



5. DEMOGRAPHIC PROFILE OF THE CITY

5.1 POPULATION GROWTH

The UT of Chandigarh is a uni-district territory which came into existence on 1st of November, 1966 with an area of 114 sq. kms.

During the last 6 decades (1951-2011), Chandigarh has witnessed a population increase of more than forty four times with the absolute population increasing from 24,261 in 1951 to 10,54,686 in 2011.

As per Census 2011, the population of Chandigarh U.T has crossed the one million mark with its population placed very close to that of the state of Mizoram (10,91,014). The Union Territory recorded a population of 10,54,686 in 2011 with much lower decadal rate of increase in population with only 154051 people being added to the Chandigarh UT during the last decade.

The growth rate of merely 17.10% between 2001-2011 is the slowest since its inception. This is perhaps due to the rapid pace of urbanization taking place in the neighbouring towns of Mohali, Panchkula, Zirakpur, Kalka, Kharar, etc. falling within the 16 km periphery control area.

The details of the total population, decadal absolute growth and decadal growth rate are given in Table D1.1 below:

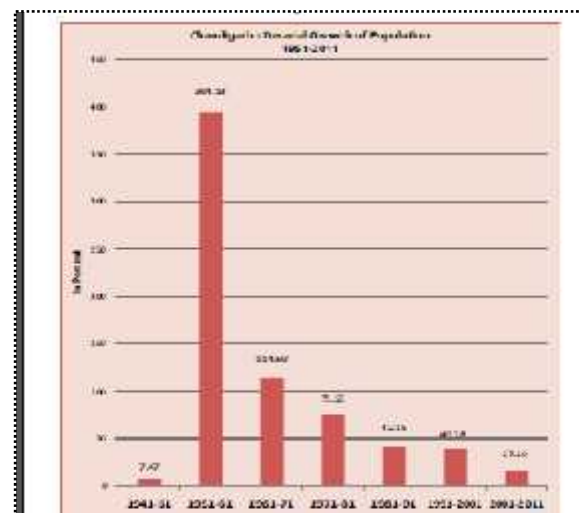


TABLE D1.1 POPULATION GROWTH 1951 -2011)

Year	Total Population	Decadal Absolute variation of Population	Decadal Growth Rate (in %age)
1951	24261	-	-
1961	119881	95620	394.13
1971	257251	137370	114.59
1981	451610	194359	75.55
1991	642015	190405	42.16
2001	900635	258620	40.28
2011	1054686	154051	17.10

Source – Census of India

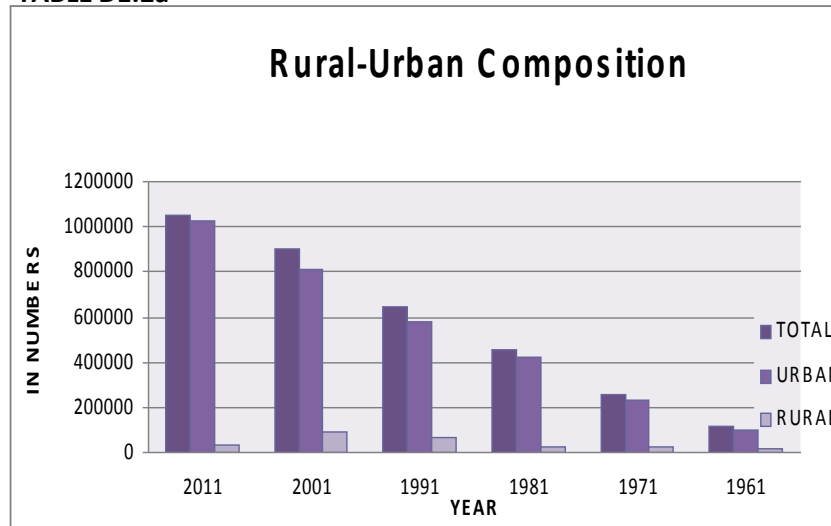


5.2 RURAL –URBAN COMPOSITION

The U.T of Chandigarh has essentially become one territory with the urban settlements of Chandigarh and Manimajra occupying a major part of its 114 sq.km area.

As per the census of 2011, 10,25,682 (97.25%) of its population was urban and 29,004 (2.75%) was rural as compared to 82.80% urban and 17.20% rural in the year 1961. The details are at **Table D1.2a**.

TABLE D1.2a



5.3 DENSITY

The population density during the last 5 decades (1961-2011) has increased 9 fold, from 1051 to 9252 persons per sq. km.

The density of the city doubled during 1961-71, when it increased from 1051 persons per sq. km to 2257 persons per sq. km. It went on increasing rapidly in subsequent decades with 3961 persons per sq. km in 1981, 5632 persons per sq. km in 1991 and 7900 persons per sq. km in 2001. With the latest census data becoming available, the density recorded for the Chandigarh UT is now placed at 9252 persons per sq. km in 2011.

Chandigarh shall continue to record higher densities with further population growth , which poses a challenge for maintaining the quality of life and providing basic & essential services even to its poorest residents as envisioned by the city's planners.

5.3.1 SECTOR WISE DISTRIBUTION OF POPULATION & DENSITY & THE UT'S HOLDING CAPACITY

Detailed analysis of the holding capacity of each sector based on the number of existing or planned dwelling units and their population as per the 2001 census has been done. This is shown in **Table D1.3 (see Annexure Page 7)**.



Further assessment of population density has also been done for different phases of the city's development i.e. Phase I comprising of Sectors 1-30, Phase II comprising of Sectors 31-47, and Phase III with sectors 48-56, 61 and 63.

5.3.2 DENSITIES AS PER ORIGINAL PLAN

The capital city of Chandigarh was planned for a differential pattern of density to accommodate a total population of 5 lakhs. Phase I was planned to be low density development with 9000 acres of land housing 150000 population.

Phase II was planned for higher density with 6000 acres of land accommodating 350000 people.

5.3.3. PREVAILING DENSITIES AS PER 2001 CENSUS

The prevailing density of Phase I of the city as per the 2001 census was 26, whereas for Phase II, it was 60 persons per acre. The density of Phase III (which was added subsequently), has been proposed as approx. 100 persons/acre.

Thus, by 2001, the density of Phase-I had already exceeded the design density when that of Phase-II sectors was the same as was designed. The city however, still has reasonable capacity to accommodate additional population.

5.3.4 DENSITY AS PER HOLDING CAPACITY / PROJECTIONS

As per the population worked out for the city on the basis of its holding capacity, the density of Phase I is estimated to be 34 persons per acre (more than double the planned density), 83 persons per acre for Phase II and 100 persons per acre for Phase-III sectors.

It can be seen that as against the planned population of a sector varying from 15000 – 25000, large variations in population at the sector level have been observed with the highest population of 41,077 being recorded in Sector 45, and the lowest population of only 1 being recorded in Sector 63.

The highest population in Phase I sectors was recorded in Sector 20 was 22,138, whereas in Phase II (31-47), the position is occupied by Sector 45, with a population of 41,077.

TABLE D1.2 DENSITY FOR PHASE I, II AND III BASED ON CENSUS 2001 AND HOLDING CAPACITY

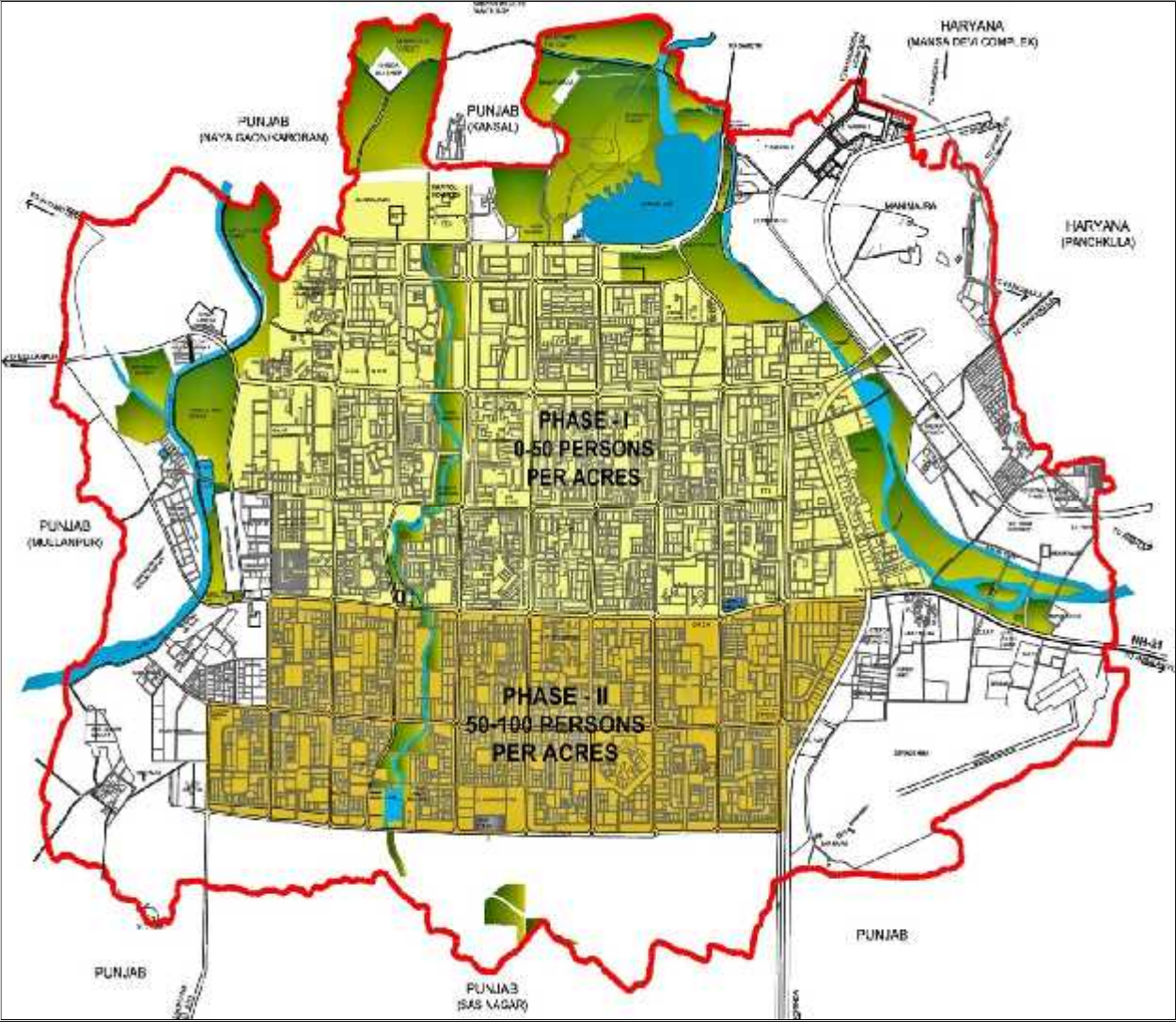
Phase	Planned Density (persons/acre)	Density as per Census 2001 (persons/acre)	Density as per Holding Capacity (persons/acre)
I - Sector 1 to 30	16	26	34
II - Sector 31 to 47	59	60	83
III - Sector 48 to 56, 61, 63	-	Under process of development	100

The density pattern is likely to undergo considerable change in the years to come with the city recording higher growth and development. As per existing trends, the sectors falling in Phase I shall continue to have lower density as compared to the sectors falling in Phase II.

The highest population density will be in the sectors falling in Phase III due to group housing and large scale rehabilitation of the population of unauthorized settlements in these sectors. As per the density calculated according to the holding capacity it can be mentioned that the higher densities will be in Manimajra (161 PPA), Sector 38 West (211PPA), Sector 63(195 PPA) and in Rehabilitation colonies at Ram Darbar (157 PPA). The detail of area and densities for Rehabilitation Colonies is at Table 1.3 (a)

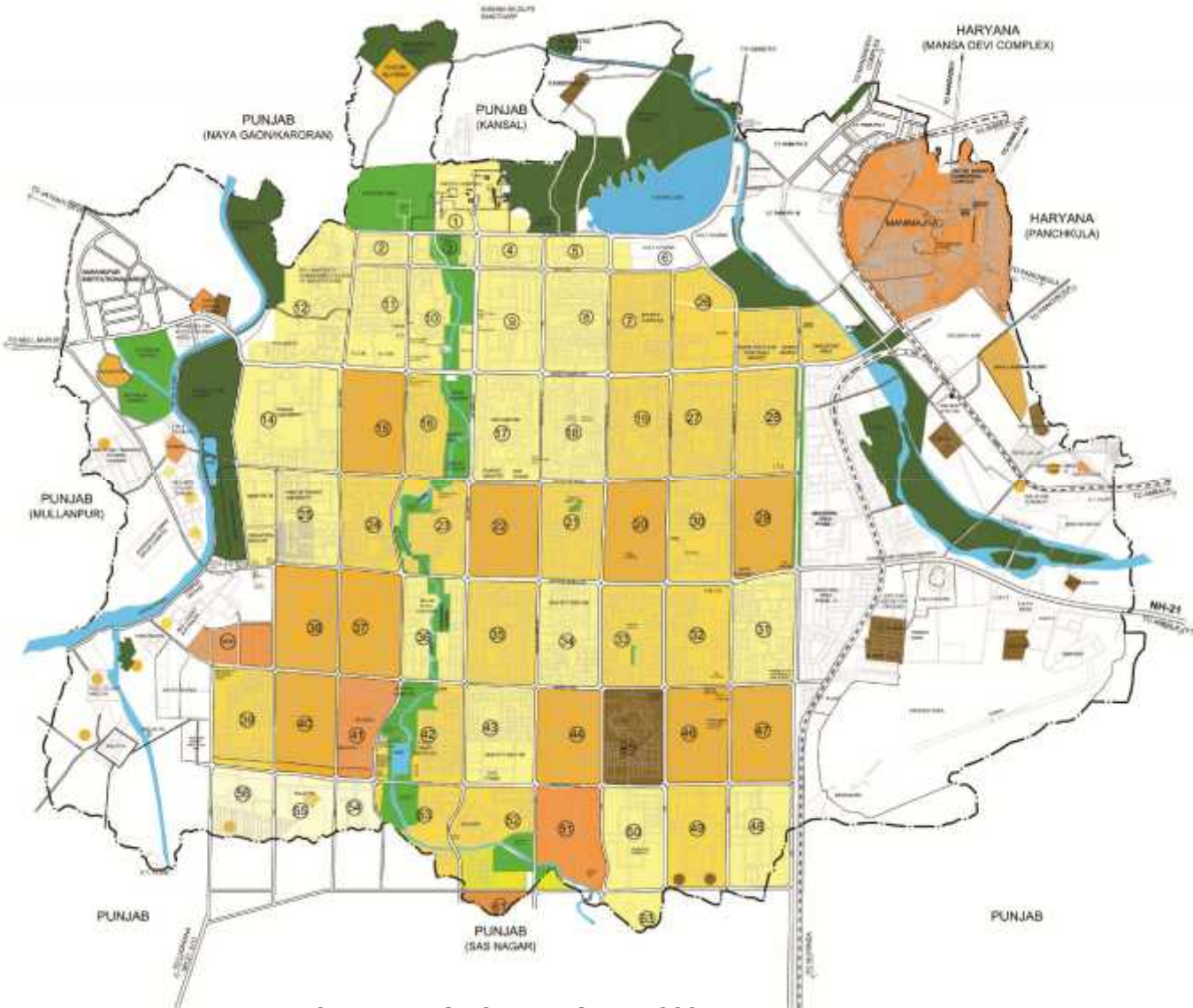


PLAN D1 – DENSITY PATTERN IN SECTORS (AS PER ORIGINAL PLAN)





PLAN D2 - DENSITY PLAN OF CHANDIGARH (AS PER CENSUS -2001)



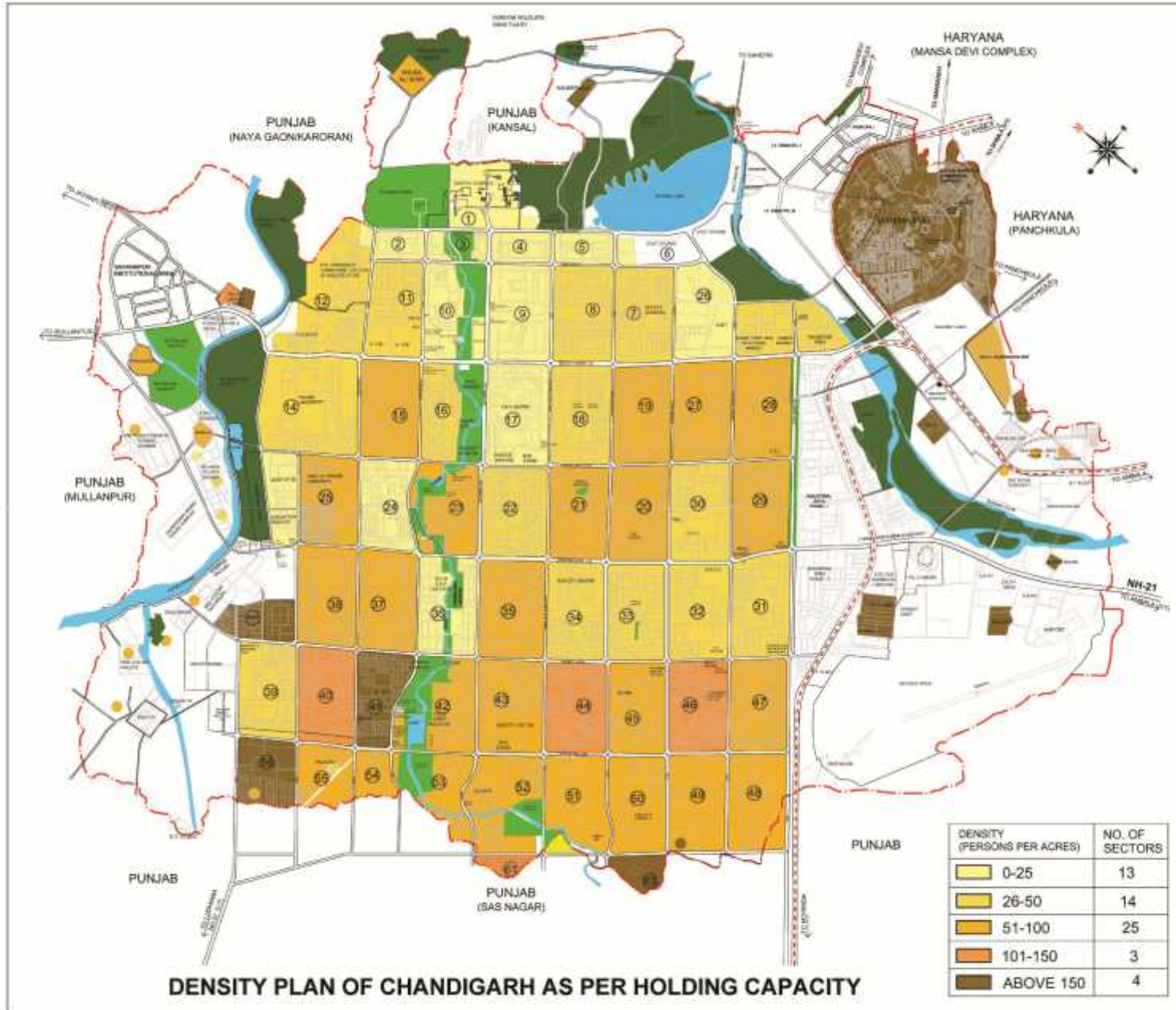
EGEND:

DENSITY (PERSONS PER ACRES)	NO. OF SECTORS
0-25	26
25-50	18
50-100	10
100-150	3
ABOVE 150	1

DENSITY PLAN OF CHANDIGARH -2001



PLAN D3 - DENSITY PLAN OF CHANDIGARH (AS PER HOLDING CAPACITY)



DENSITY PLAN OF CHANDIGARH AS PER HOLDING CAPACITY



5.4 SEX RATIO

As per the provisional population figure of 2011, Chandigarh U.T. recorded a population of 10,54,686 out of which 5,80,282 are male whereas remaining 4,74,404 are female.

As per Census 2011, compared to the all India figure of 940, Chandigarh has recorded a sex ratio of 818. Chandigarh recorded a sex ratio of 777 in the year 2001 as compared to the national average of 933.

The **Table D1.4 (see Annexure Page 13)** gives the prevailing sex ratio in Chandigarh and in India during the period 1961-2011. The sex ratio has gradually increased over the years except in 2001, when it showed a marginal decline. The distribution of population by age group/sex has been shown in **Table 1.5 (see Annexure Page 13)**.

5.5 LITERACY RATE

Chandigarh has always recorded a high literacy rate since its inception due to the high quality of educational infrastructure available in the city. As per Census 2011, 8,09,653 persons were literate in the U.T, indicating a literacy rate of 86.43% (see **Table D1.6 (see Annexure Page 14)**).

5.6 ECONOMIC ACTIVITY

The majority of workers in the UT are employed in fields other than cultivation, agriculture, household industry etc. From **Table 1.7 (see Annexure Page 14)**, it is observed that proportion of cultivators, agricultural labourers, household industry workers and other workers to total workers are 0.6%, 0.2%, 1.1% and 98.1%.

5.7 FUTURE POPULATION PROJECTIONS

In order to have a realistic assessment of the future population, the population estimates have been based on the following four methods.

1. Population projections made by the technical group on population projections constituted by Registrar General, Census of India
2. Population projections based on accepted methods of population projections.
3. Population projections made by various agencies.
4. Population projections based on the holding capacity.



5.7.1 POPULATION PROJECTIONS MADE BY THE CENSUS OF INDIA

The Technical Group set up by Census of India has made projections for Chandigarh's population for the period 2011-2026 (**Table 1.8 (see Annexure Page 14)**). As per the table, Chandigarh will have a population of 14,38,000 in the year 2011, 22,26,000 in 2021 and 25,18,000 in the year 2026. These projections are based on assumed growth rates of 59.67% for the period 2001-11, 54.80% for 2011-21 and 13.12% for 2021-26. However, the actual population in the year 2011 is 10,54,686 which is much lower than the projected population by the Technical Group.

The prime reason for variation is the difference in actual and projected growth rate of the Chandigarh U.T recording the lowest decadal growth rate of 17.10% in its history as against the 59.67% projected by the technical group. Accordingly, even the future population projections for Chandigarh shall be much lower compared to the projections made by the technical group.

5.7.2 Population projections based on four accepted methods

Population projections for Chandigarh U.T. have also been made by the Arithmetic Progression Method, Exponential Method, Incremental Increase Method, and the Geometric Progression Method as shown in **Table 1.8**. As indicated in the table, there are large variations in the projected population using different methods. In order to remove the abnormalities/large variations, law of averages has been made applicable. The table showing population projections made by the Census of India is at **Table 1.9 (see Annexure Page 14)**.

POPULATION PROJECTION OF CHANDIGARH UT BY VARIOUS METHODS

Sr. No	Method	2011	2021	2031
1	Arithmetic Progression	1054686	1241647	1428608
2	Geometric Progression	1054686	1474694	2061962
3	Incremental Increase	1054686	1272457	1521039
4	Exponential	1054686	1882540	3360200
Average		1054686	1467834	2092952

5.7.3 POPULATION PROJECTIONS MADE BY VARIOUS AGENCIES

Taking various population projections into account, it will be realistic to assume that Chandigarh UT will have a population of 13.5-14.5 lakhs by the year 2021 & 15-16 lakhs by the year 2031.

5.7.4 Holding capacity of UT Chandigarh based on Master Plan recommendations

Population for the Chandigarh U.T has also been projected based on the holding capacity of the area. Holding capacity of the city has been worked out based on the following :

- Number of plots carved out for government housing,
- Residential plots made available to the residents for constructing houses,
- Number of plots and dwelling units made available by the Chandigarh Housing Board,
- Dwelling units created in re-habilitation colonies,
- Population of Manimajra in 2011.
- Housing in the villages falling in the U.T.
- Population living in unauthorized settlements.
- Holding capacity of vacant areas in Phase III sectors and the periphery.
- Para-military personnel housed in the area.

Based on the above, the total holding capacity of the U.T of Chandigarh has been worked out as 15.52 lakhs as detailed in **Table 1.10 (see Annexure Page 15)**. While it may not be possible to make an accurate forecast, the expectation is that the UT's population will range between 15-16 lakhs, by 2031 for which the provision of necessary infrastructure should be planned.



In order to maintain the basic character of Chandigarh as an administrative city, unnecessary increase in the population should be avoided. With the coming up of new towns in the periphery in Punjab and Haryana, the excess population can be easily accommodated in those towns. Moreover since the land stock in Chandigarh is limited, the uses related to governance and administration should get priority in the allocation of land. It will be prudent to look at the city and the union territory based on the holding capacity indicated above with population restricted to 15.5 lakhs. Additional population will have to be diverted to the adjoining settlements by viewing the entire context of planning in the regional framework. However, continuous monitoring of population every 5 years will be desirable in order to rationalize the distribution of population. **It will be prudent to consider that population for the area falling in the sectors should not exceed one million.**

TABLE 1.10 HOLDING CAPACITY OF UT CHANDIGARH BASED ON MASTER PLAN RECOMMENDATIONS

Sr. No.	Category	Total Units	Existing Population	Maximum No. of Dwelling Units	Holding capacity
1	Government Plots	24330	-	29925	111116
2	Private Plots	22788	-	22788x3=68364	293965
3	Chandigarh Housing Board	Plot	2255	2255x3=6765	29090
		Unit	30698	30698	132001
4	Others	28963	-	28963	124541
5	Rehabilitation Colonies	61525	-	61525	264558
6	Unauthorized Colonies to be Rehabilitated	20911	69047		69000
7	Villages	-	84235		117929
8	Manimajra	-	117046		136943
9	New residential areas	-	-		200328
10	Paramilitary				50000
11	Total				1529471

Note: (i) Average family size for calculating holding capacity has been taken as 4.3.
(ii) In case of sectors 6,12,17,26E,53& 54 existing population in 2001 has been included in the holding capacity.
(iv) Private plots availing additional FAR / DU's



ADJUSTMENT OF PROPOSED POPULATION IN CHANDIGARH CITY

1	Sectoral Grid	Sectors	Projected Population
	Phase I	1 to 30	270086
	Phase II	31 to 47	345945
	Phase III	48 to 63	201424
2	Periphery	Pocket 2 near Sarangpur	7500
		Pocket 7 near Maloya	45000
		Chandigarh Armed Police Complex	6500
3	Others	Rehabilitation Colonies	264558
		Villages	117929
		Manimajra	136943
		Unauthorized Colonies to be Rehabilitated	69000
		Paramilitary	50000
	Total		1529471 Say 16 lac

* The Population of sectors 48 to 63 has been calculated with a Gross Density of 100 PPA



5.8 DECADAL GROWTH RATE OF GMADA REGION (PUNJAB)

The growth in Mohali's population and its emergence as a part of the tri-city comprising Chandigarh, Panchkula and Mohali started in the seventies. The population of Mohali (then a village) was only 1229 in 1971 but grew by about 39% per year during the period 1971-81 to reach 32,351 in 1981. Though the rate of growth in Mohali's population has declined after 1981 due to a larger base population, it has remained high at over 9% per year during 1981-91 and over 4.5% per year during 1991-2001. The decadal growth rate of other towns in the region is given in the **Table D1.11 (see Annexure Page 16)**.

5.9 DECADAL GROWTH RATE OF HARYANA PORTION

Due to establishment of various special government projects of HMT, ACC Cement Factory, Chandimandir Cantonment, Indian Tibet Border Police Complex, CRPF Complex, Terminal Ballistic Research Laboratory and Panchkula Town, this periphery area has undergone tremendous socio-economic and physical development. Further the development of infrastructure like roads, electricity and rapid transportation facilities, induced large scale immigration from other areas to this region. The population in the periphery area of Haryana has increased manifold in the last three decades. **Table D1.12 (see Annexure Page 16)** shows the projected population of the Haryana portion of periphery controlled area upto 2021.

As apparent from the above projections, the total population of the periphery controlled area would be 14,23,000 in 2021, when projects of Panchkula Extension & Shree Mata Mansa Devi Urban Complex get completed and urbanization in the area adjoining Kalka & Pinjore take place. Accordingly, the urban population would be 65.00%, 75.00% & 85.00% of the total population in the corresponding years of 2001, 2011 & 2021 respectively. The total urban population would be 1209550 in 2021.

5.10 FUTURE TRENDS OF POPULATION IN 16 KM PERIPHERY CONTROL AREA

The provisional population of UT according to 2011 Census is 10,54,686 having increased by 17.1% over the decade. It is a much lower rate of population growth than projections made by different agencies. While availability of more detailed 2011 Census data has to be awaited for analysis of the factors which have contributed to this lower growth rate, it may be conjectured that rising property values in the city, combined with limited availability of land for additional housing, has led to spill over of some of Chandigarh's growth into cheaper alternatives available in Zirakpur, Mohali and Panchkula as well as some of the neighbouring villages such as Kansal and Naya Gaon in Punjab.

It is clear that future trends of the city's growth cannot be seen in isolation from the massive urban development taking place in its periphery falling in Punjab and Haryana.

With little land left for new development, and no major new developments in the pipeline combined with the decision to maintain Chandigarh as a medium rise city at best, the same low rate of population growth during the coming two decades may be assumed. The total projected population for the year 2031 has been estimated at 20 lakh as highlighted earlier to maintain the basic character, the holding capacity of city has been worked out to be 16 lakh (see 5.7.3) with a view to retain the original concept of a green and spacious town and due to environmental considerations. The additional population will have to be diverted to the adjoining settlements by viewing the entire context of planning in the regional framework.