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EXECUTIVE SUMMARY

Chandigarh is one of the early planned cities in post-independence India and is internationally known for its architecture and urban design. Born as a direct result of a violent and black period of Indian history- "the partition", Chandigarh has acquired the unique distinction of being a capital to two states i.e. Haryana & Punjab. Chandigarh is bordered by the state of Punjab to the north, west and south, and to the state of Haryana to the east. The Union territory of Chandigarh is considered to be a part of the Chandigarh Capital Region or Greater Chandigarh, which includes Chandigarh, and the city of Panchkula (in Haryana) and cities of Kharar, Kurali, Mohali, Zirakpur (in Punjab).

Significant as a symbol of a developing, progressive and free India; Chandigarh is pragmatic mix of the functional and the aesthetic romanticism blended with practicality. The wide tree lined roads, managed gardens, unique architecture, greenery, the Rock Garden, Sukhna lake and its citizens; all together merge to characterize a city of the future, with no baggage of the past. Famous as "The City Beautiful", the master plan of the city was prepared by Swiss-French architect Le Corbusier, which transformed from earlier plans created by the Polish architect Maciej Nowicki and the American planner Albert Mayer. Most of the government buildings and housing in the city, were designed by the Chandigarh Capital Project Team headed by Le Corbusier, Jane Drew and Maxwell Fry. The Master Plan of Chandigarh as analogous to the human body with a head (Capitol Complex, Sector 1), heart (The City Centre, Sector 17), lungs (The leisure valley, open spaces and sector parks), intellect (cultural & educational institutions), circulatory system (the road network) and viscera (the industrial area).

In 2015, an article published by BBC named Chandigarh as one of the perfect cities of the world in terms of architecture, cultural growth and modernization. The word Chandigarh, literally means "The Fort of Chandi", came from the ancient temple called "Chandi Mandir", devoted to Hindu goddess Chandi. Located near the foothills of the Shivalik range of the Himalayas in northwest India, Chandigarh covers an area of approximately 114 sq km. As per census 2011, over 10.54686 lakh people reside in Chandigarh with a population density of 9,252 persons/sq.km. Most of the villages are urbanized and provided with all basic amenities. The Punjab New Capital (Periphery) Control Act, 1952 was promulgated in 1952 to control haphazard growth around Chandigarh.

Chandigarh architecture is based on neighbourhood concept which allows the access of all facilities within the walking distances, to control the vehicular movement and promote healthy living. Each sector is occupied separately by a school, nursing home, shopping area, parks and gardens for its residents. Moreover the city has also provided with three multi-speciality hospitals including Post Graduate Institute of Medical Education & Research and two Hospitals each in the field of Homeopathy & Ayurveda.

Air quality of the city is far much better than most cities/states of the country. For a sharp monitoring, the air quality monitoring devices are placed at the five major places of the city i.e. (1) Punjab Engineering College, (2) IMTECH, Sec 39 (3) Industrial Area (4)Kaimbwala Village and (5) Sector 17; covering institutional area, industrial zone, rural area and commercial areas respectively. These areas are located in different parts of the city and are hence, covering almost whole of the city.

Respirable Suspended Particulate Matter (RSPM) in the city is certainly higher than the permissible limits. However, the SO_2 & NO_x levels are well within permissible limits. The contributor of air quality deterioration in Chandigarh are activities like industries, illegal burning of dry leaves, pollens from trees & gardens in the city, dust from the roadside vacant spaces and operation of generator sets in certain areas adjoining the city. Anthropological activities in the neighboring states such as burning agro-residue also contribute to the ambient air quality of Chandigarh.

Chandigarh has the highest density of vehicles in India. The fleet of vehicles is over two per capita household. However, strict management of the traffic and control over the polluters/traffic offenders made it possible to minimize the air pollution due to vehicles. Due to its wider roads and wise traffic sense and regulations, traffic jams are rare in Chandigarh. Chandigarh Traffic Police has recently been awarded Police Excellence Award in the category of best of Traffic Management by Cops on 18th may 2017 as a result of the survey, conducted by International journal on Internal Security published by Foundation for Police Research at Pragati Maidan, New Delhi.

Several steps have been taken to check and stop deterioration of the air quality of Chandigarh, such as:-

1. Subsidy on Battery operated vehicles has been given by the Department of Science and Technology. Alternative fuel like LPG driven vehicles have been promoted by the administration.
3. Strict control over industrial pollution is exercised and the installation of air pollution control devices (APCD's) is made mandatory.
4. Hazardous waste is being disposed category wise using recyclers and secure landfilling etc.
4. Traffic lights are synchronized for better traffic flow of vehicles. Small rotaries are closed to ensure grid based movements of the traffic
5. Cycle tracks have been completely developed for slow moving cycle traffic.
6. Due to approachable facilities, tree covered roads and cycle tracks, walking and cycling is promoted . Chandigarh is found as the most walk able city of India in recent survey.
9. Massive plantations have been carried out thorough out city and the total green cover of the city is increased by more than 45% over last decade.

10. Burning of leaves, garden waste and other waste materials has been banned by the Administration.
11. Government of India (GOI) has cleared DPR of metro to pave the way for mass transport system to discourage private vehicles' use.

Water in UT Chandigarh is received from Bhakra Canal, thus Chandigarh is one of the few cities in the world with canal water supply. Currently Chandigarh is getting nearly 67 million gallons per day from surface water and 20 million gallons per day from tube wells. However, with depleting ground water and possible reduced flow to River, from which the city is drawing water for domestic use, the city administration should aim to reduce water usage through various technologies. UT Chandigarh has a potential to use recycled water. Chandigarh has a capacity to treat 56 million gallons per day, which could be used to irrigate landscapes. Reduce water consumption, is contemplated to gardening, car washing and toilet flushing in all houses measuring more than 500 sq ft. All new buildings can be fitted water efficient fixtures aiming at 25% reduction of water consumption. Replacement of malfunctioning water meters in all houses and commercial buildings. Introducing the conversion of a flat rate water connection into metered connection is another solution to reduce water consumption. Revision of water tariff will also caution the consumer to use water judiciously. An efficient storm water management through zero drainage of storm water for large development sites that have more than 30 acres; Sustainable urban drainage system on sites with more than 1 ha to implement SUDS technique; Rainwater harvesting structures to be built in all new buildings, commercial complexes and industrial establishments; Existing buildings to install rainwater harvesting structures within next 2 years; Recharging aquifers in all housing complexes and commercial complexes and reduction of paving on unbuilt areas such that paving should not exceed 25% of unbuilt areas where ever possible use of grass pavers should be encouraged.

Chandigarh is having one of the best water drainage systems in India and whole of the waste water is treated in Sewage Water Treatment Plants within the city premises. The city beautiful is daily generating 57MGD waster water including domestic and industrial sectors, whereas total installed/working capacity of STP's is 53.85 MGD. To make city 100% efficient in terms of waste water treatment, additional 16.7 MGD treatment capacity of STP is at the final stage of completions. 93.7% households are having Treated Tap Water facility, out of total covered 96.7% households. Recently, efforts were made by Municipal Corporation (MC) to elevate the efficiency by enhancement of water supply hours and strengthening of water supply system. Drinking water supply has been given to authorized and rehabilitated colonies and village areas. Special measures have been taken for remote areas. To improve the waste water disposal and to establish the same for newly built areas, up-gradation of sewerage system is ongoing. Polythene was found to be a drainage choker. To solve this problem, the manufacture and use of polythene/plastic carry bags have been completely banned in Chandigarh from 2nd Oct.2008.

Forest cover of the country as per Forests Survey of India (FSI) assessment 2013 is 6,97,898 sq. km (69.79 million ha) and the tree cover of the country is estimated to be 91,266 sq. km (9.13 million ha) comprising 21.23% and 2.78% of the total geographical area respectively. Thus, the total green cover of the country is 789164 km2, which is increased by 5,871 sq. km than that of 2011 assessment.

Chandigarh has wide plan for better life style and clean environment as the city is well known for its beautiful tree covered roads, spatial gardens and surrounding green forests of Shivalik range. The green cover of Chandigarh constitutes the managed gardens; central green belts between the sectors and the open space at community level consist of parks around which clusters of houses are rearranged. In the city, the Horticulture wing of Municipal Corporation and Engineering Department maintains and takes up the plantation on the road side, gardens, parks and other vacant revenue land. The city is enveloped between the Sukhna, Kansal and Nepli reserve forests. The forest and other areas managed by Forest Department in UT Chandigarh is 3436 hectares (ha) comprising of Sukhna Wildlife Sanctuary 2598 ha, Reserved Forest, Un-classed Forest and other areas.

The total geographical area of U.T. Chandigarh is 139.92 sq. km2 which includes 25.42 sq. Km as "Sukhna r species grow in small groups except for the closed forests where the tress are in abundance.

Wildlife Sanctuary" on 6th March 1998; acquired for soil conservation works. As per the India State of Forests Report -2013 (ISFR) of Forests Survey of India (FSI), the forest cover in UT Chandigarh is 17.26 sq. km and another 10 sq. km area is under tree cover. Thus, the total green cover of Chandigarh as per 'ISFR-2013' is 53.26 km^2, which amounts to 38.04% of the total geographical area.

Major forest type occurring in the Union Territory is Tropical Dry Deciduous. These forests occur in climates that are warm year around and receive several hundred centimetres of rain per year. The canopy of the trees does not normally exceed 25 metres. The common trees are Acacia and bamboo. There is no trace of Chir (Pinus roxburghii) and Sal (Shorea robusta) in the Chandigarh Shivalik Hills; however, some patches of these trees do exist in the Morni Shivalik Hills. The trees are less in number with xerophytes, thorny and spiny species, predominating throughout the range. Scattered trees of the othe

Energy consumption patterns of the territory depicts the living standard and life style of its residents. UT Chandigarh draws power from the central grid and has no power generation of its own. But yet electricity consumption of UT Chandigarh is increasing by approximately 52 million units every year. Therefore it is imperative that the union territory adapts itself to reduce dependence on the grid electricity and build its own captive generation or switch to renewable power that helps to generate its own power. Furthermore, on the mitigation front, the city should largely focus on reducing green-house gas emissions from reduced electricity consumption that reduces emissions elsewhere and transport sector which is originated in the city itself. While UT Chandigarh boasts of as one of the highest per capita vehicles per family, it also has lowest number of persons per public transport held by the Chandigarh Transport undertaking. Therefore there is a necessity to improve the public transport facilities for people to travel to various destinations within the city in order to reduce dependence on the personal transport that might cause increased per capita emissions.

UT Chandigarh is moving strongly to adopt Solar City plan to reduce dependence on Conventional Energy. As a sustainable city plan, the city is also moving towards adopting electricity reducing measures and solar water heaters in a big way. It is expecting that nearly 15% of total energy consumption is reduced in the next 20 years. Thus, adaptation and mitigation measures are being followed simultaneously. Some of the innovative strategies are to promote bicycles in the city, pedestrian pathways, metros, Bus Rapid Transits, and solar power generation. Energy efficiency building through adoption of building code is another major attempt to reduce energy consumption. Overall, UT Chandigarh is moving towards the low carbon city with various measures though there is a long way to go.

Waste generation and its management in the city goes hand in hand, at a constant pace. The city beautiful is having 975 waste collection and disposal efficiency and manage all kind of waste as per the rules and guidelines laid by the ministry. To control the increasing quantity of waste and its disposal, Chandigarh Administration and Municipal Corporation with active involvement & participation of Resident Welfare Associations, NGO's like CAWEDS (Chandigarh Animal Welfare and Eco Development Society) & Yuvsatta, Institutions like hospitals, colleges, hotels and the university, have initiated a project 'SAHYOG' for the effective and meaningful disposal of waste.

The household waste is taken to Sehaj Safai Kendras (S.S.K.) and Khad Banao Kendras (K.B.K.), which are established at various locations in the sectors (refer to chapter Waste Management). The Municipal Corporation initiated the (SSK) scheme in 2002 from Sector 15 for ensuring proper collection and transportation of Municipal Solid Waste in the city. So far, the Corporation has identified about 100 sites for the construction of above mentioned Kendras. Under the scheme all Garbage Containers from these Sectors are removed and 2 sites per sector are designated for disposal of garbage, horticulture and other waste material collected from house to house by the Sector Welfare Associations on cost recovery basis. The collected waste is then segregated into recyclable material, organic and inorganic waste. The organic material is converted into compost (including vermincompost with the help of earthworms). Hence, the waste is converted into excellent manure produced most economically. The project 'SAHYOG' has been implemented in the institutions and various sectors.

Despite the commendable actions taken by the Union Territory Administration for protection of its land

Resources from degradation and pollution, the following initiatives are suggested:

1. A coordinated approach in consultation with the State Governments of Punjab and Haryana may be adopted to ensure implementation of the Punjab New Capital Periphery (Control) Act, 1952. Discussions may be taken up with PUDA and HUDA to stop further expansion of satellite towns. However, it is important to realize that such pressures will continue in future. Hence, planning (like, MRTS, prevention of encroachment, etc.) for catering to these pressures may be taken up.
2. A strategy for integration of urban villages with adjoining planned sectors needs to be devised. Also, strategy for tackling problems of residential & commercial slums may be defined.
3. Commercial areas may be augmented with concept of multi level shopping.
4. Studies on characterization of solid waste need to be conducted and waste segregation at household level needs to be promoted. The citizens of Chandigarh are literate and environmentally conscious and aware, hence, this activity can be successfully initiated here.
5. For disposal of construction waste, the Administration may provide low lying area which can be filled up by Municipal authorities conveniently.
6. Land use changes in peri urban areas should be strictly curbed to retain/freeze existing land use pattern.

The present report emphases on the current development and achievements of Chandigarh, related to the different aspects of environmental concern. Adding up to the efficient actions of the Union Territorial administration, the report recommends following initiatives:

- To control the degradation of the land, it is proposed that:
  - The green belt areas including forests should be checked strictly to prevent any biological damage and deteriorating land quality.
  - A coordinated approach in consultation with State Governments of Punjab & Haryana may be adopted to ensure implementation of Punjab New Capital (Periphery) Control Act, 1952 and stop further expansion of satellite towns by PUDA & HUDA. At the same time, it is important to realize that such pressures would continue in future. As such, planning for catering to these pressures be initiated (e.g. development of MRTS, prevention of encroachments, etc.) to promote sustainable development.
  - Land use changes in peri urban areas may be strictly curbed.
- To reuse the solid waste generated, it is proposed that:
  - Solid waste characterization at the generation point level studies may be taken up and the working of Sehaj Safai Kendras and Khad Bnao Kendras should be optimized.
  - Projects for energy generation from the biodegradable municipal waste consisting of fruit & vegetable (mandi waste),house hold kitchen, restaurants, hotel and graden waste should be promoted.
  - Small industries based on the recycling and reuse of solid waste materials in the city should be promoted.
- To control air pollution, it is proposed that:
  - Clean & energy efficient technologies may be promoted in the industries and incentives should be provided for minimization of air emissions and adoption of latest Air Pollution Control Devices.
  - To control vehicular pollution, existing public transport may be improved, alternate fuels (like CNG, Propane) may be promoted with more of subsidies and better facilities like free parking etc.
  - Diesel operated vehicles mainly auto-rikshaw (5,471 registered with city) are observed to be the main source of RSPM in the air of city beautiful, they should be prohibited within the city.
  - Mass Rapid Transport System may be executed in conjunction with satellite towns of Panchkula, Zirakpur, Mohali, Dera Bassi, and Kharar to reduce floating vehicular population in the city. Elevatedroads may be planned for long route vehicles.
  - Continuous air monitoring systems should be used to cover the remaining areas of the city for more effective air pollution monitoring and to check the best possible reasons behind it.

- The adjoining states of the city should also take strict measures to control over seasonal stubble burning, brick kiln emissions and diesel based public transports entering the city.
- Solar energy utilization throughout the city should be maximized. For this, change in capacity building by law should be included, wherein a minimum capacity of solar Pv plant and solar water heating may be made mendatory.
- Rain water harvesting should be encouraged at small household levels also.
- To understand and quantify the impact of environmental pollution on health, epidemiological studies should be promoted.
- Government agencies, industries, students & residents of the city should be encouraged to protect Environment.

INTRODUCTION

Chandigarh was built up as the new capital of East Punjab after the partition of 'India' in 1947. It is located about 240 km north of New Delhi on a gently sloping terrain in the foothills of the Shivalik Range. Bounded on two sides by two seasonal rivulets, the northern edge of the city is Capital Complex against the panoramic back drop of Shivalik hills.

The geographical location of the city is 30 degree 50' N latitude and 76 degree 48' E longitude and it lies at an altitude varying from 304.8 to 365.76 meters above sea level. The annual rainfall (average) is 1110.7 mm. The temperature in the winter varies from 1^0 C to 16^0C and in summer it ranges from 27^0C to 46^0C.

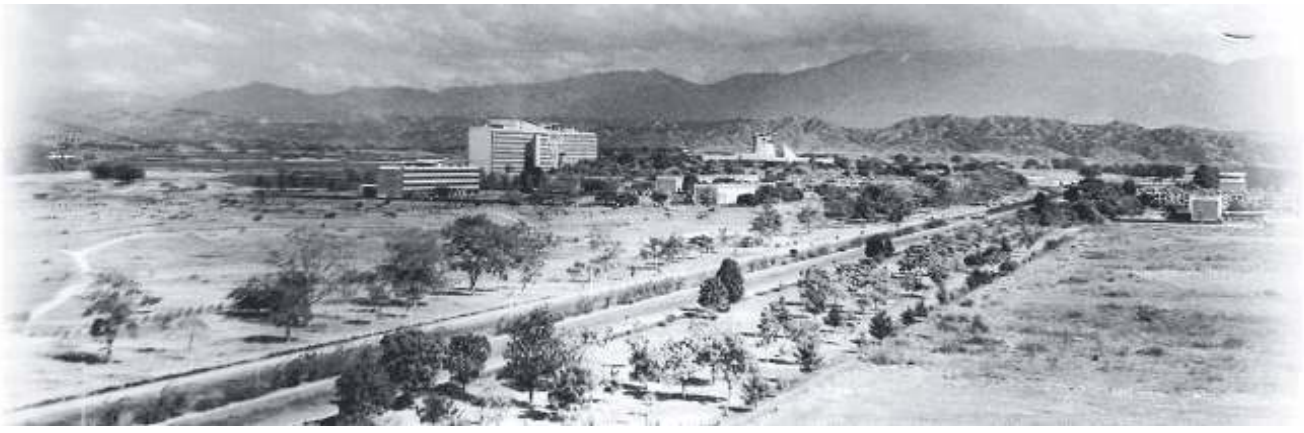
Chandigarh is a fully grown town of most modern architectural splendour. The city nestles in a picturesque setting in the foothills of the Shivalik hills and enjoys the popular epithet the "City Beautiful". Representative of Modern Architecture & Town Planning, the city is a creation of the French Architect, Le Corbusier. Chandigarh and the area surrounding it was constituted as a Union Territory on 1st November 1966. It also serves as the joint capital of both Punjab and Haryana States. It is bounded on North West by Punjab and on the East and South by Haryana. Its origin was contributed by 'Pandit Jawahar Lal Nehru'.

HISTORICAL BACKGROUND

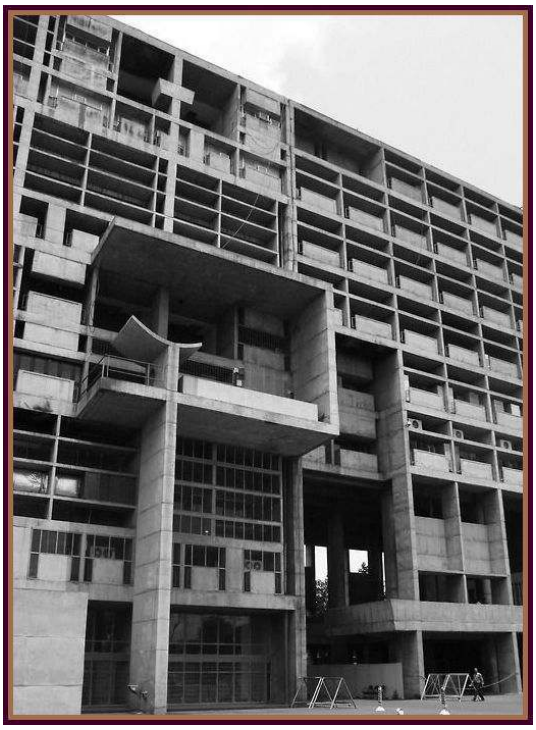
Chandigarh derives its name from the temple of Goddess 'Chandi' (the goddess of power) located in the area and a fort or 'garh' lying beyond the temple. The city has a pre-historic past. The gently sloping plains, on which modern Chandigarh exists, were, in the ancient past, a wide lake ringed by a marsh. The fossil remains found at the site indicate a large variety of aquatic and amphibian life which was supported by that environment. About 8000 years ago, the area was also known to be a home to the Harappans.

SELECTION OF SITE

The present site was selected in 1948 taking into account various attributes such as its central location in the state, proximity to the national capital & availability of sufficient water supply, fertility of soil, gradient of land for natural drainage, beautiful site with the panorama of blue hills as backdrop & moderate climate.



EDICT OF CHANDIGARH



The Edict of Chandigarh proposes to enlighten the present and future citizens of Chandigarh about the basic concepts of planning of the city so that they become its guardians and save it from the whims of individuals. The Edict highlights that the city is planned to human scale putting its residents in touch with the infinite cosmos and nature. It provides places and buildings for all human activities so that the citizen can live a full and harmonious life.

The central plaza in Sector 17 was designed by Le Corbusier as a "Pedestrian's Paradise". No vehicular traffic is permitted in the plaza. The edict also specifies that no personal statues shall be erected in the city or in parks of Chandigarh. The city is planned to breathe the new sublimated spirit of art. Commemoration of persons is confined to suitably placed bronze plaques. The edict proposes that the truthfulness of materials of constructions, concrete, bricks and stone shall be maintained in all buildings constructed or to be constructed. The seed of Chandigarh is well sown. It is for the citizens to see that the tree flourishes.

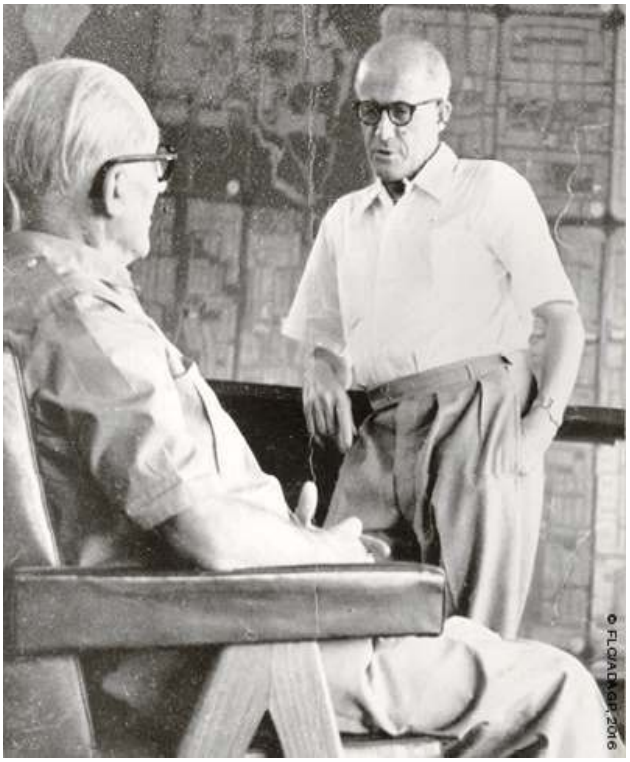
CHANDIGARH: A FACT FILE

- Number one in the country in terms of Human Development Index.
- Awarded as cleanest city of India by Ministry of Urban Development
- Chandigarh will also become the country's first solar city in 2016
- Chandigarh has been rated as the "Wealthiest Town" of India. In terms of family wealth, it was rated as the sixth most prosperous city.
- Good Governance: A compact, efficient Administration having Quick Decision Making System.
- Chandigarh (73.48 points) and Mysore (70.65 points) record the highest household coverage of solid waste collection in the country (MoUD, Government of India).
- Education: Chandigarh has one state level University; i.e. Panjab University and Two deemad Universities; i.e Punjab Engineering College and PGMIER (Post Graduate Institute of Medical Education and Research). Chandigarh host about 45 recognized institutes of higher education and 175 schools to impart knowledge from primary to Sr. Secondary Level.
- Health: There are 3 Hospitals with 500 or more beds,6 (>50<200 beds), 39(<50 beds) out of total 720 Health care units.
- Research Institutes: Institute of Microbial Technology (IMTECH), Central Scientific Instruments Organization (CSIO), National Institute of Pharmaceutical Education and Research (NIPER), and Centre for Research in Rural and Industrial Development (CRRID), all add to the value added Research facilities provided by the city.
- Gross State Domestic Product (GSDP) at Current Prices has shown that Chandigarh has grown by 11.13% in 2013-14 over 2012-13.

According to Associated Chambers of Commerce and Industry of India (ASSOCHAM), better civic amenities and law and order situation make Chandigarh figure among the most preferred Tier II cities for a post-retirement life (2010), and it is one of the most preferred destination for tourism (2011).

MASTER PLAN OF CHANDIGARH

The Master Plan was developed by Le Corbusier who also designed the Capital Complex and established the architectural control & design of the main buildings of the city.



In March, 1948, the Government of Punjab, in consultation with the Government of India, approved a 114.59 sq. km. tract of land at the foothills of the Shivaliks as the site for the new capital. The location of the city site was a part of the erstwhile Ambala District as per the 1892-93 gazetteer of District Ambala. The site was selected by Dr. M.S. Randhawa, the then Deputy Commissioner of Ambala. Before the new city came up, the original site had about 59 villages (Singh et.al., 1998).

The foundation stone of the city was laid in 1952. Subsequently, at the time of reorganization of the state on 1st November, 1966 into Punjab & Haryana, the city assumed the unique distinction of being the capital city of both, Punjab and Haryana while it was also declared as a Union Territory under the direct control of the Central Government.

LAND

As per census 2011, Chandigarh stood second in India among the other cities, in terms of the urbanized population,; with 97.3% population living in urban area. Out of total Area i.e. 28170 acres, 4.75 % is under commercial Area., 5.6% is under Defense, 4.7% is under Industrial Area, 1% is under Public Utilities, 10.5% is under Public/Semi Public, 1.1% is under Railways, 8.6% is under Recreational Use, 37.8% is under Residential Area, 7.3% is under Transport, and 10.9% of total land is vacant. Rest of area is under forest cover. In addition to the 28170 acre, a total area of 26 sq. km. was acquired by the erstwhile Punjab Government from 1962 to 1964 for soil conservation works that is hilly area declared as 'Sukhna Wildlife Sanctuary'. Total forest and other areas managed by Forest Department in UT Chandigarh is 3436 hectares comprising of Sukhna Wildlife Sanctuary 2598 ha. The total green cover of Chandigarh now is 53.26 sq. Km. and 4.72% of total area is under water bodies. Most of the area of Chandigarh is acquired or urbanized now. As per the Agriculture department Chandigarh, total area under agricultural crops has shrunk to 600 hectares (Ha) in 2013-14. Out of which area under Kharif crops is 45 Ha, Rabi crops 575 Ha and under coarse cereals is 25 Ha. Total cultivated area in Chandigarh including area under fodder, vegetables, and fruits is 1200 Ha. The northeast part of the Union Territory comprises Shivalik rocks constituting conglomerates, friable sand stone, silt

stone and clay stone. The matrix consists of medium to coarse grained sandstones. Based on detailed soil survey studies, soils of the Union Territory have been grouped into 9 soil series and mapped accordingly.The land use pattern has changed in Chandigarh in recent years with the growth in the economy and commercialization; thus several important land acquisitions have happened in the past years. Projects like IT Park and Botanical Garden etc. have been initiated and are under continuous development while many phases have been already completed. One of the major point of concern for the administration is the change of the land use pattern in the peripheral zone to bring more area under urbanization &, developmental activities; and the generation of high volumes of solid wastes.

Land Use Type	Total Area (Acre)	Land Use Type2	Total Area (Acre)2
Phase I	9398.82	Public/Semi Public	2968.78
Phase II	5158.75	Recreational	2428.46
Phase III	1870.53	Public Utility	302.32
Periphery	11741.86	Railway Land	316.29
Residential	10672.15	Total Defence	1573
Commercial	1339.72	Total Forest	2113.97
Transport	2046.9	Vacant Land	3082.67
Industrial/IT Park	1346.39		

Available land area of Chandigarh is divided in to different categories depending upon the land use type. The development of the city was well planed in three phases(Phase I, Phase II, Phase III) with total distributed area of 28.170 acre. Phase wise distribution of the total land area of Chandigarh among different categories is described by the graph below .Out of the total area nearly 3082 acre is still lying vacant.

Housing and Infrastructure

Being a limited and defined city in terms of area with a cover from all the sides by neighboring states, Chandigarh has no margin to expand. Hence, that has put pressure on land use pattern to get changed from open spaces to colonies. Till 2013-14, a total of 28,587 units under Economically Weaker Section (EWS), 8,511 units under Lower Income Group Housing Scheme, 10,675 units by Middle Income Group Housing Scheme and 5,597 units under High Income Group Housing Scheme have been constructed by Chandigarh Housing Board. Total construction units by Chandigarh Housing Board are 60,337.

Source: Sr. Town Planner, Chandigarh

Agriculture

The Union Territory Chandigarh has limited area under Agriculture. The agricultural land is being gradually acquired for the expansion of Chandigarh City, and total crop area has shrunk from 5,441 hectares in 1966 to 1,400 hectares in 2002-03. It has shrunk to as low as 600 hectares in 2013-14. The main sources of irrigation are deep-bore tube-wells installed by the Administration and shallow tube-wells installed by individual farmers. The main crop of foodgrain is wheat and it is sown nearly in 600 hectares of land. The Department is making efforts to promote techniques of harvesting by following measures: (i) Extension and Farmers' Study/Training Tour, (ii) Development of Kitchen Garden, (iii) Soil and Water Conservation.

Water Treatment and Irrigation

The Chandigarh Administration has initiated action on various projects to meet the objectives of Jawahar Lal Nehru National Urban Renewal Mission so as to have planned development of urban areas with focus on efficiency in urban services delivery system. The Chandigarh Administration has made a provision of tax revenue for the Municipal Corporation.

Conservation of water is given top priority in Chandigarh. The augmentation work of water supply scheme, Phase-IV has already been completed. 25 new deep tube wells have been installed at various parts of the city, and 12 new irrigation tube wells have been installed for supply of water for irrigation. Sewage Treatment Plants of capacity 45 MGD at Diggian, 5 MGD at 3BRD, 5 MGD at Raipur Kalan, 1.25 MGD at Raipur Khurd have been constructed The sewerage and storm water drainage system of the city has further been augmented and strengthened. There is proposal for construction of Sewage Treatment Plants of capacity 10 MGD at 3 BRD, 5 MGD at Maloya, 7.5 MLD at Dhanas.

With the exponentially increasing demand of water resources due to escalating population, the city beautiful "Chandigarh", has also implicated the scheme at the remarkable speed in a very short span of time. The rainwater harvesting potential of Chandigarh, with an area of 114 sq km and the average annual rainfall of 1059.3, is calculated to be 60380.1million litres or 13241gallons or 36.28 MGD.

Conservation of drinking water by harvesting of the tertiary treated sewage for irrigation of green spaces in Chandigarh and Upgradation of water supply infrastructures for proper monitoring and automation with remote computerized surveillance system to 24x7 water supply is under process.

POWER

At present, the City is receiving 67% of its power through Mohali (PSEB), about 10 % through Dhulkote (BBMB) and remaining 23 % through Nalagarh. The city has a transmission network which comprises of one No.220 KV Sub Station at Kishangarh Manimajra, 11 Nos. 66 KV Sub Stations and 6 Nos. 33 KV Sub Stations. At present, the city has 2,00,000 consumers as on 31.03.2014 which includes 1,72,653 domestic consumers, 21,428 commercial consumers and about 2300 industrial consumers. The average power requirement is around 32.49. lac units per day. UT has an allocation of 166-236 MW of power from different Central/State Generating Stations during different hours of the day. Per capita consumption is 1168 units per person per annum. Besides this, Chandigarh Administration is maintaining 19437 numbers overhead tube type of street light points within sectors (i.e. V-6) roads. Chandigarh draws power from the central grid and has no power generation of its own. But yet electricity consumption of Chandigarh is increasing by 52 million units every year. Therefore it is imperative that the union territory adapts itself to reduce dependence on the grid electricity and build its own captive generation or switch to renewable power that helps to generate its own power. Chandigarh is moving strongly to adopt Solar City plan to reduce dependence on Conventional Energy.

Greening City Beautiful

Forest cover of the country as per Forests Survey of India (FSI) assessment 2013 is 6,97,898 sq. km (69.79 million ha) and the tree cover of the country is estimated to be 91,266 sq. km (9.13 million ha) comprising 21.23% and 2.78% of the total geographical area respectively. Thus, the total green cover of the country is 789164 km2, which is increased by 5,871 sq. km than that of 2011 assessment. Chandigarh has wide plan for better life style and clean environment as the city is well known for its beautiful tree covered roads, spatial gardens and surrounding green forests of Shivalik range. The green cover of Chandigarh constitutes the managed gardens; central green belts between the sectors and the open space at community level consist of parks around which clusters of houses are rearranged. In the city, the Horticulture wing of Municipal Corporation and Engineering Department maintains and takes up the plantation on the road side, gardens, parks and other vacant revenue land. The city is enveloped between the Sukhna, Kansal and Nepli reserve forests. The forest and other areas managed by Forest Department in UT Chandigarh is 3436 hectares (ha) comprising of Sukhna Wildlife Sanctuary 2598 ha, Reserved Forest, Un-classed Forest and other areas.

The total geographical area of U.T. Chandigarh is 139.92 sq. km2 which includes 25.42 sq. Km as "Sukhna Wildlife Sanctuary" on 6th March 1998; acquired for soil conservation works. As per the India State of Forests Report -2013 (ISFR) of Forests Survey of India (FSI), the forest cover in UT Chandigarh is 17.26 sq. km and another 10 sq. km area is under tree cover. Thus, the total green cover of Chandigarh as per 'ISFR-2013' is 53.26 km^2, which amounts to 38.04% of the total geographical area.

Major forest type occurring in the Union Territory is Tropical Dry Deciduous. These forests occur in climates that are warm year around and receive several hundred centimetres of rain per year. The canopy of the trees does not normally exceed 25 metres. The common trees are Acacia and bamboo. There is no trace of Chir (Pinus roxburghii) and Sal (Shorea robusta) in the Chandigarh Shivalik Hills; however, some patches of these trees do exist in the Morni Shivalik Hills. The trees are less in number with xerophytes, thorny and spiny species, predominating throughout the range. Scattered trees of the other species grow in small groups except for the closed forests where the tress are in abundance.

E-Governance

Chandigarh is one of the few cities of India implementing the e-governance. This not only saves paper but other office stationary also. To make an example out of this, Chandigarh Police has recently launched an SMS information facility. The SMS information facility would enable any person to know the status of public complaints submitted at the public window system and the status of their passport applications. Approx 2501797 transactions were made in 25 Sampark Centres located through out the city.

Industrial Growth in The City

Chandigarh Administration earmarked 1475 acres of land for Industrial Area, Phase-I & II which came into existence during the year 1970. The Administration has also developed Industrial Area, Phase-III in Mauli Jagraon for which an area of 152 acres of land has been earmarked. Chandigarh has nearly 3817 industrial units including 68 large and 59 medium and 1145 small scale units located on the outskirt and separated with a green belt. These units manufacture a wide variety of products with an annual turn over of nearly 2497.59 crores. The highest turnover in Chandigarh is exhibited by the industries based on metal products followed by the paper printing and chemical products.

Products	2014-15	Unit
Petrol Incl. ULP	85161	Kilo Litres
High Speed Diesel	82636	Kilo Litres
Kerosene	2035	Kilo Litres
Light Diesel Oil	447	Kilo Litres
Furnace Oil	39975	Metric Ton
Low Sulphur heavy Stock	0	Metric Ton
L.P.G Connections	408289	Nos.(Cum.)

Energy consumption of Petroleum Products

Major part of energy demand of Chandigarh is fulfilled by the petroleum fuels. With the modernization of living style and daily developing energy needs the city has been issued nearly 3.23 lakh LPG connections in 2012-13; which now has been increased to 4,08,289 in 2014-15. Total consumption of LPG for commercial and domestic purpose in the year 2014-15 was calculated to be 41,840 MT.

Initiatives by Chandigarh Administration:

Chandigarh Administration is moving on four broad fronts. Firstly, it is its aim to provide, with the help of information technology, an accessible and transparent administration. It is among the earliest to implement the provisions of the Right To Information (RTI) Act. A number of services, for which citizens earlier had to go to government offices, are now available on computer and mobile phones. All rules are being reviewed to see what simplification can be carried out to make them user-friendly. The purpose is to minimize the exercise of discretion, and reduce the leg work of the citizens in dealing with the Administration.

Secondly, the Administration is working towards a higher rate of economic growth by encouraging economic activities which provide greater value addition such as knowledge based industries, high-end commercial activity, etc. Chandigarh already has the highest per capita income in the country.

Thirdly, the Administration is seeking to provide infrastructural services such as electricity supply, water supply, health & educational services and public transport which should compare with those in advanced countries.

Fourthly, the Administration is too conscious of the fact that the benefits of development do not reach everyone equally. Hence there is a special emphasis on reaching out to those whom development has by-passed. To achieve the aforementioned objectives, the Administration has initiated the following actions:

Providing Essential Public Services to the Poor

Education

Under Sarva Shiksha Abhiyan 10,400 children have been enrolled and the ambit of SSA is spreading its wings to cover all the out of school children/ drop-outs by the end of this financial year. To accomplish this task a house-hold survey has been inititated which will detect the out of school children. To encourage literacy amongst the illiterate adults, different schemes in collaboration with Govt. of India are being

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launched every year. Literacy centers are being opened in all the nook and corner of the city so that every adult can be educated and provided basic minimum educational qualification.

Health Care

- General Hospital Sector 16 has been upgraded to General Multi Speciality Hospital, so as to provide quality health care to the underprivileged.
- General Medical College & Hospital Sector 32 and General Multi Speciality Hospital Sector 16 would be looking after the primary and secondary health care needs.
- PGI ME&R would be upgraded to a world class Referral Hospital, where only complicated medical cases would be referred from the Region.
- A Complete study of the integration of the Health Care systems has been made by Director, PGI ME&R and the same has been sent to Government of India.
- This study has also identified the need for another Medical Education Centre, and a project for Rs 240 Cr has been prepared which will be implemented under the PPP model.
- A massive drive has been started to ensure that all children are given the benefit of our medical system and this drive will cover 1.5 lakh children.
- To tackle the problem of malnutrition, the whole mid-day meal scheme has been revamped, starting with Non recognized schools with 50000 students and gradually this scheme will be extended to the 104 Government schools as well.. The daily expenditure per child is Rs. 7 out of which the GOI subsidy component is Rs. 1.50. Some of our Institutes and Corporations have been given this responsibility of partially funding this endeavor.
- Tele-medicine project has been undertaken so as to integrate the IT services with the medical services.

Changing Employment Patterns

RGCTP has been conceived with an idea of creating employment and it is expected that once RGCTP is completed more than 25000 professionals would be working here. Already 4500 professionals are working in RGCTP at present. As a natural corollary to creation of a single job in the IT sector, 3 other indirect jobs per one job in IT sector are created and as such 15000 jobs were created indirectly.

Increasing Manufacturing Competitiveness

Roads

As a Long term measure, Chandigarh Administration has initiated the conversion of all bitumen roads into RCC roads. We are also using plastic waste in road construction and propose to rehabilitate our rag pickers in a planned colony. The Engineering Department will purchase plastic waste from the rag pickers and use in the construction of roads.

Power

- Long term tie ups have been made with all the Power Corporations, so as to ensure uninterrupted power supply to the City.
- Talks are going on with GAIL for a dedicated gas pipeline to the city for setting up of 250 MW Power plant.

In touch with foreign companies for harnessing the Solar energy, which will include setting up a plant for manufacture of Solar Photovoltaic Cells.

✎Power T & D losses have been brought down from 24% to 19%, which will be further brought down to 16%.

Rajiv Gandhi Chandigarh Technology Park

✎The Phase I of the RGCTP has been fully developed and it has been accorded the SEZ status. The same has been anchored by Infosys with a state of the art building ready for occupation. 15 other BTS sites have been allotted to prominent IT companies.

✎A state of the art Entrepreneurs Development Centre is coming up on a 1.5 acre plot at a cost of Rs 16 Cr, which will have plug n play facilities for upcoming entrepreneurs.

✎The Phase II of the RGCTP is under development and has also been accorded SEZ status by GOI. Wipro is the anchor company for Phase II, and Tech Mahindra, Bharti and eSys are the co-anchors.

✎DLF Info city has built up a state of art building on 12.5 acres plot having a covered area of 6,00,000 sq. ft for the use of IT companies. Big names like IBM Daksh, Infosys, Tech Mahindra, eSys , Net Solutions, Virsa Systems, etc have already starting functioning from this Centre.

✎Keeping in view the demand for more IT space Phase - III of RGCTP has been planned for which 270 Acres of land is to be acquired. The acquisition process has already begun.

✎Till now Rs. 700 Cr has already been invested in RGCTP. Once completed, the RGCTP will bring in an investment of Rs. 5000 crores, apart from bringing in 25000 IT professionals.

Developing Human Resources

✎A new state of the art Education City is coming up, which will have world class educational faculty and excellent infrastructure.

✎PEC-Punjab Engineering College which is an autonomous deemed University will be soon upgraded to IIT status, enabling delivery of more value added education.

✎Setting up a IIM level Management Institute and a branch of the National Institute of Design

✎Partnership with Private Sector for providing IT education to young students. Infosys has already launched the programme "Catch Them Young" whereby entrance test is conducted in all the schools of the city and the students selected are given free of cost inhouse training in Infosys. Intel Learn is providing IT education to teachers of the Govt schools, who will inturn provide IT education in the rural areas. The Administration is also in the process of upgrading select Government schools as Smart Schools, where IT programmes would be launched for the betterment of the school going children.

✎C-TOSS, a programme for upgrading the soft skills, for urban and rural areas enhancing employability of students under PPP model.

Protecting the Environment

✎Botanical Garden has been developed on 178 acres in village Sarangpur, which will consist of 15 botanical sections and other features to promote eco tourism.

✎3 Lakes, two along Patiala ki Rao and 1 along Sukhna Choe are being undertaken , as a part of environmental related initiatives.

✎A Project for augmentation of the Water Supply has been prepared and sent to GOI under JNNURM for approval. This will go a long way in contributing towards Rain water Harvesting, Ground Water Charging and also reducing our dependence on pumping out Ground water.

✎Tertiary Water treatment plan is also under implementation which will cater to the needs of supporting 2000 parks/gardens in the city.

Improving Rehabilitation and Resettlement Practices

✎To ensure harmonization between the old and new, we have activated the Chandigarh Perspective which has representatives of all professional and social sectors and includes members of Le Corbusier's initial team of eminent architects.
✎Comprehensive Plans are in various stages of implementation in the field of Housing especially to cater to the needs of the incoming IT professionals.
✎FAR has been standardized across the city.
✎Self Certification of Building Plans by registered Architects.
✎Promulgation of suitably modified building byelaws which have redressed long standing demand of majority of people. These byelaws also cover the conversion of Industrial Areas into Commercial Areas so that it can be upgraded to the same level as the new construction and this has had a very good response.
✎Rehabilitation of slum dwellers is being undertaken in a massive way, which involves construction of 18000 flats for which a complete new model has been worked out. Past experience has been that the slum dwellers had to take loans from the unorganized sector, who got into benami transactions, resulting in the flats going into wrong hands. Under the new model, the slum dwellers would be allotted flats on rent basis which shall be non-transferable. This project will also include a home for rehabilitation of 1000 destitute children. We are also creating facilities for 1000 mentally retarded children and 1000 crippled children, both of which will have a percentage of vacancies for adults and destitute.
✎Upgradation of Rehabilitation Colonies is proposed to be launched in a big way.

Improving Governance

Participation of Citizens in Decision Making

✎Chandigarh Administration has instituted a consultative process as broad based as possible involving people with varied expertise and experience in specialized subjects in public affairs so that aspirations of all sections of the society are reflected in governmental decisions. This initiative has successfully given a sense of participation to citizens in decision making processes making them seamless and transparent. Such initiatives include constitution of Administrator's Advisory Council including its sub groups on various issues of public concern, Chandigarh Perspective and Environmental Committee on Preservation of Ecology of Sukhna Lake.
✎
✎The burning issue of tackling corruption, needs our concentration. There needs to be a wide spread campaign, at the National and State levels with important functionaries of the Government at all levels introducing citizens charters and the Right to Information, which should be widely publicized to increase awareness amongst the public so that the general public is not forced to succumb to corrupt officials. Concrete steps, like deterrent, punishment, as also incentives for honest officials, would also be effective. The issue needs to be taken up at the national level, so that there is a concerted effort among all levels of Government to rid the system of corrupt officials in particular and corruption as a whole. The Chandigarh Administration has incorporated all these measures to ensure a transparent, responsive and completely accountable Government.

Regaining Agricultural Dynamism

To support the crop diversification programme undertaken by both Punjab & Haryana, we are in the final stages of setting up of Terminal Market for Fruit & Vegetables for which preliminary discussions have been held with the GOI. The Administration is also putting together a Milk Village so that all UT Villages are cleaned up. A modern dairy system for Chandigarh villages is being introduced. Expressions of Interest are being invited for setting up a high value product Milk Processing Plant.

Disparities and Divides

Chandigarh's plan priorities clearly focus on the target and objectives contained in the National Common Minimum Programme. We are aiming at three areas i.e. Human Development, Infrastructure, and Environment Upgradation and Protection. Despite facing many challenges, the Chandigarh Administration is constantly working towards improving the quality of life of the residents and preserving the unique character of the city of Chandigarh.

Development Infrastructure

Upgradation of Chandigarh Airport to international standards is under implementation with the first step of transfer of 8.5 acres land to the AAI. Chandigarh Administration will be allotting equal area to Air Force and Army in lieu of this land. This will augment the physical connectivity of Chandigarh to the world and fulfill a long term need and considerably enhance export potential of this Region.
As a Long term measure, Chandigarh Administration has initiated the conversion of all bitumen roads into RCC roads.
Nehru Centre for Performing Arts is being set up in Sector 34, Chandigarh which will also have the facility of an international convention centre and theatres.
Rejuvenation of the City Centre, Sector 17 is being undertaken by provision of multi level parking, relaying of the floors of main plaza, provisioning of tourist information centres etc.
Completion of Sub City Centre in Sector 34 will further boost the commercial activity of the city.
Botanical Garden is being developed on 178 acres in village Sarangpur, which will consist of 15 botanical sections and other features to promote eco tourism.
3 Lakes, two along Patiala ki Rao and 1 along Sukhna Choe are being undertaken , as a part of environmental related initiatives.
Second State Library is being completed in Sector 34.

"The seed of Chandigarh is well sown. It is for the citizens to see that the tree flourishes".
Mon Le Corbusier