

Environmental Issues and its Management In Delhi



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Delhi at a Glance

- Geographical Area - 1483 sq km
- Current Population - 16.3 million
- Expected population by year 2021 - 22 million (approx.)
- Population density -10,000 people per Sq. Km.
- Migrant Population - About 0.5 million every year
- Industries -Thermal Power Plants and Small Scale Industries.

➤ Vehicles -

- 1989 (15 lakh), 1999 (30 lakh), 2002 (35.5 lakh), 2007 (50 lakh)
- 5.4 million (One vehicle for every 3 households)
- Total vehicular population of Delhi has exceeded the combined figures for Mumbai, Chennai and Kolkata.
- Annual growth rate of vehicles in Delhi is 8 – 10 %.
- Approximate 1000 vehicles are being registered per day.

EXPANDING CITIES

- In 1800, 2% of world's population lived in cities. Currently, it is 50% and heading towards 60% by 2030. Urban populations are expected to grow by 2 billion people within 30 years.
- Cities in developing countries are expected to absorb 95 percent of this increase.
- Over, 1 billion people live in urban slums. In the least developed nations, slums house 70% of the urban population.
- Droughts and floods in rural areas have increased migration to cities. By 2030, if nothing is done, slum population will reach 2 billion.

AIR POLLUTION

➤ Sources of Air Pollution

- Vehicular Emissions
- Industrial Activities
- Diesel Generator Sets etc

➤ Critical Pollutants

- Suspended Particulate Matter (SPM)
- Respirable Suspended Particulate Matter (RSPM)
- Sulphur Dioxide (SO₂)
- Oxides of Nitrogen(NO_x)
- Carbon Monoxide (CO)

Ambient Air Quality Status of Delhi

- The Sulphur Dioxide levels have reduced from 19 micrograms in 1999 to about 7 in 2007.
- The Carbon Monoxide concentration at ITO (Traffic Intersection) has fallen from 4241 micrograms in 1999 to 2338 in 2007.
- Levels of SPM, RSPM and NO_x have remained more or less constant and have shown a slight incline in 2007.
- Concentration of other pollutants like Benzene and lead have also registered a marked decline.

Results of Ambient Air Quality Monitoring in Delhi

- DPCC conducts monthly ambient air quality monitoring at 40 locations in Delhi since April 2008.
- Concentration of Suspended Particulate Matter (SPM) has decreased at 37 locations in September 2008 as compared to April 2008.
- Concentration of RSPM has decreased at 33 locations in September 2008 as compared to April 2008
- Concentration of Oxides of Nitrogen (NO_x) has decreased at 34 locations in September 2008 as compared to April 2008.
- SO₂, NO_x and CO levels have been observed within the prescribed standard at all the locations

Steps taken to ensure control of air pollution

- More than 15 year old commercial / transport vehicles have been phased out.
- Entire public transport has switched over to CNG fuel mode (appx. 130,000).
- Implementation of Bharat Stage III/Euro-III emission norms
- Efforts are being made to reduce Sulphur content in Diesel upto 50 PPM by the year 2010 and also to use 350 PPM Sulphur Diesel within a radius of 500 Km of Delhi.

- 500 Pollution under control Certificates are being linked on the net so that daily pollution check reports can be downloaded, & monitoring can be done.
- Creation of Air Ambience Fund, for levying fee on the sale of diesel at the rate of Re. 0.25 per litre in the NCT of Delhi. The Air Ambience fund of Rs. 20 Crores collected so far is being utilized for refund of VAT for conversion of Diesel vehicles to CNG.
- VAT refund of 12.5% also allowed for conversion of vehicles to clean fuel like CNG.
- Use of Battery operated Vehicles having zero tailpipe emissions are being given concessions upto 30% of the base price of the vehicles.

- Whole of Delhi declared as air pollution control area under Air Act.
- Stringent emission norms for industries and thermal power stations
- Installation of Emission Control System in 500 air polluting firms.
- Burning of leaves/plastics is prohibited.
- Use of 5 KVA or more capacity of DG set is prohibited from 10 PM to 6AM except in group housing societies. Also, acoustic enclosure has been made mandatory in DG sets
- 6000 cell phone towers and 600 Nursing Homes have been asked to provide acoustic enclosure and proper stack height in DG sets.

THERMAL POWER PLANTS

- Delhi has 3 coal based thermal power plants & 2 gas based thermal power plants
- Air Pollution Control Measures in Thermal Power Plants:
 - Installation of additional Electro Static Precipitators (ESPs) in IP power to reduce particulate Emissions.
 - Use of beneficiated coal having ash content less than 34%.
 - Indra Prastha and Rajghat power plants asked to use blended coal with ash content less than 10% to further reduce particulate emissions.

WATER POLLUTION

➤ **Source of water pollution is :**

- Domestic Sewage
- Industrial Wastewater
- Dumping of Garbage and disposable Puja material into drains

➤ **Critical Pollutants-**

- pH (indicates acidic, neutral and alkaline)
- Dissolved Oxygen (DO)
- Biological Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Total Suspended Solids (TSS)

Sewage Treatment

1. Total wastewater generation in Delhi -- 750 MGD (Approx)
2. Total installed capacity of the STPs -- 512 MGD
3. Sewage being treated -- 360 MGD
4. Capacity utilization -- 70.3 %
5. Settled / silted sewers need to be rehabilitated by DJB which are being done in a phased manner to maximise capacity utilization

Industrial Wastewater Treatment

- Total Industrial Wastewater generation is 40 MGD
- All water polluting industries made to install Effluent Treatment Plants (ETPs)
- Total No. of CETPs Installed : 11 Nos.
- Total No. of CETPs under construction : 3 Nos.

Measures taken to reduce water pollution

- DPCC conducts periodical water quality monitoring of river Yamuna, drains, STP and CETP.
- Since 14.10.2003, 1075 Non-Compliant Hazardous Waste generating Industries closed down.
- More than 1000 Polluting industries recommended for closure in residential areas.
- Interceptor sewer concept is being planned by DJB on 3 major drains (Najafgarh, Supplementary and Shahadra drains) to keep Yamuna clean.
- Use of degradable plastic bags made mandatory for the following sectors: Hospitals of 100 beds or more; 5 star and 4 star hotels ; Restaurants with 50 seats or above; Fruits and vegetable outlets of Mother Dairy; Liquor vends; Shopping malls.

- Amendment has been carried out in the Act to increase the thickness of plastic bags to 40 microns and to ensure that only bio-degradable plastic bags are used in all shopping centres and main markets as directed by the Hon'ble High Court.
- 175 Water Bodies are being revived and taken up for greening.

NOISE POLLUTION

- The major sources are industrial, aircraft, transportation and diesel generator sets.
- Government of Delhi has notified an area of 100 meters, around the hospitals with 100 beds or more, educational institutions with 1000 students or more, all court complexes, all Govt. Office complexes as Silence Areas/Zones.
- Acoustic enclosure is mandatory for Diesel Generator sets.
- As per Hon'ble LG's order, Generator sets of more than 5 KVA capacity are banned between 10.00 PM to 6.00AM, except for group housing societies

NOISE POLLUTION (CONTD....)

- DPCC conducts monthly ambient Noise Level monitoring at 40 locations in Delhi.
- The results of ambient noise level monitoring in September 2008 indicate that the Noise Levels ranged from 59.0 to 65.0 dB(A) in Day Time while the night time ranged was 51.8 to 59.2 dB(A), which are just in excess of the norms.

WASTE MANAGEMENT

Municipal Solid Waste

- 7000 MT Municipal Solid Waste generated daily in Delhi. MSW generation will be 9000 MT by 2009.
- Govt. intends to convert 3500 tonnes of MSW per day into Power and Compost, in 3 projects through MCD and NDMC
- MCD through IL & FS plans conversion of about 3200 MT (Timarpur 650 MT, Okhla 1300 MT, Gazipur 1300 MT) of waste into energy by converting waste into RDF and generating 26 MW power.
- 2400 MT/day of waste is proposed to be made into compost by MCD and NDMC.
- MCD proposes to earn substantial CDM revenue worth RS 400 crores by closing down their 3 landfill sites and reducing the methane gas emission.

WASTE MANAGEMENT....contd.

- Pilot project for converting kitchen waste into compost is being undertaken by the Delhi Govt. at the Delhi Secretariat canteen. This can be replicated in all colonies by Resident Welfare Associations, Hotels/ Hospitals/ Hostels to handle large scale kitchen waste.
- The MCD proposes to develop engineered landfill sites at Jaitpur, Narela-Bawana and Bhatti Mines.

Biomedical Waste

- 8.5 Mt per day Biomedical waste is generated from hospitals and health care establishments.
- Two private waste operators are collecting such waste from more than 2,000 small clinics, dispensaries, nursing homes and hospitals.
- Hospitals have installed 17 incinerators, 20 autoclaves and 2 microwaves to treat the waste, but many are outsourcing their waste to the two private developers.

Industrial Hazardous Waste

- About 2000 units in approved industrial areas are generating hazardous waste.
- About 5300 MT per annum of hazardous waste generated.
- Govt. of Delhi has identified a new site near Khanjawala for treatment, storage and disposal facility (TSDF) for Hazardous Waste.

Electronic Waste

- There are 5 processes involved in e- Waste.
 1. Collection of waste both electrical and electronic equipments
 2. Dismantling
 3. Extraction of Precious Metals.
 4. Recycling/Reuse
 5. Final disposal of e-waste residue in authorized landfill (TSDF).

- Recently, CPCB has issued latest guidelines for e-waste management. DPCC has issued an EOI for authorizing operators for the above 5 processes. 41 firms have shown their interest. RFP documents are being prepared by M/s Ernst and Young Consultant for the Government of Delhi.

Construction and Demolition Waste

- MCD is planning to instal a pilot project for utilization of construction and demolition waste at Burari Village by pulverizing it first.
- The C&D waste is proposed to be utilized for road construction.
- IL&FS is in the process of issuing the EOI.

Plastic Waste

- About 583 MT/ year of Plastic waste is generated in Delhi.
- The Govt. Of Delhi notified an Act “The Delhi Degradable Plastic Bag (Manufacture, Sale and Usage) and Garbage (Control) Act, 2000”.
- Use of degradable plastic bags was made mandatory for the following sectors: Hospitals of 100 beds or more; 5 star and 4 star hotels ; Restaurants with 50 seats or above; Fruits and vegetable outlets of Mother Dairy; Liquor vends; Shopping malls.
- Amendment has been carried out to increase the thickness of plastic bags to 40 microns and to ensure that only degradable plastic bags are used in all shopping centers and main markets as directed by the Hon’ble High Court.

Mercury Waste

- **Sources:** medical appliances, switches, lights (CFL and Tubelights) and thermal power stations.
- **Effects :** highly toxic, damages nervous system. An area of 25 acres of lake can be contaminated fully by 1 gram of mercury in 5 years. 81 tonnes of mercury emitted in the atmosphere in the world every year from power generation.
- The Govt. of Delhi is creating awareness campaigns for health care professionals, regarding safe management and handling of mercury and alternatives to mercury devices etc.
- Mercury waste management is being planned by way of establishing a state of art recycling facility.

GREEN COVER IN DELHI

- Tree to population ratio in Delhi is about 1.
- Green cover of Delhi increased from 30 sq. km to 300 sq. km in the last 10 years. United Nations General Assembly invited Hon'ble Chief Minister to speak on Environmental Sustainability before 66 Heads of Government.
- 1.8 million saplings have been planted in the year 2007-08 by various greening agencies.
- The Target for 2008-09 also stands at 1.8 million saplings.
- 9 New City Forests developed in 2007-08.
- 9 new city forests have been developed in 2008-09.
- Total 32 City forests, 2 Bio-Diversity Parks and 15000 Parks and Gardens exist in the city.

COMBATTING CLIMATE CHANGE

- In the last two years, five workshops and two orientation programmes have been arranged for all Departments of Govt of Delhi to sensitize them on the issue of creating CDM projects to combat climate change and earn Carbon Credits.
- One such project of Delhi Metro has already earned Carbon Credits and Delhi Metro is embarking on other projects, where energy efficiency will be achieved.

- The Forest Department is working to create a project of large scale afforestation in Bhatti Mines areas, in nearly 2500 Hq of land, to regenerate plantations on denuded mine land.
- Other departments like DJB and MCD are working on several energy efficiency parameters, which will ultimately result in CDM revenue.
- A circular is being issued to all Heads of Departments to factor in the question of CDM based projects, in the effective planning of the Department.

Steps taken by the Govt. to combat Climate Change

- **Solar water heating system** – 45 schools, colleges and social welfare institutions have been provided effective solar water heating systems with a 30 year life span.
- **Rain water harvesting structure** – rain water harvesting structures have been created in more than 100 schools and colleges to harvest the 40 hours of rain in Delhi. 1200 cooperative housing societies are being encouraged to set up rain water harvesting structures. Major Hotels, Hospitals, Malls directed to do the same .
- **CFL** – 3 million Delhi households need to convert incandescent into CFL immediately to save nearly 1200 MW of power, since each CFL is 50% more efficient and lasts for 3 years as against 6 months for bulb.

- **Composting** - 1200 thousand tonnes of leaf waste is generated in Delhi and invariably gets burnt. Compost pits are being encouraged to prevent air pollution and to create vital compost. Organic waste converter is being propagated for conversion of kitchen waste into compost in hotels, hospitals, hostels and cooperative group housing societies.
- **Water recycling** – All big water guzzlers are being asked to set up effluent treatment plants or sewage treatment plants and use treated water for horticulture purposes, air-conditioning or toilet flushing.
- **Paper recycling** – All big paper guzzlers are being directed to set up paper recycling plants and propagate use of recycled paper. 100 schools have been provided small paper recycling plants and more and more organizations are being motivated to do so.
- **DG Sets** – All Malls, hotels, hospitals and big construction projects are being monitored regularly for installing acoustic enclosures and raise the stack height, to keep both air and noise pollution under control and curb carbon emissions. 31

Thanks

