapid and haphazard growth, the central government, based on the recommendations of a Committee chaired by G. D. Birla, formulated a single planning and controlling authority for all the urban areas of Delhi. Consequently, the Delhi Development (Provisional) Authority (DDPA) was constituted by promulgating the Delhi (Control of Building Operations) Ordinance, 1955 (which was replaced by the Delhi Development Act, 1957) with the primary objective of ensuring the development of Delhi in accordance with a plan. On December 30, 1957, the Delhi Development Authority acquired its present name.

The Constitution (69th Amendment) Act, 1991 that came into force in January 1992 declared the Union Territory of Delhi to be formally known as the National Capital Territory of Delhi (NCT Delhi) and conferred special status on Delhi. It provides for a 70-member elected Legislative Assembly and a Council of Ministers to aid and advise the Lieutenant-Governor. The Assembly has powers to make laws on matters contained in the State and Concurrent lists that are applicable to the Union Territory. But it cannot legislate on matters relating to public order, police and land. With these administrative changes after implementation of the 1991 Act, control over the Delhi Transport Corporation (DTC) was transferred from the central government to the Delhi government. The Delhi Electricity Supply Undertaking and the Delhi Water Supply and Sewage Disposal Undertaking were reorganised into the Delhi Vidyut Board (DVB) and the Delhi Jal Board (DJB), and their control was transferred from the Municipal Corporation of Delhi (MCD) to the Delhi government. However, government agencies such as the MCD, the New Delhi Municipal Council (NDMC) and the DDA do not come under the administrative ambit of the Delhi government. This means that the Delhi Police and the Delhi Development Authority (DDA) do not come under the administrative purview of the Delhi government, whereas 28 states enjoying full statehood in India enjoy this authority. This is why the demand for full statehood surfaces every now and then.

The Delhi Development Authority (DDA) instigated operations in 1957 under the Delhi Development Act for the well-planned, orderly and swift development of Delhi into a capital city in its true sense. The state of Delhi is divided into three statutory urban regions: the Municipal Corporation of Delhi (MCD), the New Delhi Municipal Council (NDMC) and the Delhi Cantonment Board. The Municipal Corporation of Delhi (MCD) was formed in 1958 under an Act of Parliament that merged all civic bodies except the NDMC and the Delhi Cantonment Board. Prior to that the DMC (Delhi Municipal Committee) was the principal civic body of Delhi .

In the NCT Delhi area, most of the land is owned by the DDA, the Land and Development Office (L&DO) and the Cantonment Board. Land under state ownership is limited. Agricultural land is mainly privately owned and owners pay agriculture tax to the revenue department. The private sector primarily comprises individuals, families, trusts, institutions and firms/companies that own or seek land or space (Table 1).

Table 1: Land Ownership in Delhi

Land Owning Agency	DDA	L&DO (NDMC)	Cantonment Board	Other (MCD, Railways, etc.)	Total
Area in sq km	253.77	42.70	1143.53	43.0	1483
% to Total	17.1	2.9	2.9	77.1	100

Source: Jawaharlal Nehru National Urban Renewal Mission (JnNURM), 2006, Department of Urban Development, Government of Delhi, City Development Plan, Delhi.

The roles and responsibilities of various departments of the central and state government agencies in land management are summarised in Table 2.

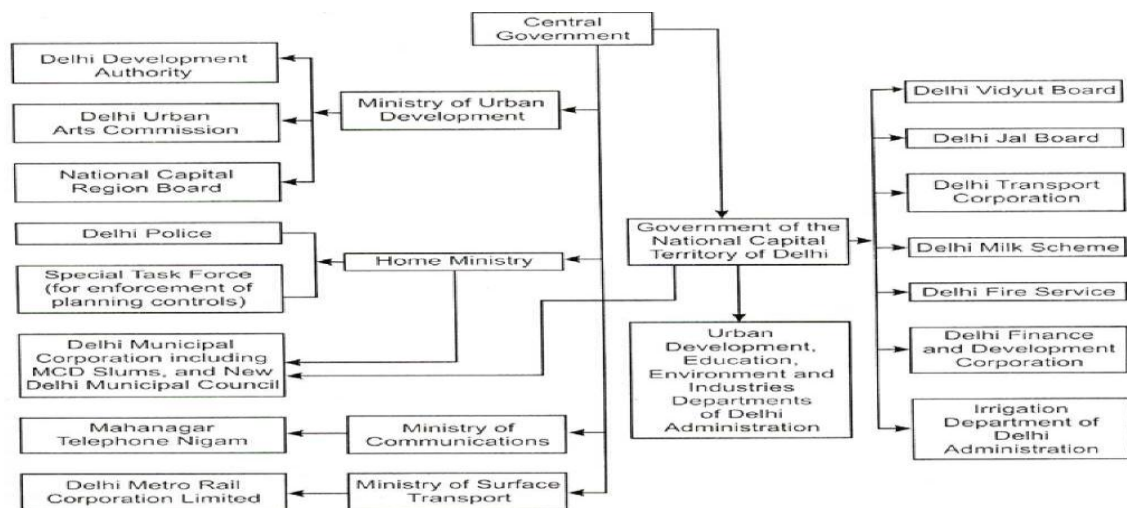
Table 2: Department/Agency Roles and Responsibilities in Land Management

Land Record Management, DDA	It deals with Nazul-I lands transferred to the DDA from the Delhi Improvement Trust and Nazul-II lands acquired under the policy of large-scale acquisition for development and disposal of land by the DDA after 1957. Its functions are to acquire land, allot sites for petrol pumps and gas godowns, maintain land records, protect land from encroachment and enforce the Master Plan section against misuse. The DDA has set up six field zones for the purpose of protection of land.
Land and Building Department/Revenue Department	The revenue department acquires land on behalf of the DDA/MCD/Slum department. The demand for land acquisition is placed by the DDA before the Land and Building Department, which acquires the land for the DDA after getting approval from the Lieutenant-Governor (LG); after acquisition, it places the same at the disposal of the DDA, under Section 12 of the DDA Act.
Land and Estate Department of MCD	It deals with records of land and properties of the colonies/villages within the jurisdiction of the MCD. The department also deals with the collection of property tax and monitors its activities through the 12 MCD zones.
Land and Development Office (L&DO) GoI	It deals with the maintenance of land records of the properties of the Government of India (GoI). The activities of construction and maintenance are with the Central Public Works Department (CPWD).

Source: Jawaharlal Nehru National Urban Renewal Mission (JnNURM), 2006, Department of Urban Development, Government of Delhi, City Development Plan, Delhi. Consultant: Infrastructure Leasing & Financial Services Limited (IL&FS) Ecosmart Limited, City Development Plan, Delhi.

Thus, the demand for land and demand for houses are closely linked and land is used to build independent houses or flats. The institutional framework for urban management in Delhi has multiple agencies, both central and state. This is given in Figure 1 along with the functions of each agency relating to urban infrastructure.

Figure 1: Institutional Framework for Urban Management of NCT Delhi



Source: Jawaharlal Nehru National Urban Renewal Mission (JnNURM), 2006, Department of Urban Development, Government of Delhi, City Development Plan, Delhi. Consultant: Infrastructure Leasing & Financial Services Limited (IL&FS) Ecosmart Limited, City Development Plan, Delhi.

There were constraints on the expansion of housing supply within the NCT because the infrastructure was quite burdened. Also, areas where expansion was possible required huge infrastructure development that the government sector for some reason was not willing to take up despite the huge appreciation in property prices, while private players were not allowed to operate within the NCT. Moreover, farmers felt that they were not getting a fair price under the land acquisition act and private players were banned from acquiring land.

Since there was a limit on further expansion within the NCT region, the area surrounding the NCT assumes significance. This was, in fact, visualised as early as 1956 when the Interim General Plan suggested that serious consideration should be given to planned decentralisation in outer areas and even outside the Delhi region. In 1962, a High Powered Board was set up under the Union Minister for Home Affairs. In 1962, the Master Plan for Delhi emphasised the planning of Delhi in the regional context, and mooted the concept of a National Capital Region (NCR) for the first time. In 1985, Parliament enacted the NCRPB Act with the concurrence of the constituent states of the NCR, namely, Haryana, Uttar Pradesh and Rajasthan, to provide for the constitution of a Planning Board for the preparation of a plan for the development of the NCR and for co-ordinating and monitoring the implementation of such plans. The purpose was to evolve and implement harmonised policies for the control of land use and development of infrastructure in the NCR so as to avoid haphazard development of the region.

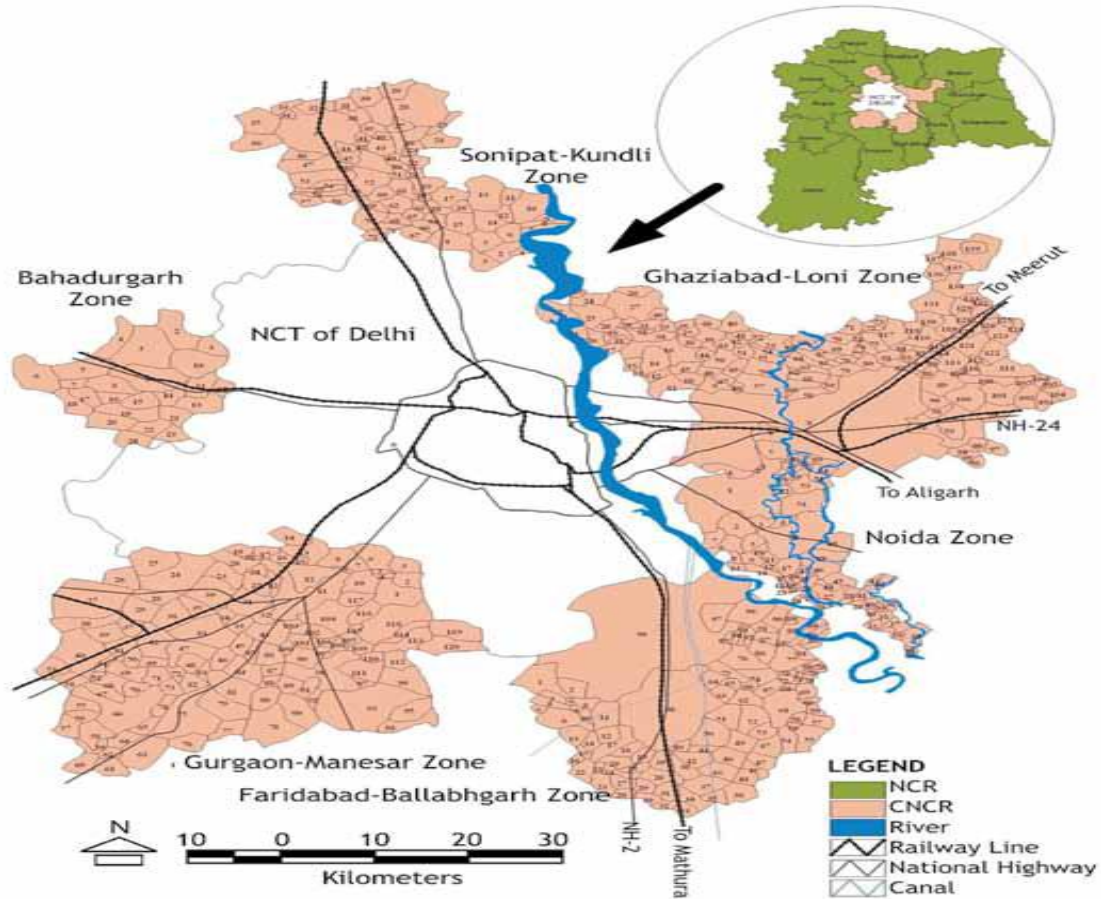
Under the provisions of Section 17(1) of the Act, 1985 each participating state is required to prepare a Sub-Regional Plan for the sub-region within the state. Section 19 of the Act, 1985 provides directions for the submission of the Sub-Regional Plan to the Board and Section 20 provides for the implementation of Sub-Regional Plans by each participating state. The constituent states are expected to finalise their respective Sub-Regional Plans in conformity with the Regional Plan. The Board provides financial assistance to the state governments and implementing agencies for implementation of development projects through long-term soft loan/low interest rate up to 75 per cent of the estimated cost. As on March 31, 2013 the Board had provided financial assistance to 277 infrastructure development projects at an estimated cost of Rs. 18,994 crore, of which an amount of Rs. 8,704 crore has been sanctioned as loans. The Board had released a loan amount of Rs. 6,464 crore by March 2013. Of the 277 projects financed by the Board, 188 projects have been reported to be completed and 89 are at various stages of implementation. Projects in sectors such as water supply, sewerage & sewage treatment, transport and power have been financed (National Capital Regional Planning Board, Ministry of Urban Development, GoI, July 2013).

The concept^{iv} aimed to develop areas around Delhi through the implementation of Regional Plans. The draft Regional Plan - NCR - 2021 has proposed the development of the NCR through five policy zones.

- i. **NCT Delhi.** NCT Delhi will have restricted growth and decentralisation of activities concentrated therein. As per Census 2011 the population of NCT Delhi has grown to 1.67 crore as against the projected population of 1.82 crore for 2011. NCT Delhi has an urban plus rural area of 1,483 sq km in which environmentally sustainable development/ redevelopment is proposed.
- ii. **Central National Capital Region (CNCR).** This includes the notified controlled areas of the adjoining towns of Ghaziabad-Loni, Noida, Gurgaon-Manesar, Faridabad-Ballabgarh, Bahadurgarh and Sonapat-Kundli that were earlier called ring towns/DMA towns (Table 7). The opportunities presented by the CNCR need to be maximised to enable it to effectively reinforce/ support NCT Delhi by offering jobs, economic activities, a comprehensive transport system, housing, social infrastructure and quality of environment that are at par with the national capital. Major economic and non-polluting activities intended to be located in NCT Delhi should be located in the urbanisable areas planned in this zone and, where

appropriate and necessary, in the rest of the NCR. Map 1 shows that these towns in the CNCR area are close enough to Delhi to allow a daily commute if there is good connectivity with Delhi.

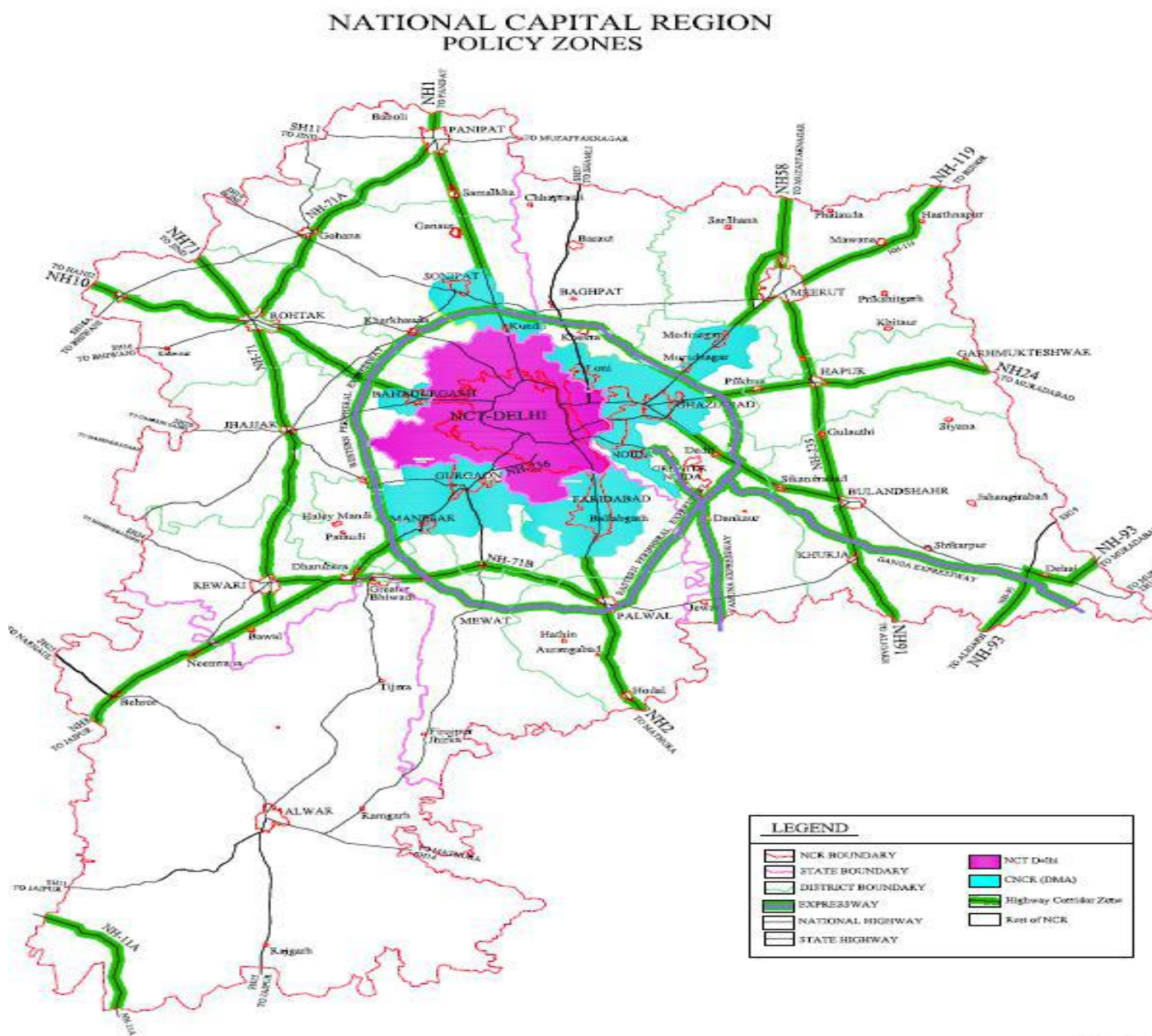
Map 1: CNCR area



- iii. **Highway Corridor Zone.** A Highway Corridor Zone is proposed with a minimum width of 500 metres inclusive of green buffer on either side of the right-of-way (ROW) along National Highways (NH) 1, 2, 8, 10, 24, 58 and 91 that converge at Delhi to enable planned and regulated development along stretches of these highways that are outside the controlled/development/ regulated areas. In addition, Highway Corridor Zones along NH 71, 71A, 71B, 119, 93, 235, 11A and expressways have been proposed.
- iv. **Rest of NCR.** This is envisaged for induced development, especially of the 12 centres. The area includes Greater NOIDA, Meerut, Panipat, Rohtak, Palwal, Rewari-Dharuhera-Bawal, Hapur-Pilkhua, Buandshahr-Khurja, Baghpat-Baraut, Alwar, Greater Bhiwadi and Shahjahanpur-Neemrana-Behror (Map 2). The approximate area of this zone is 29,795 sq. km
- v. **Counter-Magnet Areas (CMAs).** Counter-Magnet Areas (CMAs) to the NCR, as envisaged in Regional Plan 2001, should be urban areas that may be located sufficiently far from the NCR and should have their own established roots and the inherent potential to function as viable independent growth focal areas. The CMAs would have the attributes of physical,

social and economic viability and nodality with respect to the transportation network and have the quality of physical linkages in the form of transportation and communication facilities so that these centres play an important role in imparting growth to an urban centre and make it a potential counter-magnet. Regional Plan 2021 proposes to relook at the counter-magnet aspect outside the boundaries of the NCR in states that send a high level of migrant population to Delhi and NCR. It is suggested that more than one such settlement be identified in Uttar Pradesh in consultation with the state government from where 46.5 per cent of migrants come to Delhi (Perception Survey, 2013). Currently, these areas include Gwalior, Hisar, Kota, Patiala, Bareilly, Ambala, Dehradun, Kanpur and Jaipur. Karnal, which was earlier part of the CMAs, is now included in the NCR area.

Map 2: National Capital Region—Policy Zones



Map: 3.1

The first four zones of the NCR have a total area of 34,143 sq km. They include the entire region of NCT Delhi and parts of three states, namely, Haryana, Rajasthan, and Uttar Pradesh. The NCR has

ecologically sensitive areas such as the extension of the Aravalli ridge, forests and wildlife and bird sanctuaries and the river systems of Yamuna and Hindon, and is a dynamic rural-urban mix.

It is clear from Map 2 of the NCR area that some areas are too far from Delhi for a daily commute, even if connectivity improves over time. For these far-flung areas, one CNCR town may act as an independent focal point with certain kinds of services at best. Some of these far-flung areas that have been included in the CNCR would have been better suited as CMAs, but more and more far-flung areas are getting included in the CNCR. In addition to the 34,143 sq km area of the NCR, on January 19, 2014, based on requests from the Haryana government, the National Capital Region Planning Board (NCRPB) approved the inclusion of the adjoining districts of Jind and Karnal in the NCR zone.

III. Review of Literature and Land Use Policies adopted in Delhi and NCR and their implications

Review of Literature

This section reviews the land policy being adopted and public intervention taken to ensure planned development and affordable housing to all sections of society. The policy intervention to ensure equity or social justice also depends upon the stage of development (Kitay, 1985: 4).

Since an important objective of housing policy at the early stage of development is to provide houses at reasonable prices to low and middle income families and at the same time ensure planned development, in most places governments adopted innovative policies to keep the supply ahead of demand. This is exactly what happened in Delhi to provide access to land to all users and especially to economically disadvantaged groups. The DDA, a single, high-powered public authority, was given the entire responsibility of planning, large-scale advanced land acquisition, development and disposal in order to keep the supply ahead of demand. It has invoked compulsory land acquisition laws that include effective tools such as expropriation, price-freezing and advance public acquisition to assemble land at cheap prices. The DDA developed most of the land on its own and restricted private development to certain activities. Mattingly (1993:109) and Srirangan (1997) state that in developing countries where the poor outnumber the rich, and most of the public policy operations lack dedication and determination, the overall objective of the DDA's public land and property development policy was an attempt to control and keep supply ahead of demand in order to keep land prices stable, and to make housing land affordable to every party including low-income households.

Srirangan (2000) stated that Delhi's public land, property development and cross-subsidisation for low and middle-income housing is unique in India. In accordance with the Delhi Master Plan, the DDA was provided with statutory powers to acquire land at 'off-market' rates, maintain a land bank for future development and auction land for non-residential uses. The DDA Master Plan was formed in 1962 to ensure organised and structured development of Delhi. This included identifying new land that could be developed into residential properties and making self-contained colonies by providing ample commercial office and retail complexes. The policy was aimed at facilitating self-sufficiency in land development and sales. Profits from the sale of this land are placed in a revolving fund that is used to cross-subsidise the DDA's low-income housing programme. In contrast, cities like Mumbai, Chennai and Kolkata depend on an urban land ceiling and cross-subsidies provided by the World Bank and other development agencies to fund their low-income housing programmes.

The success of this large-scale public land development and cross-subsidisation in Delhi can be seen in the rise of the revolving fund capital from Rs. 123 million to over Rs. 2 billion in 1980-81 (Misra, 1986; Pugh, 1991; Srirangan, 1997), which suggests that success lies in supplying housing land to low and middle-income households at low prices (Mitra, 1990). Maitra (1991) believes that a large number of households in the lower income range would otherwise have been driven out of urban Delhi, with no means to enter the formal housing market operated by private developers. Although this method seems to be an ideal way to provide quick housing options and regulate speculation in

housing land, Ribeiro (1992) suggests that it as an unsuccessful way to promote quick, affordable housing stock and fulfil residential needs. He observed that in 1985, of the 29,412 plots allotted to various societies, about 11,995 plots (40 per cent) lay vacant for one reason or another.

There are divergent views on the success of policies related to the acquisition of land and keeping supply ahead of demand. One view is that land banking and land use policy are the prime tools for the provision of land to the poor and a fundamental requirement for clearing the backlog of housing demand (Flatt et al., 1982; Habitat-11 Delhi, 1996; Roberts, 1977; UNCHS, 1983). The UN seminar on land for housing the poor held in 1983 emphasised that the provision of secure tenure for land in adequate quantities in suitable locations at affordable prices and on equitable terms was a fundamental requirement for clearing the backlog of housing demand for the poor and meeting the rapidly growing need to house poor families, particularly in urban areas. Thus, the main message was to increase the supply of legally available land at prices that were affordable by the poor. The feeling was that the problem is not the availability of land, but the delivery system of the land to the poor. Without strong government understanding of the key role of public intervention in the land delivery process, there is no impact on the problem.

In counterarguments against the success of Delhi's land acquisition policy, Willcox (1980) argued that it does not seem to have succeeded in forestalling a steep rise in land prices, but believed that the price rise would have been higher without the land banking programme. He states that the advance land acquisition programme has put greater pressure on the lands not acquired and therefore contributed to the boosting of prices. In contrast, Howland (1977) argued that Delhi's land policy programme accomplished little more than what a free market would have done to distribute the majority of the land to high-income families. McAuslan (1985) also concludes that the policy of allocation of land for mainly upper-income group housing and auctioning of land at high prices has led to the building of luxury housing in Delhi, forced up the price of land for low-cost housing, and increased squatting and illegal sub-division of land; the failure of public land delivery also exists in other cities of developing countries. Similarly, Misra (1986) argued that the policy of bulk acquisition and monopoly ownership by the public authority has squeezed the supply side because of the slow process of development and has converted the market into a sellers' market. Srirangan (1997) concluded on the basis of empirical evidence gathered from office records and from a primary survey of households living on informal land that substantial portions of such households sought to obtain illegally developed land because of the opportunities to obtain varying sizes of plots at comparatively cheaper prices, at the desired time, and with flexible payment, construction and use terms. The large-scale land policy failure to deliver the right land to the right persons/ parties at reasonable prices prompted unauthorised^v resale of formal plots. The higher resale prices of formal plots and households managing to obtain more than one formal plot against the formal allocation norms encouraged a large number of households to resell their subsidised plots in an informal resale market.

Experience of Developed Countries

Several developed countries have used similar techniques of providing housing subsidy through public land banking and the experience gained from land banking programmes in developed countries shows that land banking can work well. Public land development (often called land banking) and cross-subsidisation is recommended by several expert committees as a viable tool for ensuring planned development and providing access to land for housing to all, especially to economically disadvantaged households (Flatt et al., 1982; Habitat-II Delhi, 1996; UNCHS, 1976, 1983). Strong (1979) states that in Sweden and the Netherlands the entire land use control system prevents speculation. In France, too, land banking has proven to be an effective force against speculation. Atmer (1987), with reference to the Stockholm land banking and municipal leasehold ownership, states that land banking solved problems in a single operation. In Scandinavia, advance purchase of lands by municipalities and the creation of considerable land banks for housing have enabled cities to expand housing construction without difficulties (UNCHS, 1984). However, the public development

policies practised in the Netherlands, Singapore, the USA and Poland are different in the sense that the cross-subsidisation element is dominant in the case of Delhi where profits from public land and property development are utilised for housing for low-income households.

Ratzka (1981), however, suggests that public development has not yielded the desired effects in several countries. After analysing public land banking and development in Stockholm and residential leasehold allocations as public finance and housing subsidy instruments, the author inferred that the inefficiency of subsidising through below-market fees has not in fact benefitted several of the targeted low-income groups. Rather, it mainly benefitted the middle and upper income brackets. Varghese (1980) also suggests that government subsidy provisions for slum improvement and re-housing families living in slums through slum clearance schemes were not successful in India. The lengthy and time-consuming procedures of acquisition of slum areas, the non-availability and high cost of alternative sites near places of work and the reluctance of slum dwellers to move from the areas selected for clearance seem to have hampered the progress of these schemes. Kombe (1993) observed with reference to Tanzania that the failure of the current formal land delivery to cope with urban demand is the major cause for the creation of illegal settlements in Dar-es-Salaam.

Land Use Policies in NCT Delhi

The development programmes of the DDA started in 1962 with the allotment of plots to individuals including housing land to registered low and middle-income groups and persons whose land was acquired. Allocations were also made by auction to unregistered higher income households who could afford higher prices. In the 60s and early 70s, the option was in favour of layout development with serviced plots ranging from 25 to 500 square metres. The DDA, however, soon realised that large plots are an unaffordable luxury due to increasing pressure on land and transportation facilities, and so it introduced group housing schemes for both co-operative societies and registered individuals. The DDA policy of concentrating its efforts on providing serviced plots as a means of ensuring housing to lower income groups was being frustrated by the fact that several allotted plots were not being developed by the allottees and were lying vacant due to lack of financial arrangements to start construction and, thus, were awaiting potential sale at scarcity value. From the DDA's point of view this had three consequences. First, funds were being expended on the infrastructure which was not being fully utilised; second, housing was not being provided to the allottees, which meant that they were still occupying space elsewhere; and third, a frustrated demand was being created (Srirangan, 2000).

The DDA shifted the emphasis of its investment policies from serviced plots to providing built flats for multi-family occupancy to allottees in the lower income groups, thus ensuring improved shelter to those most in need. In order to accelerate the pace of construction of flats/houses under this approach, an independent construction cell was created in the DDA in November 1967. In 1970, the DDA introduced the concept of co-operative group housing societies in which individuals were encouraged to form societies and build their flats in the form of multi-family group housing. The DDA's main function along with providing built flats for multi-family occupancy was to allot serviced land and recover ground rent from them. Plot owners sought mortgages from commercial banks, but they were reluctant to grant mortgages on the 99-year leases granted by the DDA, which resulted in the DDA formulating a policy to guarantee mortgages for construction. These flats were then allocated among their registered members and managed by their society association with the advice of the DDA (Srirangan, 1997).

This pattern continued and in the nineties new development projects at Rohini and Dwarka were initiated that include several schemes for group co-operative housing societies and allotment of DDA flats and land. These were very successful programmes to provide houses to middle and high-income families at reasonable prices, but very limited work was done to ensure houses for the Economically

Weaker Section (EWS), poor and low-income families. Thus, they have to rely mainly on unauthorised construction on land developed illegally. This unauthorised construction also becomes a bone of contention between the residents and the MCD and the result generally is far more money being spent on improving these unauthorised colonies. Thus, the areas earmarked as rural/ agricultural in the previous Master Plans have always been under pressure for utilisation for various urban activities and have virtually lost their original character.

Until the year 2000, the DDA succeeded in meeting the housing requirements of middle and high-income groups, but did not do much to provide houses for low and EWS groups. From 2001, there has been a major change in the role of the DDA, as it abstained from any further land development programmes on a large scale despite the unprecedented rise in property prices during this period. The DDA now merely plays the role of controlling authority in development work undertaken by builders/ individuals. The major land development programmes shifted to the CNCR region, but within NCT Delhi private real estate developers, though banned from large-scale acquisition of land after the passage of the Delhi Development Act in 1957, took advantage of the skyrocketing prices and absence of supply from the government. Within no time, they transformed the city by converting old single/double-storey buildings into multi-storey buildings by not only using the permitted change in maximum ground coverage and Floor Area Ratio (FAR) norms from the time when these buildings were constructed, but invariably exceeding them in connivance with the authorities. Although the easy availability of housing loans at concessional rates coupled with tax incentives encouraged final users to purchase houses even at extraordinarily high prices, it seems to have helped property dealers more than the final users. Although the share of self-owned households in total households increased from 67.4 per cent in 2001 to 69.2 per cent in 2011, property prices increased more than 10 times in a span of less than 10 years. The increase in share of self-owned households in total households rose sharply during the period 1991-2001, from 63.1 per cent to 67.4 per cent in Delhi when there was excess supply and prices were stagnant.

Land Pooling Policy in NCT Delhi

The DDA has come out with a major change in land policy by approving the land pooling policy in 2014 in the Master Plan 2021. Under this policy, landowners can surrender their land holding into a central pool and become stakeholders in the development proposed on their land. Once the land is pooled, the landowner would get 40-60 per cent of the total land surrendered as developable land. The dispute over undervaluation of land for acquisition would be removed, and the process would seem fair to every landowner, irrespective of the size of their holding. The 40-60 per cent of the land that DDA would retain would be utilised to create infrastructure as well as to monetise it for specific purposes.

Two basic types of land pooling have been announced so far.

- i. 0.2 sq km and above, where 60 per cent of the land would be returned to the landowner.
- ii. 0.02–0.2 sq km, where 48 per cent of land would be returned to the landowner.

Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2014

To deal with areas where acquisition is essential all over India, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2014 has been implemented, which will replace the Land Acquisition Act, 1894, which was enacted during British rule. Due to the inadequacy of the legal regime on compensation and rehabilitation, land acquisition had been facing considerable opposition from landowners and farmers, which was delaying the execution of projects.

The computation of the market value of the land will be based on the proposed minimum compensation based on a multiple of the market value. The resettlement and rehabilitation entitlements to landowners and livelihood losers are in addition to the minimum compensation. The market value of the proposed land to be acquired shall be set as the higher of:

- The minimum land value as per the registration of sale deeds in the area, where the land is situated; or
- The average of the sale price for similar type of land being acquired, ascertained from the highest 50 per cent of the sale deeds registered during the preceding three years in the nearest village or nearest vicinity of the land being acquired; or
- The consented amount in case the land is acquired for private companies or Public-Private Partnership (PPP) projects.

The market value will be multiplied by a factor of at least one to two times the market value for land acquired in rural areas and at least the market value for land acquired in urban areas. In addition, the Act provides for value to assets attached to the property. In addition to the above compensation, the Act proposes a wide range of rehabilitation and resettlement entitlements to landowners and livelihood losers from the land acquirer.

The Act makes mandatory provision for obtaining the consent of at least 80 per cent of the project-affected families in the case of acquisition for private companies and the consent of 70 per cent of the project-affected families in the case of acquisition for PPP. There, however, is a catch in this policy. Once a land is notified for a particular project, the owner cannot apply for a change in land use (CLU). It means that if he does not intend to farm that land, he will have to sell it for the notified project. However, the consent of project-affected people is not required if the government acquires land directly for a declared public purpose. This applies when:

- The government acquires land for its own use, hold and control, including land for public sector undertakings.
- The government acquires land with the ultimate purpose to transfer it for the use of private companies for a stated public purpose. The purpose of LARR 2011 includes PPP, but excludes land acquired for state or national highway projects. Schedule III of LARR 2011 proposes additional amenities over and beyond those outlined above. It proposes that the land acquirer shall provide 25 additional services to families affected by the land acquisition, such as schools, health centres, roads, safe drinking water, child support services, places of worship, burial and cremation grounds, post offices, fair price shops, and storage facilities.
- The government acquires land for immediate and declared use by private companies for public purpose.

The Act includes an urgency clause for expedited land acquisition. The clause may only be invoked for national defence, security and for the rehabilitation of people affected by natural disasters or emergencies (The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2014).

The new Act has one of the major limitations of the old Act, as the current market value is almost three times on average compared to the value mentioned on registered deeds. Considering the kind of appreciation taking place, the average of the past three years' registered deed value will be even lower than one-third the prevailing market land prices in general. Apart from this major limitation, the features related to rehabilitation schemes have several merits in the new Act.

Land Use Policies in CNCR outside Delhi Gurgaon & Other CNCR regions of Haryana

The policies adopted in Delhi of large-scale acquisition and development of land were also prevalent in areas falling within the CNCR region. In Haryana in the sixties, Haryana's Urban Estates

Department used to carry out land acquisition. With growth taking off rapidly in the mid-seventies, the Haryana Urban Development Authority (HUDA) was set up under the Haryana Urban Development Act of 1977 to carry out bulk land acquisition through the Indian Land Acquisition Act and large-scale land development to meet the demands for serviced land and city-wide infrastructure. The District Town planner (DTP) decides on the locations of lands to be acquired based on its master plan and asks the state's Urban Estate Departments to acquire them through the Land Acquisition Act. Based on the available land records, the lands are demarcated and the department issues public notification for their acquisition under the law. After due public hearing of objections and claims of compensation and the payments thereof, possession of the lands is taken and then vested in HUDA for their development.

Almost contemporaneously, another law—the Haryana Development and Regulation of Urban Areas (HDRUA)—came out in 1975 (its detailed Rules came out in 1976) that permitted, under grant of licence from the DTP, private developers to assemble lands from the market through negotiations and develop these to build residential colonies. Private developers are allowed to negotiate the market price with agricultural and other landowners to buy land. A minimum of 0.45 sq km of contiguous land has to be assembled to obtain a licence for the development of a residential colony. A licence is issued initially for two years and may be renewed if necessary. Private colonisers prepare layout plans for integrated development of residential areas, with internal infrastructure such as local roads, shopping areas, parks and playgrounds and local schools, considering the space norms specified in the city's development plan, for approval by the DTP (Joardar, 2006).

A developer is required to reserve 20 per cent of the housing provisions for the EWS and the Low Income Group (LIG); another 25 per cent can be sold in the market on “No Profit No Loss” basis, while the remaining 55 per cent can be sold freely in the open market, provided that the overall profit is limited to 15 per cent. Further, the developer is required to pay HUDA, in proportion of its development costs for a colony, External Development Charges (EDC) to get connected to HUDA's trunk lines of utilities such as water, drainage and sewerage and power, as well as an Infrastructure Development Charge (IDC) for city-wide infrastructure development. The DTP is the nodal agency for regulating the functions and activities of the licensed private developers including checking their income and expenditure (Joardar, 2006).

Land Pooling Policy in NCR outside CNCR

Behind this boom was the acquisition of land at cheap rates from several farmers. Farmers' protests increased over such deprivations and so state governments such as Haryana and Uttar Pradesh initiated land pooling schemes. On September 10, 2012, the Haryana government initiated a land pooling scheme for 50 per cent of the land of farmers to be acquired and a compensation package for the remaining part of the land. Under the Land Acquisition Act, 1894 and now 2013, the Department of Urban Estates of state governments acquires land. The landowner(s) opting for the Land Pooling Scheme will be provided with developed residential site/plots measuring 1000 sq yards and commercial sites measuring 100 sq yards against each acre (0.004047 sq km) of land acquired. In the case of owners where the land acquired is less than one acre (0.004047 sq km), the developed sites/plots will be given in proportion to the land acquired.

The policies adopted in NCR regions in the states of Uttar Pradesh and Haryana were similar. The major difference between Delhi and NCR states like Haryana and Uttar Pradesh was that in Delhi, private real estate developers were banned from large-scale acquisition. Several amendments were made to facilitate the active participation of private players for construction activities, which started to some extent in the seventies, but more vigorously with the growth of the economy. When the DDA abstained from new acquisition of land in Delhi, the CNCR region falling under Haryana and Uttar Pradesh took advantage by developing land for housing migrants willing to settle in Delhi or its

surrounding areas. In Haryana, the major benefit of these reforms was witnessed in the Gurgaon region due to its proximity to Delhi and the international airport.

Implications for Gurgaon and other towns of Haryana CNCR sub-region

Delhi Land & Finance (DLF) was the first private builder to enter the Gurgaon region. It acquired a large quantity of land in the seventies and eighties from farmers, which resulted in a boom in private real estate in Gurgaon and other areas of Haryana that continues to this day. Several land laws and Master Plans were amended in-between to accelerate this process and facilitate the developments. The entry of the private sector further accelerated, as certain players could seek arbitrary variances, exceptions and zoning amendments from the zoning authority and through the political process. This encouraged the process of rent seeking in an *ad hoc* manner. Growth further accelerated because the government allowed builders to develop good road connectivity and other infrastructure. Despite an increase in the supply of spacious houses in the CNCR region, prices rose, while the demand for low-income house segment was ignored as builders flouted the norms and the population of this segment has to rely on the informal sector. The boom includes world-class office buildings, apartments, golf courses, shopping malls, 5-star hotels and a private expressway linking Gurgaon to Delhi airport. Thus, after the year 2000 the process of transformation in these areas was different from Delhi. In Delhi, builders mainly have to convert single- or double-storey buildings into multi-storey buildings.

In the process, farmers felt deprived of their share in the value addition that occurs upon conversion of agricultural land to urban land. The initial period saw less resistance. It was reported that in several cases land is first notified and then released for public acquisition once ownership is transferred from the farmer to the builder. In the past eight years, 84.98 sq km of land was licensed in Haryana, for which builders obtained licences in collaboration with landowners/farmers in more than 90 per cent of the cases (The Hindu, February 4, 2014). The fear of acquisition of land by the government if they did not sell their land to private companies resulted in their decision to sell land to private companies and often opt for collaborative licences. If no major private players operate in the area, farmers at times escape the government acquisition route by selling their lands for unauthorised colonisation through the intermediation of colonisers and the land mafia.

Private developers have built residential colonies at locations where they were able to assemble land from the market through negotiations with local landowners. These do not necessarily match the phases of development of the city according to the Master Plan, but the developers managed to obtain licences. Thus, there was not much transparency, and in several cases out-of-turn concessions were reported in the media that explain the exponential increase in land value. Of the 84.98 sq km of land licensed in the past eight years in Haryana, roughly 5.46 sq km of land was acquired from farmers at a low rate in the name of 'public interest' and later licensed to builders. Under the Land Acquisition Act, 1894 there is no provision for release of such land. Similarly, several farmers were hit in the Reliance SEZ land acquisition in Gurgaon. At that time the government stipulated a compensation rate for acquisition at Rs 24.7 crore per sq km (Rs. 10 lakh/acre), while the value of projects launched by 19 builders on 5.46 sq km at modest rate market rates is estimated at Rs. 22,852 crore. This is a huge premium of more than Rs. 102 crore (24.7 x 5.46) on the government's acquisition cost (The Hindu, February 4, 2014).

Land Use Policies in NOIDA & other towns of Uttar Pradesh CNCR sub-region

Noida's growth was not as rapid as that of Gurgaon until a few years ago, but picked up when Greater Noida started coming up. Despite its proximity to the capital, Noida was not able to attract as many multinational companies as Gurgaon until a few years ago. Gurgaon lies on Highway 8, which is the economic lifeline of the country, whereas Noida is very close to Central and Old Delhi and also Ghaziabad and Faridabad and is situated on the fertile hinterland. One factor could be that Noida generally remains part of the politically unstable government in Uttar Pradesh. But the main factor

behind this is the historical reason for its growth. Historically, the development of Noida coincides with the period of the Emergency, when all democratic institutions in India came to a standstill. Unauthorised construction had already been initiated in Noida with the idea that areas surrounding Delhi should be developed. Overnight, thousands of people in Delhi were moved to resettlement colonies (Dupont *et al*, 2000; Tarlo, 2000) and Noida town was chosen as the location where polluting industries from various parts of Delhi would be shifted. While the lack of civil rights meant that the government could easily force poor people to move to the resettlement colonies, it was difficult for it to enforce the migration of polluting industries to Noida. This is reflected in two events. First, by 1977 Noida had been established and the physical infrastructure had been set up, but the state of emergency was lifted. This was done before the national elections, in which the government of Indira Gandhi was routed. The incoming government, which opposed the state of emergency, was not interested in this unfinished agenda. Second, there were delays in the approval of the First Master Plan for Noida, which after amendments was only approved in 1983.

The area remains a hot bed of speculative activity. The Perspective Plan for Delhi 2001 was finalised by the DDA and enforced in 1990. Within the framework of the NCR Plan, Noida was given the status of a Delhi Metropolitan Area town with an assigned population of 5.50 lakh by the year 2001. The NCR Planning Board revised the Regional Plan in 2005 for the year 2021. Against the background of organising the Commonwealth Games, which were mainly confined to eastern Delhi, the Regional Plan for the NCR – 2021 has assigned a population of 12 lakh for Noida and accorded it the status of a Central NCR town (Observer Research Foundation, 2010). Thus, the major boost to Noida and the development of Greater Noida and the Yamuna Expressway industrial area townships was witnessed after 2003.

Environment Impact of Construction Activities

Rampant construction activities in the Hindon-Yamuna basin not only left Delhi vulnerable but also exposed large parts of Noida to the risk of flash floods. A study by the Department of Geography of the Delhi School of Economics in 2013 sends a clear warning that several areas of Delhi's satellite town could end up under floodwater. There has been a loss of farmland, forest and shrub since 1995, with more than 36 per cent of the forest and 22 per cent of the shrub areas being transformed into settlements. As a result, rainwater goes directly into the river. Sectors 15, 18 and 18 in Noida are particularly vulnerable to flood hazards, including inundation and erosion. In addition, Noida can store liquid waste for a limited period, before having to dispose of these into the Yamuna or Hindon rivers.

The news on the environment front is also not good. The Aravalli range runs approximately 800 km in a northeast direction across Delhi and the states of Gujarat, Rajasthan and Haryana; if the mining and construction activities in these hills are not halted, the desert from Rajasthan may extend to Delhi. These are natural recharge zones for freshwater lakes in the vicinity and are also the catchment for lakes such as Badhkal, Surajkund, Dhauj and Peacock, some of which have turned seasonal in the past decade. These have been identified by the Central Ground Water Board as the last source for recharging the depleting groundwater reserves that are already inadequate to meet the drinking water needs of the population of Delhi, Gurgaon and Faridabad.

The Aravalli hills are not only rich in floral biodiversity, but are an important wildlife corridor between the Asola Bhatti wildlife sanctuary in Delhi and the Rajasthan Aravallis. The new development plans—Mangar Bani development plan 2031, Sohna Master Plan 2031 and Gurgaon Manesar Master Plan 2031—consider several forest areas as agriculture area. In Punjab, only about one-third of the Aravalli hills is protected under Sections 4 and 5 of the Punjab Land Preservation Act (PLPA), 1900 and some areas that come under the Aravalli Plantation Scheme are also protected. The remaining portion is now designated as an agriculture zone, where even twigs had not been cut for

centuries. Once a land is designated as an agriculture zone, changing its land use to commercial or residential is easily justified, and it is easy to colonise.

Development in the NCR Rajasthan Region

Until recently, the provision in the Section 17 of the 1973 land ceiling Act in Rajasthan prohibited companies from acquiring agricultural land beyond prescribed ceilings. This was an impediment to those who wanted to buy agricultural land in excess of the ceiling and get the land converted for non-agricultural use. The state government had powers to waive the ceiling on the purchase of agricultural land, but this was confined to industrial units. In 2010, the Rajasthan government amended its 37-year-old land ceiling Act to allow the direct purchase of agricultural land by investors (The Hindu, September 13, 2010). The legislation will help industrial projects as well as other investment options such as townships, housing projects, infrastructure projects, power plants and hotels and resorts. These reforms have come much later than the reforms implemented in Haryana and Uttar Pradesh. This, coupled with the greater distance from NCT, is responsible for the slow appreciation of property in this region.

There is a difference in the spirit in which the policies are being implemented in Rajasthan compared to Haryana and UP. Rajasthan's housing policy has outlined five models for developing housing units and the government has several features for public causes. One is the PPP to build houses on government-owned land. The criteria used to select private builders in the Rajasthan model is not the maximum amount of money a developer pays for the land, but the maximum number of lower income group units the developer can deliver free to the government. The aim is to get 80 per cent of houses for the needy constructed through a joint venture. They also ensure that commercial use in such building complexes is limited to 10 per cent of the built-up area and the property is optimised for housing.

To make property affordable for buyers, the government has reduced the stamp duty on registering houses for the EWS to a nominal Rs.10 and for LIG houses to Rs. 25, and it also offers other subsidies. Delays are avoided and cost escalations are kept under control by offering incentives to developers. The idea is to provide quality housing at a reasonably low price. The success of Rajasthan can be gauged from the very low share of the population living in rented accommodation compared to other states in the NCR region (Table 3).

Table 3: Ownership of Census Houses

Sub-regions	Status	Urban	% of status of ownership	Rural	% of status of ownership	Total	% of status of ownership
NCT Delhi	Owned	22,14,621	67.9%	64,682	81.8%	22,79,303	68.2%
	Rented	9,29,112	28.5%	12,347	15.6%	9,41,459	28.2%
	Any Other	1,17,690	3.6%	2,086	2.6%	1,19,776	3.6%
		32,61,	100.0%	79,115	100.0%	33,40,53	100.0%
Haryana	Owned	6,94,301	72.3%	10,37,661	95.7%	17,31,962	84.7%
	Rented	2,40,185	25.0%	33,301	3.1%	2,73,486	13.4%
	Any Other	25,490	2.7%	13,107	1.2%	38,597	1.9%
		9,59,976	100.0%	10,84,06	100.0%	20,44,04	100.0%
Rajasthan	Owned	98,741	79.9%	4,96,412	98.2%	5,95,153	94.6%
	Rented	22,821	18.5%	4,778	0.9%	27,599	4.4%
	Any Other	2,085	1.7%	4,076	0.8%	6,161	1.0%
		1,23,647	100.0%	5,05,266	100.0%	6,28,913	100.0%
U.P	Owned	9,67,073	75.4%	11,80,816	96.6%	21,47,889	85.8%
	Rented	2,82,158	22.0%	25,781	2.1%	3,07,939	12.3%
	Any Other	33,643	2.6%	15,161	1.2%	48,804	1.9%
		12,82,87	100.0%	12,21,75	100.0%	25,04,63	100.0%
NCR	Owned	39,74,736	70.6%	27,79,571	96.2%	67,54,307	79.3%
	Rented	14,74,276	26.2%	76,207	2.6%	15,50,483	18.2%
	Any Other	1,78,908	3.2%	34,430	1.2%	2,13,338	2.5%
	Total	56,27,92	100.0%	28,90,20	100.0%	85,18,12	100.0%

The low share of tenants could be attributed a low level of development that results in low migration of the population. However, the growth of population was, in fact, not low in the Rajasthan NCR sub-region, given the longer distance from NCT Delhi. During 2001-11, population growth in the Rajasthan NCR sub-region was 50.4 per cent compared with 52.7 per cent for the Uttar Pradesh NCR sub-region and 60.4 per cent for the Haryana NCR sub-region.

Thus, a slow property boom coupled with low and affordable housing price is not a bad option for the welfare of people residing in this area without any environment degradation. This explains why large-scale land acquisition has not yet taken place in the state. The largest acquisition was for the SEZ, Mahindra World City Jaipur Limited, which is spread over 2,500 acres (10.12 sq. km), which is a joint sector venture with the state-owned Rajasthan State Industrial Development and Investment Corporation (RIICO).

IV. Growth of Population in NCT Delhi

The population of Delhi as on March 1, 2011 was 1.68 crore as against 1.39 crore on March 1, 2001 (Census, 2011). About 97.5 per cent of the population of Delhi lives in urban areas and the remaining 2.5 per cent in rural areas. In the 2011 Census, this urban population includes the population of 110 census towns that, as per Revenue Department records, are located in the rural area of Delhi and are not part of the notified urban area of Delhi (Economic Survey of Delhi, 2012-13).

Migration has played a major role in the demographic evolution of NCT Delhi^{vi}. In 1947, Delhi's population was about 9-10 lakh. It received about 5 lakh refugees from Pakistan and this coupled with the rise in natural population and migration from within the country raised the population of Delhi to 17.4 lakh in 1951. In the post-independence era, migration continued to have a significant contribution on urban growth (Government of India, 2007). The population as per the 1961 census

was 26.6 lakh, which increased to 138.5 lakh in 2001. In-migration increased: it was 8.8 lakh during 1961-71, 12.3 lakh during 1971-81, 15.9 lakh during 1981-91 and 22.2 lakh during 1991-2001. Out-migration from Delhi has increased slightly, from 2.4 lakh in 1961-71 to 2.8 lakh in 1971-81 and remained at 2.8 lakh during 1981-91 before increasing to 4.6 lakh in 1991-2001. Thus, the net migrants (In-migrants – Out-migrants) to NCT Delhi has steadily increased, from 6.3 lakh during 1961-71 to 9.5 lakh in 1971-81 to 13.1 lakh in 1981-91 to 17.6 lakh in 1991-2001 (NCR Regional Plan 2021, Final Report). This emphasises the pull effect of a large metropolis like Delhi in a predominantly rural country.

Table 4: Population, Area and Density of NCT Delhi (1901-2001)

Year	Population	Growth Rate	Population (Urban)	Growth Rate	Urban Area	Density of Urban area
	Lakh	% p.a.	Lakh	% p.a.	Sq km	Pp sq km
1901	4.1	-	2.1	-		
1911	4.1	0.2	2.4	1.1	43	5581
1921	4.9	1.7	3.0	2.5	168	1786
1931	6.4	2.7	4.5	3.9	169	2663
1941	9.2	3.7	7.0	4.5	174	4023
1951	17.4	6.6	14.4	7.5	201	7164
1961	26.6	4.3	23.6	5.1	327	7217
1971	40.7	4.3	36.5	4.5	446	8184
1981	62.2	4.3	57.7	4.7	541	10,665
1991	94.2	4.2	84.7	3.9	624	13,574
2001	138	3.9	129	4.3	723	17,842
2011	167.5*	2.0	163.3	2.4	837	19510
2021	202.5*	1.9	202.5	2.2	978	20706

Note: * Population estimates as per Master Plan 2021 are 182 lakh for year 2011 and 230 lakh for year 2021.

Source: Census of India, 2011 and other census reports; area from Delhi Master Plan 2021; Office of the Chief Registrar, Births & Deaths, Government of NCT Delhi; estimated mid-year population based on provisional census data.

The inflow of population from Uttar Pradesh and Bihar (including the areas carved out of these states for comparison), known as Purvanchalis, contributes the maximum share^{vii} of 64.3 per cent among the total migrants to Delhi as per Census 2001. Uttar Pradesh (including Uttarakhand) sends the maximum migration of 45.2 per cent, followed by Bihar (19.1 per cent including the area carved out). The percentage share of migration from Uttar Pradesh was 50.1 per cent during 1971-81 and Bihar's share was 5.8 per cent. The share of migration from the states of Rajasthan, Punjab and Haryana has decreased. The percentage of total migrants from Haryana has come down, from 12.9 per cent in 1971-81 to 7.9 per cent in 1991-01, and that of Punjab from 6.4 per cent to 2.3 per cent (Table 5).

Table 5: Migration trends to Delhi by Place of last Residence

States	1971-81	1981-91	1991-01
Uttar Pradesh (including Uttarakhand)	50.1	48.3	45.2
Bihar (including carved-out states)	5.8	10.7	19.1
Haryana	12.9	11.5	7.9
Rajasthan	7.6	6.0	4.1
Punjab	6.4	5.3	2.3
Others	17.2	18.3	21.5
Total	100	100	100

Data Sources: For the years 1971, 1981, 1991 and 2001, Census of India data for the relevant year.

Between 2001 and 2011, there was a slowdown in Delhi's population growth mainly due to a decline

in net migration of population, but the population growth of 21 per cent is still above the national average of about 17 per cent. Delhi's overall population density has been estimated at 113.2 persons per sq km (167.5 lakh/ 1,483 sq km).

Table 6: Increase in Delhi's Population due to Natural Rise and Migration

	Natural Increase (lakh)	Net Migration (lakh)	Total Increase (lakh)	Base Year Population (lakh)	Total Population (lakh)	% p.a. growth due to Natural Growth	% p.a. Growth due to Migration
1981	12.0	9.5	21.5	40.7	62.2		
1991	18.9	13.1	32.0	62.2	94.0	2.7	1.9
2001	26.6	17.6	44.0	94.0	138.0	2.5	1.7
2011	24.2	20.0	44.0	138.0	182.0	1.6	1.4
2021	24.0	24.0	48.0	182.0	230.0	1.2	1.2
2011*	22.7	6.8	29.5	138.0	167.5	1.5	0.5
2021#	24.0	11.0	35.0	167.5	202.5	1.3	1.3

Source: Projections by DDA sub-group (MPD-2021); Delhi Master Plan 2021.

Note: * Based on provisional Census of India data 2011 and other census reports, Office of the Chief Registrar data.

Revised estimates in Draft NCR report of NCR Board.

The sharp slowdown in net migration to NCT Delhi from 17.6 lakh during 1991-2001 to 6.8 lakh during 2001-2011 (Table 6) can be attributed to the implementation of employment promotion programmes like the Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA) and welfare schemes like pensions to senior citizens and widows by central and state governments, on the one hand, and the development of NCR priority towns, such as Gurgaon, Faridabad, Sonipat, Noida, Ghaziabad and Meerut (Economic Survey of Delhi, 2012-13). A survey by the Institute for Human Development (IHD) (2013) found that the proportion of people who migrated to Delhi in search of employment opportunities and have been residing there for the past 6 to 10 years has declined, from around 60 per cent to 32 per cent (for migrant population residing in Delhi for the past 5 years). The decline is also seen in people migrating for better employment opportunities, from 28 per cent to 21 per cent during the corresponding periods. The IHD report cited the high cost of living (food, housing, transport, etc.) in Delhi as the reason for the decline in migration to Delhi. But this argument does not seem very convincing, because the cost of living was always higher in Delhi than in other cities. The reasons given in the Economic Survey of Delhi, 2012-13 seem more plausible.

Other demographic changes have been observed between 2001 and 2011. The sex ratio in Delhi has gone up from 821 in 2001 to 868 in 2011 in line with the increase all over India. Employment opportunities for domestic maids and the successful introduction of several schemes for empowerment of women and welfare of children by the government of NCT Delhi (Economic Survey, Delhi 2012-13) might have encouraged the migration of female members along with their male counterparts.

The sharp decline in net migration levels during 2001-11 has not been observed since 1951 and is the reason for the lower population estimate of 167.5 lakh in 2011 compared with the 182 lakh projected in Master Plan 2021. Thus, the population projections for 2021 based on Census 2011 data have been lowered to 202.5 lakh in the revised NCR Master Plan 2021 (Table 6). This reduction needs to be accommodated over and above the settled population.

V. Population Growth in the CNCR

The various initiatives by the states and the Centre, such as economic reforms, land policy changes and increase in spending on infrastructure to improve connectivity through metro, rail and road networks, encouraged the participation of private players in the development process. This helped alter investment incentives, shifted growth to new areas such as Gurgaon, Noida and Ghaziabad and eased the pressure on infrastructure within NCT Delhi, which had been earlier considered as the sole centre of development.

These developments partially explain the lower increase of 34 lakh in Delhi's population during 2001-11 compared to the projected increase of 64 lakh in the original Master RP 2011. On the other hand, the urban population of NCR increased by 83.8 lakh during 2001-11 (Table 7), which is higher in absolute terms compared to the 62.4 lakh and 46.1 lakh achieved during 1991-2001 and 1981-91, respectively. However, in per cent per annum growth terms, the urban population of NCR declined to 3.6 per cent per annum during 2001-11 compared to 3.8 per cent and 4.2 per cent per annum during 1991-01 and 1981-91, respectively. The overall increase in urban population in the NCR region at 83.8 lakh during 2001-11 was also lower than the projected increase of 125.5 lakh in the original RP 2021, because the targets were too optimistic in a decade that witnessed a slowdown in migration level to metropolitan cities at the all-India level.

Table 7: Population Growth during 1981-2021 in NCR areas (in lakhs and % p.a. growth)

					Likely	RP	RP	Gr Rt	Likely	Projected
	1981	1991	2001	2011	2021	2011	2021	2001-11	2011-21	2011-21
1. NCT-Delhi	57.7	84.7	129.0	163.0	202.6	188.5	230.0	2.4	2.2	3.5
Increase in Population		27.0	44.3	34.0	39.6	59.5	41.5			
2. Bahadurgarh	0.4	0.6	1.3	1.7	5.0	2.0	3.0	2.6	11.4	5.8
3. Faridabad-Ballabgarh complex	3.3	6.2	10.6	14.1	20.0	16.0	25.0	2.9	3.6	5.9
4. Gurgaon-Manesar complex	1.0	1.4	2.3	9.0	16.0	4.5	21.0	14.7	5.9	8.8
5. Sonapat-Kundli complex	1.1	1.4	2.3	3.1	8.0	3.5	10.0	2.9	9.9	12.4
6. Haryana sub-regions (2 to 5)	5.8	9.6	16.6	27.9	49.0	26.0	59.0	5.3	5.8	7.8
7. Ghaziabad-Loni complex	2.9	5.1	10.9	21.5	30.2	19.0	30.2	7.0	3.5	3.5
8. Noida	0.36	1.47	3.05	6.42	17.4	6	17.4	7.7	10.5	10.5
9. UP sub-regions (7 & 8)	3.2	6.6	13.9	27.9	47.6	25.0	47.6	7.2	5.5	5.5
CNCR excluding NCT Delhi (6 & 9)	9.0	16.1	30.5	55.8	96.6	51.0	106.6	6.2	5.6	6.7
Increase in Population		7.1	14.4	25.3	40.8	20.5	55.6			
CNCR (1, 6 & 9)	66.7	100.8	159.5	218.8	299.2	239.5	336.6	3.2	3.2	4.4
Increase in Population		34.1	58.7	59.3	80.4	80.0	97.1			
8. Panipat			3.6	4.4	7.0	5.0	7.0	2.0	4.8	4.8
9. Rohtak			2.9	3.7	7.6	4.2	7.6	2.5	7.5	7.5
10. Palwal			1.0	1.3	2.4	1.7	4.0	2.7	6.1	11.9
11. Rewari			1.3	1.4	2.5	2.0	4.0	0.7	6.1	11.1
12. Meerut			11.6	14.3	19.2	15.0	26.5	2.1	3.0	6.4
13. Hapur-Pilkhua complex			2.8	3.6	5.1	3.0	7.5	2.5	3.5	7.6
14. Greater Noida			0.3	1.1	4.5	7.0	12.0	13.9	15.0	27.0
15. Bulandshahr-Khurja complex			2.7	3.8	5.4	3.7	4.8	3.5	3.5	2.4
16. Baghpat-Baraut complex			1.2	1.4	1.8	1.6	3.0	1.6	2.3	7.9
17. Alwar			2.7	3.4	4.3	3.4	5.4	2.3	2.3	4.7
18. Greater Bhiwadi			0.3	1.1	2.0	1.0	8.9	13.9	6.0	23.3
19. SNB-complex			0.4	4.3	7.7	1.0	5.4	26.8	6.0	2.3
Metros & RCs outside CNCR (8-19)			30.8	43.8	69.3	48.6	96.1	3.6	4.7	8.2
Urban Town < 1 lakh population			9.4	20.9	34.0	20.9	48.1	8.3	5.0	8.7
NCR Urban Population excluding CNCR	24.5	36.5	40.2	64.7	103.4	69.5	144.2	4.9	4.8	8.3
Increase in Population		12.0	3.7	24.5	38.7	29.3	74.7			
NCR Urban Population	91.2	137.3	199.7	283.5	402.6	309.0	480.8	3.6	3.6	5.4
Increase in Population		46.1	62.4	83.8	119.1	109.3	171.8			

NCR Rural Population	107.6	136.3	171.3	177.0	164.7	177.0	164.7	0.3	-0.7	-0.7
NCR Total Population	198.8	273.6	371.0	460.5	567.3	486.0	645.5	2.2	2.1	3.4
Increase in Population		74.8	97.4	89.5	106.8	115.0	159.5			

Note:

1. The share of Kundli and Loni towns was very small during these periods. Sonapat and Loni were included in the controlled/ development/ regulated Central NCR areas.
2. Population of cities with more than 1 lakh population is available from Census of India for 2011. Population for cities with less than 1 lakh population have been projected based on urban growth rate in the respective districts.
3. RP: Regional Plan, NCR.

Source: Census of India 1981, 1991, 2001 & 2011 (Provisional) and Regional Plan (RP) 2021 of NCR and Revised RP-2021 of NCR.

Further fragmentation analysis indicates that the population increase of 25.3 lakh for metro and regional centres within the CNCR excluding Delhi during 2001-11 was in fact higher than the 20.5 lakh projected in the original MP 2021 for the same period. Thus, the CNCR excluding Delhi shared the population expansion burden of Delhi by providing housing facilities, while the metro and regional centres outside the CNCR have not played the role assigned in RP 2021 due to their distance from the NCT. Delhi's metropolitan cities that fall in Uttar Pradesh accounted for a 13.9 lakh addition to the population during 2001-11. Ghaziabad and Noida have grown reasonably well during this period. Although Noida was the fastest-growing city between 1981 and 1991, it lagged behind Gurgaon during 2001-11 despite its image of being a well-developed city that housed several hi-tech industrial/ commercial and residential units. Although Noida has well-planned development, several areas have not been integrated with the overall planning framework and lack basic facilities. Ghaziabad, in fact, showed much higher addition to the population during 2001-11. However, the pace of development and population growth in these cities could not match the requirements for both physical and social infrastructure, which led to unauthorised colonies and pressure on the infrastructure. In addition, towns in Uttar Pradesh are plagued by law and order problems that hindered planned development in these cities. Among UP towns, Noida is poised for major growth due to its relatively better development in the CNCR region.

In Haryana, Gurgaon was a non-descript town until its potential was recognised in the late 1980s. Gurgaon is only 32 km from Delhi on the Delhi-Jaipur road (NH 8), is close to the international airport and is often seen as an extension of south Delhi. With the introduction of economic reforms, the state government took several initiatives for industrial and planned development. The Haryana Urban Development Authority (HUDA) is mainly responsible for the overall development of cities (including infrastructure, waste and water management) in Haryana along with the State Town and Country Planning Department, which provides licences to private developers. With initiatives from the state government to improve connectivity and infrastructure in the Gurgaon region, the city attracted a large number of multinational companies though it took some time before it could become the leading industrial centre in the entire NCR with the setting up of the automobile industry through Maruti Udyog and Hero Honda. Over the past 20 years, the city has attained a cosmopolitan look with the development of posh residential colonies, multiplexes and shopping malls and the entry of several multinational companies in the Information Technology (IT) and Business Process Outsourcing (BPO) industries. This has changed the face of the city. Industrial activities here are well planned and the surrounding residential sectors being developed by HUDA as well as private colonisers have remained pollution-free. Gurgaon has expanded and the city infrastructure has become overburdened; thus, opportunities for its further expansion are limited, expensive and far from the city.

The increase projected for metros and RCs including small cities outside the CNCR area was lower at 24.5 lakh compared to the projected population of 29.3 lakh in RP 2021 for the period 2001-11. The

overall increase in urban population is 83.8 lakh compared to projections of 109.3 lakh made in the original RP for 2001-11.

For the period 2011-21, the population of NCT is estimated at 202.6 lakh compared to original estimates in the RP of 230 lakh, while the CNCR population is expected to be 299.1 lakh as against the RP 2021 estimate of 336.6 lakh by 2021. The NCR population is expected to be much lower at 567.3 lakh by 2021 compared to 645.5 lakh projected in the original RP 2021.

VI. Additional Demand and Supply of Occupied Houses in NCT during 1991-2001 & 2001-11

The analysis here is not on the absolute demand and supply situation, but on a comparison of additional supply and increase in demand during two consecutive periods, namely, 1991-2001 and 2001-11.

a. 1991 to 2001

The net increase in Delhi's population of 44 lakh during 1991-2001 (i.e., from 94 lakh to 138 lakh) was the highest for any decade to date. To accommodate this increase in population, there was a major increase in housing infrastructure. The number of census houses increased by 9.3 lakh during this period, raising the number from 24.5 lakh in 1991 to 33.8 lakh in 2001. Of this, the residential and residential-cum-other usage increased from 18 lakh to 24.5 lakh (Table 8). The usage for non-residential purposes including locked houses increased from 3.5 lakh in 1991 to 5.5 lakh in 2001. The number of locked houses was 39,488 during 2011. There was an increase in the number of vacant houses from 2.9 lakh to 3.8 lakh during this period.

Table 8: Additional Demand & Usage of Household for Various Purposes in 1991, 2001 and 2011

	1991	2001	2011	Addition in Houses during 1991-01	Addition in Houses during 2001-11
Occupied Census houses for residence use	17,13,952	23,16,996	31,76,329	603,044	859,333
Occupied Census houses for residence cum other use	88,386	1,35,406	139,157	47,020	3,751
Total houses for Residential use	18,02,338	24,52,402	33,15,486	650,064	863,084
Other Non-Residential Usage including locked houses at the time of Census	350,128	549,764	777,378	199,636	227,614
Vacant Houses	293,677	377,790	512,691	84,113	134,901
Total Census Houses	24,46,143	33,79,956	46,05,555	933,813	12,25,599

To accommodate this increase in population, the number of occupied houses for residential and residential-cum-other use rose by 6.5 lakh, from 18.0 lakh to 24.5 lakh. Moreover, the average family size per household increased during this period from 5.02 to 5.4 due to natural growth or additional members migrating along with existing families. However, these two factors are not sufficient to explain the addition to Delhi's population. Another factor seems to be an increase in the number of families sharing a house. The number of households exceeded the number of occupied houses by a margin of 1 lakh during 2001 compared with 0.6 lakh during 1991. Thus 0.4 lakh additional families were adjusted with other families during the period 1991-2001.

In equation form, the increase in population is accommodated in additional occupied houses with an increase in average family size and a higher congestion level:

44 lakh = 6.5 lakh net houses added during 1991-2001 * 5.4 average members size per household + 18 lakh occupied houses in 1991 * (5.4-5.02) increase in family size + (101,747-59,238) houses required to adjust additional congestion during 1991-2001 * 5.4 average members per household.

$$44 = 6.5*5.4 + 18*(0.38) + 0.4*5.4$$

b. 2001 to 2011

The number of census houses increased from 33.8 lakh in 2001 to 46.1 lakh in 2011, a huge jump of 12.3 lakh. This was also the period when additional residence property was used for non-residential purposes and their number increased from 5.5 lakh in 2001 to 7.8 lakh in 2011 (Table 8). During this period, the number of vacant houses also increased from 3.8 lakh to 5.1 lakh.

The net addition to occupied houses increased from 24.5 lakh in 2001 to 33.2 lakh in 2011, i.e., a rise of 8.7 lakh during the period 2001-11, while the net increase in Delhi's population was only 29.5 lakh, i.e., from 138 lakh to 167.5 lakh. Thus, the expansion in occupied houses was more than what is required to accommodate the increase in number of households assuming the same family size. Thus, the 2011 data reflect a decline in average family size per household from 5.4 to 5.01 persons and there was a decline in the number of families sharing houses. A comparison of households with families shows that the number of households was 0.27 lakh higher compared to occupied houses, while it was as high as one lakh during 2001. Thus, 0.73 lakh additional families who were earlier sharing houses got separate houses in 2001-11.

The removal of the slum population for the Commonwealth Games (CWG) is another factor that improved the cleanliness of the city. As many as 32,000 families were shifted to rehabilitation colonies in the North-west and South districts of Delhi. Apart from this, land was distributed and other benefits were given since the displacement was much higher. According to Dhunu Roy, director of the Hazards Centre, a Delhi-based non-profit group, nearly 200,000 Delhi residents were evicted between 2003 and 2008 for CWG 2010. Apart from this, a small number of posh houses were built for the Commonwealth Games that were brought under use at a much later stage.

In equation form, the increase in additional population is accommodated in additional occupied houses with a smaller average family size and a reduced congestion level:

29.5 lakh = 8.6 lakh net houses added during 2001-11 * 5.01 average members size per household + 24.5 lakh occupied houses in 2001 *(5.01-5.4) increase in family size + (0.27-1) houses required to adjust additional congestion during 1991-2001 * 5.4 average members size per household.

$$29.5 = 8.6*5.01 + 24.5*(0.39) + (- 0.73)*5.01$$

In fact, the improvement in housing stock can be judged from other indicators as well. The number of census houses increased by 12.3 lakh during 2001-11 compared to 9.3 lakh during 1991-2001. The number of vacant houses also increased by 1.3 lakh during 2001-11 compared to 0.8 lakh during 1991-2001; thus, holding houses for speculative purposes also increased, which is a natural phenomena when there is high price appreciation; also, owners do not want to rent their property due to eviction problems, etc. The usage of houses for non-residential purposes also increased nominally from 2 lakh during 1999-01 to 2.3 lakh during 2001-11, perhaps because people are now prepared to pay for the better facilities available in institutional areas and commercial and market areas/complexes. The number of dilapidated houses, however, declined from 182,241 in 1991 to 32,976 in 2001 and then increased to 93,457 in 2011.

Thus, during 2001-2011 the population pressure was comparatively low and there was an improvement in supply indicators. Despite this, property prices appreciated during this period. Thus, property prices do not seem to be controlled only by an increase in the supply of houses and other benefits in buying property, but depend on other factors. During 2001-11, it was easy to obtain finance for purchasing houses at low interest rates and with better tax concessions. Thus, when the public sector was providing excess supply, prices remained under control. The moment government agencies chose to abstain from active participation in creating additional houses/ flats within NCT Delhi, builders took the opportunity to control property stocks and created a cartel to raise prices. The housing finance meant to help the consumer actually helped builders raise their controlled property prices. Thus, the government sector has an important role in certain essential services and cannot afford to abstain if it wishes to help the needy. This was also highlighted in the literature review above. At the same time, the private sector's simultaneous participation could be very useful to bring in efficiency.

Thus, the model of providing stock far in excess of demand and keeping it in the public sector control mechanism is more efficient to keep prices at a reasonable rate than merely increasing supply through the active participation of private players. Effective public sector intervention to discourage speculators and hoarders is essential even if the private sector is allowed to operate. The extra deployment of public resources to create housing assets is essential if we do not wish to create a situation in which scarce resources are mis-utilised. An artificial scarcity is created by forming a cartel or creating a speculative and hoarding market despite the fact that actual supply far exceeds the requirement. The speculator enters the market to take the benefit of soaring prices for better returns and hoarders want to keep it for long periods so that they do not have to pay the high, appreciated price. Several rich people own stocks in a metro, important city or hill station, though they use the space only occasionally (once or twice a year). The cost of maintaining the space is much higher than staying in a good hotel, but this is happening because the appreciation of such property gives much higher returns.

Thus, increasing the stock of houses alone may not deal with the housing shortage faced by the population. The Technical Group on urban housing shortage (TG-12) 2012-17, Government of India, Ministry of Housing and Urban Poverty Alleviation indicated that there is paradox in Indian economic growth, as there exists both high shortage of housing at a time when there is massive and rapidly growing stock of vacant houses. The next section reviews the official methodologies used to estimate the housing shortage in order to arrive at information about the housing shortage faced by people, which is essential for policymakers to formulate corrective measures.

VII. Reviews of Technical Group on urban housing shortage (TG-12) and National Capital Region Planning Board estimates to rework the Housing shortage in NCT Delhi for year 2011

The various official methodologies used to estimate the housing shortage are reviewed below.

c. Shortage of houses during 2011 in India and Delhi as per Technical Group on urban housing shortage (TG-12)

The Technical Group on urban housing shortage (TG-12) 2012-17, Government of India, Ministry of Housing and Urban Poverty Alleviation indicated that to address the mismatch between suppliers of housing and those needing them it is essential to bring down the shortage of housing. For this, it is essential to determine the quantum of housing shortage not only at the aggregate level, but also in various income and rental categories and across states so as to draw road maps for the right action plan. TG-12 used data from the population/ housing census and various rounds of the National Sample Surveys (NSS) to draw these estimates. Both data sources have certain advantages; the NSS data covers a wide range of aspects, while the census data covers the total population and is free of sample biases. The

TG-12 methodology is based on excess of households over housing stock, the number of households residing in unacceptable dwelling units, the obsolescence factor, congestion factor and number of homeless people. In the absence of information on all these parameters, the housing shortage in the country for successive five-year plans has been estimated by putting together:

- I. Excess of households (that do not include the homeless) over housing stock
- II. The number of households residing in unacceptable dwelling units, which is computed by considering the obsolescence factor
- III. Those residing in unacceptable physical and social conditions, which is worked out using the overcrowding/ congestion factor
- IV. Houseless households. TG-12 considered that half the homeless are single migrants, whereas the other half has an average household size of 3.

TG-12 suggested that there is some overlap, as obsolete houses can have a congestion problem and *vice versa* and the extent of this overlap was estimated using NSS data. Around 4.8 per cent of the congested households are also estimated to have an obsolescent factor in common during 2011-12 at the all-India level.

Using these details, the housing shortage in India is estimated to be 187.8 lakh at the all-India level, which includes 9.9 lakh households living in non-serviceable kaccha households, 22.7 lakh households living in obsolescent houses, 149.9 lakh households living in congested houses requiring new houses and 5.3 lakh households in homeless conditions. Households among the various income categories were re-classified by using NSS data. TG-12 classified EWS and Lower Income Group (LIG) as households with income up to Rs 5,000/- per month and income between Rs 5,000/ and Rs 10,000/- per month, respectively. The problem faced by TG-12 was the absence of income data at the household level. It assumed that households at the lower income level do not have any savings and thus consumption expenditure in the EWS category was assumed to be the same as their income. For the LIG category, based on fragmented evidence from regional and city-level studies, TG-12 assumed the saving rate to be 5 per cent of the income. Thus, households with an expenditure between Rs 5,000 and Rs 9,500 per month are taken as LIG.

Based on this analysis, TG-12 concluded that the lower income group faces an extreme shortage of houses as their estimates show that 56.2 per cent of the total housing shortage is faced by EWS households. In addition, the LIG faces 39.4 per cent of the total housing shortage and, thus, the MIG and above group face only the remaining 4.4 percentage shortage of houses.

Reworking the estimates in this study to make it comparable

There is no doubt that the lower income group faces a higher shortage due to their weak purchasing capacity, but presenting these numbers without indicating the share of household and population in each income category, which is generally much higher among low-income categories, may be equally misleading. We reworked the estimates by calculating the shortage in various income categories. Table 9 shows the reworked calculations for EWS, LIG and above using data from TG-12; in the denominator we used census households to estimate the share of housing shortage within each group rather than the shortage of each group in the total. The census data is preferred to the NSS since its coverage is 100 per cent; both results are given in Table 9, but we have analysed only those that use census data in the denominator unless specified.

If census household data is taken in the denominator, the lowest decile household income group in urban India faces a 45.7 per cent housing shortage, while in the top 10 per cent income bracket the

shortage is only 2.6 per cent. If NSS households are taken in the denominator, 55.9 per cent face a shortage in the bottom income decile and 3.1 per cent in the top income decile.

On average, 23 per cent of urban households face a housing shortage if census households are taken in the denominator (Table 9). If the results are presented as a percentage of the population, 25.6 per cent of the urban population faces a housing shortage. The shortage of houses faced by EWS households is estimated at 36.3 percent. Housing shortage for LIG households above the EWS group is estimated at 13.8 per cent and among the upper income group only 7.0 per cent.

These estimates of the housing shortage are misleading. Saying that 7 per cent of households with an income higher than an LIG income are facing a housing shortage while the remaining who own a house do not face a shortage is misleading. First, because the house may not be of the appropriate size, the owners may have to live with it due to the very high prices. Second, households with more than an LIG income are mainly those with a secure monthly income, which allows them to borrow huge amounts to purchase a house. Most of those who have bought houses in the past 0-10 years are heavily burdened with debt and though these households now have reasonable accommodation, they may spend the rest of their lives repaying the principal and interest. Although such households own houses on huge borrowed money, they cannot be considered as not facing a shortage.

Around half the households in the bottom decile face a housing shortage, but this is expected in an income bracket group where the entire income is spent on day-to-day essential commodities with no savings. In fact, most of these groups seem to have benefitted from government policies designed to provide free houses to those living in jhuggi jhopri (JJ) areas so that the crucial areas occupied by these families can get vacated. Thus, a shortage of around 50 per cent means that almost half the population has benefited from government largesse. The government should build small accommodations at subsidised rates that have one or two rooms per house in multi-storey buildings for poor families; these should have an easy and subsidised rate of financing with strict implementation of clauses, such as anyone owning another house in the country should not be entitled to the accommodation. Ownership entitlement should be given only at the end of the entire payment. Defaulters who occupy the house and are not able to pay for more than six months in a given financial year should be treated as living on rent and any excess amount paid by them should be refunded with interest. For labour that caters to seasonal industry, accommodation should be built in areas where such industries operate and rented out on advance payment at a cheap monthly, weekly, or daily rate. This could be done as a PPP model.

For the low, middle and lower stratum of high-income groups, the government should continue to provide houses by acquiring land from farmers at a reasonable market price to provide excess supply that restricts the entry of speculators. In addition, the private sector can be given the freedom to operate in a high-rise building in a transparent manner in specified areas by developing a Master Plan in advance that takes care of all environment and other infrastructure bottlenecks. A high Floor Area Ratio (FAR) is essential to accommodate a large population in smaller areas in order to spare scarce and productive land for agriculture usage for food and national security. So, land development to the maximum possible extent should be confined to low-productive agriculture areas in the Master Plans.

Table 9: Housing Shortage among Various Income Groups in Urban India

Decile Income Groups from Bottom to Top	Urban Households in India as per Census (in lakhs)	Urban Households in India as per NSS (in lakhs)	Share in Total Urban Households %	Average MPCE	Average Household Size	Average Household Income based on TG-12 Method	Households facing Housing Shortage (in lakhs)	Households facing Housing Shortage in Decile using NSS Households (%)	Shortage using Census Decile Households (%)	From NSS data: Households & Population facing Shortage among EWS, LIG & Other income Groups (%)	From Census data: Households & Population facing shortage among EWS, LIG & Other income Groups (%)
1	82.5	67.4	10.1	521	5.9	3050	37.7	55.9	45.7	42.5 (43.2*)	36.3 (36.9*)
2	84.6	69.1	10.4	722	5.3	3821	32.5	47.1	38.4		
3	74.1	60.5	9.1	870	5.1	4392	22.3	36.9	30.1		
4	132.6	108.3	16.3	1028	4.7	4872	37.2	34.4	28.1		
5	33.9	27.7	4.2	1420	4.6	6904	8.6	31.1	25.4	20.8 (21.8*)	13.8 (14.2*)
6	76.0	62.1	9.3	1688	4.2	7354	16.8	27.0	22.1		
7	86.9	71.0	10.7	2051	4.0	8551	13.5	19.0	15.5		
8	89.8	73.4	11.0	2681	3.6	10245	9.9	13.6	11.0		
9	86.5	70.7	10.6	5673	3.3		6.5	9.2	7.5	8.2 (8.5*)	7.0 (7.2*)
10	66.5	54.3	8.2	1786	2.7		1.7	3.1	2.6		
Total	813.5	664.5	100.0	1856	4.4		186.7	28.1	23.0	28.1 (31.3*)	23.0 (25.6*)

Note:

1. Positive figures mean shortage, while negative means surplus.
 2. * Figures in parentheses in these last two columns represent shortage of houses as % for population; while figures without parentheses represents shortage as % of households.
 3. MPCE: Monthly Per Capita Consumption Expenditure.
 4. Housing shortage is faced by 28.1 per cent of urban households, which constitutes 31.3 per cent of the Indian urban population.
 5. 42.5 per cent of households and 43.2 per cent of the population among EWS face housing shortage in urban India.
 6. 20.8 per cent of households and 14.2 per cent of the population among LIG face housing shortage in urban India.
 7. Only 8.2 per cent of households and 7.2 per cent of the population among income group higher than LIG face housing shortage in urban India.
 8. In the lowest decile household income group, 55.9 per cent of households face housing shortage, while the top income decile household group faces only 3.1 per cent shortage in housing.
- Source: TG 12, NSS and Census data.

To work out the estimates for the States and UTs, the TG-12 distributed the shortage worked out for the all-India level among State/UTs in proportion to their share of households living in *kaccha* houses and that of Below Poverty Line (BPL) households at the national total. For Delhi, the households facing a shortage worked out by the TG-12 is estimated at 0.49 lakh. The TG, however, states that there is nothing sacrosanct about the exact figures for shortage or their distribution across state and expenditure categories; it strongly recommended that state and city-level agencies must undertake detailed surveys of slums and low-income areas as also high-density colonies in the cities to determine how many poverty-stricken households face a housing shortage.

b. Shortage of Houses in NCR and Delhi as per National Capital Region Planning Board (NCRPB)

Following the recommendation of the TG-12, the NCRPB derived the housing shortage using the TG-12 methodology. The NCRPB estimated the housing demand and supply gap for the year 2011 using the following steps:

- i. Taking the Census 2011 data on total population and assuming the household size as 5 persons per household, the required number of houses was calculated for each sub-region of the NCR:

Number of houses required = Total population / 5

- ii. The total houses available for accommodation was calculated by reducing the number of dilapidated houses from the total available houses in residential use and adding vacant houses.

Total housing stock available for accommodation = (Total no. of houses primarily used for Residential use) – (Total no. of Dilapidated Houses) + (Total vacant Census houses)

- iii. The current gap in the housing demand is calculated by deducting (i) from (ii).

Housing Gap = (Total housing stock available for accommodation) – (Number of Houses required)

In the NCT, there were 46.1 lakh census houses, of which 5.1 lakh were vacant. These vacant houses account for 5.1 lakh, i.e., 15.3 per cent of the households, which though unoccupied can be used for residential and residential-cum-other purposes. The remaining 40.9 lakh were occupied. Census houses account for 122.5 per cent of the households. The total households account for 33.4 lakh in NCT as per the 2011 Census. The estimates of housing usage and shortage are presented as a percentage of total households in this study unless specified otherwise. The logic is as follows: If everyone owns/ occupies only one house, and that too for residential purposes, and does not hold any additional houses that are unoccupied or diverted for other than residential use, then the number of households should ideally be equal to the number of houses required.

Of the occupied houses, 7.4 lakh, i.e., 22.1 per cent of the houses as a percentage of households, were diverted for use as shop/office, school/college, hotel/lodging/guest house, hospital/dispensary, factory/ workshop, place of worship and other non-residential uses (Census 2011). This may be happening because it is more profitable than giving the space on rent.

Apart from this, 0.4 lakh houses, though occupied, were found locked at the time of the survey.

Thus, the remaining 33.1 lakh occupied houses (Table 10) were used for residential and residential-cum-other purposes in Delhi out of the total 46.1 lakh census houses during 2011; this includes 31.7 lakh houses used exclusively for residential purposes and 1.4 lakh for residential-cum-other purposes. To work out the housing shortage during 2011, vacant houses need to be added to the stock and dilapidated houses need to be taken out. The number of dilapidated houses is estimated at 93,457, which accounts for just 2.8 per cent of the households during 2011 in the NCT. Thus, the number of houses available for residential and residential-cum-other purposes

even after netting out dilapidated houses accounts for 37.3 lakh (33.1 + 5.1 – 0.9), which is 3.9 lakh higher than the 33.4 lakh households residing in the NCT during 2011 (Table 10). This means that excess houses accounted for 11.8 per cent during 2011 compared to the number of households despite so many houses being diverted for non-residential purposes. Using this methodology, TG-12 estimated the excess availability of houses in the NCT at 3.8 lakh. However, since we have used the actual number of households rather than the number derived from population estimates using the family size assumption, the housing shortage worked for the NCT is estimated at 3.9 lakh in Table 10.

Similarly, the NCRPB estimated for other NCR regions the excess number of houses compared to the number of households and these are presented in Table 11 as a percentage of households. The data in Table 11 shows that in the rural areas of the NCR regions except Delhi, there is a shortage of houses compared to the requirements, while in other areas there is a surplus.

Table 10: Demand and Supply Gap in Housing in NCR during 2011 as estimated by TG-12

By sub-Region Urban/rural/ Total	No. of Households	Total no. of census houses available	Total Occupied houses	No. of houses primarily used for residential purpose	Total no of Vacant houses	Total Dilapidated Houses	Total DU's available (5+6-7)	Housing demand/ excess (8-2)	Housing Surplus as % of Households
1	2	3	4	5	6	7	8	9	10
Delhi-U	3256927*	44,81,133	39,90,998	32,35,212	4,90,135	90,477	36,34,870	377943	11.6
Delhi-R	83611*	1,24,422	1,01,866	78,692	22,556	2,980	98,268	14657	17.5
Delhi-T	3340538*	46,05,555	40,92,864	33,13,904	5,12,691	93,457	37,33,138	392600	11.8
Haryana-U	9,50,922	14,31,048	12,52,293	9,56,034	1,78,755	30,358	11,04,431	1,53,509	16.1
Haryana-R	12,56,588	16,46,698	15,05,120	10,82,220	1,41,578	55,175	11,68,623	-87,965	-7.0
Haryana-T	22,07,510	30,77,746	27,57,413	20,38,254	3,20,333	85,533	22,73,054	65,544	3.0
Rajasthan-U	1,30,858	2,12,967	1,78,362	1,23,119	34,605	1,964	1,55,760	24,902	19.0
Rajasthan-R	6,03,542	7,82,294	7,32,426	5,03,228	49,868	18,181	5,34,915	-68,627	-11.4
Rajasthan-T	7,34,400	9,95,261	9,10,788	6,26,347	84,473	20,145	6,90,675	-43,725	-6.0
U.P- U	14,09,297	18,89,173	16,45,379	12,76,396	2,43,794	24,628	14,95,562	86,265	6.1
U.P -R	15,07,550	18,12,266	16,75,551	12,18,233	1,36,715	46,230	13,08,718	-1,98,832	-13.2
U.P-T	29,16,847	37,01,439	33,20,930	24,94,629	3,80,509	70,858	28,04,280	-1,12,567	-3.9
NCR- U	5767715	80,14,321	70,67,032	55,90,761	9,47,289	1,47,427	63,90,623	642620	11.1
NCR-R	3451797	43,65,680	40,14,963	28,82,373	3,50,717	1,22,566	31,10,524	-340767	-9.9
NCR-T	9219512	1,23,80,001	1,10,81,995	84,73,134	12,98,006	2,69,993	95,01,147	301853	3.3

Note: Positive figures means surplus, while negative means shortage.

* Household in other NCR regions except Delhi is worked out by dividing population by 5. In Delhi, the number from Census data is used instead.

Source: Provisional Household Tables, Census of India, 2011; National Capital Region Planning Board.

However, the excess availability worked out in these estimates seems to be far from the reality in Delhi and its surrounding areas for any income bracket. Though the situation is extremely difficult for low income groups as is clear from Table 9, the medium to high income groups now face a challenge because property prices have skyrocketed. With the diminished role of the public sector in providing cheap land in large tracts for the housing sector, the PPP model is able to provide good houses, but at 10 times the cost a decade ago. As a result, the poor, middle and even the lower segment of high-income families have no option but to stay in unhygienic and unauthorised, far-flung areas. Even for the higher income group, the cost of buying a new house means debt for the rest of their life despite the availability of cheap and easy finance from banks. The luckiest group is the one that owned houses before the boom. Farmers might have got a slightly higher rate for their land with certain modifications in the land acquisition laws, but the consumer has to pay a higher than proportionate hike in cost. The top income bracket might have benefitted from this boom, as they now have the option to own luxury houses and can afford more than one house (lying vacant or partially vacant) for which the property price multiplies over time. In cases where the control mainly lies with builders and

the government has chosen to abstain from active participation to meet the supply gap, black marketers and speculators have taken the leading role; that is how the share of vacant houses grew by 3.1 per cent during 20001-11 compared to 2.6 per cent during 1991-2001, despite the high base of vacant houses during 2001.

Thus, the estimates of housing shortage derived in Table 10 do not seem to be an accurate reflection of the housing market in Delhi and surrounding areas. This methodology helps explain the shortage of houses if there is perfect competition, an ideal situation prevails and there is an absence of speculators in the market. To bring in additional aspects, an alternative methodology is attempted to better reflect the housing shortage in a situation where the presence of speculators is a reality in the market.

VIII. Shortage of Houses in NCR Delhi worked out in this study:

The methodology adopted in this study is based on the simple understanding that except for a small per cent of the population residing without shelter, others reside in a house irrespective of the condition and congestion of the house. Thus, shortage of houses at any point of time is the number of additional houses required to provide a separate/independent house for residential or residential-cum-other usage to each family in a reasonably good condition according to their social status and income status. This is estimated by adding the following:

- i. **Shortage of houses due to difference in number of households and occupied houses and congestion factor:** As per census data, the number of households at 33.4 lakh is very close to 33.1 lakh occupied houses for residential and residential-cum-other usage.

Thus, there is a shortage of only 0.3 lakh houses compared to occupied houses. ----- (a)

However, further scrutiny of census data reveals that 30.1 lakh houses were occupied by 33.4 lakh households in Delhi in 2011. This means there was a shortage of houses due to congestion to the extent of 3.3 lakh houses. Due to this shortage, the needy have to combine/adjust with other families in one house as reported in Table 11. It is estimated that 6.1 lakh families reside in 2.8 lakh houses, and more than one family occupies these houses, while in 27.3 lakh houses only one family resides per house. Thus, the difference between the number of households and the number of occupied houses for residential purposes accounted for 3.3 lakh (6.1 – 2.8), i.e., 10.0 per cent of the total households during 2011.

Table 11: Data on No. of Married Couples staying in a House

Household by number of married Couples	Number of Households	Number of Houses Derived
None	4,04,963	4,04,963
One	23,21,368	23,21,368
Two	4,73,852	2,36,926
Three	1,15,262	38,421
Four	20,760	5,190
Five plus (Av6)	4,333	722
Total	33,40,538	30,07,590

Why certain occupied houses remain unutilised: Of the total of 33.40 households, 9.4 lakh families occupied a house on rent during 2011. Out of rented accommodation, around 20 per cent of households, i.e., approximately 1.88 lakh, opt for their own house on average during a year. Easy and cheap availability of housing loans and tax concessions have made it an attractive option to purchase a house in monthly instalments towards a loan rather than staying on rent.

These 1.88 lakh tenants opting to own house in a year either purchase the same house in which they were residing as tenants or opt for second-hand house (i.e., not newly constructed house). Only a small per cent, say one-sixth to one-seventh, opt for a newly constructed house as it involves a long

gestation period that mainly suits those who already own a house. For households that pay rent, it is not easy to pay both monthly instalments as rent and loan repayment. This means that on average around 28,000 households out of 1.88 lakh opt for a newly built house and the remaining 1.6 lakh purchase a house from the existing owners. These 1.6 lakh houses remain unoccupied for around 6-9 months after purchase, so that they can be re-innovated and modernised.

Thus, it takes around 1 lakh additional houses out of use during a year. ----- (b)

Out of the remaining 7.52 lakh tenants, around 40 per cent, i.e., approximately 3.0 lakh, on average change house after 11 months and move to a new house as new tenants. These transactions leave around 3 months non-occupancy of such houses for various factors such as not finding new tenants and time required for repairs, whitewash, etc., which is equivalent to 80,000.

Thus, it takes around 80,000 additional houses out of use during a year. ----- (c)

In addition to (a), (b) and (c), around 3.5 per cent of 33.1 lakh houses that are shown as occupied remain unoccupied. These are ancestral houses, newly purchased houses, or houses that have been temporarily vacated for certain compulsions. There are also houses that are partially occupied by families (large or otherwise) that own more than one house; in such cases, only furniture and other household material remain in the house, while members of the family stay most of the time in the other house. In the case of ancestral houses, older family members live in the house, while the remaining members live with their children in a new house at a different place and visit the ancestral house only occasionally but make it a point to participate in ceremonies in the neighbourhood. Similarly, a small percentage of families partially move to their newly owned house before starting to live in it.

Thus, it takes around 1.2 lakh additional houses out of use from occupied houses. ----- (d)

Thus, the total estimated occupied houses that could not be used due to this factor account for $0.3 + 1 + 0.8 + 1.2 = 3.3$ lakh during the year 2011.

This is the shortage due to the difference in number of households and utilised occupied houses and, thus, there is congestion in the utilised occupied houses of 10 per cent, i.e., 3.3 lakh shortage for 33.4 lakh households. ----- (i)

ii. **Shortage due to Obsolescence conditions of various occupied houses and requirement for modernisation:** Obsolescent houses are bad houses that are 40-80 years old, all houses that are older than 80 years and non-serviceable houses. Such census houses are also called dilapidated houses, as they show signs of decay or breaking down, require major repairs and cannot be restored or repaired. As per census data, there were 33.1 lakh occupied houses of which 21.8 lakh (66%) were in good condition, 10.4 lakh (31%) liveable and the remaining 93,457 (3%) were dilapidated during 2011.

The 93,457 dilapidated houses should go out of stock in a short span of time. However, a percentage of these houses could not be modernised for long time because of factors such as the economic condition of the owner, property disputes and legal problems related to modernisation/ expansion. Some owners who live in these houses are too poor to modernise the house and have to sell the house when it becomes dangerous. It is, however, assumed that the stock of dilapidated houses remains do not change much over time, as the replaced stock for upgrading of around 30,000–35,000 houses gets replaced with new additions of similar stock during the same period.

----- (a)

Apart from dilapidated stocks, a certain percentage of occupied houses, say 2.5 per cent per annum (assuming 40 years' life of stock), go out of stock due to wear and tear and around the same percentage of houses gets upgraded. During the past few years, a major stock of single- or double-storey houses was replaced with multi-storey houses and, on average, it requires two years for builders to purchase such space, build the same, get the approvals and arrange to sell to customer/s so that it is finally occupied.

Thus, 5 per cent (2.5 + 2.5) per cent per annum of 33.1 lakh occupied houses go out of stock for modernisation, which accounts for 1.66 lakh houses. ----- (b)

Adding (a) and (b), it is estimated that 2.6 lakh households, which is 7.8 per cent of 33.4 lakh households, go out of stock immediately except for a percentage of dilapidated houses. Thus, the additional demand created by this factor is not 7.8 per cent as indicated by shortage, but around 6 per cent of 33.4 households. ----- (ii)

iii. Loss of houses at any point of time due to temporary transition going on all the time, i.e., loss of residency tenure due to change of tenancy or ownership.

Out of 22.8 lakh self-owned occupied houses, around 1 per cent need major whitewash and repairs on average in a year due to family functions or otherwise. During this period, some owners move out of the house to a nearby vacant house for at least for 6 months to a year, whereas other owners continue to stay in some part of the house. This accounts for non-occupancy of approximately 17,000 occupied houses in a year on average. But this shortage does not require additional houses as it can be adjusted within vacant houses unless there are no vacant houses. But in the case of Delhi and the NCR, there is a sufficiently large number of vacant houses and, thus, this temporary shortage is accommodated there. Thus, there is no need to take this factor into account. ---- (iii).

iv. Shortage due to additional houses required for slum and shelterless population of urban households:

Problem of Poor Section Residing in Slums and Without Shelter

The analysis so far focused on the shortage of houses for low, middle and higher income households, but the situation is extremely bad for poor households, the analysis for which can be split into the shelterless population and the slum population.

Shelterless Population

The Census estimates of population do not include most of the houseless population except those who reside in night shelters. Night shelters are arranged by the government during winter for the homeless. The homeless in Delhi are mainly unemployed people from the rural areas of Uttar Pradesh, Bihar, West Bengal, Rajasthan and Madhya Pradesh who have come to Delhi for work and are usually labourers or handcart and rickshaw pullers. In Delhi, there were 23 government-run/ managed shelters for the homeless in 2001, which increased to 47 in 2005 and 148 in 2010. There was a proposal to increase the number of such shelters to 175 by 2013. Several of these night shelters run above capacity and such growth in night shelters also indicates large-scale migration of the poor and homeless to Delhi. Therefore, the NCRPB has requested adjoining towns of Delhi in the NCR, namely, Gurgaon, Noida, Greater Noida and Ghaziabad, to create an adequate number of night shelters for which the NCRPB will provide financial assistance. According to estimates by NGOs including Ashraya Sudhar Board, there are around 1.5 lakh people who spend the night on footpaths and under the metro and overbridges in Delhi.

According to the DDA's plan there must be a night shelters for every one lakh population, but so far nothing has been done and shelters in Delhi can accommodate only 14,500 people (Hindustan Times, January 1, 2014). Most government shelters are in bad condition due to poor infrastructure. These shelters are unhygienic and unsafe because drug addicts and criminals make the rounds of such places. This houseless population remains more or less uncounted in census data.

Slum Population

Apart from shelterless people, the situation is bad for people who reside in slum areas. As per the definition adopted for the Census, slum areas broadly constitute: (a) All specified areas notified as 'Slum' by State/Local government and UT Administration under any Act. (b) All areas recognised as 'Slum' by State/Local government and UT Administration, which may not have been formally notified as slum under any Act. (c) A compact area with a population size of at least 300 or about 60-70 households of poorly built, congested tenements in an unhygienic environment usually with inadequate infrastructure and lacking proper sanitary and drinking water facilities. These people do not have the capacity to buy liveable houses, but the government has some responsibility to provide them with liveable houses in hygienic conditions and with reasonable infrastructure. During the Commonwealth Games, several slum clusters were removed in accordance with the slum rehabilitation scheme, which reduced the slum population in NCT Delhi.

Table 12: Slum Population in NCR

S. No	Sub-region/Cities	Population		Percentage of Slum population
		Total	Slum	
1	NCT-Delhi (MC-	98,17,439	18,54,685	18.9%
	Haryana (Urban)	61,14,139	14,21,839	23.3%
2	Panipat	2,68,823	1,02,813	38.2%
3	Sonepat	2,25,151	75,454	33.5%
4	Rohtak	2,94,537	90,645	30.8%
5	Bahadurgarh	1,26,746	39,478	31.1%
6	Rewari	1,00,946	51,754	51.3%
7	Gurgaon	2,01,759	33,570	16.6%
8	Faridabad (MC)	10,54,981	4,91,131	46.6%
9	Palwal	1,00,528	15,589	15.5%
	Rajasthan (Urban)	1,32,05,444	12,06,123	9.1%
10	Alwar	2,60,245	15,923	6.1%
	Uttar Pradesh	3,45,12,629	43,99,005	12.7%
11	Meerut	10,74,229	4,71,316	43.9%
12	Ghaziabad	9,68,521	2,58,834	26.7%
13	Hapur	2,11,987	90,964	42.9%
14	Bulandshahr	1,76,256	50,292	28.5%
15	Modinagar	1,12,918	33,103	29.3%
16	NOIDA	2,93,908	26,824	9.1%

Source: Census 2001, Census of India.

Apart from the existing shortages in jhuggi jhopri areas, which was partially taken care of at the time of the Commonwealth Games in NCT Delhi, the plight of the shelterless or homeless population was ignored. There was a reduction in the share of the slum population in Delhi after the Commonwealth Games, but not in other areas of states falling under the NCR. Currently, around 0.9 per cent of the shelterless population and 14.6 per cent of the slum population stay in slums as per Census 2011 provisional data. It is estimated that there are 860 Jhuggi Jhopri clusters with 4,20,000 jhuggies, which is equivalent to 12.6 per cent of the households in the NCT. As the share of houseless and slum

population for the year 2011 is not available for areas of states falling under the NCR, we have assumed that the share of the houseless and slum population in all these areas remain at the 2001 level for the year 2011 except for NCT Delhi.

To estimate the housing shortage, it is assumed that half of such households, i.e., 6.3 per cent in the case of Delhi, need new houses. For the remaining households that reside in slums, the shortage can be managed by upgrading their existing houses to reasonable standards. Thus, the shortage of houses due to slums and houseless population is taken at 6.3 per cent of urban households.

Total shortage due to all the above factors (from i to iv) = (10.0 + 7.8 + 6.3) = 24.1 per cent houses of total households in Delhi during 2011.

Demand per year due to these factors = 10 + 6 + 1.2 = 17.2 per cent of households in Delhi during 2011.

By applying the same steps, the shortage of houses for NCR is also worked out.

Table 13: Demand and Supply Gap in Housing in NCR during 2011 as Derived in this Study

1	Households	Houses for residential Purpose	Share of Rented %	Loss due to temporary transactions	Shortage due to Congestion & difference in households and occupied houses		Vacant houses	Dilapidated houses	Shortage due to deprecation & modernisation loss + dilapidated houses		Shortage due to Slum		Total Shortage	
	No	No	No	No	No	6 as % of 1	No	No	No	10 as % of 1	13 as % of 1	No	No	14 as % of 1
	2	3	4	5	6 = 5 + 2-3	7	8	9	10 = (9 + .05*1)	11	12	13	14	15
Delhi-U	3261423	3235212	28.5	299134	325,345	10.0	490135	90477	252238	7.7	6.6	213623	791205	24.3
Delhi-R	79115	78,692	16	5223	5,646	7.1	22556	2980	6915	8.7	0.0	0	12560	15.9
Delhi-T	3340538	3313904	28.2	304356	330990	9.9	512691	93457	259152	7.8	6.4	213623	803766	24.1
Haryana-U	959976	956034	25	81460	85,402	8.9	178755	30358	78160	8.1	11.7	111837	275399	28.7
Haryana-R	1084069	1082220	3.1	44599	46,448	4.3	141578	55175	109286	10.1	0.0	0	155734	14.4
Haryana-T	2044045	2038254	13.4	126059	131850	6.5	320333	85533	187446	9.2	5.5	111837	431133	21.1
Rajasthan-U	123,647	123119	18.5	8884	9,412	7.6	34605	1964	8120	6.6	4.6	5626	23158	18.7
Rajasthan-R	505266	503228	0.9	18522	20,560	4.1	49868	18181	43342	8.6	0.0	0	63903	12.6
Rajasthan-T	628913	626347	4.4	27407	29973	4.8	84473	20145	51462	8.2	0.9	5626	87061	13.8
U.P- U	1282874	1276396	22	101120	107598	8.4	243794	24628	88448	6.9	6.4	81462	277509	21.6
U.P -R	1221758	1218233	2.1	47770	51295	4.2	136715	46230	107142	8.8	0.0	0	158436	13.0
U.P-T	2504632	2494629	12.3	148890	158893	6.3	380509	70858	195589	7.8	3.3	81462	435945	17.4
NCR- U	5627920	5590761	26.2	490598	527757	9.4	947289	147427	426965	7.6	7.3	412549	1367271	24.3
NCR-R	2890208	2882373	2.6	116114	123949	4.3	350717	122566	266685	9.2	0.0	0	390633	13.5
NCR-T	8518128	8473134	18.2	606711	651705	7.7	1298006	269993	693650	8.1	4.8	412549	1757904	20.6

Note:

1. Method used is the same as in the case of NCT; so 50 per cent slum population share is taken as housing shortage in general for all urban NCR regions. While in the case of Delhi, the slum population share declined during 2001-11 due to the Commonwealth Games, for other areas of the NCR it is taken at the 2001 level for which data is available.

2. For rural areas, the shortage due to slum, tenancy factor and depreciation for reconstruction share is assumed as one-third per cent point share of urban areas of the respective region.

2. Positive figures mean shortage, while negative means surplus.

*Actual Households

Source: Provisional Household Tables, Census of India, 2011; National Capital Regional Planning Board.

The data in Table 13 explains the shortage of 24.1 per cent houses of 33,40,538 households in the market during 2011 for Delhi despite the fact that the stock of houses meant for residential usage is much higher than the requirements. The scarcity problem is much more acute among low-income classes as scarcity is not uniform across various income classes. This explains the unauthorised and slum clusters across the city to meet the huge gap between demand and supply.

The solution lies in providing stock that is far in excess of demand and control on supply by the government. Creating excess supply is essential if we do not want scarce resources to be mis-utilised. This is because speculator activity increases to benefit from soaring prices for better returns and hoarders keep their property so that they do not have to pay high appreciated prices.

The analysis suggests that the situation is worse for other NCR regions compared to NCT Delhi. The above analysis clearly shows that characteristics of neighbouring metropolitan cities such as Gurgaon and Noida surrounding the NCT are similar to that of Delhi regarding housing shortage, because the burden of migration was largely shared by these cities during 2001-11. As per data, the Rajasthan sub-region is slightly better off, perhaps because the artificially created scarcity is less in Rajasthan though development is also comparatively less, and several families share a house in the Rajasthan area of the NCR region.

Can this shortage be taken care of by vacant houses or houses used for alternative purposes?

The major component of shortage is congestion. Can the shortage be accommodated in vacant houses or locked houses? Our understanding of the situation is that these vacant houses cannot be considered to be brought into use for future occupancy for residential purposes. These vacant houses are available for future use only if these unsold stocks, stocks for disaster sale and stock held by owners for speculation or future needs take the benefit of rising prices. While several people rent their unoccupied house through a market mechanism or to a friend/ relative, several owners do not rent their houses in order to avoid legal problems due to poor rent control acts.

These vacant houses are those stock that owners choose not to rent through a market mechanism, through a lease system or to a friend or relative given the legal problems or other **urgencies**. This explains the fact that the share of vacant houses remains constant over time, and it was more than 10 per cent of the total houses in both the census 2001 data and 2011 data. These houses are purchased by the high-income bracket for speculation or investment. Apart from speculators, several vacant houses are owned by the working and non-working class that want to live in it at a later date or wish to retain it for future family needs. They want to hold these houses because the appreciation rate is very high and thus these houses are not always available in the market for other users. It, however, requires strong political will and an efficient administrator to implement a policy that can bring these houses into use for the needy. This is possible if speculators are discouraged from entering the market.

Apart from 5.1 lakh vacant houses during 2011, an additional 39,488 houses (i.e., 1.2 per cent of houses as a percentage of total households) that were considered occupied were found to be locked by the Census investigators. However, these are not counted as households used for residential purposes. Most of vacant and locked houses are owned by NRIs, well-to-do families who own or live in another house in the city and wealthy owners who live in another city who occasionally come to stay in these houses. These are either partially or fully non-occupied houses, but the Census data considers them as occupied houses.

Thus, the total housing stock available for accommodation should not take into account occupied houses that are kept vacant and houses that were found locked during the Census.

Can this shortage be taken care of by houses not used for residential purposes?

Apart from houses meant for residential purposes, there are houses used for other purposes, which is more attractive for user than residential use and thus there is no chance to bring it back for residential purposes unless forced by law. Thus, houses used for non-residential or other purposes cannot be considered as usable for residential and residential-cum-other usage except those already in use for the same purpose.

IX. Planned Developments in Housing Sector as per Master Plan 2021 in NCT and likely Scenario

Supply Side: As per Master Plan 2021, planned development in the housing sector within NCT Delhi can be split into two parts:

a. Planned Developments in the existing Area to Accommodate Additional 44 lakh Population during 2001-21 as Proposed in Master Plan 2021

The total area of NCT Delhi is 1,483 square kilometres (sq. km). With the rapid pace of urbanisation, the landscape of Delhi has undergone a change from predominantly rural areas to urban areas. The pace of urbanisation reduced the number of villages in Delhi from 300 in 1961 to 165 in 2001 and 112 in 2011, and the number of urbanised villages increased from 20 in 1961 to 135 in 2011. The number of census towns increased from 3 in 1971 to 29 in 1991 and 110 in 2011. The growth in urban area during 2001-2011 was 20.4 per cent and the overall population density increased from 93.40 persons per sq km in 2001 to 112.97 people per sq km in 2011. The rise in growth in population in NCT and the increase in overall population density in Delhi were not uniform across regions. The rapid population growth in several wards in the MCD area had an adverse impact on the quality of the micro-environment since they already had high density and placed serious pressure on their infrastructure and basic amenities. Several low-lying areas, tracts along the sides of railway lines, vacant plots where development projects could not be launched in time, etc. have attracted a large number of migrants, right in the heart of the city. In the past decade there has been a strong growth trend in the south-west, north-west, and north-east districts. Large-scale commercialisation of previously residential areas took place during this period and urbanised villages become heavily populated.

In fact, during the past decade several high-rise buildings came up in several areas including areas where there had been only low-rise houses, and the large additional population is accommodated in these areas. Large-scale commercialisation of residential areas has also taken place in the past decade. In several areas of NCT Delhi, the ground floor of the building is converted for commercial use, while the upper floors are residential. In urban areas, non-residential usage constituted 18 per cent of the total houses during 2011 compared to 16.2 per cent during 2001. Urbanised villages have become heavily populated due to tenants who are migrants and now are mainly employed in Delhi and Gurgaon (using Census 2011 data).

Spatially differentiated growth has increased disparities in density within the urban segment of NCT Delhi. The rise in density in a large part of Delhi is in sharp contrast with the fairly regulated areas under the New Delhi Municipal Council (NDMC) and the Cantonment region where illegal encroachment is quite difficult. There has also been a sharp fall in population in New Delhi and Central Districts mainly due to the removal of slum clusters on a large scale since 2001. Many of these clusters were removed in accordance with the slum rehabilitation scheme and several were removed in the run-up to the Commonwealth Games. As many as 32,000 families were shifted to rehabilitation colonies in the north, west and south districts of Delhi.

In the Master Plan 2021, considerable land use changes have been proposed to increase the FAR so that more and spacious houses could be built on the same area (Table 14).

Table 14: Changes in Building Norms within Residential Premises in Master Plan 2021

Area of Plot (Sq. Mt)	As per Master Plan 2021			Previous norm		
	Maximum Ground Coverage %	FAR	No of DUs	Maximum Ground Coverage %	FAR	No of DUs
Below 32	90*	350	3	75	225	1
Above 32 to 50	90*	350	3	75	225	2
Above 50 to 100	90*	350	4	75	225	2
Above 100 to 250	75**	300**	4	66-66	200	3
Above 250 to 750	75	225	4/6	50	150	3(4)
Above 750 to 1000	50	150	7/9	40	120	6(8)
Above 1000 to 1500	40	120	7/9	33.33	100	6(8)
Above 1500 to 2250	40	120	10/12	33.33	100	9(12)
Above 2250 to 3000	40	120	13/15	33.33	100	12(16)
Above 3000 to 3750	40	120	16/18	33.33	100	15(20)
Above 3750	40	120	19/21	33.33	100	18(24)

Note:

1. Local bodies shall be competent to disregard variations up to 2 % in plot size.
2. *100 % ground coverage shall be eligible for regularisation of construction already existing as on 22/09/06 on payment of charges as notified.
3. Minimum size of plot 32 sq mt except in the case of government-sponsored economically weaker section schemes.
4. **100 % ground coverage and 350 FAR for already existing units as on 22/09/06 on payment of charges as per the notification, in respect of the plot size between 100 to 175 sq mt.

Source: Various Master Plan documents.

With these amendments, the existing residential areas may provide potential to accommodate 44 lakh additional people during the period 2001-21 as indicated in Table 15. This includes 15.7 (114.0 – 98.3) lakh additional people in Zones A to H. In addition, 28.3 lakh (39.0–10.7) additional people can be adjusted in Dwarka, Rohini Phases III, IV & V and Narela. Thus, 44 lakh (153–109) additional people in NCT would be adjusted in the already developed zones in an area of 558.9 sq km. The density of population would be the highest in Old Delhi, followed by West Delhi I, Trans-Yamuna and Karol Bagh. The density in New Delhi is the lowest due to lots of public spaces. There may be a possibility for going vertical in these areas, but this may be a slow process. In fact, during 2001-11 the city underwent a major transformation. Thus, further expansion of NCT Delhi in old areas, even if we are able to overcome infrastructure bottlenecks, may happen at a slow pace, and therefore new areas are being developed within Delhi as specified in Section b below.

b. 48 Lakh Additional Population during 2001-2021 is planned to be adjusted in new areas proposed to be developed under land pooling policy in Master Plan 2021

The DDA has acquired and developed 701.62 sq km of land for residential, recreational, commercial and institutional purposes out of a total of 1,483 sq km area in NCT Delhi. On this developed land, the DDA has constructed or facilitated construction of more than 10.65 lakh dwelling units. In addition to 701.62 sq km land for residential purposes, 195.09 sq km is developed for forest, wildlife sanctuary, Ridge, River Yamuna and other water bodies/drains. Thus, the balance land available that can be developed is 586.29 sq km. In addition, 310 sq km is reserved for disposal of solid waste that will be generated up to 2051, metro and other services facilities and agriculture zones. Thus, the Master Plan 2021 proposes to develop the remaining 276.29 sq km land, which would add up to 977.91 sq km of land developed for residential, recreational, commercial and institutional purposes (Master Plan, 2021). In order to this, the DDA has made a major change in the land acquisition policy.

The land pooling policy has been approved in an attempt to meet the huge residential requirements and to address the limitations of the policy of large-scale acquisitions in which farmers were given a much lower price for their land than the market price. Private developers were not given land directly under the earlier policy. The land pooling policy allows developers/landholders to pool land for development purposes and get back a share in lieu of it. According to the land pooling policy, private entities will be able to retain 40 per cent of the developed land (for areas between 0.02 sq km and 0.20

sq km) and 60 per cent of the land (for areas above 0.2 sq km). Landowners and developers will be able to get back developed land that they can further sell or use, as long as they adhere to the regulations. The policy has several elements of a PPP. Landowners, including farmers, can form consortiums and tie up with private builders or banks to consolidate their land parcels and develop the plots. The DDA will be in charge of infrastructure development on the consolidated land.

Delhi has been divided into 15 planning zones or divisions named 'A' to 'P' under Master Plan Delhi (MPD) 2021. Under this policy the new sub-cities will be developed with all facilities such as schools, colleges and hospitals and would be developed along the lines of residential development in Dwarka and Rohini. These areas have several existing village settlements that would be absorbed as urban extensions from time to time with due regard to balanced city development. Thus, future urbanisation has to be in areas that have development potential such as areas along major transport corridors and the fringes of already-urbanised areas.

The previous policy of compulsory acquisition at a fixed price that was much lower than the prevailing market price was resisted by farmers. Development activities in some of the zones to be developed have already started. Zone L, which covers about 46 villages adjoining Najafgarh in West Delhi, is one of the priority areas for residential development. Situated along National Highway 10, the area can provide residential units for about 15 lakh people in the coming years. Zone PII is situated on the Grand Trunk (GT) Road Karnal in North Delhi and includes villages beyond Burari and Sant Nagar. This zone is proposed to cover a population of 19 lakh, including existing settlements. Zone N covers northwest Delhi and areas beyond Rohini. Zone J is located in south Delhi and covers farmhouses in Mehrauli and Chattarpur; about 30 villages fall in this zone (Mail Online India, March 30, 2013).

The estimates of additional population of 48 lakh would be accommodated in addition to the existing population of 29 lakh in villages on planned extension areas of size 276.29 sq km (derived from data from Delhi Master Plan 2021 in Table 15). Thus, the total of 77 lakh (230 – 153 as per Master Plan 2021 data) could be accommodated in urban extensions J to P zone areas including 29 lakh already residing in these villages, census towns, unauthorised colonies and JJ clusters. This means the proposed density would be 27,900 people per sq km to accommodate 77 lakh persons by 2021 in an area of 276.29 sq km (Table 15).

Map 3: NCT Delhi: Zones Proposed in Master Plan 2021

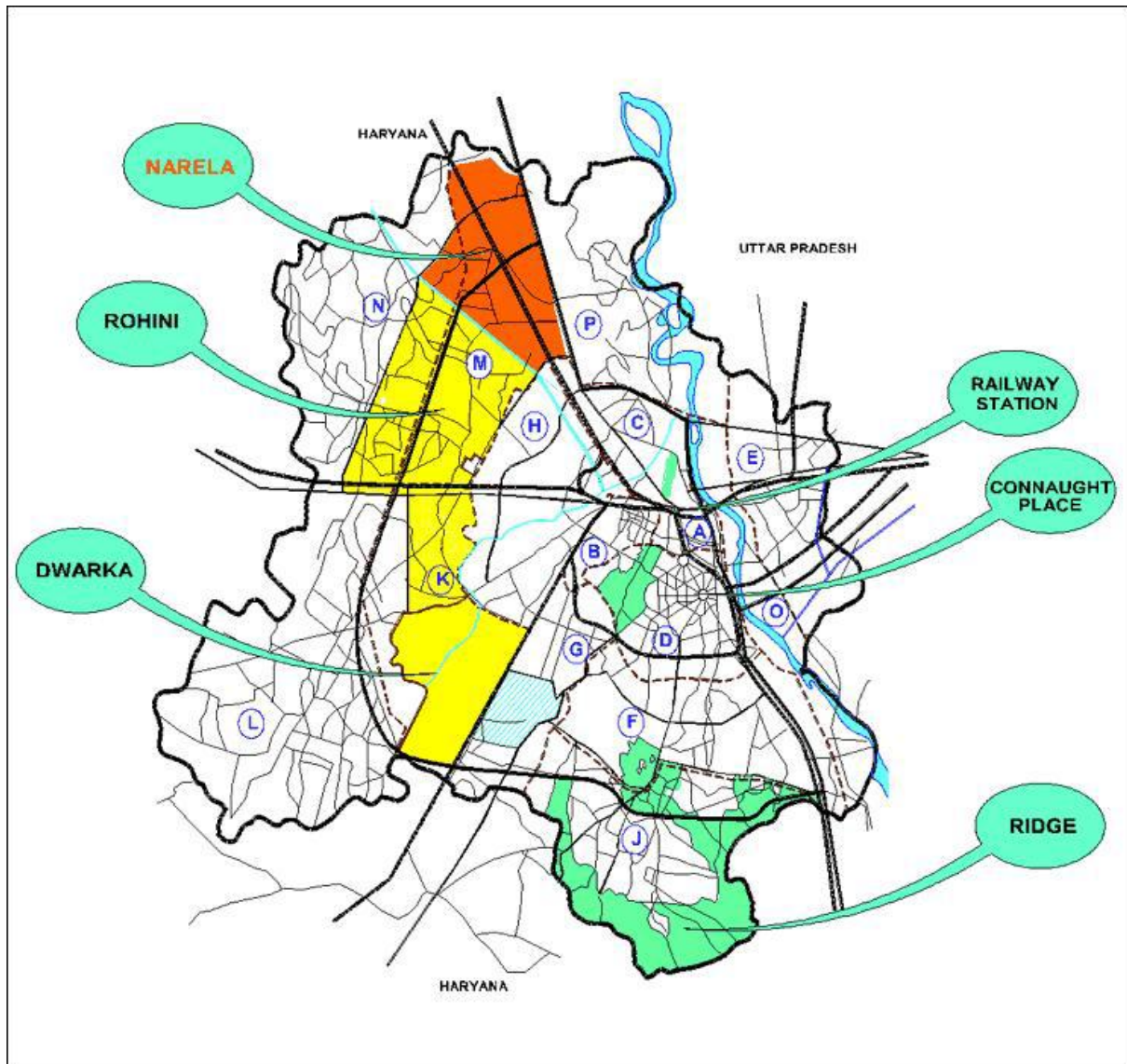


Table 15: Derived from Master Plan Data

Zone	Zone Name	Population Holding Capacity MPD 2001 ('000)	Population in 2001 ('000)	Population Holding Capacity MPD 2021 ('000)	Area in sq km.	Estimated Density By 2021 (population per sq km)
A	Old City	420	570	570	11.59	49180
B	City extension (Karol Bagh)	630	624	630	23.04	27344
C	Civil Lines	751	679	788	39.59	19904
D	New Delhi	755	587	813	68.55	11860
E	Trans-Yamuna	1789	2798	2800	87.97	31829
F	South Delhi 1	1278	1717	1975	109.90	17971
G	West Delhi 1	1490	1629	1955	11,865	165
H	North West Delhi 1	1865	1226	1865	56.77	32852
Sub-Total I		8978	9830	11,396	516.06	22083
	Dwarka		597	1300	56.48	23017
M	Rohini III		96	160	10.10	15842
	Rohini IV & V		198	820	45.33	18090
	Narela		179	1620	73.65	21996
Sub-Total II		3222	1070	3900	185.56	21017
TOTAL of Sub-Total I & II		12,200	10,900	15,296	701.62	21801
J, K, L, M, N, O, P (including population already staying in villages of zone J to P of 29,00,000)			2900*	7712	276.29	27913
Sub-Total III			2900	7712	977.91	49180
Grand Total (I + II + III + IV)			13800	23,008	977.91	27344

Note:

1. The population of NCT as per census is estimated at 167.5 lakh, while the Master Plan 2021 equivalent is 182.0 lakh for the year 2011. Thus, the projections for year 2021 differ than what was anticipated in the original RP 2021.

2: There is a difference in density worked out in various tables of the study depending on urban or total area taken.

Source: Derived using data from Master Plan 2021.

Note of Caution

The logic given for selecting the land pooling policy is to provide farmers with adequate compensation. If this was the main reason, there were numerous ways to do so without opening up/ allowing the acquisition of land on a large scale to builders, which was banned in Delhi. After the successful experiment of acquiring land and disbursing it to Group Housing Societies and directly to users by the DDA until 2000, it is strange that the government preferred to give builders control over the supply for this huge development programme. The analysis in this study is clear on the fact that private builders are extremely good at the development process, as they were able to generate enough space in old areas during 2001-11. But the excess supply created by builders was controlled such that the prices of property appreciated the maximum during this period despite very low growth of the population in the city. Private builders are good at managing the stock to their advantage, and thus this great opportunity that would have corrected property prices was wasted. It is possible that despite the large land development programme, the correction in prices may not take place, which was definitely likely if the government had taken over the supply of developed land. Who stopped the government from paying farmers higher-than-market rates in their land acquisition process and making the farmers a partner in the land development process? It would have been best for the government to have kept

the main supply in its hands and allowed private sector participation to accelerate the development process.

In fact, the land within these development zones had already changed hands to a large extent before the land pooling policy was made public. Thus, the real advantage will not be for farmers or final users, but for large-scale operators.

Another problem with this development process is that any slippage in integrating it with proper infrastructure development may lead to chaos. P.K. Sarkar of the School of Planning and Architecture is of the view that vertical growth is essential today, but this is only possible if aspects such as traffic, transport, water, sewer and other basic facilities are taken care of; failure in any of these would lead to chaos. Thus, though there are advantages of going vertical in a land-scarce economy like India, it could only be successful if the authorities keep a close watch on the basic infrastructure and requirements. Sarkar estimates that the requirements would be 13,800 lakh gallons daily (MGD) for water as against 650 MGD during 2001, 1,100 MGD sewage disposal capacity as against 512 MGD, 8,800 MW of power supply as against 2,352 MW and 55,000 km of roads as against 28,000 km during 2001. This is a serious challenge and it is essential to deal with it if we wish to see the success of the land pooling policy (The Times of India, January 29, 2014).

It may not be possible to encroach on further areas for construction and expansion, either vertical or horizontal, after planned extension on the basis of the Delhi Master Plan 2021. The city is likely to reach saturation point beyond which its carrying capacity may not be able to sustain population growth once the projections made in Master Plan 2021 are achieved. The land use distribution in NCT Delhi based on the Master Plan 2021 would be as projected in Table 16.

Table 16: Land use Distribution in Delhi as per Master Plan 2021

	As per Master Plan 2021
Land Use	% of Land
Residential	45-55
Commercial	4-5
Industrial	4-5
Green/Recreational*	15-20
Public & Semi-public Facilities	8-10
Circulation	10-12
<i>Note: This does not include green area within the various gross land use categories.</i>	

Thus, the city's potential is likely to be exhausted after meeting the targets of this plan. The role of development of the CNCR and other areas of the CNR is becoming crucial over time.

Planned Development and Demand Situations in NCT until 2021

Combining the net impact of IX a and b, the total additional population of 92 lakh (44 + 48) or (230 lakh – 138 lakh) during 2001-21 could be accommodated in NCT if the proposed development in Master Plan 2021 is implemented, of which 29.5 lakh has already been accommodated by 2011. Thus, an additional 62.5 lakh could be accommodated in the NCT during 2011-21. If the family size remains at 5.01 as was the case during 2011, the proposed increase in occupied houses is estimated at 12.5 lakh (62.5/5.01) during 2011-21.

Demand Side. From the demand point of view, the NCRPB in its NCR regional plan has revised the population estimates for NCT Delhi to 202.5 lakh by 2021, which would mean an additional requirement of 7 lakh houses ((202.5 – 167.5)/5.01) during 2011-21. Thus, the planned development would be much more than meeting the additional demand requirement as the population growth is unlikely to be very high. Though the migration level is expected to improve compared to 2001-11, it is still likely to be much below the level achieved during 1991-2001 as a lot of development is going

to take place in other NCR regions surrounding Delhi, which will increase population in those areas faster.

Is these targets achievable: Is the target of accommodating an additional 62.5 lakh population and estimated 12.5 lakh households in NCT during 2011-21 achievable as worked out using Master Plan 2021 projections for the period 2001-21 by planning huge investments in new areas along with implementation of the land pooling policy or is it difficult to accommodate e such a huge additional population? One way to look at whether this can be achieved from the supply side is to compare the targets with the performance during the past two decades.

How Demand and Supply Side Targets Compare with Earlier Achievements

Data on the vacant, occupied and houses used for other than residential purposes are available at 10-year intervals and are presented in Table 17. The growth rates for various indicators are presented along with the absolute numbers. Using these growth rates for the periods 1991-2001 and 2001-11 and making some adjustments in certain variables on the basis of expectations, the overall supply by 2021 and the additional houses to be built during 2011-21 are presented in Columns 7 and 8, respectively.

Table 17: Household Usage for Various Purposes and Future Trends

	1991	2001	2011	Additional Demand	Demand Projections	Additional Supply	Supply Projections
				2011-21	2021	2011-21	2021
1	2	3	4	5	6	7	8
Occupied Census houses for residence use	17,13,952	23,16,996	31,76,329	695,598	38,71,927	12,18,366	43,94,695
		3.1	3.2		2.0		3.3
Occupied Census houses for residence-cum-other use	88,386	1,35,406	1,39,157	30,475	143,559	143,559	170,791
		4.4	0.3		0.3		2.1
Total houses for Residential use	18,02,338	24,52,402	33,15,486	700,000	40,15,486	1,250,000	4,565,486
		3.1	3.1		1.9		3.3
Other Non-Residential usage including locked houses at the time of Census*	350,128	549,764	777,378	81,331	858,709	81,331	858,709
		4.6	3.5		1.20		1.0
Vacant houses	293,677	377,790	512,691	53,639	566,330	169,527	600,887
		2.6	3.1		1.6		3.1
Total Census houses	24,46,143	33,79,956	46,05,555	834,970	54,40,525	14,19,526	60,25,081
		3.3	3.1		1.7		2.7

Note: *Locked houses were 39,488 during 2011.

The total number of census houses is expected to increase from 46.1 lakh during 2011 to 60.3 lakh during 2021, i.e., an increase of 14.2 lakh compared to an increase of 12.3 lakh and 9.3 lakh achieved during 2001-11 and 1991-2001, respectively. Although the absolute numbers are higher, the per cent per annum growth rate of 2.7 is lower than the rates of 3.1 during 2001-11 and 3.3 during 1991-2001. This seems achievable from the supply perspective considering past performance and the huge opportunity presented by the land pooling policy and planned infrastructure development.

The supply target of 12.5 lakh houses for residential use should be achieved by curtailing the demand for speculative holding in order to get the maximum benefit to overcome the shortage of houses during 2011. This may be difficult despite the fact that the overall supply is expected to exceed demand during 2011-21 as the control of stock is going to rest with builders rather than the government, a situation that is not very different from the period of 2001-11. However, the situation will depend on how the stock is released to the public. Given how the builder mafia operates, it has become extremely difficult to keep prices under control considering the low bargaining power of real users. There are also disadvantages in delaying the purchase of a house for a person who lives in rented accommodation, as it is better to pay monthly instalments at low interest rates and use the tax advantages. Thus, the only option is to follow the dictates of builders. The concept of co-operative group housing societies has been diluted, as land is no longer available to such societies at cheap rates from the government. These housing societies find it difficult to operate on their own except for a few that have been formed by employees of large organisations; they require time to find new members and collect funds from them, whereas builders, who have enough financial resources and good relation with government officials, come to know in advance which land is to be brought under the planned development process and acquire it. In several cases, after builders purchase large tracts of land, these are brought under development zones.

Thus, the easing of prices in such a model would be difficult even if there is excess supply, since supply to consumers would depend upon builders. The active participation of the government is possible for land to be shared with the government, but whether or not that land would be sufficient for this purpose needs to be seen. If the government has to purchase land, it has to do it at very high rates from builders, which would defeat the purpose. Some solutions at this stage are imposing a heavy penalty on those who cannot complete construction on time to discourage hoarding and strict monitoring by the government to not allow unsold stock to remain with builders.

From the supply perspective, there will be 5.5 lakh (12.5-7) excess supply of houses meant for residential purposes during 2011-21 compared to demand (Table 17), the advantage of which can go to consumers in the form of low prices for housing. This will also help reduce the shortage gap (28.6%) that existed in the base year 2011. However, it will be not sufficient to reduce the total gap that existed in 2011, because one also needs to provide houses to the weaker sections of society. The role of providing houses for weaker section now lies entirely with the government, as it is not included in the land pooling policy. Maybe the government plans to use the shared land to address the shortage of housing for weaker societies.

Thus, the active intervention of the public sector is essential if the government does not want a repeat of the 2001-11 period when there was excess supply compared to the requirement, but an artificial scarcity led to multiple increases in housing prices. If it is implemented properly, the excess supply projected above would not only reduce the housing shortage, but would also make houses affordable. For this to succeed, other CNCR regions outside Delhi and the remaining NCR should also be developed, which is reviewed in Section X below.

Section X: Implications of Economic Reforms coupled with several changes in land use policies to spread development to the CNCR and other NCR areas by 2021

With various changes in the initiatives and policies of the states and the centre, the CNCR, NCR and Counter-Magnet regions saw considerable growth in population and development during 2001-11. These initiatives include land policy changes and increase in spending on infrastructure development. Economic reforms, in general, helped accelerate growth and encouraged private sector participation in the development process by altering investment incentives and shifting growth to new areas such as Gurgaon, Noida and Ghaziabad, which helped ease pressure on infrastructure within NCT Delhi. The success of the CNCR and other NCR areas in shifting the burden of population from the NCT to other regions of the NCR by providing housing facilities in these areas explains to a large extent the

slowdown in population increase during 2001-11 in NCT Delhi apart from the phenomenon of slowdown of migration of population to metro towns in general at the all-India level.

There was a slowdown in the growth of the urban population of the NCR to 3.6 per cent per annum during 2001-11 compared to 3.8 per cent per annum during 1991-2001 and 4.2 per cent per annum during 1981-91, which can be attributed to a general slowdown at the all-India level in net migration to metro towns. In number terms, the population of the NCR area increased by 83.8 lakh during 2001-11, which is higher than the 62.4 lakh increase during 1991-2001 and the 46.1 lakh increase during 1981-91 (Table 7).

The actual increase in NCR population in 2011 was lower than 76.7 per cent of the proposed population in the original Regional Plan 2021. The proposed population for metro and regional centres within CNCR towns was 51 lakh (Table 7), while the census population reached 55.8 lakh in 2011, which is 109 per cent of the proposed population. During 2001-11, a significant proportion of the population coming from other cities settled in Gurgaon. Gurgaon city alone accounted for 7 lakh addition in population during the period, with 14.7 per cent per annum growth between 2001 and 2011 (Table 7). Three successive master plans in a span of six years were passed to expand planning to accommodate the high increase in population growth. However, now Gurgaon has extended to far-flung areas and there are constraints on expanding it further. Apart from Gurgaon, Faridabad is another important Haryana metropolitan town, but growth in Faridabad lagged behind during 2001-11 because several industrial units moved out. The city faces several constraints such as the inability to attract hi-tech industries, serious traffic bottlenecks on the highway, large-scale unauthorised construction colonies along the Delhi-Haryana border and the possibility of only linear development due to the presence of the Aravalli hills on the western side and the Agra Canal on the eastern side. In the UP sub-region, Ghaziabad and Noida are other important towns in the CNCR region that have accommodated a lot of the additional population during 2001-11 and are likely to do so even during 2011-21.

A review of the growth of the CNCR excluding NCT shows that the urban population grew at a reasonably high rate of 6.2 per cent per annum during 2001-11. However, if one looks at the overall CNCR, the performance was not that good. This is because the population in NCT Delhi grew by only 2.4 per cent, which is even lower than the average all-India urbanisation growth of 2.76 per cent per annum during 2001-11. It needs to be emphasised that an additional 59.3 lakh people were accommodated in the CNCR area during 2001-11, which is almost equivalent to the 58.7 lakh accommodated during 1991-2001. This is much higher than the 34.1 lakh additional population accommodated during 1981-91 in the CNCR area.

Thus, NCT Delhi alone is no longer considered the sole centre of development in the Delhi Metropolitan Area as the concept of urban agglomeration has become important, especially by developing connectivity and other infrastructure facilities. The Delhi Metropolitan Area cities/towns, namely, Ghaziabad, Noida, Faridabad and Gurgaon, already have their own characteristics and the growth and development of these areas have accelerated. The growth of NCR areas outside the CNCR i.e., the metro and regional centres outside the CNCR, was slow during 2001-11. The proposed population metro and regional centres outside CNCR in RP 2021 was 48.6 lakh for year 2011, while the actual population as per census data is 43.8 lakh, which is 90 per cent of the proposed population (Table 7).

Thus, the metro and regional centres within the CNCR have grown much faster than proposed, while similar centres outside the CNCR have not grown to their anticipated target in RP 2021. The projected growth shown for NCR excluding the CNCR is 7.6 per cent per annum during 2011-21 in RP 2021 compared to 3.6 per cent achieved during 2001-11. Thus, it is expected that this area would accommodate an additional 144.2 lakh population during 2011-21 as against 64.7 lakh accommodated during 2001-11. Despite the fact that these areas with new development may turn out to be focal points for neighbouring areas and may also attract some share of migrants who otherwise might have

come to Delhi metropolitan areas, this amount of growth does not seem possible. Thus, RP estimates for the NCR area excluding the CNCR may be inaccurate.

The rail network consisting of the proposed orbital rail corridor and regional rapid transit system besides the existing rail network are among the important infrastructure created for the development of the CNCR and this is now being extended to other NCR areas. In addition, significant development has already taken place in the road network. This consists of expressways (Kundli-Ghaziabad-Palwal eastern peripheral expressway, Kundli-Manesar-Palwal western peripheral expressway and Ghaziabad-Meerut expressway), primary road network and other roads. Thus, the network is expanding to include new areas of the NCR region, because in the RP 2021 the metro and regional centres outside the CNCR are proposed to be developed by providing fast and efficient connectivity, by developing infrastructure and by boosting economic activities. But bringing more areas within the NCR net may not be a good method of development and priority should be given to maximise the opportunities offered in nearby areas in the CNCR by offering economic activities, a comprehensive transport system, housing, social infrastructure and quality of environment at par with NCT Delhi.

It appears that the projections made in RP 2021 are too high for certain NCR areas and these seem difficult to achieve, while growth target for areas in the CNCR are not considered at their potential. For example, the growth taken for Gurgaon-Manesar in RP 2021 is very high for 2011-21. Though there is still a craze to settle around this developed city, these targets are highly overestimated. It is not clear how long developers can take advantage of this craze, as the area has already become very congested; people are now settling far beyond Manesar and it will be extremely difficult to commute to Delhi although a daily commute to Gurgaon may be possible. Thus, for far-flung areas on this side, the focal point may be Gurgaon rather than Delhi. Similarly, the high growth shown for Faridabad in RP 2021 by developing ecologically sensitive areas such as Mangar may not materialise, as there is stiff resistance from social activists, the Ministry of Environment, etc. Over time, there will be major bottlenecks and infrastructure constraints to expanding growth in these already developed towns. It is therefore surprising why planners are expanding development to far-flung areas when there is space in neighbouring metropolitan towns for development. This study reworked the estimates on the assumption that towns near Delhi that have not been developed so far are likely to take the lead in the development process during 2011-21. Apart from such towns, Noida, Greater Noida and Ghaziabad in the UP sub-region are likely to accommodate a large migrant population from other states.

Among the unexploited neighbouring metropolitan towns, Kundli and Bahadurgarh are important ones. Bahadurgarh could not grow much in the past due to poor connectivity, while in the case of Kundli the relative distance of the town from any major residential centres in Delhi was the major factor for its slow growth. However, Kundli is likely to grow very fast since it is on a national highway and well-connected by an 8-lane road. Bahadurgarh has become very approachable with improvement in its infrastructure and connectivity. From Mundka metro station, the Bahadurgarh bus stand is only 12 km and the Bahadurgarh by-pass is 15 km away. From Najafgarh, the Bahadurgarh by-pass is 14 km away and has become well-connected with good flyovers and roads.

The Delhi metro route up to Mundka has already started benefitting people who commute between Delhi and Bahadurgarh. The Delhi metro is slated to be extended to Rohtak and pass through the heart of Bahadurgarh, which will change the face of this city. The construction of the corridor is set to drastically cut the travel time between Delhi and parts of Haryana; for instance, the commute between Bahadurgarh (City Park) and Mundka will take only 20 minutes, Bahadurgarh (City Park) to Inderlok will be 45 minutes and Bahadurgarh (City Park) to Kirti Nagar will take 50 minutes.

The 135 km Kundli-Manesar-Palwal expressway coming up around Delhi will be a boon for Kundli and Bahadurgarh. The expressway takes off from National Highway-1 near Kundli, crosses NH-10 at West Bahadurgarh, crosses NH-8 near Manesar, and finally joins NH-2 near Palwal. It passes through Gurgaon, Mewat, Rohtak, Jhajjar and Faridabad, which are the main urban centres in the NCR. Thus,

the connectivity of Kundli and Bahadurgarh towns will further improve from various entry points and important cities. In addition, several flyovers are coming up on Rohtak road and Najafgarh road, which will further improve its connectivity.

The comparison in Table 22 between Gurgaon and Bahadurgarh brings out clearly that these unexplored neighbouring towns in Haryana have lots of potential for future growth and these areas should be tapped before expanding to far-flung areas.

Table 22: Comparative features of Gurgaon and Bahadurgarh

	Gurgaon Features	Bahadurgarh Features
1.	Close to Delhi and the international airport.	Close to Delhi and the international airport.
2.	Good connectivity with Delhi from several entry points	Connectivity has improved only recently with the development of flyovers and good roads.
3.	Metro rail has made life easy to some extent in the Gurgaon periphery.	Metro rail will make life easy and smooth.
4.	Good law and order, but sewerage system in bad shape. Roads are in bad shape, garbage disposal problem.	Poor law and order, which has improved recently, noise pollution was a nuisance in the main city, threat from slum dwelling. In traditional towns, these things improve with overall development and has already started happening.
5.	Hub of IT/BPO industries, thereby making the city a centre for employment generation.	More private builders have sprung up, thus beautifying the town. Industries have recently started setting up/ moving to newly developed industrial area.
6.	Availability of abundant skilled/trained manpower.	Abundant unskilled manpower. Availability of skilled manpower through migration can improve with the development of industry, good housing and other infrastructure and improvement of educational institutes.
7.	No public transport system in all the sectors.	Public transport is easily available up to the main bus stand.
8.	Land rates are very high	Cheap land available compared to other CNCR towns.
9.	Power problem	Erratic and poor power supply, but has improved tremendously recently.
10.	Abundant water because the maximum number of canals are in the state.	Main problem of brackish water solved. Canal water available. In fact, the canal water in Gurgaon comes from Bahadurgarh.
11.	Good education centre, but demand for good quality education is greater than supply.	Traditionally lacks education facilities. Inadequate government education facilities. Private schools are coming up in the area. Demand for education in this region, which is going to be well connected, is going to be high.
12.	Good hospitals.	Hospital facilities are limited, but with development, they will come up.
13.	Centre for training in special crafts. It is a training-cum-production state.	Development will take care of such infrastructure.

Source: Derived from Evaluation Study of DMA Towns in National Capital Region (NCR), Town and Country Planning, Government of India, Ministry of Urban Development, September 2007.

Section XI: Summary of the Main Findings of the Study and Policy Implications

At the early stage of development, one prime responsibility of the government was to ensure planned development and ensure a supply of houses at reasonable prices to EWS, low and middle-income groups. One successful mechanism adopted to achieve these objectives at most places including Delhi was to keep supply ahead of demand. In Delhi, the need for planned development was realised at an early stage when lakhs of migrants shifted to Delhi after Independence. The Delhi Development Authority (DDA), a single, high-powered public authority, was given the entire responsibility for

planning and also statutory powers to acquire large-scale land in advance at 'off-market' rates, i.e., rates lower than market rates, with the main objective of keeping supply ahead of demand to provide houses to all sections of society, especially those belonging to economically disadvantaged groups. The DDA developed most of the land on its own and restricted private development in such activities. It kept part of the land in a land bank for future development and auctioned some land for non-residential uses. Thus, the DDA was the chief authority for land supply and a builder of houses and related infrastructure in Delhi.

The DDA in the 60s and early 70s began its allotment procedure by offering serviced plots. Later, the DDA shifted its emphasis and started building flats for multi-family occupancy, especially for the purpose of providing shelter to low-income groups. In 1970, the DDA introduced the concept of co-operative group housing societies in which individuals were encouraged to form societies and build flats in the form of multi-family group housing. These forms of allotment procedures continued until the nineties. The development projects at Rohini and Dwarka include several group co-operative housing society schemes, allotment of DDA flats and service plots. These programmes were managed quite successfully as far as the objective of providing houses at reasonable prices to middle and higher income groups was concerned, but very little was done to ensure houses for the EWS, poor and low-income families, who had to rely on unauthorised construction on land developed illegally.

The period after 2000 saw a major change in the role of the DDA. From a provider of houses at economic cost it became a mere controller in the development work undertaken by builders/individuals, because it chose to abstain from any further land development programme despite the fact that prices started firming up after 2003 and then saw an unprecedented rise. Within a short time, builders took the lead in transforming the city by converting old single/double-storey buildings into multi-storey buildings. Builders not only used the changes in permissible norms over time since these buildings were constructed with maximum ground coverage and Floor Area Ratio (FAR), but also invariably exceeded the same in connivance with the authorities. The easy availability of housing loans at concessional rates coupled with tax incentives encouraged final users to purchase houses even at extraordinarily high prices, but repayment of these loans will remain troublesome for final users. However, it was a bonanza for a few well-placed people including well-connected property dealers/builders. The real reason for this unprecedented rise in prices seems to be the absence of the government from any direct control over housing stocks. Thus, the moment the government steps out of its role/responsibility as a controller of housing stocks, prices go out of control, even if there is excess availability of houses in the economy.

There was no shortage of houses during 2001-11 as is evident from the increase of 12.3 lakh during 2001-11 compared to 9.3 lakh during 1991-2001, while the increase in population within NCT slowed to 29.5 lakh during 2001-11 compared to 44 lakh during 1991-2001. It is thus surprising that house prices skyrocketed during 2001-11, when houses for residential purposes increased by 8.6 lakh during 2001-11 compared to 6.5 lakh during 1991-2001. The ease of house availability becomes visible as the average family size per household increased during this period from 5.02 to 5.4. The decline in congestion factor is another important indicator that reflects improvement in the availability of houses. During 2001-11, there was a net decline of 0.73 lakh in the number of families sharing houses as against a net increase of 0.4 lakh additional families sharing houses during 1991-2001. The removal of 32,000 slum families to rehabilitation colonies during 2001-11 is another important indicator of improvement in housing availability.

Apart from this, there was a net increase of 1.3 lakh in vacant houses during 2001-11 compared to 0.8 lakh during 1991-2001. This may indicate the holding of houses for speculative purposes, which is a natural phenomenon when there is high appreciation of rates. The usage of houses for non-residential purposes increased by 2.3 lakh during 2001-11 compared to a 2 lakh increase during 1991-2001. This is another indicator of improvement in availability, as it indicates people's preference for better schools, hospitals and other facilities with better infrastructure. With such places available in

commercial, market areas/complexes and institutional areas, the demand for such facilities to be accommodated in separate houses has gone down considerably.

The above indicators clearly reflect that lots of new houses were added to the stock during 2001-11, which were used not merely for accommodation, but also to a significant extent for speculative purposes. Thus, property prices appreciated despite the low increase in growth in population. At the same time, a section of society was the real sufferer because purchasing a new house became unaffordable at these appreciated prices. The net addition of 60,481 dilapidated houses during the period 2001-11 as against a net decline of 149,265 houses during 1991-01 shows that for a section of the population buying a new house was beyond their dreams and hence they had to live in unserviceable or dilapidated houses.

Excess supply does not seem to be a sufficient condition to control property prices, but it depends on who is controlling the market and how. Until the point when the public sector was keeping supply in excess, prices remained under control. The government chose to remain non-active in creating additional houses/flats within NCT Delhi, but played a major role in infrastructure development by laying the infrastructure for the metro transport system during 2001-11. This was a golden opportunity for private players, who created an artificial scarcity by forming a cartel and creating a speculative and hoarding market despite the fact that actual supply far exceeded the requirements. The solution to the housing problem lies in effective intervention to discourage the active participation of speculators and hoarders and this is possible by providing stock far in excess of demand and keeping prices at reasonable levels. Thus, the government sector has an important role in certain essential services and cannot afford to abstain if it wishes to help the needy. At the same time, the active participation of private builders should be encouraged along with the government sector under broad guidelines to make the development process more productive and effective for final users.

The major difference between Delhi and other NCR states like Haryana and Uttar Pradesh was that in NCT Delhi private real estate developers were banned from large-scale acquisitions, but in NCR areas several amendments were made to facilitate the active participation of private players for construction activities. The Haryana Development and Regulation of Urban Areas (HDRUA), 1975 permits private developers to assemble lands from the market through negotiations and to develop these to build residential colonies under a licence from the DTP. These changes resulted in a private real estate boom in Gurgaon and several other areas of Haryana, which continues to this day. Several land laws and Master Plans were amended to facilitate this process of development.

The process further accelerated as certain players could seek arbitrary variances, exceptions and zoning amendments from the zoning authority and through the political process. This encouraged *ad hoc* rent seeking. Growth accelerated as the government allowed builders to develop good connectivity of roads and other infrastructure.

Thus, NCT Delhi cannot be viewed as the sole centre of development in the Delhi Metropolitan Area. The concept of urban agglomerations has become important, especially in the case of Delhi Metropolitan Area towns by developing connectivity and other infrastructure facilities. The main infrastructure created to develop the CNCR is a rail network that consists of a proposed orbital rail corridor and a regional rapid transit system besides the existing rail network, which is being extended to other NCR areas. Significant development has already taken place in the road network, which consists of expressways (Kundli-Ghaziabad-Palwal eastern peripheral expressway, Kundli-Manesar-Palwal western peripheral expressway and Ghaziabad-Meerut expressway), a primary road network and other roads. Cities/towns in the Delhi Metropolitan Area, namely, Ghaziabad, Noida, Faridabad and Gurgaon, have their own characteristics, but their growth and development has accelerated with induced growth. The area of the NCR region is increasing with the inclusion of several new regions, but this may not be a good way to achieve development. The priority should be to maximise the

opportunities offered by the CNCR by offering economic activities, a comprehensive transport system, housing, social infrastructure and quality of environment at par with NCT Delhi.

With the initiatives and policy changes in states and the Centre, the CNCR, NCR and Counter-Magnet Regions saw considerable growth of population and development during 2001-11. These initiatives include land policy changes and an increase in spending on infrastructure development. The review of the Regional Plan 2021 stated that the actual population in 2011 was 94.7 per cent of the proposed population. The proposed population in metro and regional centres within CNCR towns was 51 lakh, while the Census population reached 56 lakh in 2011, which is 109 per cent of the proposed population. In the case of metro and regional centres outside the CNCR, the proposed population is 48.6 lakh, while the Census population is 43.7 lakh, which is 90.1 per cent of the proposed population. The analysis shows that the metro and regional centres within the CNCR have grown much faster than proposed, while the metro and regional centres outside the CNCR could not grow as anticipated to achieve the target population of the RP 2021. The emphasis, therefore, should be on developing metro and regional centres outside the CNCR by providing fast and efficient connectivity, boosting economic activities and developing infrastructure.

Economic reforms in general helped accelerate growth and encouraged the participation of the private sector in the development process by altering investment incentives and shifting growth to new areas such as Gurgaon, Noida and Ghaziabad, which helped ease the pressure on infrastructure within NCT Delhi. The success of the CNCR and other NCR areas in shifting the burden of population from NCT Delhi to other regions of the NCR by providing housing facilities in these areas explains to a large extent the slowdown in population increase during 2001-11 in NCT Delhi, apart from a slowdown of migration to metro towns at the all-India level.

Despite the increase in supply of good, spacious houses in the CNCR and NCR regions, prices rose several times, as builders flouted the norms. The boom includes world-class office buildings, apartments, golf courses, shopping malls, 5-star hotels and a private expressway linking important destinations. The policies adopted in NCR regions in Uttar Pradesh and Haryana were similar, but at the time of the Commonwealth Games, i.e., the period after 2003-11, the impact was stronger in the NCR area of Uttar Pradesh. Thus, unlike in Delhi where the development process was mainly confined to the development of old buildings, the major development and expansion projects where land development was required shifted to the NCR region during this period.

The Rajasthan government's programmes were more suitable for final users as it was more careful in its plan implementation processes. The criteria used to select private builders in the Rajasthan model was not the maximum amount of money a developer pays for the land, but the maximum number of lower income group units the developer can deliver free to the government. The benefits of developments in Haryana and Uttar Pradesh were reaped mainly by a few people, while the cost was borne by real users who have to pay 10 to 15 times the rates of 6-7 years ago. Earlier, it was not difficult for low middle-class families to buy a house, because their debt was a much lower percentage of their income. Even those who own a house have to borrow huge amounts.

The appreciation in property prices is happening because the situation is not uniform across various income groups and across states; moreover, the reality is different from what the housing availability numbers at the aggregate level suggest. There is excess supply of 11.4 per cent occupied houses compared to households in Delhi, while there is a shortage of houses for urban India to the extent of 23.0 per cent at the aggregate level. The data by income group reflects that there is a 36.3 per cent shortage of houses among EWS households, while the shortage is 13.8 per cent for LIG households above the EWS group and 7.0 per cent for the income group above LIG for the year 2011.

The practical situation is much worse. In Delhi, there was 11.4 per cent excess houses for residential usage compared to the number of households during 2011, but the prices were very high due to an

acute housing shortage in reality. If one factors in non-usable houses and vacant houses, it is estimated that 28.6 per cent of households face a housing shortage in NCT Delhi. Some people who own houses have borrowed a significant amount from the bank for a long period that they re-pay in monthly instalments. A sizeable number of households live in very congested conditions. In 25.6 per cent of the houses in NCT Delhi, six to eight family members reside, while nine or more members reside in an additional 5.9 per cent houses. Only 66 per cent of the households in urban areas are in good condition. Further, 35.3 per cent of NCT urban houses have roofs built from non-concrete material and in rural areas this is as high as 71.9 per cent for the year 2011.

Within NCR sub-regions, there are variations in shortage: 31.9 per cent in the Haryana NCR sub-region, 29.6 per cent in the Rajasthan NCR sub-region, and 34.1 per cent in the Uttar Pradesh NCR sub-region as against 28.6 per cent for New Delhi during 2011. Thus, the Rajasthan sub-region is slightly better off than other states' NCR regions; the primary reasons are that in the Rajasthan areas, artificial scarcity is lower, development is comparatively lower and several families share houses. The above analysis clearly reflects that the characteristics of metropolitan cities such as Gurgaon and Noida surrounding the NCT are similar to that of Delhi regarding housing shortage, as the burden of migration was largely shared by these cities during 2001-11.

To improve the housing shortage, the DDA has come out with a major change in land policy by approving the land pooling policy in 2014 in the Master Plan 2021. Under this policy, landowners can surrender their land holding into the central pool and become a stakeholder in the development process. Once the land is pooled, the landowner will get 40-60 per cent of the total land surrendered as developable land. The remaining 60-40 per cent of the land retained by the DDA would be used to create infrastructure as well as to monetise it for specific purposes.

The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2014 takes care of certain aspects by paying farmers better, but it also has one of the major limitations of the old Act because the price paid is the average value mentioned on registered deeds, which is almost one-third the average market price. It would have been better for the government to have kept the main supply in its hands and allowed private sector participation to accelerate the development process. The logic given for opting for the land pooling policy is to provide adequate compensation to farmers. If this was the main reason, there were numerous ways to do so without opening up/allowing the acquisition of land on a large scale to builders, which was banned in Delhi. After the DDA's successful experiment of acquiring land and disbursing it to group housing societies and directly to users until 2000, it is strange that the government preferred to give control of the supply to builders for this huge development programme. The analysis in this study is clear that private builders are extremely good at the development process as they were able to generate enough space in old areas during 2001-11. Private builders are good at managing the stock to their advantage and the opportunity for timely correction of property prices has been wasted. Despite such a large land development programme, the correction in prices may take longer despite the excessive supply and even at a late stage the correction may not take place to a level where houses become affordable; this might have been the case if the supply of developed land had been taken over entirely by the government. Who stopped the government from paying farmers even higher than market rate in their acquisition process and making the farmers a partner in the process of land development? It would have been better for the government to have kept the main supply in its hands and allowed private sector participation to accelerate the development process. In fact, the land in these development zones had already changed hands to a large extent before the land pooling policy was made public. Thus, the real advantage will not be given to farmers or final users, but to large-scale operators.

There is no doubt that private builders are extremely good in the development process as they were able to generate enough space even in old areas during 2001-11. Similarly, the recommended process of development for the period 2011-21 allows builders to retain supply, but the saving grace is that

there would be excess supply compared to demand after a similar phase during 2001-11. It is estimated that there will be excess supply of 5.5 lakh houses (12.5 – 7) meant for residential purposes during 2011-21 compared to demand. As this will be over and above the excessive supply over demand during 2001-11, it may become difficult for speculators to manipulate prices for excessively long periods, especially after the stocks initially controlled by a few big builders are sold to small speculators/ households /users. The active intervention of the public sector is thus essential to protect small investors/ households/ users for first purchase of a flat/land/house at extraordinarily high prices, and once large-scale stocks are disposed of the housing stock prices are likely to come down. Government intervention in the beginning would save the small investor from suffering losses and make houses affordable from the start instead of squeezing profits from big builders. This will ease the prices of housing stock at a very early stage during 2011-21 in NCT Delhi. But for this to happen, apart from NCT Delhi the neighbouring Delhi metropolitan cities should grow to take the pressure off NCT Delhi.

During 2001-11, the estimated urban population of CNCR excluding NTC grew at a rate of 6.3 per cent per annum, but the population of the CNCR including NCT Delhi grew at a nominal rate of 3.3 per cent per annum during the same period. The population in the NCT grew by 2.4 per cent, which is even lower than the average all-India urbanisation growth of 2.76 per cent per annum during 2001-11. Thus, a large proportion of the migrant population got shelter in the CNCR excluding NCT Delhi. The additional number of persons accommodated in the urban CNCR area remained more or less the same at 59.4 lakh during 2001-11 compared to 58.6 lakh during 1991-2001; both these figures are higher than the 34.2 lakh addition during 1991-2001. The projected additional population of 117.8 lakh during 2011-21 in the Regional Plan 2021 for the CNCR is much higher, especially considering the slowdown in migration to metro areas.

Thus, the actual growth in the CNCR population taken in this study is much lower than projected in the Regional Plan, because a significant proportion of the migrant population settled in Gurgaon during 2001-11. Gurgaon alone accounted for a 7 lakh addition in population, with 14.7 per cent per annum growth during 2001-11. However, now Gurgaon has been extended to far-flung areas and there may be constraints on expanding it further due to bottlenecks and infrastructure constraints. Apart from Gurgaon, Faridabad is another important metropolitan town in Haryana that may face growth constraints during 2001-11. In fact, growth in Faridabad lagged behind even during 2001-11 as several industrial units moved away from the city. The city faces several constraints such as the inability to attract hi-tech industries, serious traffic bottlenecks on the highway, large-scale unauthorised construction colonies along the Delhi-Haryana border and possibility of only linear development due to the presence of the Aravalli hills on the western side and the Agra Canal on the eastern side. These are good reasons to understand why other towns near Delhi should take the lead in the development process. Instead, in the new Regional Plan far-flung areas are included in the development process and the projected growth in the NCR Revised Regional Plan 2021 is very high in already developed towns including Gurgaon-Manesar for the period 2011-21.

It is, however, true that there is still a craze to settle around developed cities such as Gurgaon and developers are taking advantage of this craze by coming out with several new projects that are sold in advance. Despite the fact that there is space in neighbouring metropolitan towns for development, planners are pushing expansion proposals in a haphazard manner to non-sustainable and environmentally sensitive areas in Guragon and Manesar and the Aravalli area of this region. Thus, the growth of this area will be high, but not to the extent projected in Master Plan 2021, because the area has already become congested. Three successive master plans in the past six years were passed to expand planning for accommodating the high increase in population growth, which has now caused major bottlenecks and infrastructure constraints. For far-flung areas, the focal point is likely to be Gurgaon rather than Delhi.

Other metropolitan towns near Delhi such as Kundli, Bahadurgarh and Greater Noida with better connectivity and good infrastructure are likely to grow at a rapid rate in the next 10 years or so. These towns have several advantages and are likely to remain attractive spots for development during the next decade and, thus, the major share of the migrant population looking for shelter around Delhi may be absorbed in these towns. Greater Noida is not part of the CNCR, but has high potential among UP towns. Bahadurgarh and Kundli are attractive spots in the CNCR region but their potential was not exploited in the past decade; in the case of Bahadurgarh it was poor connectivity and in the case of Kundli it was the distance from any major residential centres in Delhi. Over time, Kundli's location on the national highway and its connectivity have improved with the development of an 8-lane road and, thus, it is likely to grow very fast. Bahadurgarh has become very approachable with the improvement in its infrastructure and connectivity. It is also close to Delhi.

The 135 km Kundli-Manesar-Palwal expressway coming up around Delhi will be a boon for Kundli and Bahadurgarh. Performance may be better than the targets set in Regional Plan 2021 for certain areas, while for others the target may not be achieved during 2011-21. In the revised Regional Plan, the projected growth shown for the CNCR area excluding Delhi is 6.7 per cent per annum during 2011-21 compared to 6.2 per cent achieved during 2001-11. In terms of absolute numbers, the Regional Plan projects that this area would accommodate an additional 55.6 lakh population during 2011-21 as against 25.3 lakh accommodated during 2001-11. Based on the review in this study, it is estimated that the additional population in the CNCR area excluding Delhi would grow by around 40.8 lakh during 2011-21. To make this happen, the potential of several unexplored neighbouring areas in Haryana need to be tapped before expanding to far-flung areas. It is also estimated that in Delhi the urban population would grow by 39.6 lakh during the same period.

For the remaining urban NCR region excluding the CNCR, the projected population growth in RP 2021 seems very high and the proposed development may accommodate an additional population of 74.7 lakh, i.e., at the rate of 8.3 per cent per annum during 2011-21. Despite the fact that these areas with new development may turn out to be focal points for neighbouring areas and may attract some share of migrants who otherwise might have come to Delhi metropolitan areas, this kind of increase in population may not materialise. The addition in population during 2001-11 was only 24.5 lakh in the urban NCR region excluding the CNCR. It is estimated that the growth of population may not be more than 29.3 lakh in the NCR region excluding the CNCR. This means a growth of 4.9 per cent per annum, which seems reasonable considering the slowdown trend in metropolitan areas. Thus, it is very likely that property prices will come down during 2011-21, but its timing would depend on how carefully builders are able to deplete the stocks in their hands and the controlling mechanisms adopted by the government.

The important policy conclusion drawn in this study is that the excess supply of houses is not a sufficient condition to control property prices; rather, it depends on the controlling authority. When the public sector was controlling excess supply, prices remained under control, but once the government chose to remain non-active the excess supply did not succeed in controlling property prices. Thus, the public sector should play an active role and have control over the supply of houses in order to keep prices under control, but the private sector should be encouraged to develop houses. For the EWS and low-income groups, the government sector should not only increase the supply, but also provide them with subsidised houses along with a soft loan facility.

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Endnotes

i. For a comparison we cite trends in urbanisation in select countries: By the end of 2012, the People's Republic of China had a total urban population of 712 million or 52.6% of the total population, rising from 26% in 1990.

Urbanisation is much higher in developed countries. As per U.S. Census Bureau, the United States has a total resident population of 3,175 lakh making it the third most populous country in the world though well behind China and India. It is very urbanised, with 80.7 per cent of the population in 2010 living in urban areas, up from the 79 per cent counted in 2000 (the worldwide urban rate is 52 per cent). Much of the country is nearly uninhabited. The United States Census Bureau shows population increase of 0.75% for the twelve-month period ending in July 2012. Though high by industrialised country standards, this is below the world average annual rate of 1.1 per cent.

Japan, the third largest among the developed countries, faces a population decline in the near future. Other developed countries, a group that includes the rest of Europe, Canada, Australia, and New Zealand, are far smaller and are not expected to grow much over the next half-century (Mary M. Kent and Mark Mather, what drives US population growth, Population Bulletin, December 2010).

ii. For 2011 Census, urban areas include:

- a. All Statutory Towns: These towns are all places notified under law by the concerned State/UT Government and have local bodies like municipal corporations, municipalities, municipal committees etc, irrespective of their demographic characteristics as reckoned on December 31, 2009 for 2011 Census.
- b. Census towns: These are places with a minimum population of 5,000 persons in the preceding Census and at least 75 per cent of male main working population engaged in non-agricultural activities and a population density of at least 400 persons per sq km.
- c. Urban Agglomerations and Outgrowths (OGs): Urban Agglomerations (UAs) are the continuous urban spread comprising one or more towns and their adjoining outgrowth(s). Outgrowths (OGs) are areas around a core city or town, such as well recognised places, like a railway colony, university campus or port area, that lies outside the town limits (Census of India, 2011).

No of Urban Areas of Various Types in India during 2011

Type of Urban Units	2011 Census	2001 Census
Towns:	7,935	5,161
(a) Statutory Towns	4,041	3,799
(b) Census Towns	3,894	1,362
2. Urban Agglomerations	475	384
3. Out Growths (OGs)	981	953

Source: Census 2011 and 2001.

iii In the US, the share of the top city in urban population accounts for 8 per cent, which is close to India's top city's share, i.e., Delhi at 6 per cent. While the share of the largest city is quite high in the case of Australia at 22 per cent, Japan at 32 per cent and Europe at 15 per cent, it is quite low in China at 2 per cent.

iv. The broad objective of the NCR Regional Plan-2021 for promoting growth and balanced development of the Region is to be achieved by:

- i. Providing suitable economic base for future growth by identification and development of regional settlements capable of absorbing the economic development impulse of NCT-Delhi.
- ii. Providing efficient and economic rail and road-based transportation networks (including mass transport systems) well integrated with the land use patterns.
- iii. Minimising the adverse environmental impact that may occur in the process of development of the National Capital Region.
- iv. Developing selected urban settlements with urban infrastructure facilities such as transport, power, communication, drinking water, sewerage, drainage, etc. comparable with NCT-Delhi.
- v. Providing a rational land use pattern in order to protect and preserve good agricultural land and utilise unproductive land for urban uses.
- vi. Promoting sustainable development in the region to improve quality of life.
- vii. Improving efficiency of existing methods of resource mobilisation, adopting innovative methods of resource mobilisation and facilitating, attracting and guiding private investment in the desired direction.

v Unauthorised sale means selling land prematurely (when it cannot be resold, but has to be surrendered) by the person who got the allotment for the sake of constructing his own house. It could also be selling to someone who already owns a house or does not fall in the income category for which this land was allotted.

vi Migration data is mainly taken from the Census of India, 2001 and 2011; Employment and Unemployment Surveys of the National Sample Survey Organisation (NSSO); People's Perceptions Survey, 2013, conducted by the Institute for Human Development (IHD); and a large primary survey conducted by the IHD and the Institute of Rural Management (IRMA), Anand on informal employment in 2010.

vii The Human Development Report 2009, prepared by the UNDP estimated that 45% of the people in Mumbai are migrants. The results of a survey on people's place of origin or birth indicate that the largest proportion (37.4%) of immigrants came to the city from within Maharashtra. The second biggest contributor was UP, and Gujarat came third. Maharashtra and UP together accounted for more than 60% of the people who migrated into the city.