INTRODUCTION

A) CHANDIGARH AND ITS ENVIRONMENT:

Chandigarh - the 'City beautiful' designed by famous French Architect, Le Carbusier is known for its unique architecture and well planned landscaping. It derives its name from a temple 'Chandi Mandir' located in the vicinity of the site selected for the city. It is a modern city housing the Capital of two States Punjab and Haryana and the seat of 'Union Territory' Administration. Bounded on two sides by two seasonal rivulets, the northern edge of the city is the Capital Complex against the panoramic backdrop of the Shivalik hills. A harmonious blend of buildings, trees and other landscape elements, with the beautiful backdrop of the Shivalik hills, enhances its aesthetic value. The most fascinating feature of the City's landscaping is perhaps the Tree plantation along avenues, open spaces, green belts and around building complexes. A number of beautiful avenues with conspicuous tree species, well wooded forests along the periphery of city, 'Sukhna Lake' against the backdrop of Lake Reserve Forests, green belts running across the length and breadth of the city and a beautiful 'Sukhna Wildlife Sanctuary' on its periphery, further enhance the ecological, environmental and aesthetic richness of the city.

GREENING CHANDIGARH ACTION PLAN 2008
Chandigarh Administration

Geographical area of U.T.Chandigarh is 114 sq. kms. and another 25.42 sq. km. of hilly area which has been declared as 'Sukhna Wildlife Sanctuary' was acquired for soil conservation works. The forest cover in U.T. (as per S.F.R. 2003) is 41.42 sq. kms. which forms 29.6% of its total landmass. Another 8 sq. kms. area is under tree cover. Thus, the total green cover (forest cover + tree cover) of Chandigarh as per F.S.I. report 'SFR-2003' is 49.42 sq. kms. which form 35.3% of its total geographical area. As per SFR-2001, the total green cover of U.T. Chandigarh was 36 sq. kms. Thus, there is net increase of 13.42 sq. kms. in the green cover of Chandigarh.

The galloping increase in population and rapid increase in the number of vehicles have led to a rising trend in pollution levels in U.T. Chandigarh. The population of the city is over 10.0 lakhs and the number of vehicles including the floating vehicles is more than 7.5 lakhs (the total registered vehicles in Chandigarh is about 6.5 lakhs). The sharp increase in number of vehicles from 2,58,843 in 1991 to about 6.5 lakhs in 2007 is a matter of concern and is responsible for the rising trend in air pollution. As compared to neighbouring cities/towns of Punjab and Haryana, the quality of 'ambient air' today in Chandigarh is better. SO_2 and NO_X levels are well within permissible limits. However SPM (Suspended particulate matter) levels at times cross the permissible limits. The annual average dust levels are more than the permissible limit of

140 microgram per cubic meter. The increase in SPM level and dust level is increasing the occurrence of respiratory diseases in the city. The noise levels on roads like Madhya Marg, Dakshin Marg, Jan Marg, Himalaya Marg are more than the permissible limits of 65 dB. Similarly in some residential areas, the noise levels are above the permissible limits of 55 dB. Constant noise pollution can lead to mental disorder and emotional disturbances besides other medical problems. Thus, increase in pollution level not only degrades our soil, water and air, but also affects our lives to an extent that these problems begin to be reflected in health statistics.

ROLE OF THE FORESTS IN AMELIORATION OF THE ENVIRONMENT:

Rising pollution level and degrading environment of the city particularly by vehicular pollution highlight the need for remedial steps to combat pollution. Though the best way to reduce pollution at source is by adoption of clean technology and clean fuel, proper maintenance of roads & vehicles, maximum use of bicycles, strict enforcement of Air (Prevention and Control of Pollution) Act, 1981, Water (Prevention and Control of Pollution) Act, 1974 and the Environment (Protection) Act, 1986 etc., yet another effective way to reduce air and noise pollution is through a well planned and realistic strategy for afforestation. Apart from giving shade, aesthetic beauty, recreational spots and playing host to a wide variety of birds and

insects, the forests and trees play an important role in amelioration of environment due to their tremendous potential to act as :

1. Dust Collector due to their dust trapping ability,
2. Effective carbon sink,
3. Green lungs of the city,
4. Supplier of much needed vital oxygen,
5. Nature's air conditioners as well as purifier of air,
6. Soil and water conserver,
7. Potential areas for conservation of bio-diversity especially in natural features like Sukhna Wildlife Sanctuary, Lake Forest and Leisure Valley.

Plants play an important role in both, reducing the environmental pollution load as well as serve as pollution indicator. Vegetal cover is, therefore, a pollution scavenger as it absorbs gases and gathers particulate matter through leaves having large surface areas. The green portion of the trees and plants has the capacity to filter dust, smoke and other pollutants in the air. Some species like Ficus, Mango, Neem etc. also act as good dust collectors. Studies show that one well grown Pipal tree (162 sq.metre crown area) can absorb 2252 kg. of carbon dioxide from the atmosphere and give out 1712 kg. of oxygen in one hour.

Well laid out gardens and parks with selected ornamental and shady trees provide good recreational spots and enhance the beauty of the city.

Well designed green belts prove to be very effective wind break and help in soothing the microclimate of the surroundings.

C) STRATEGY TO IMPROVE THE FOREST AND GREEN COVER:

A need based appropriate model dovetailing environmental considerations will have to be adopted by all Greening Agencies in their plantation drives. The selection and quality of species play most important role in the success of greening and improving the survival percentage of the plantations. Therefore, the selection of species has to be judicious for which a number of indicators have been short-listed as indicated below:-

- Location of plantation site,
- Site conditions like, soil, ground water table,
- Climatic conditions like rainfall, temperature,
- Ornamental and aesthetic requirement,
- Environmental considerations like pollution abatement.

To ensure greater survival percentage of saplings planted, ***salient requirements*** have been identified which are as follows:-

- Proper identification of area requiring afforestation,
- Selection/choice of species,
- Raising of healthy seedlings,
- Planting of healthy and tall saplings,

- Area treatment according to its edaphic and climatic condition,
- Protection from grazing by providing tree guards or proper fencing,
- Post plantation care particularly the maintenance and watering upto three years,
- Monitoring and concurrent evaluation,
- Soil and water conservation including water harvesting measures.

It has to be recognised clearly by all greening agencies that every effort should be made for horizontal expansion of the forest cover/ green cover in & around Chandigarh. Simultaneously, all efforts have to be made as well for vertical expansion of existing green areas by way of developing them into multi-strata forest to increase efficiency and effectiveness of forest areas as carbon sink and green lungs of the city.

Potential areas available for greening during 2008 are:-

I) Plantation in the Catchment of Sukhna Lake:-

Plantation sites:

1. Near confluence point of Sukhna choe and Kansal choe, there is around 50 hactares of land available for plantation. This area is adjoining the boundary between U.T. Chandigarh and Haryana.
2. 50 acres of agriculture land of Kaimbwala village just behind the Lake Reserve Forests which is under the process of acquisition by Land Acquisition Officer.
3. Hill tops & slopes of Sukhna Wildlife Sanctuary may also be enriched with green cover by seed sowing in patches by contour trenching and trench-cum-ridge method.
4. Plantation of stem cuttings of soil conserving species like Arundo-donex along choe-banks to reduce erosion of choe banks by rain water run off.
5. Plantation of indigenous variety of trees & shrubs on gentle slopes & plain area of Wildlife sanctuary.

II) Enrichment planting in the reserve forest area:

There are following three Reserve Forests around the city:-

1) Sukhna Lake Reserve Forest,
2) Sukhna Choe Reserve Forest
3) Patiala-ki-Rao Reserve Forest.

These three Reserve Forests cover three sides of Chandigarh city. There is scope for densification of this forest land which spread over 700 hactares.

III) **Plantation within the city**:

Location

1. Land along N-choe passing through Sectors 42, 53, 52 and 51 and land between Hotel Management Institute and Beant Singh Memorial.
2. Area between Karsan Colony, Railway line and road leading to BRD Air Force
3. Land along Uttar Marg on northern side of it including Rajendra Park
4. Land in the west of Sector 25 which is earmarked for Dharna site
5. Land along Dakshin Marg in Sector-21
6. Land near office of Bhaskar newspaper and near Cremation ground in Sector-25
7. Land on the boundary of Mohali and Chandigarh available in Sectors 48 & 49.

8. Area along outer Dakshin Marg (Vikas Marg) available in Sectors 39, 40, 51 & 55.

9. Area between Railway track, Madhya Marg and road leading to I.T. Park.

10. Plantation of trees and shrubs in Parks and greenbelts under the jurisdiction of Municipal Corporation.

11. Vacancy filling by planting along the roads, green belts etc. by Municipal Corporation and Engineering Department.

12. Development of Parks & green belts in Sectors from 50-56

IV) Plantation in Schools, Colleges, Offices and residential houses and other vacant spaces:

A massive campaign for plantations on private lands, complexes of Schools, Colleges, University, Hospitals, Police Lines and Residential Complexes and offices will be undertaken in collaboration with students, Resident Welfare Associations, Market Associations, Environmental N.G.O.'s etc. Every unutilized & abandoned patch of land will thus be brought under tree plantations.