

06 green buildings and spreading green cover

greening the work place

Delhi has decided to adopt the Green Buildings technology across all its major construction agencies. The green building concept emphasizes sustainable site planning, design and construction of buildings to achieve maximum harmony with nature and at the same time reduce negative environmental effects.

IN 2009, DELHI RECEIVED INDIRA PRIYADARSHINI VRIKSHA MITRA AWARDS FROM MINISTRY OF ENVIRONMENT AND FORESTS, GOVT. OF INDIA FOR INCREASING AND MAINTAINING THE GREEN COVER IN DELHI.



Green CWG Games – Thyagaraj Stadium.



The Bureau of Energy Efficiency has developed an Energy Conservation Building Code (ECBC), which has been made mandatory for new Government buildings. Green Building Code in conjunction with ECBC has also been made mandatory for all new Government Buildings in Delhi. One of the finest examples of this is the Thyagaraj Sport Complex which was constructed for the Commonwealth Games 2010 at Delhi.

Some of the main environment friendly features in Thyagaraj Stadium are as under: -

Water Efficiency

- Water efficient landscaping (Drip irrigation).
- Use of 100% recycled water for irrigation of green areas resulting in reduction of potable water.
- Water efficient chillers to reduce water requirement for cooling towers.
- Use of Water Efficient Systems, Fixtures Fittings.

- Rain water harvesting for replenishment of ground water table.
- Waste Water Treatment & Recycling.

Non Conventional Energy Technology

- The waste heat from the 3.5MW Turbine is being used for Air-conditioning (1600 Tonnes Plant).

Alternative Fuel for Power Generation

- Gas Turbine of 3.5MW is used for power generation instead of Diesel fed generators. The entire power-backup is through environment friendly means.

Eco-friendly Materials used in Construction

- Low embodied energy materials
- Local materials
- Recyclable materials
- Low water intensive materials
- Paints with low VOC
- Certified wood
- Low U-value materials
- Some of the low embodied construction materials produced with

A green building is eco-friendly, conserves energy and water and circulates pure air.



energy efficient process used in the project are:

- Fly ash lime bricks for walls
- Recycled rubber flooring in public places
- Paints, sealants and adhesives containing no or low volatile organic chemical

Indoor Environment Quality

- Declaration of the entire building as Non Smoking Area/Creation of designated smoking rooms.
- Flush out before occupancy and replacement of AHU filters.
- Installation of CO2 sensors to monitor indoor air quality.
- The reverence standards achieved are AHRAE 90.1 2004 indoor air quality

and ventilation standards.

- Maximize use of Natural Day lighting and outdoor view to the occupants.

Ozone Depletion

- The chillers used are CFC and HCFC free and work on environment friendly refrigerants.

Use of Renewable Energy Sources Solar Energy

- Generation of 650 KVA electricity from Solar panels on the roof. (1 MW Solar power plant)
- The electricity generated from solar energy contributes to around 18% of the 100% standby arrangement during the mega events in the stadium.



A Green eco-friendly building: New Civic Centre of Municipal Corporation of Delhi.



The city of Delhi is in the process of finalizing a Solar Power Policy. A 1 MW grid connected roof top Solar Power Generation Plant has been installed at Keshav Puram by North Delhi Power Limited. The plant consists of more than 5500 Solar PV Panels.

The expansion of Integrated Terminals for Delhi International Airport Limited adopted the green building concept. Delhi International Airport Limited (DIAL) is mandated to operate, develop, design, construct, upgrade, modernize, finance & manage the IGI Airport for 30 years. 4430 Mtrs of run ways, 18 KM of taxiways, 4,80,000 SQM of area have been constructed.

CDM potential exists in the use of natural lighting, Energy efficiency, water conservation, use of solar energy, integrated waste management, and adoption of Green Building Technologies etc. The new airport terminal building construction & runway construction has a lot of CDM potential.

A number of buildings including four big hospitals, municipal corporation's civic centre of 28 floors, Commonwealth Games Village and the new headquarter building of the Delhi's Power Transmission Company have been constructed along the green buildings concept.

Spreading Green Cover

Delhi is the one of greenest Capital cities of the world because of its creative hard work, mass social mobilization, awareness campaigns, dedicated public action and the strong political and administrative will of the governing authorities. Active efforts by the Government have led to the expansion in forest cover of the city from 26 sq. km to over 300 square kilometers in the past 10 years.

CWG 2010 has led to vast beautification of the CWG venues, roundabouts, avenues and central verges, road dividers, flyovers etc. through potted plants and mosaic culture technology. The forests of Delhi are home to a rich

O Man! My Friend! In those blistering sweaty summer evenings,
I grant you the Ultimate harmony, with my cool gentle breeze.



variety of flora and fauna. 12.91 lakh trees were planted in the year 2010-11 adding to Delhi's green efforts. 31 city forests have been created earlier and 9 entirely new city forests have been developed during 2010-11, making a total of 40 city forests developed in Delhi.

Multiple stake holders viz, Eco-clubs, Resident Welfare Associations (RWAs), Market Traders Associations (MTAs), and Industrial Associations are involved in the tree plantations in their respective areas. Places such as parks and gardens, educational institutions, hospitals, bus stations, road side and central verges, along railway lines, railway stations, along the drains, village community lands and villages, bunds of agricultural lands, farm lands etc were also selected for plantation in a coordinated efforts with the concerned agencies.

Initiatives such as free distribution of saplings through 13 Departmental nurseries and through the nurseries of other greening agencies were also taken.

Novel approach such as free distribution through petrol pumps and Mother Dairy milk vending booths during monsoon season yielded fruitful results.

6.88 lakh saplings were distributed free of cost in the year 2010.

The abandoned Bhatti mines in the outskirts of Delhi were reclaimed and refurbished with half a million trees and today the entire 2500 acres is resplendent with a beautiful green cover where animals and insects are finding their homes in large numbers. It has become a renewed wild life sanctuary and waste lands have been converted into verdant green space.

Delhi received Indira Priyadarshini Vriksha Mitra award by Ministry of Environment and Forests, Government of India in the year 2009 for increasing the green cover of the city.

The forestry plantation project covers approximately 5000 acres in Deramandi, Bhatti Mines, & Asola wild life Sanctuary

Harvest Rain water - Replenish Mother Nature for Posterity.



in Delhi. Eco-Task Force and Dept. of Forests cover these areas under plantation.

For expansion of existing Climate Change Agenda for Delhi - 2009-12, State Action Plan for Climate Change till 2030 is in process of preparation for various Environmental sectors.