

**Sustainable Forestry: Status and Rejuvenation Strategies****Introduction**

Forest resources are a major pathway for the survival of mankind. They are one of the most prominent sources of breathable clean air. Besides providing habitats for animals and livelihoods for humans, forests also assist in protection of watersheds, preventing the soil erosion and drastic changes in climate. According to World Wide Federation (WWF), over 2 million people rely on forests in terms of basic needs such as, shelter, water, fuel and food security. In addition, forests also support the livelihood of large proportion of global population, for example, nearly 13 million people are engaged in jobs provided by forests. Also, forests help in sustaining the ecological balance by acting as world's second largest storehouses of carbon. They also provide various other ecosystem-associated services that are critical to human welfare. Despite, all the aforementioned benefits of the forests, insubstantial efforts are being made to prevent their depletion.

The term 'Forest Cover' technically means, tree patches having canopy density more than 10% and an area of 1 ha or more in size, irrespective of their legal status and species composition. As per the assessment of Forest Survey of India (FSI), the total forest cover of India is 7,12,249 sq km which is 21.67% of the total geographic area of the country. Further, in terms of canopy density classes, area covered by Very Dense Forest (VDF) is 99,278 sq km (3.02%), Moderately Dense Forest (MDF) is 3,08,472 sq km (9.39%) and Other Forest (OF) is 3,04,499 sq km. (9.26%) (ISFR 2019). As per ISFR (2019), the total forest cover of Chandigarh increased from 47.54 sq. km. to 48.01 sq. km. i.e., 0.47 sq.km., within the time duration of 2017 to 2019.

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Towards Greening the City: Chandigarh

Including 25.98 sq. km of hilly area, also known as 'Sukhna Wildlife Sanctuary', the total geographical area of U.T. Chandigarh is 139.98 sq. km. It also includes another wildlife sanctuary, which is located in Sector-21 and is called as 'City Bird Sanctuary'.

Greening is an integral part of Urban Planning in Chandigarh. A number of beautiful avenues, with varied tree diversity, are consistently constructed, comprising wide green belts with species rich vegetation. No wonder, Chandigarh is recognized all over the nation, for its greenery and effective execution of green initiatives by the Administration. Despite relentless efforts by the executing agency, commendable efforts have also been put forward by the residents of Chandigarh, students, researchers and the NGO's.

Keeping pace with managing rapid urbanization, Chandigarh has inculcated principles of Urban forestry wherein, management of tree population is undertaken in order to improve the urban environment. Description, about some of the parks covered under the ambit of Urban Forestry in Chandigarh, is mentioned as following.



City forest also called as Nagar Van was established under Nagar Van Udyan Yojana. It is spread over 100 hectares of land located near the serene Sukhna lake. It is equipped with meditation huts, rain shelters, sitting benches, and nature trails



City Bird Sanctuary or Parrot Bird Sanctuary, Chandigarh is a bird sanctuary situated in Sector 21. It serves as a primary habitat for parrots.



Butterfly Park is a beautiful landscaped area spread over an area of 7 hectares, attracting over more than 35 different species of butterfly. This park is located at Sector-26, Chandigarh



The Shiwalik Arboretum is spread over an area of 11.15 acres of land and is located at Sector-26, Chandigarh. With the forest Department's determination, this barren land filled with industrial waste was converted into a green belt.



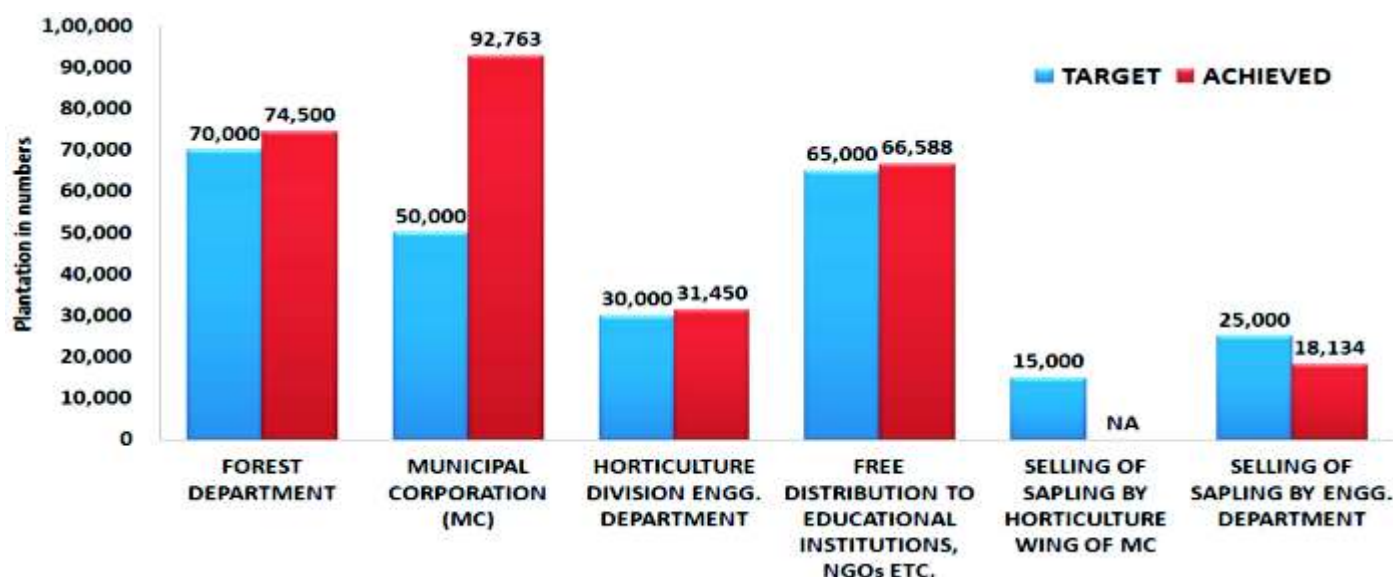
Peacock park is developed over a green area of 5.7 acre land located at Sector-39, Chandigarh. This lush green area is a potential habitat for Peafowls.



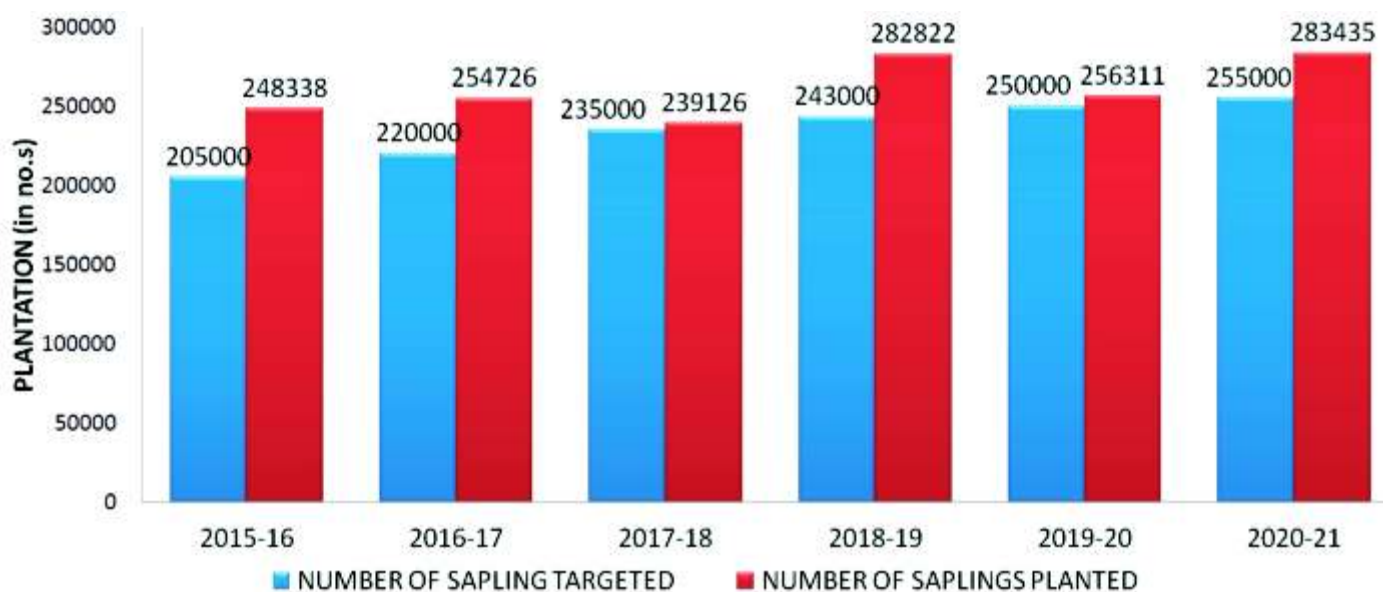
The total area of City Forest near IT park is 12.35 acre. This stretch of barren land was eventually converted to a green belt by Forest Department's initiatives and dedication

Plantation Targets and Achievements by Different Departments of Chandigarh

The Greening Chandigarh Task Group was constituted by the UT administration, wherein, the first greening action plan came into being in 2001. This not only acted as a guiding tool for a number of greening agencies to carry forward the urge to conserve the nature's forest resources, but also abide by the principles of sustainability. Owing to the increased anthropogenic pressure, this group also suggests various mitigation measures and strategies. It also helps to monitor and regulate the various targets set by different departments of Chandigarh, in terms of plantation of trees. The plantation targets for the year 2020-21 and its comparative analysis with the outcomes of last five years, is depicted in figures below. As seen in the figures, in 2020, the target for planting the saplings was 2,55,000, instead 2,83,435 saplings were planted.



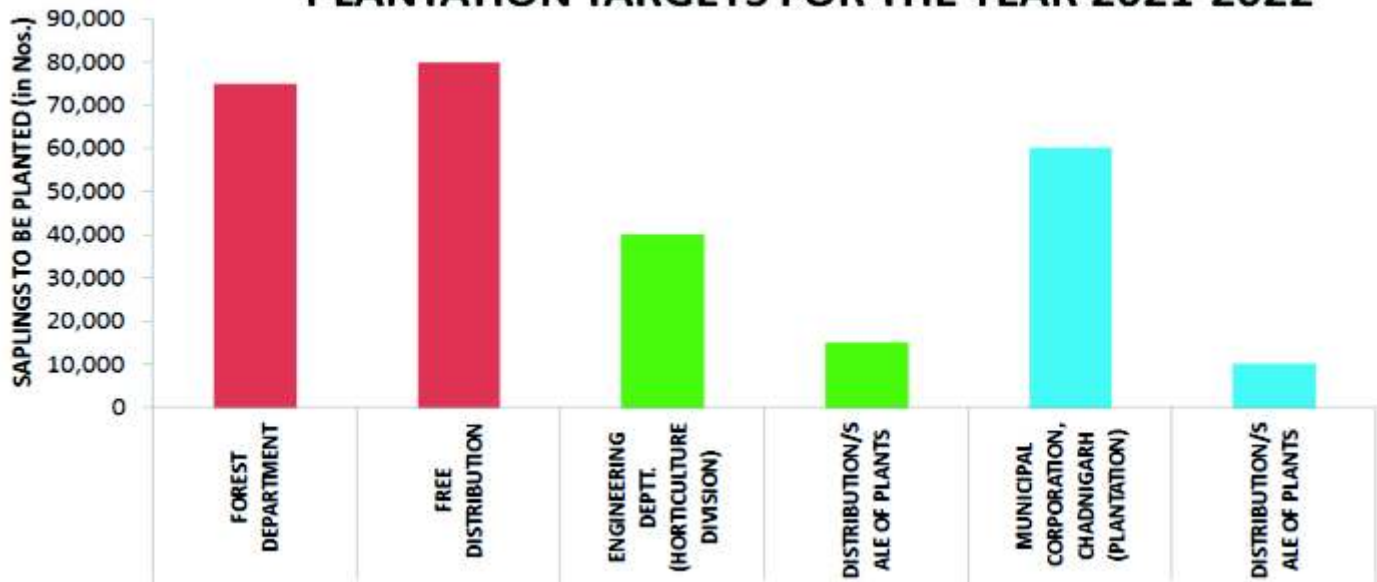
Source: Deputy Conservator of Forest, U.T., Chandigarh



Source: Deputy Conservator of Forest, U.T., Chandigarh



PLANTATION TARGETS FOR THE YEAR 2021-2022



Source: Greening Action Plan 2021-22

Plantation Targets for the year 2020-21 includes free distribution of 65000 seedlings of Arjun, Mango, Neem, Peepal, Kusum, Kachnar and Amaltas, by forest department to various educational institutions, NGO's, RWA's, local residents, farmers, religious institutes and other organizations.

A total of 40,000 fruits and ornamental trees are targetted to be sold by the horticulture wing of the MC and Engineering Department. This step was required not only to educate the residents but also to instill a feeling of belongingness towards mother earth and to forward the legacy of afforestation.

Selfless Initiatives

One of the many selfless grand initiatives, taken by the Department of Forest & Wildlife, Chandigarh Administration, is the scheme entitling, "Free distribution of plants/saplings to the general public" without any tedious application filling process. In context to the same, a vehicle, specifically to distribute free saplings was launched by the Chief Conservator of Forest. The perspective was to encourage and engage people in plantation activities by supplying free tree saplings, of their choice, to their doorstep. The initiative was called 'Forest Department at your Doorsteps.'





Administrative Initiatives

Some of the initiatives taken by the Chandigarh administration to sensitize people and residents towards the importance of conservation and preservation are as follows-

- In order to protect our tree wealth and to sustain the legacy of protection, preservation and conservation of green spaces in Chandigarh, as per order No.: 107, dated 21/12/2017, a total of 31 number of trees of Chandigarh have been notified as “Heritage Trees of Chandigarh”. In addition Department of Tourism, Chandigarh, also plans and organizes heritage walks along these trees to aware the citizens about these heritage trees.
- To create awareness among the youths and residents of Chandigarh, ‘Nature & Wildlife Awareness Treks’ are organized every month by Forest Department at Nepli Forest. This is a great effort to instill a feeling to maintain and educate the youth and tourists about conservation of flora and fauna.
- Chandigarh is a hub not only for national and international tourists, but the famous ‘Sukhna Wetland’. It is an excellent habitat for the avian and aquatic birds. Further, to aware the general public about avian species diversity and the need for conservation, a ‘Nature Bird Walk’ in the Bird Park area is organized on monthly basis in association with the Chandigarh Bird Club.
- There is an online platform called ‘Digital Forest Flora’ wherein intrigued searches about any plant species can be carried out.
- As per the office Order No.3, dated 18th April 2017, the pruning of trees upto 90 cm of girth class in UT Chandigarh will be carried out in a scientific and symmetrical way instead of just carrying out pruning casually on one side.
- There is a help line number for any query related to plant pathology or treatment i.e. 98724-21567.
- Chandigarh Administration has also established a Botanical Garden near village Sarangpur, Lahora and Dhanas. The total land acquired for the establishment of these Botanical Gardens is 176 acres. Here multiple actions are taken such as raising & maintenance of nursery, raising of plantations (new), raising of shrubs, creation of lawns, land leveling, etc.
- There is an App entitled, ‘Wildlife Rescue’, developed by Department of Forest & Wildlife, Chandigarh Administration, with an aim to rehabilitate wildlife in parks, wildlife centuries, reserved or protected forest in urban and rural environments. This app disseminates information to the concerned authorities with respect to injured and displaced animals. This app can be downloaded by scanning the QR code provided below :





Reserve Forests of Chandigarh

As per Indian Forest Act, 1927, the power to reserve forest is such that the State Government may constitute any forest-land or waste-land which is the property of Government, or over which the Government has proprietary rights.

After the issue of a gazetted notification, under section 4, no right shall be acquired in or over the land comprised in such notification, except by succession or under a grant or contract in writing made or entered into by or on behalf of the Government or some person in whom such right was vested when the notification was issued; and no fresh clearings for cultivation or for any other purpose shall be made in such land except in accordance with such rules as may be made by the State Government in this behalf. In toto, Reserve forests are under the direct supervision of the government and no public entry is allowed for collection of timber or grazing of cattle.

As per India State of Forest Report (ISFR-2019), forest cover, Inside and Outside Reserve Forest Areas of Chandigarh, is spread over an area of 8.27 sq km and 13.76 sq. km, respectively, as shown in the Figure. These RFAs comprise of Very Dense Forest (VDF), Moderate Dense Forest (MDF) and Other Forest (OF).



Source: ISFR, 2019

Efforts adopted to Improve Forest and Green Cover

Total forest area in U.T.Chandigarh is 3289.77 hectares and its distribution is shown in the following table :

Sukhna Wildlife Sanctuary	2598.48
Sukhna Cho Reserve Forest	395.92
Lake Reserves Forest	153.9
Patiali-ki-Rao Forests	136.47
Forest Area at Brick Kiln Manimajra	5
Total	3289.77



Source: Department of Forest & Wildlife UT Administration

The Department is taking up multifarious activities for improving the green cover of U.T. Chandigarh, preserving and protecting the Wildlife, creating awareness among the people of Chandigarh about the protection of flora and fauna & preservation & restoration of bio-diversity. To increase green cover in U.T. Chandigarh, “Annual Greening Chandigarh Action Plan” is being prepared and released for implementation by all greening departments.

Other than taking initiatives on the educational and awareness front, the department is also performing multi-disciplinary activities for improving the green cover of Chandigarh. Some of the working schemes are-

- **Enrichment Plantation in Sukhna Catchment-** Objectives of this scheme are plantation of fruit bearing species in dedicated plantation spots in Sukhna Wildlife Sanctuary. In addition, multiple soil conservation works like silt retention dams, check dams, construction of grade stabilizers, opening of choe bed and live hedge plantations are undertaken.
- **Conservation Initiatives-** Under this, initiatives like ‘Chain link fencing’ are being carried out around forest area to avoid encroachment. The works like Biodiversity enrichment plantation in Lake Reserve Forest, Patiala-ki-Rao & Sukhna choe forests and removal of lantana-parthenium in forest area are being undertaken. Apart from maintaining Lake reserve forest, Sukhna choe reserve forest and Patiala-ki-Rao forests, department is maintaining plantations over 100 hectares of land in southern sectors & brick kiln area.
- **Collecting and Preserving Mango Seeds-** Another innovative initiative undertaken by the Forest Department is the collection of discarded Mango seeds, wherein these mango seeds need to be put into seed boxes which will be preserved and nurtured by the department and will be planted next year during the plantation drive. These bins are placed near village: Sarangpur, at the various Botanical Gardens of Chandigarh.
- **Gap Filing-** In this case, Municipal Corporation, Chandigarh, execute the plantation activities along the roads and green belts around the city.
- **Other strategies-** These include, proper monitoring mechanisms to ensure greater survival percentage of existing saplings planted. In addition to this, proper site selection, choice of species as per climatic and soil condition, protection from grazing and post plantation care.

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✿ **MEDICINAL PLANTS** ✿

The word 'Herb' has been derived from a Latin word, 'Herba' and it refers to any part of the plant like fruit, seed, stem, bark, flower, root as well as non-woody plant. Medicinal plants have been used in healthcare since time immemorial. Studies have been carried out globally to verify their efficacy and resulted in the production of many plant-based medicines. As per WHO, an estimated 80% of people worldwide rely on herbal medicines for primary healthcare. Medicinal plants thus play a vital role in disease prevention and therefore, their promotion and use, fit into all existing prevention strategies. A conscious effort need to be made to properly identify, recognize and position medicinal plants in the design and implementation of working frameworks. In view of that, some of the common medicinal plants grown in Chandigarh, are as below-

S.No	Medicinal Plant	Botanical Name	Part Used	Medicinal Use
1	Bhringraj	Eclipta Alba	Seed, Whole	Anti-inflammatory, Hair tonic, Digestive
2	Bael	Aegle Marmelos	Fruit, Bark	Diarrhoea, Dysentery, Constipation
3	Dhak	Butea Monosperma	Flower Bark	Piles, Tumor, Menstrual disorders
4	Neem	Azardichata indica	Rhizome	Sedative, Hypertension, Epilepsy
5	Ghrit Jumari	Aloe Vera	Leaves	Laxative, Wound Healing, Ulcers
6	Stavari	Asparagus racemosus	Tuber, Root	Weakness, Cough, fatigue
7	Stevia	Stevia rebaudiana	Leaf	Sugar substitute
8	Tulsi	Ocimum sanctum	Leaves, Seeds	Bronchitis, Cold, Cough
9	Barna	Crateva adansonil	Leaf, Root	Demulcent and Tonic
10	Mandukparni	Centella asiatica	Whole plant	Jaundice, Diarrhoea, Anti-inflammatory

Source: Greening Action Plan 2020-21

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Note : While every care has been taken in compilation of the information available for this newsletter. However, readers must make thorough confirmation/enquiries at their own level before acting upon any data/information provided to the readers. Any discrepancy brought in the notice of ENVIS CENTRE, Chandigarh will be highly appreciated.

