

## CHAPTER 8

### ENVIRONMENTAL CONCERNS

Delhi is landlocked City in Northern India with limited resources in comparison to growing population. Rapid Urbanization of Delhi along with growth in economic activities in its surrounding areas is responsible for environment problems. Air pollution, water pollution, loss of biodiversity, noise pollution etc. are the major environmental challenges besides these Hazardous Waste, Bio –medical waste, Construction, Demolition and Electronic Waste are other serious threat to the environment in Delhi.

- 1.1 The pace of Increase in number of vehicles in Delhi is far faster than construction of roads. Besides large scale construction activity, the problem of air pollution gets aggravated due to Crop residue (parali) burning in the NCR and neighboring states in the winter months, not favorable for dispersion of air pollutants. Delhi's Environment is also highly influenced by different meteorological phenomena. In summer, the particulate is influenced by dust storm from Rajasthan.
- 1.2 Government has taken several steps in the recent past to improve the environment condition which includes massive focus on afforestation, installation of Anti Smog Gun at construction sites, promotion of bio-decomposer developed by IARI Pusa for stubble management, closing of thermal power plants, deployment of Mechanical Road Sweepers (MRS) & Water Sprinklers (WS), implementation of Electric Vehicle Policy, ban on single use plastic, better management of solid waste, treatment of waste water, prohibition on open burning of garbage/ dry leaves etc, improvement of sewage system, stringent industrial emission norms etc.
- 1.3 Govt. of Delhi has launched an innovative platform for submission of pollution related grievances which is monitored through Green War Room called Green Delhi App, which is a user friendly mobile based app with 27 government departments/ agencies of Delhi on one platform, both for android and IOS mobile phone users.
- 1.4 To improve Delhi's air quality and create an entire supply-chain ecosystem for this new segment of vehicles, Delhi Govt. established a policy 'Delhi Electric Vehicles Policy, 2020'. the policy intends to deploy 25% of all new vehicles to be electric vehicles by 2024.
- 1.5 As a result of the initiatives taken by the Government of NCT of Delhi, forest and tree cover area has been increasing steadily since 1997. The area increased to 342 sq km in 2021 increasing thereby the share of forests in the total area to 23.06 per cent. Delhi has the second-highest tree cover as a percentage (9.91%) of the total geographical area of the States/ UTs after Chandigarh (13.16%).

## 2. Ambient Air Quality

- 2.1 The city of Delhi has a complex urban environment with respect to air pollution and faces severe air pollution of PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>2</sub>. Year-wise annual mean ambient air quality levels in Delhi during 2015 to 2022\* (till November) is presented in Statement 8.1

### STATEMENT 8.1

#### AMBIENT AIR QUALITY LEVELS IN DELHI: 2015-2022

DPCC CAAQMS Yearly City Average of Various Pollutants 2015 – 2022***								
Year	PM <sub>10</sub> (ug/m <sup>3</sup> )	PM <sub>2.5</sub> (ug/m <sup>3</sup> )	SO <sub>2</sub> (ug/m <sup>3</sup> )	NO <sub>2</sub> (ug/m <sup>3</sup> )	O <sub>3</sub> (ug/m <sup>3</sup> )	NH <sub>3</sub> (ug/m <sup>3</sup> )	CO (mg/m <sup>3</sup> )	C <sub>6</sub> H <sub>6</sub> (ug/m <sup>3</sup> )
Standard	60 (ug/m <sup>3</sup> )	40 (ug/m <sup>3</sup> )	50 (ug/m <sup>3</sup> )	40 (ug/m <sup>3</sup> )	100** (ug/m <sup>3</sup> )	100 (ug/m <sup>3</sup> )	2** (mg/m <sup>3</sup> )	5 (ug/m <sup>3</sup> )
2015	295	133	17.54	71.96	45.11	43.97	1.51	4.41
2016	303	137	20.52	71.63	39.78	43.16	1.84	6.28
2017	277	130	23.28	74.01	43.60	37.99	2.07	5.20
2018	277	128	18.61	50.00	38.57	40.00	1.52	3.10
2019	230	112	14.76	48.18	34.69	37.80	1.44	4.25
2020	187	101	13.54	40.30	35.74	36.17	1.27	3.34
2021	221	113	12.79	42.31	32.57	40.65	1.34	2.91
2022***	215	95	10.77	40.80	33.30	42.07	1.26	2.07

\* City average is calculated from 2015-2017 for 4 stations & from 2018-2022 for 24 stations

\*\* For 8 hrs & for 1 hr O<sub>3</sub> is 180 (ug/m<sup>3</sup>) & CO is 4 (mg/m<sup>3</sup>)

\*\*\* till November 2022

Source: DPCC

**Particulate Matter for measuring Pollution:** Particulate matter is basically a mixture of extremely small particles and liquid droplets like acids, chemicals, gas, water, metals, soil dust particles, etc., the measurement of which gives an idea of the pollution of a city. It is also known as particle pollution or PM.

- 2.2 **Particulate Matter (PM<sub>10</sub>):** Annual city average at all the monitoring locations is exceeded the prescribed standard i.e. 60 µg/m<sup>3</sup>.
- 2.3 **Particulate Matter (PM<sub>2.5</sub>):** Annual city average at all the monitoring locations is exceeded the prescribed standard i.e.40 µg/m<sup>3</sup>.
- 2.4 **Sulphur Dioxide (SO<sub>2</sub>):** Annual city average at all the monitoring locations is within the prescribed standard i.e. 50µg/m<sup>3</sup>.
- 2.5 **Nitrogen Dioxide (NO<sub>2</sub>):** Annual city average at some monitoring locations is exceeded the prescribed standard i.e.40µg/m<sup>3</sup>.
- 2.6 **Carbon Monoxide (CO):** Annual city average at all the monitoring locations is within the prescribed standard i.e. 2 mg/m<sup>3</sup>.

2.7 **Ozone (O<sub>3</sub>):** Annual city average at all the monitoring locations is within the prescribed standard i.e.100 mg/m<sup>3</sup>.

2.8 **DPCC** monitored air quality through 24 online continuous ambient air quality monitoring stations at 24 locations which are presented in Statement 8.2

**STATEMENT 8.2**

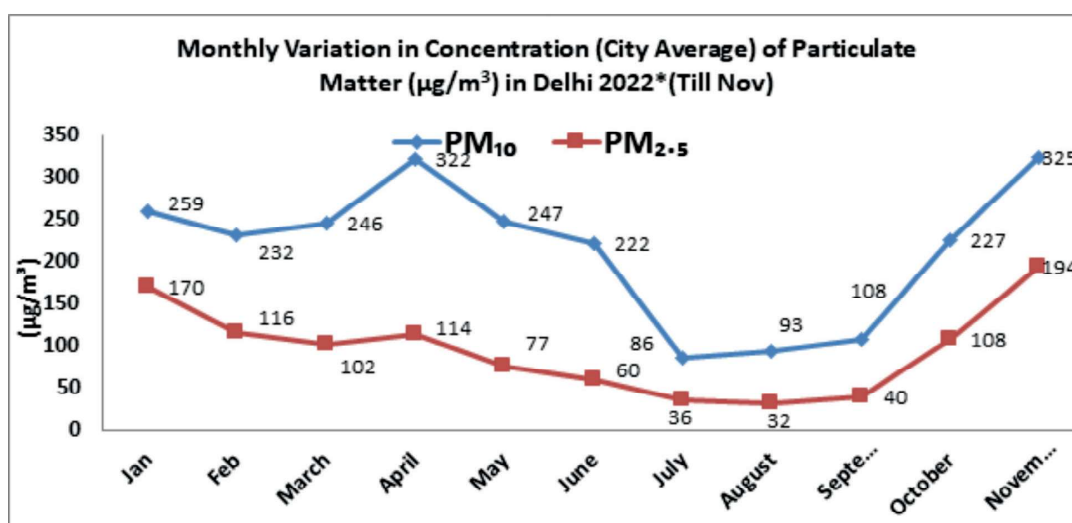
**CONTINUOUS AMBIENT AIR QUALITY MONITORING STATIONS (CAAQMS) ESTABLISHED IN DELHI**

S. No.	Name of CAAQMS	S. No.	Name of CAAQMS
1.	Maj.Dhyanchand National Stadium	13.	Maharishi Valmiki Hospital,
2.	Jawahar Lal National Stadium.	14.	MGICCC,Alipur
3.	Dr Karni Singh Shooting Range	15.	NIT&RD, Sri Aurobindo Marg
4.	PGDAV College, Srinivasपुरi	16.	ITI, Jahangirपुरi
5.	Mother Dairy Plant, Patparganj	17.	IARI,PUSA
6.	Satyawati College	18.	NIMR, Sector-8, Dwarka
7.	Mundka Metro Residential Colony	19.	DITE,Wazirपुर
8.	S.S. College of Business Studies, Rohini	20.	ITI, Shahadra
9.	ITI, Narela	21.	Anand Vihar
10.	WTP(DJB), Sonia Vihar	22.	Mandir Marg
11.	DITE Okhla	23.	Punjabi Bagh
12.	Ch. Brahm Prakash Ayurvedic	24.	R.K.Puram

2.9 The real time air quality monitoring data can be seen at DPCC’s website.

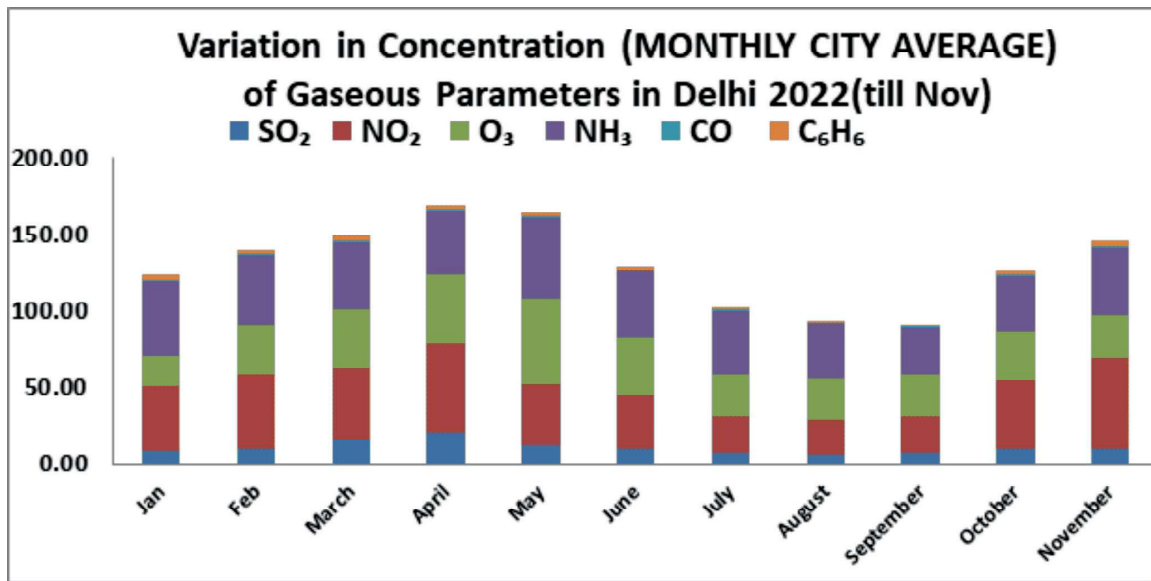
**CHART 8.1**

**MONTHLY CITY AVERAGE OF CRITICAL POLLUTANTS DELHI 2022**



Source: Delhi Pollution Control Committee (DPCC)

CHART 8.2

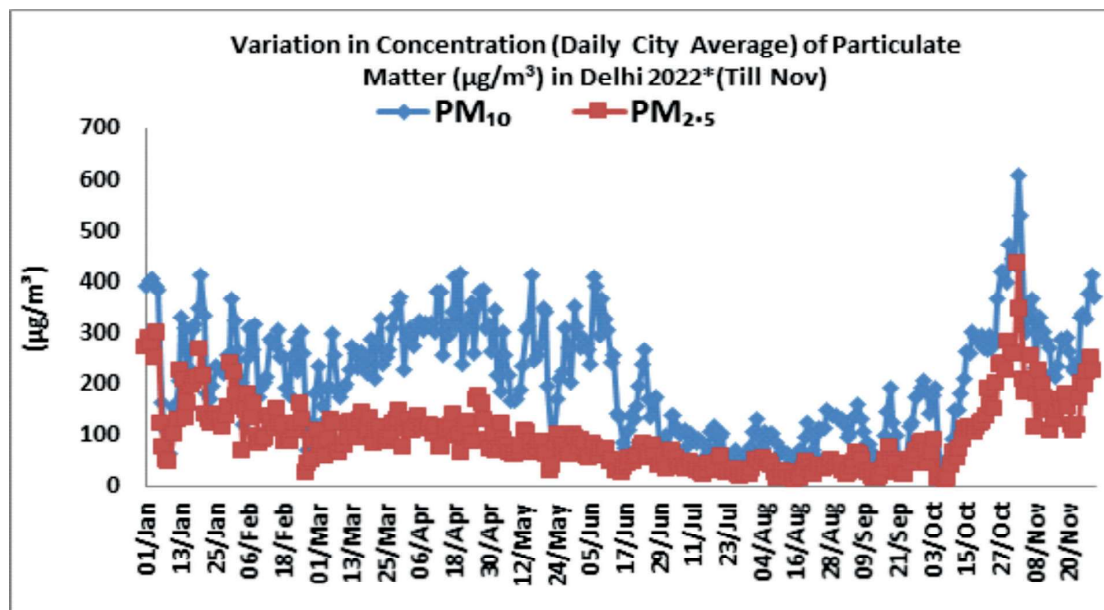


Source: Delhi Pollution Control Committee (DPCC)

### 2.10 Air Pollution Control

Chart 8.3 shows the variation in the concentration of PM<sub>2.5</sub> and PM<sub>10</sub> from 1<sup>st</sup> January to 30<sup>th</sup> November 2022. The average concentration was 95µg/m<sup>3</sup> and 215µg/m<sup>3</sup> respectively for PM<sub>2.5</sub> and PM<sub>10</sub>. The peak of PM<sub>10</sub> was recorded on 03<sup>rd</sup> November 2022, when the concentration of PM<sub>10</sub> reached up to 607µg/m<sup>3</sup>. However, PM<sub>2.5</sub> reached up to 435µg/m<sup>3</sup> on the same day.

CHART 8.3



Source: Delhi Pollution Control Committee (DPCC)

## 2.11 Measures taken to Control Air Pollution in Delhi:

2.11.1 **Monitoring and Action against persons for burning of waste material /garbage in open**

2.11.2 **Monitoring and Action against violators of dust control measures:**

- i. DPCC has imposed fine on construction projects who have obtained Environmental Clearance (built up area more than 20,000/- sq.mtr.)
- ii. Environmental Compensation collected by Delhi Pollution Control Committee in FY 2020-2021 (unaudited ₹ 15,772,050 )

2.11.3 **NGT Orders/ Judgments in O.A. No 21/2014:** Quarterly action taken report is being sent to CPCB.

2.11.4 **Implementation of Comprehensive Action Plan (CAP):** The Hon'ble NGT directed constitution of Air Quality Monitoring Committee (AQMC) in respect of Delhi to prepare action plan to control air pollution. Quarterly Progress Report on Comprehensive Action Plan (CAP) is now under purview of Commission for Air Quality Management (CAQM) National Capital region and Adjoining Areas as per MoEF&CC, GoI.

2.11.5 **Promotion of Electric Vehicles:** - Delhi Electric Vehicle Policy-2020 has been notified by the Transport Department, GNCTD.

2.11.6 **Ban on bursting and sale of Firecrackers:** Complete Ban on Firecrackers: GNCTD on 14.09.2022 upto 01.01.2023 in the territory of Delhi.

2.11.7 **Imposition of Charge on lights and heavy duty commercial vehicles entering Delhi:** Incompliance with the order dated 09.10.2015 and 16.12.2015 of Hon'ble Supreme Court, Environment Compensation Charge (ECC) is levied on Delhi bound light and heavy duty commercial goods vehicles.

2.11.8 **Greening of City:** As per the latest Forest Survey of India Report 2019, the green cover of Delhi has increased to about 324.44 sq. km (23.06% of total area of Delhi) from 26 Sq. Km in 1997.

2.11.9 **Implementation of Graded Response Action Plan (GRAP):** GRAP for NCR now classified under 4 different stages of adverse air quality in Delhi, reflected through the AQI, which are as follows:

**POOR Category :** 201-300

**VERY POOR Category :** 301-400

**SEVERE Category :** 401-450

**SEVERE + Category:** AQI:-> 450

Proactively implementing GRAP measures based on air quality forecasts, rather than retroactively implementing them once the acceptable levels are breached. Measures under GRAP to be invoked at least two-three days in advance based on the prediction of air quality forecasting models.

2.11.10 GNCTD implementing all actions invoked under I-IV stages of Graded Response Action Plan (GRAP) notified in Aug, 2022 by the Commission for Air Quality Management (CAQM) in NCR and Adjoining Areas; and is reviewed regularly at the highest level.

2.11.11 **To Control local Sources of Air Pollution at source**, 13 Hotspots namely, Narela, Bawana, Mundka, Wazirpur, Rohini, R.K.Puram, Okhla Ph-II, Jahangirpuri, Anand Vihar, Vivek Vihar, Punjabi Bagh, Mayapuri and Dwarka have been identified on the basis of Annual concentration of  $PM_{2.5}$  &  $PM_{10}$  in Delhi. Specific action plans have been drawn up for identifying and mitigating the local sources of air pollution such as plastic & garbage, Malba / C&D waste removal, road patches and pot holes repair, De-congestion of congested traffic points, Mechanical road sweeping and Water sprinkling of roads, Closure of polluting & unauthorized industries, Night patrolling to check violations with respect to Bio-mass burning, C&D waste dumping etc, greenery development etc.

2.11.12 **Installation of Smog Tower** : In compliance with this Hon'ble Supreme Court order dated 13.01.2020, Smog Towers have to be installed at Anand Vihar Bus Terminal and Baba Kharak Singh Marg, Connaught Place. Smog Tower at Connaught Place was inaugurated on 23.08.2021 by Hon'ble Chief Minister of Delhi. IIT Bombay is currently conducting the performance evaluation of effectiveness of the Smog Tower.

2.11.13 **Implementation of Notification issued on Approved Fuel for Industries.** Contribution by the industries to air pollution in National Capital Territory of Delhi is minimal compared to other sources. All the industries in National Capital Territory of Delhi, which have boiler/furnace, have been directed to convert to Piped Natural Gas (PNG). 1805 fuel based industrial units are running on approved fuels and use of unapproved fuels is effectively checked to curb air pollution due to industrial emissions.

**2.11.14 Public Awareness**

- Students of Eco Clubs across schools and colleges in Delhi have been engaged for conducting environmental awareness
- An event named "Diye Jalao Patakhe Nahi" on 21.10.2022 at Central Park Connaught Place, New Delhi.

**2.11.15 Compliance to directions of CAQM**

A Commission on Air Quality Management in the National Capital Region and Adjoining Areas has been constituted through an Ordinance and promulgated by the Hon'ble President of India on 28<sup>th</sup> October 2020. Necessary steps are being taken regarding road dust management, abatement of air pollution from dispersed sources,



safeguarding and enforcement, greening and traffic management are being ensured and action taken reports are compiled in coordination with stakeholder department's different periodicity.

## 2.12 New Initiatives by Delhi Government

2.12.1 Real-Time Source Apportionment and Forecasting for Advance Air Pollution Management in Delhi” study is being undertaken by IIT- Kanpur led consortium for identification of major sources of air pollution for development of an extensive scientific database to have a targeted focused and purposeful decision-making on air pollution in Delhi. It would for the first time provide hourly forecast for 3 days and daily forecast in fifteen days for prediction for concentration of pollutants and their sources. The Super site for the project has been setup at SBV School at Rouse Avenue, New Delhi.

**Use of Anti- Smog Guns:** Dust mitigation measures for C&D activities have been issued regarding deployment of adequate numbers of anti-smog guns, in proportion to the area of the construction sites to all project proponents, contractors and other stakeholder departments as per CAQM policy.

**Use of Anti-Smog Water Guns with modifications on the top of High-Rise Building:** In compliance with the direction of Hon'ble Lt. Governor, Delhi, the building owning / construction agencies i.e., MCD, DCB, DDA, NDMC, PWD, NBCC & CPWD have been asked to identify in total 125 high-rise buildings for installation of Anti-Smog Water Guns with modification to abate air pollution during winters.

**Bio decomposer Technology to control Stubble burning:** Institute of Agricultural and Research Institute (IARI) Pusa, has developed its own bio-decomposer technology for crop residue decomposition.

**Use of fire tender:** DPCC issued a direction on 28.10.2022 to Delhi Fire Services, Delhi to ensure sprinkling of water during the GRAP period by deployment of at least 50% of fire tankers (water tenders and water bousers) to suppress the dust on roads.

## 2.13 NCR States related factors which impact Ambient Air Quality of Delhi :

- **Air quality monitoring stations** to be set up in NCR with an online display of data.
- The neighboring states must ensure that the **dust suppression methods** must undertake to control the dust emission from the construction sites.
- **Open burning of garbage** in Delhi's neighboring areas should be strongly discouraged.
- The practice of **burning of paddy stubs** in the agricultural zones adjoining Delhi needs to be stopped.
- **Conversion of Public Transport to CNG:**
- **BS VI vehicle registration:** only BS VI Inter-state commercial vehicles to be allow for entering in Delhi.

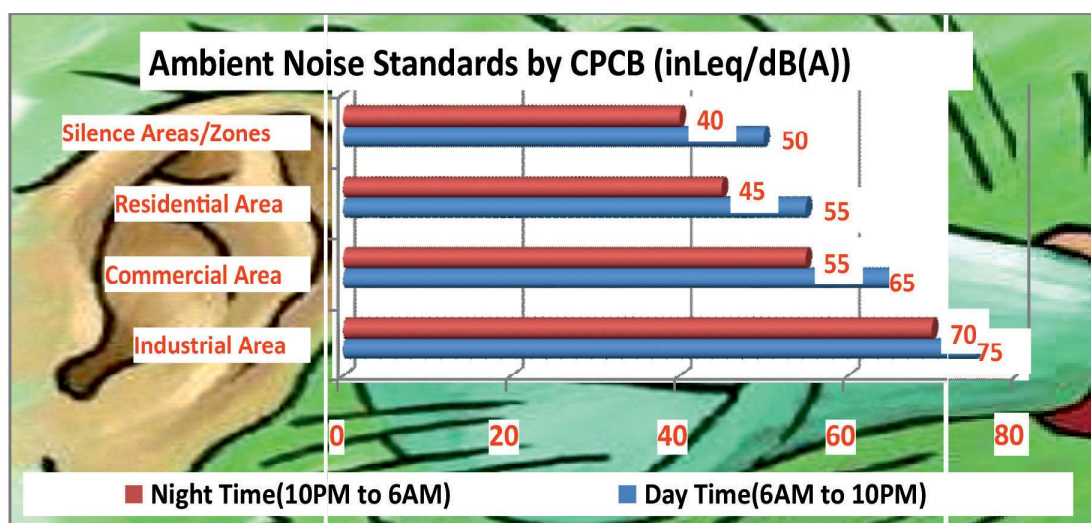
- The brick kilns in NCR states should be closed/ or their emissions be regulated.
- **Discourage entry of non-destined trucks into Delhi:** Hon'ble National Green Tribunal has already directed that diesel vehicles of more than 10 years life will not be allowed to ply in NCR.
- Refused Derived Fuel (RDF) and Inert disposal from the bio-mining of legacy waste at dumpsites in Delhi

### 3. Noise Pollution

- 3.1 Delhi witnesses excessive noise on account use of high sound loudspeakers during festivals and many social gatherings in public place directly increases the noise pollution in the affected areas. GNCTD has notified an area of 100 metres around the hospitals with 100 beds or more, educational institutions with 1000 students or more, all court complexes, all government complexes as Silence Areas/Zones. The Central Pollution Control Board published the information regarding permitted ambient noise levels in different areas. The prescribed ambient noise levels are as presented in Chart 8.3.

**CHART 8.4**

#### AMBIENT NOISE STANDARDS BY CPCB (IN LEQ/DB(A))



Source: Noise Pollution (Regulation and Control) Rules, 2000, Ministry of Environment, Forests and Climate Change Government of India.

Notes: 1. Day Time from 6 AM to 10 PM and Night Time from 10 PM to 6 AM.

2. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other areas which are declared as such by the competent authority.

- 3.2 DPCC recently strengthened the Noise Monitoring Network in Delhi with 31 (26 New + 5 Old) Noise monitoring stations. These stations were installed in different land use areas which are as:



- 7 - Stations are situated in silence zone which include educational institute and hospitals
- 11 - Stations in commercial zone which include markets and stadiums
- 8 - Stations are situated in residential zone
- 5 - Stations in industrial area.

3.3 The yearly average of real time ambient noise level during day time was in the range of 53.8 db (A) at Najafgarh Station to 74.4 db (A) at Karol Bagh Station in 2022 till the month of September. A detailed statement of station wise day time noise data from the year 2015 to September, 2022 is available at table no. 8.1.

3.4 The yearly average of real time ambient noise level during night time was in the range of 50.4 dB (A) at Dr. Karni Singh Shooting Range to 65.2 dB (A) at Shahdara in 2022 till the month of September. A detailed statement of station wise night time noise data from the year 2015 to September, 2022 is available at table no. 8.2

### 3.5 Noise limiter notification:

In compliance to Hon'ble National Green Tribunal directions GNCTD issued Noise limiter Notification on 21<sup>st</sup> November 2019 under sub-rule (3) of rule 3 and sub-rule (3) of rule 5 read with clause (c) of rule 2 of the Noise Pollution (Regulation and Control) Rules, 2000, to ensure that no audio system or public address system shall be let out / installed without being fitted with Sound limiter in any function in the whole of National Capital Territory of Delhi.

### 3.6 Noise Complaint lodging platform:

If someone violates the noise rules and creates excessive noise, complaint may be lodged by citizen at following:

- Green Delhi App
- Website: [ngms.delhi.gov.in](http://ngms.delhi.gov.in)
- Helpline number - 155271

## 4. WATER POLLUTION

4.1 The river Yamuna, the reason for Delhi's existence, has suffered heavily from pollution which is due to the flow of untreated sewage and also the discharge of inadequately treated industrial effluents.

- 54 KM Stretch in Delhi from Palla to Badarpur (Delhi-Haryana border).
- 22 KM Stretch from Wazirabad (Downside of Wazirabad Barrage) to Asgarpur Village (after Okhla Barrage), which is less than 2% of the river length, accounts for about 76% of the pollution load in the river.
- 18 Major Drains outfall into river Yamuna with discharge of about 3026 MLD (about

666 MGD) of waste water into the River Yamuna including 105 MGD waste water coming into Najafgarh Drain from Haryana and 14 MGD coming into Shahdara Drain from Ghaziabad. About 264 TPD is the pollution load in terms of BOD.

- 10 Cumecs of Water is being released by the State of Haryana at Hathanikund during lean season. However, most of it evaporates or percolates before it reaches Wazirabad during the lean season and therefore it is highly inadequate to meet the dilution requirement to achieve the desired water quality of Bod < 3 mg/l & DO  $\geq$  5 mg/l.
- 4.2 **Water Quality of River Yamuna:** it is monitored by DPCC on monthly basis at 8 Locations i.e. Palla, Wazirabad, ISBT Bridge, ITO Bridge, Nizamudin Bridge, Agra Canal (Okhla), Downstream Okhla Barrage, Asgarpur.
- As per the trend analysis of CPCB carried out for the water quality in river Yamuna for the last 5 years:
    - Levels in river Yamuna are complying with water quality criteria for outdoor bathing at 2 locations. BOD concentration varies from highest levels of 77.00 mg/l River Yamuna at Asgarpur (After confluence of Shahdara & Tuglakabad drains) and 72.43 mg/l at after meeting Shahdara Drain (Downstream Okhla Barrage).
    - The high concentration of BOD and COD levels at these locations is due to discharge of untreated waste water and joining of various drains at points between Shahdara and Okhla.
  - Online Monitoring System has been installed at Palla, Wazirabad and Okhla Barrage for monitoring the Water Quality of river Yamuna.
  - Online Monitoring System for measuring the concentration of Ammonia in river Yamuna at Palla has been installed by DPCC. This will help in issuing early alerts to the DJB water treatment plant at Wazirabad in the event of deterioration in water quality received at Palla due to discharge of sewage/industrial effluent from Haryana
- 4.3 DPCC has been conducting monthly water quality monitoring of river Yamuna (at 8 locations) and major drains (27 drains) falling into river Yamuna. Statement 8.3 (at 8 locations) and 8.4 (27 drains) indicate average water quality of River Yamuna from January-2021 to December-2021. Water quality monitoring reports of river Yamuna indicate that the water quality parameters are meeting the Water Quality criteria of "C" class, at Palla only, which is upstream of Wazirabad Barrage.
- 4.4 The highest average of DO is 8.96 mg/l at Palla and lowest is 0.08 at Okhla Barrage (after meeting Shahdara Drain). A detailed statement of average water quality of River Yamuna at different locations from **APRIL 2022 – OCTOBER 2022** is available at table no.8.3
- 4.5 Water quality monitoring results of the drains indicate that most of the drains still have to meet the standards with respect to Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS). The average water

quality of 27 drains at different locations in Delhi from **APRIL 2022– OCTOBER 2022** is presented in the table no. 8.4

#### 4.6 Status of Sewerage Network in Unauthorized Colonies

Delhi Jal Board has prepared a plan to provide sewerage facilities in unauthorized colonies. In Delhi, about 78% of population is already connected to sewerage network. The unseweraged areas mainly consist of unauthorized colonies. There are 1799 unauthorized colonies out of which sewer lines have been laid and commissioned in 706 colonies and the work is in progress in 448 colonies. In 161 Colonies NOC is awaited/O Zone.

#### 4.7 Measures taken for Control of Pollution in River Yamuna-Sewage Treatment

• Estimated Sewage Generation	–	768 MGD
• Functional Sewage Treatment Plants (STPs)	–	35 (at 20 Locations )
• Capacity of 35 Functional STPs (82.3 % of Sewage generation)	–	632 MGD
• Treatment of Sewage	–	597 MGD
• Gap between Sewage Generation & Installed Capacity	–	136 MGD (17.7%)
• Gap between Sewage Generation & Treatment	–	171 MGD (22.3%)
• Sewage Treatment Capacity after completion of 2022)	–	722 MGD (December,

Proposed Projects (ISP, Rehabilitation /Upgradation of 12 STPs & New STP Okhla)

[632 MGD (Existing Capacity) + Additional 30 MGD after construction of New Okhla STP + Additional 20 MGD after completion of Rehabilitation and Upgradation of STP Kondli Ph-II + Additional 40 MGD after completion of Rehabilitation and Upgradation of STP Rithala Ph-I

- Monitoring of the Functional STPs of DJB is being carried out by DPCC Laboratory on monthly basis and Analysis Results are uploaded on the website of DPCC and also communicated to DJB
- All the functional STPs have installed Online Continuous Effluent Monitoring System (OCEMS) and the same are connected to the servers of CPCB & DPCC. OCEMS at the STPs are regularly calibrated by DPCC.
- *List of 35 Functional Sewage Treatment Plants (STPs) & their capacities are given in statement 8.5*

#### 4.8 Interceptor Sewer Project (ISP)

Delhi Jal Board initiated the process of laying of interceptor sewers along 3 major drains (Najafgarh Drain, Supplementary Drain and Shahdara Drain) for trapping of 108 sub drains out falling into these drains. About 242 MGD of sewage generated from the colonies/ other sources & coming through the 108 sub drains will be trapped before reaching the above mentioned major drains and the same would be diverted to the existing underutilized STPs / New STPs for treatment of sewage. Entire flow of 242.16 MGD shall be trapped and treated by December, 2022 after construction/ rehabilitation of Coronation Pillar & Rithala and Kondli STP under YAP-III.

#### 4.9 Trapping of Drains

18 Major drains outfall into river Yamuna with discharge of about 3026 MLD (about 666 MGD) of waste water into the River Yamuna including 110 MGD waste water coming into Najafgarh Drain from Haryana and 14 MGD coming into Shahdara Drain from Ghaziabad. About 264 TPD is the pollution load in terms of BOD.

#### STATEMENT 8.3

#### MAJOR DRAINS OUT FALLING IN TO THE RIVER YAMUNA

Major Drains Out falling into river Yamuna	18
Drains Already Trapped [58.75 MGD]	13[Magazine Road, Sweeper Colony, Khyber Pass , Metcalf House, Tonga Stand, Moat Drain (Vijay Ghat), Civil Military, Delhi Gate, Drain No.14, Tughlaqabad, Kalkaji, Tehkhand and Sen Nursing Home ]
Remaining Drains to be Trapped	5 [Najafgarh , Shahdara, Mori Gate, Barapullah & Maharani Bagh]

- Individual STPs are proposed at the mouth of Mori Gate (9.51 MGD) and Barapullah (31.97 MGD) drains.
- Maharani Bagh drain has been partially trapped to the extent of 9 -10 MLD flow & balance 15 MLD flow will be trapped in the Batla House Sewerage System by December, 2023.

#### 4.10 Rehabilitation / Up-gradation of Existing STPs & Construction of New STPs by DJB

Following existing Sewage Treatment Plants (STPs) of DJB (as mentioned in the Table given below) are proposed / being Rehabilitated / Up-graded to meet the more stringent prescribed standards of BOD – 10 mg/l & TSS - 10 mg/l. New STPs are being constructed at Coronation Pillar and Okhla as mentioned in the Statement 8.4:

## STATEMENT 8.4

## EXISTING STPs (TO BE UPGRADED) AND NEW STPs (TO BE CONSTRUCTED)

S. No.	Name of STP	Capacity Addition (in MGD)	Timelines
<b>Sewage Treatment Plants</b>			
1.	<b>Coronation Pillar (New STP) of 70 MGD Capacity (Completed)</b> Physical Progress upto Sept, 2021 – 92.30 % upto 15 <sup>th</sup> March, 2022 – 100 % (7.70 % increase in last one year)		Completed and commissioned on 15.03.2022
2.	<b>Okhla (New STP) of 124 MGD Capacity (Under Construction)</b> Physical Progress upto Sept, 2021 – 40.75 % upto Oct, 2022 – 72.10 % (2.7 % increase in Oct, 2022) [Work delayed due to Lockdown / Covid-19, EPCA ban on construction activities due to air pollution and tree cutting permission etc.]	<b>30</b>	December, 2022
3.	<b>Sonia Vihar (New STP) of 7 MGD Capacity (Under Construction)</b> Physical Progress upto Sept, 2021 – Nil upto Sept, 2022 – 4 % (4 % increase in last one year)	<b>07</b>	April, 2023
4.	<b>Delhi Gate (New STP) of 10 MGD Capacity</b> (Land to be allotted by DDA)	<b>10*</b>	December, 2023
5.	<b>Kondli Phase-II of 20 MGD Capacity (Under Construction for Rehabilitation &amp; Upgradation)</b> (Liquid stream of Ph-I & III has been started on 09.03.2022 & 07.04.2022 respectively) Physical Progress upto Sept, 2021 – 65.82 % upto Oct, 2022 – 85.15% (0.18 % increase in Oct, 2022)	<b>20</b>	December, 2022
6.	<b>Rithala Phase – I of 40 MGD Capacity (Under Construction for Rehabilitation &amp; Upgradation)</b> Physical Progress upto Sept, 2021 – 50.70 % upto Oct, 2022 – 70.21% (1.92 % increase in Oct, 2022) [Work delayed due to Lockdown / Covid-19, EPCA ban on construction activities due to air pollution and tree cutting permission etc.]	<b>40</b>	December, 2022
<b>Total Addition in Capacity of STPs</b>		<b>107</b>	
<b>Status of Decentralised Sewage Treatment Plants (DSTPs)</b>			
1.	<b>27 DSTPs proposed to be constructed at various locations in Delhi of total Capacity of 60 MGD</b>		
A	16 DSTPs (land already allotted.	32	December, 2023

B	11 DSTPs where land is yet to be allotted.	28**	15 months after allocation of land
2.	<b>14 DSTPs proposed to be constructed in Najafgarh Drainage Zone of total Capacity of 32 MGD</b>		
A	12 DSTPs where land is already allotted.	21	December, 2023
B	02 DSTPs where land is yet to be allotted.	11**	15 months after allocation of land
1.	<b>Up gradation / Augmentation of Remaining Existing STPs of total Capacity of 94.5 MGD</b>	<b>94.5</b>	December, 2023
	<b>Total Addition by December, 2023</b>	<b>199+94.5=293.5</b>	
	<b>Grand Total Capacity by December, 2023</b>	<b>925.50</b>	

#### 4.11 In-situ Bioremediation / Phytoremediation of Sewage in Drains

- Integrated Drain Management Cell (IDMC) headed by Chief Secretary, GNCTD has been constituted vide order dated 17.03.2020 for remediation and management of all drains of Delhi as per the orders of Hon'ble NGT in OA No.06/2012.
- IDMC is having members from all the Drain Owning Agencies (DOAs).
- Meetings of IDMC are held on regular basis and 11 Meetings have been held so far.
- DOAs have submitted / are submitting their Action Plan with time line subject to availability of fund.
- DDA, EDMC & DCB have started implementation of Action Plan.
- EDMC has also submitted action plan with estimated cost of ₹59.70 Crore but due to financial crunch not able to proceed further. One pilot project of EDMC at Shahdara Jheel is in progress (about 70 % work completed).
- The waste water in Kushak Nala running through NDMC areas is under bio-remediation.
- SDMC has given consultancy to IIT Delhi and projected an estimated cost of ₹129.9 Crores but due to financial crunch not able to proceed further. They have undertaken the pilot project for Phyto / Bio Remediation of Pushp Vihar drain for which tenders have been invited.
- North DMC has given consultancy to IIT Delhi. They have projected an estimated cost of ₹ 53.52 Crore but not able to proceed due to crunch of fund. They have undertaken the pilot project for Phyto / Bio-Remediation of Kudesia Nallah.
- DDA has already submitted action plan and constructed/Constructing wetland in Yamuna flood plain in Kilokari/ Maharani Bagh/ Dhobhi Ghat.
- Drain Owning Agencies have been directed to start a small pilot project on some of



their drains and requested to submit Action Plan along with timelines to treat the entire length of drain under their command for management of waste water in their drains.

- Delhi Jal Board has adopted natural treatment technology to treat raw sewage for rejuvenation of existing water bodies. At present work of 50 water bodies has been awarded, where Phytorid Treatment Technology developed by CSIR-NEERI is adopted to revive existing water bodies.
- Natural Treatment Technology under the guidance of Centre for Science & Environment has been adopted to recycle waste water at the DJB office at Jal Sadan.

#### 4.12 Sewage and Fecal Sludge Management (Septage Management)

- Septage Management Regulations notified by the Urban Development Department, GNCTD on 12.11.2018 and necessary action is to be taken by Delhi Jal Board, District Magistrates and Local Bodies / Municipal Corporations as per the provisions of the said Notification. On an average 6 to 7 lakh litres of septage per month is being collected and treated at the STPs of DJB.
- DJB has so far registered 208 licensed vendors (Emptiers) for collection and transportation of sewage from the septic tanks as detailed.

Agency	No. of Emptiers Vehicles Authorised by DJB (As on 31.01.2022)	No. of Functional SPSs for collection of septage from vendors	Septage collected & Treated in November, 2022	Septage treated by DJB (As on 30.01.2022)
DJB	260	86	3.77 Crore Litres	82.75 Crore Litres

#### 4.13 Prevention of Dumping of Solid Waste in Drains and River Yamuna

- For preventing the dumping of solid waste in the drains, all the concerned Departments/ Agencies have been directed vide order dated 09.01.2019 of Chief Secretary and Order dated 15.01.2019 of UD Department, GNCTD for taking necessary action against the violators including imposition of Environmental Compensation of ₹ 5000 on dumping of Pooja Material/ Flowers etc. and ₹ 50,000 on the dumping of Construction Material /Malba in River Yamuna. Wire Nets etc.

#### 4.14 Rejuvenation of Water Bodies

- DJB, IFCD, DDA, Local Bodies / Municipal Corporation & other Agencies responsible for maintaining Water Bodies in their areas of jurisdiction are required to identify & prepare Action Plan for Protection and Restoration of Water Bodies w.r.t the orders of Hon'ble NGT
- 362 water bodies have been taken up by Delhi Jal Board for revival/rejuvenation. For 130 water bodies estimation is under process of approval. 12 have been rejuvenated, 44 are under progress and 176 are under tendering process.

#### 4.15 Protection of Flood Plain of River Yamuna

- As per the orders of Hon'ble NGT dated 13.01.2015, Flood Plain of River Yamuna is to be protected, Unauthorized Habitation/ Settlements/ Encroachment are to be removed by DDA and cultivation of Edible Crops are prohibited. Following action has been / is being taken by DDA for protection of Flood Plain of river Yamuna and prevention of Encroachment:

##### **Demarcation of Flood plain and Removal of Illegal Encroachments:**

- Demarcation of 1 in 25 years Flood Plains & Fixing up of Bollards and Fencing
- Engagement of Private Security to stop illegal Dumping:
- Installation of Electronic Surveillance System:
- Removal of Encroachment from the Flood Plain:
- Demolition Program:
- Removal of C&D Waste:
- Restoration and Rejuvenation of the Floodplains of River Yamuna.

#### 4.16 Ban on Idol Immersion

- DPCC has issued Directions u/s 33 A of the Water (Prevention and Control of Pollution) Act, 1974 on 13.10.2021 for the immersion of idols on festive occasion of Durga Pooja etc. As per the said Directions Idol Immersion is not permitted in River Yamuna.

#### 4.17 Effluent Management

- Number of Industries/ Units in 28 Approved Industrial Areas: 25253
- Number of Industries/ Units having ETPs in 28 Approved Industrial Areas: 1334
- Number of Water Polluting Industries /Units in 28 approved Industrial Areas: 1334
- Quantity of Effluent generated from the industries /Units in 28 approved Industrial areas: 28.75 MLD
- Common Effluent Treatment Plants (CETPs): 13 (212.3 MLD) Capacity for 17 approved Industrial areas.
- Waste Water Received at CETPs -About 67.202 MLD( October,2022)

*List of 13 Common Effluent Treatment Plants (CETPs) in Delhi along with their capacities is given in the table no. 8.6.*

- Rest of the 11 Approved industrial areas out of 28 Approved Industrial Areas are not having CETPs as they are not generating substantial liquid waste.
- All the existing 13 CETPs are being monitored by DPCC Laboratory on monthly basis and Analysis Reports are placed on the website of DPCC. Sufficient treatment capacity (212.3 MLD) is available with existing 13 CETPs for management of industrial effluent

generated from 17 approved industrial areas. The units which are operational in non-CETP industrial areas have individual waste water treatment facilities.

- Online Monitoring System (OLMS) have been installed on all the 13 CETPs for measuring the pH, TSS, BOD & COD at the outlet of the CETPs. All these OLMS are connected to servers of DPCC and CPCB. Calibration of OLMS installed at CETPs is being carried out by DPCC Water Laboratory from time to time.
- Show Cause Notices / Directions for Closure are issued by DPCC u/s 33(A) of Water (Prevention and Control of Pollution) Act, 1974 and Environmental Compensation is also imposed on Non Complying / Violating Water Polluting Industries / Units in Delhi.

#### 4.18 River Rejuvenation Committee (RRC)

In compliance to the directions of the Hon'ble National Green Tribunal issued videorders dated 20.09.2018, 19.12.2018, 08.04.2019, 06.12.2019, 29.06.2020 & 21.09. 2020 i O.A. No. 673/2018 a River Rejuvenation Committee for Delhi (RRC Delhi) has been constituted.

- RRC Delhi has submitted the Action Plan for Rejuvenation of river Yamuna in Delhi to CPCB in February, 2020. Monthly Progress Reports of Delhi are being submitted to the Secretary, Ministry of Jal Shakti & CPCB and Chief Secretary, Delhi is also reviewing the progress from time to time.
- RRC Delhi is functioning under the overall supervision and coordination of Pr. Secretary (Environment).
- Chief Secretary, Delhi is also monitoring the progress of various projects of DJB etc.
- As per the directions of the Hon'ble NGT in OA No. 673 / 2018 Dated 20.09.2018, polluted river stretches are to be rejuvenated at least for bathing purpose with quality of river as given below:

Quality Parameter	Standards to be Achieved
BOD	$\leq 3$ mg/l
Dissolved Oxygen (DO)	$\geq 5.0$ mg/l.
Faecal Coliform	$\leq 500$ MPN/100ml.

#### 4.19 Agencies/ Departments involved / responsible for implementation of the Action Plan for Yamuna

- Delhi Development Authority (DDA), Delhi Jal Board (DJB), Irrigation and Flood Control Department (IFCD), Delhi Pollution Control Committee (DPCC), Forest Department, Public Works Department (PWD), Industries Department , Delhi State Industrial and Infrastructure Development Corporation (DSIIDC), Urban Development Department, Local Authorities & Municipal Corporations.

## 5. WASTE MANAGEMENT

### 5.1 Municipal Solid Waste Management

Municipal Solid Waste is to be managed as per the provisions of Solid Waste Management Rules, 2016. Duties and responsibilities of Local Authorities & Village Panchayats, Urban Development Department, Waste Generators, District Magistrates, and other Departments / Agencies / Ministries are mentioned in the said Rules. 5 Local Bodies / Municipal Corporations in Delhi are responsible for the proper Solid Waste Management including its collection, processing & disposal. The detail of generation, processing and disposal of the municipal solid waste is briefed in the statement 8.5:

#### STATEMENT 8.5

#### MUNICIPAL SOLID WASTE GENERATION, PROCESSING AND DISPOSAL

S. No.	Particulars	MCD	NDMC	DCB	Total
1.	Total Municipal Solid Waste (MSW) Generation (in TPD)	11000	263	72	11335
2.	No. of Wards	272	14 (Circles)	8	280 Wards + 14 Circles
3.	Lifting / Collection of MSW (in %)	100%	100%	100%	NA
4.	Segregation of MSW at Source (in %)	80-100% (in 73 Wards) 60-80% (in 16 Wards) 50-60% (in 50 Wards) 40-50% (in 50 Wards) 20-40% (in 50 Wards) 10-20% (in 33 Wards)	100 % in all 14 Circles	95-100% in Model Wards of Civilian Area 60-70% in Army Area	NA
5.	Existing Capacity of MSW Processing Facilities (Excluding MRFs)				7913.175 (69.8%)
6.	MSW Processed including Pit Composting and Excluding MRF (in TPD)	6728 (61.1%)	254 (96.6%)	50 (69.4 %)	7032 (62%)
7.	Recycling through MRF	256 (157 No.) (2.3%)	9 (2 No.) (3.4%)	4 (5.5%) (11 No. of 50 TPD Capacity)	269 (2.37%)
8.	Disposal through Compost Pits	538 (533 No.) (4.9 %)	16.6 (50 No.) (6.3%)	Nil	554.6 (4.9%)
9.	Disposal of MSW in Landfill Sites	4016 (36.5%)	Nil	18 (25%)	4034 (35.6%)

Note: Most of the Five & Four Star Hotels and Major Hospitals having 50 Beds or more have installed Organic Waste Converter.

#### (a) Municipal Solid Waste Processing and Disposal Facilities

There is one Integrated Solid Waste Management Facility at Bawana for processing of 2000 TPD of municipal solid waste having Waste to Energy Plant, Compost Plant and Engineered Sanitary Landfill. One Engineered Sanitary Land Fill is proposed to be

developed by South Delhi Municipal Corporation (SDMC) at Tehkhand. An Integrated Solid Waste Management Facility for 2000 TPD was proposed to be developed by East Delhi Municipal Corporation (SDMC) in joint venture with NTPC at Ghonda Gujran however Principal Committee constituted by Hon'ble NGT has not permitted the said Facility since it was falling in the Flood Plain of River Yamuna.

### Waste to Energy Plants

Delhi has 4 Waste to Energy Plants (WTE Plants) of capacity 6550 TPD at 4 different locations in Delhi namely Okhla, Ghazipur, Bawana and Tehkhand. One new Waste to Energy Plant of capacity of 3000 TPD is proposed at Narela-Bawana. Expansion of existing WTE at Okhla from 1950 TPD to 2950 TPD (from 23 to 40 MW Capacity) is proposed. Public Hearing for Expansion of existing WTE at Okhla was held on 16.08.2022 and Proceedings of Public Hearing sent to MoEF&CC on 24.08.2022. After commissioning of abovementioned proposed project, the capacity of WTE Plants will enhance from 6550 TPD to 9550 TPD by August, 2025.

The brief of the existing operational Waste to Energy Plants in Delhi is given in the statement 8.6:

### STATEMENT 8.6

#### EXISTING OPERATIONAL WASTE TO ENERGY PLANTS IN DELHI

S. No.	Waste to Energy Plant & Name of Operator	Existing Capacity	
		Waste Processing (in TPD)	Electricity Generation Capacity (in MW)
1.	<b>Waste to Energy Plant at Okhla</b> (Operated by M/s Timarpur Okhla Waste Management Company Ltd., Old NDMC Compost Site, Okhla)	1950	23
2.	<b>Waste to Energy Plant at Ghazipur</b> (Operated by M/s East Delhi Waste Processing Company Ltd., Ghazipur)	1300	12
3.	<b>Waste to Energy Plant at Bawana</b> (Operated by M/s Delhi MSW Solutions Ltd., Narela Bawana Road, Bawana)	1300	24
4.	<b>Tehkhand Waste to Electricity Project Limited,</b> Tehkhand, Delhi	2000	25
	<b>Total</b>	<b>6550</b>	<b>84</b>

Monitoring of the stack emissions and Ambient Air Quality is also carried out by CPCB during the inspections and report is submitted by CPCB to Hon'ble National Green Tribunal from time to time. Online Continuous Emission Monitoring System (OCEMS) has been installed by all the 3 operational Waste to Energy Plants in Delhi and connected to the Servers of CPCB & DPCC.

## STATEMENT 8.7

## PROPOSED WASTE PROCESSING FACILITIES &amp; SANITARY LAND FILL IN DELHI

S. No.	MSW Facility	No(s)	Location	Local Body	Capacity (in TPD)	Expected Timeline for Completion
1	Waste to Energy Plant	1	Narela-Bawana For 3 Zones (City-SP, Karol Bagh & Narela Zone)	MCD	3000	August, 2025
2.	Expansion of existing WtE at Okhla	1	Okhla	MCD	1000 (From 1950 TPD to 2950 TPD)	Public Hearing held on 16.08.2022 & Proceedings of Public Hearing sent to MoEF&CC on 24.08.2022.
3.	Bio CNG Plant	1	Okhla	MCD	300 TPD (From existing compost plant of 200 TPD to 300 TPD)	September 2023
4.	Compressed Bio Gas (CBG) Plant	1	Hastsal	MCD	100 TPD	April, 2023 (Due to Public Resistance site is being shifted to Ghoga Dairy)
5	Bio-methanation Plant of NDMC	1	NDMC Area	MCD	10(5 TPD EACH)	December, 2022
6.	Sorting cum Composter Plants	2	Tigris Road & Kirby Place in Delhi Cantt.	Delhi Cantonment Board	<b>50</b> (Total Capacity of 50 TPD Plants)	December, 2022
7.	Decentralised Composter Plants	2	<ul style="list-style-type: none"> <li>• New Ashok Nagar</li> <li>• Vishwas Nagar</li> </ul>	MCD	2 (1TPD each)	December, 2022
8.	Engineered Sanitary Landfill (SLF)	1	Tehkhand	MCD	-----	April, 2023
	<b>Total</b>	<b>8 + One SLF</b>			<b>4452 TPD</b>	

## Decentralized Bio- Methanation &amp; Compost Plants

The Government is in the process of installation of decentralized Waste Management Facilities (Compost Plants / Bio- Methanation Plants) so that the solid waste generated is segregated and treated at source and the transport and dumping of waste in faraway areas can be done away with. The details of the decentralized plants already commissioned and those at different stages of commissioning are as follows:



**STATEMENT 8.8****WASTE MANAGEMENT FACILITIES UNDER LOCAL BODIES**

S. No.	Local Body	Composting	Bio- Methanation Plant
1.	DCB	1 Sorting Cum Composter of 20 TPD at Tigris Road, 2 Food Waste Composters (OWCs) (0.125 TPD + 0.05 TPD) - Total Capacity - 20.175 TPD	Nil
2.	NDMC	10.15 TPD [24 Organic Waste Convertors (OWCs)]	8.25 TPD (6 Nos)
3.	MCD	<ul style="list-style-type: none"> <li>• One Centralised Compost Plant at Okhla (200 TPD) is closed for upgradation into Bio-CNG Plant of 300 TPD</li> <li>• One Centralised Compost Plant of 700 TPD within Integrated Waste Complex at Bawana</li> <li>• 20 Composters of 1 TPD each at various locations (20 TPD)</li> </ul>	50 TPD (10 Nos of 5 TPD each) (Commissioned but not in operation)

### 5.2 NGT Case OA No. 519 / 2019 & OA No. 386/2019 regarding Remediation of Legacy Waste (Old MSW) from the 3 Dumpsites in Delhi

There are 3 Dumpsites at Ghazipur, Bhalaswa and Okhla in Delhi where Municipal Solid Waste have been dumped in the past for several years accumulating legacy waste of 28 Million Tons.

76 Trommel Machines have already been installed at three landfill sites for treatment of waste.

### 5.3 Biomedical Waste

5.3.1 About 25.828 TPD of Bio-Medical Waste was generated during 2021. There are following two Common Bio-Medical Waste Treatment Facilities (CBWTF) in Delhi for the treatment of the Bio-Medical Waste generated from the Health Care Establishments in Delhi :

- (i) M/s Biotic Waste Solutions Pvt. Ltd at SMA Industrial Area, GTK Road, Delhi
- (ii) M/s SMS Water Grace BMW Pvt. Ltd., near Nilothi STP of DJB.

5.3.2 These CBWTFs have a total capacity of 63 Tons/ Day and having Incinerators, Autoclave and Shredders for the treatment and disposal of the Bio-Medical Waste.

### 5.4 Electronic Waste

5.4.1 CPCB grants Extended Producer Responsibility (EPR) authorization to the Producers as well as Producer Responsible Organisations (PROs) and its compliance is being monitored by the DPCC and violations, if any, are being intimated to CPCB for further necessary action.

5.4.2 DPCC has issued authorization to 03 Refurbishers and 02 Dismantlers under the said Rules in NCT of Delhi.

5.3.3 Land for setting up of Eco Park for E Waste has been allotted at Holambi Kalan by DDA to DSIIDC.

## 5.5 Plastic Waste

### Plastic Waste Management Rules, 2016 as amended 2018 issued by MoEF & CC, GOI

The rules cast responsibilities on various stakeholders including generators, producers, Urban Local Bodies, Urban Development Department, Local Administration and the Pollution Control Board/ Committee.

Prescribed Authority	Mandate
The State Pollution Control Board and Pollution Control Committee	Registration, Manufacturing & Recycling
The concerned Secretary-in-charge of Urban Development Department of States / UTs	Waste Generator, Use of plastic Carry bags, sheets or like etc.
The concerned Gram Panchayat shall be the authority in the villages	Waste Generator, Use of plastic Carry bags, sheets or like etc.
District Magistrates	Assisting above authorities in enforcement of the PWM Rules within territorial limits.

*Status of Plastic Waste generation: 1035 Tons/day (approx)*

## 5.6 Ongoing Action/ status by DPCC in respect of Plastic Waste Management

- ULBs have been directed to encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction or energy recovery etc.
- Registration under the Plastic Waste Management (Amendment) Rules, 2018:

No. of registered Plastic Manufacturing or Recycling (Including multilayer, compostable) unit. (Rule 9) in FY2020-22	
Type of Unit	Number of units
Producer (Bags/sheets/Multilayered & Like)	840
Recyclers	778
Plastic Raw Material/Producers	236
<b>Total</b>	<b>1854</b>

- Carry bags made of virgin or re-cycled plastic less than 75 microns are banned in Delhi for production and use. Further carry bags and plastic products made of re-cycled plastic are also banned in Delhi for storing, packaging of ready to eat or drink food stuff.

- d. From 01.04.2020 till 07.01.2021, 34 plastic units were inspected, Environmental Compensation of ₹ 28,535,500/- imposed on violating units and 21 number of Show cause notices were issued to units, which were found engaged in burning/ dumping of plastic waste in Bawana and Narela Industrial Areas.

### 5.7 Ban on Single-Use Plastics

- As per condition No. 4(2) a&b of Plastic Waste Management (Amendment) Rules, 2021 Notified on 12.08.2021 "The manufacture, import, stocking, distribution, sale and use of following single use plastic, including polystyrene commodities shall be prohibited with effect from the 1<sup>st</sup> July, 2022:- (a) ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol for decoration; (b) plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 micron, stirrers (except commodities made of compostable plastic).
- Further, The Ministry has notified the Plastic Waste Management Amendment Rules, 2021, under the provisions of Plastic Waste Management Rules, 2016 and as amended to date, has mandated banning of 19 identified Single Use Plastic (SUP) items with effect from 1<sup>st</sup> July, 2022.
- After all amendments to the Plastic Waste Management Rules 2016 were brought about in August 2021, September 2021 and February 2022. Now the rule is called as Plastic Waste Management (Amendment) Rules, 2022.

#### **Action Taken by Department of Environment to eliminate Single Use Plastic & to promote alternatives to SUPs in Delhi:**

- i. **Special Task Force:** Department of Environment, Government of National Capital Territory of Delhi constituted the Special Task Force under the Chairmanship of Chief Secretary, Delhi.
- ii. **The Comprehensive Action Plan (CAP)** on the elimination of Single Use plastic in Delhi has been prepared based on inputs from local bodies to MoEF&CC, GoI and also circulated to all stakeholder Departments/Agencies for implementation.
- iii. **Information, Education and Communication (IEC) Plan:** IEC plan for different stakeholders was prepared for execution by all stakeholder departments including education, Urban Local Bodies (ULBs), Environment, Delhi Pollution Control Committee (DPCC) etc.
- iv. **Advisory on phasing out SUP items:** The Advisory on phasing out SUP items was issued in government offices of Govt. of NCT of Delhi. Department of Environment requested to the Directorate of Education and Directorate of Training & Technical Education, GNCTD to initiate and give wider publicity among school & college students.

- v. **Online Training and Sensitization Programmes on Single Use Plastics and Plastic Waste Management (Amendment) Rules, 2022:** Various online training and sensitization programmes were organized with ULBs, Industrial Associations & Commercial Units, Eco-Clubs (School & Colleges), Revenue Department, DPCC Enforcement Officials and Market Traders Associations from May, 2022 to September, 2022.
- vi. **Research & Development Study:** Department has floated Request For Proposal (RFP) to conduct various R & D studies which will be useful to combat various types of pollution and environment-related issues. Following studies are specifically proposed on plastic:
- Study on Single-Use Plastic in Delhi
  - Study on Yamuna Frothing in Delhi
  - Study on Micro plastics in Yamuna River and Ground Water in Delhi
- vii. **Plastic Vikalp Mela :** The Department of Environment and Delhi Pollution Control Committee organized a 3-day fair “Plastic Vikalp Mela” from 1st – 3rd July, 2022 on alternatives to single-use plastics (SUPs) to encourage and promote Startups/ Entrepreneurs/ SHGs/ Traders/ Manufacturers/ Associations/ Institutions etc.
- viii. DPCC organized awareness campaigns, issuing of public notice in print media, door to door survey of 28 industrial area, convened meetings with industrial associations and ULBs, inspection of industrial units and closure of non-complying units, distribution of handbook for enforcement officers on Plastic Waste Management Rules etc.
- Govt. of Delhi had imposed ban on manufacture, sale, storage, usage, import and transport of all kinds of plastic carry bags in NCT of Delhi vide Notification dated 23.10.2012. This notification was challenged in the Hon'ble High Court of Delhi by All India Plastic Industries Association (WPC 7012/2012). On 05.12.2016, Hon'ble High Court of Delhi transferred the matter to the Hon'ble NGT vide an interim order dated 10.08.2017 Hon'ble NGT directed complete prohibition on use of less than 50 micron non-compostable plastic carry bags in the NCT of Delhi and that the defaulters shall be liable to pay ₹ 5000/- per default as Environmental compensation.

## 5.8 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

- Approximate total C&D waste generation in Delhi - 6000 TPD
- 4 Construction and Demolition Waste Processing / Recycling plants are functioning at present with installed capacity of 3150 TPD (Rani Khera-1000 TPD, Shastri Park- 1000 TPD, Rani Khera-150 TPD & Bakkarwala – 1000 TPD). Additional 2500 TPD facilities are proposed at Tehkhand Okhla (1000 TPD) and Libaspur (500 TPD).
- C&D Waste Processing Facility of 2000 TPD at Jahangirpuri (Burari) is under

revamp/ under construction and therefore not in operation, expected to be commissioned by February, 2023.

- With the existing and proposed processing facilities, it is expected that the entire C&D waste generated in Delhi will be managed properly in a scientific manner.

Processed construction and demolition material is used for making tiles/ pavement blocks and also for ready-mix concrete, aggregates etc.

### **5.9 Hazardous Waste - Setting up of Treatment Storage and Disposal Facility (TSDF) at Bawana for disposal of hazardous waste of Delhi**

Delhi Govt. is in the process of setting up of TSDF for disposal of hazardous waste of Delhi at Bawana. DSIIDC has been assigned the task and is in the process of setting up of TSDF through M/s Tamil Nadu Waste Management Ltd. M/s Tamil Nadu Waste Management Ltd. has been granted Consent to Establish by DPCC on 31.12.2020. Consent to Operate under the Air & Water Acts and authorization under the Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016 have been issued by DPCC to the Project Proponent on 04.03.2022 for Secured Land Fill (SLF), Incinerator and Associated Activities. TSDF is in operation.

## **6. Climate Change Mitigation Measures**

6.1 In order to address the challenges of climate change, Delhi Government has been finalized Delhi Climate Change Action Plan which is aligned with National action plan on climate change.

6.2 Following sectors have been identified as critical to the impact of climate change and comprehensive strategies have been drawn in State action plan on climate change.

- a) Enhanced Energy Efficiency
- b) Sustainable Habitat
- c) Green India
- d) Water Mission
- e) Strategic Knowledge
- f) Solar Mission

6.3 Department of Environment has engaged Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ-India) for the revision of State Action Plan on Climate Change Delhi (SAPCC) Delhi as per the common framework guidelines for Revision of SAPCC provided by MoEF&CC, GOI. Revision of State Action Plan on Climate Change (SAPCC) for Delhi is in alignment with India's Nationally Determined Contributions (NDCs) under the Paris Agreement, the Sustainable Development Goals (SDGs), and prevalent national policies and missions. The Revised SAPCC report contains

mitigation and adaptation action points targeting till 2030. The revision of SAPCC-Delhi is in progress.

## 7. Green Delhi App

7.1 Green Delhi app has been developed for information, awareness and redressal of grievances of the citizens at single platform. Green Delhi App has been launched by Hon'ble Chief Minister Govt. of Delhi on 29.10.2020 for redressal of grievances of citizens of Delhi with regard to various offences related to pollution. Green War Room (GWR) is a 24X7 pollution monitoring and mitigation initiative setup at Delhi Secretariat for monitoring the grievance uploaded on Green Delhi App. Green Delhi App is aimed to resolve grievances related to Air and Noise pollution on priority.

7.2 56284 Complaints have been received on Green Delhi App (as on 07.12.2022) out of which 52849 have been resolved by 29 Agencies and only 6.10% of the complaints are pending.

For efficient functioning of the GWR, the following six stakeholders are responsible:

1. In charge GWR: to carry out overall operation of the GWR.
2. DPCC Trainees: to carry out day to day operation of GWR.
3. Nodal officers of Agencies: for timely resolution of complaints within their departments.
4. Green Marshals: Group of Civil Defense volunteers have been deputed with the responsibility to assist in quick on ground inspection and verification & resolution of complaints. The Green Marshall have been grouped into two categories :
  - a. Green Marshall Field Team: Responsible for carrying out inspection and on ground verification.
  - b. Green Marshal Coordination Team: Responsible to assist coordination between GWR and Green Marshall Field Team.
5. DPCC Engineers: Cell Incharge(s) of DPCC are responsible for taking action on the complaints including imposing EDC on the agencies responsible for redressal of complaints, in case of default.
6. Green Delhi App IT Team (DPCC): Responsible to manage Green Delhi App Dashboard and other IT requirements of the GWR

## 8. DELHI PARKS AND GARDENS SOCIETY (DPGS)

8.1 Delhi Parks and Gardens Society (DPGS) maintain parks and gardens of Delhi. DPGS involves RWAs /NGOs, in maintaining and developing parks of Delhi with the objective to increase the greenery in Delhi. It provides financial assistance to RWAs / NGOs and financial assistance increased w.e.f. 02.11.2020 from ₹ 2.00 lakhs per acre to ₹ 2.55 lakhs per acre for maintenance of parks and gardens without STPs and ₹ 2.80 lakhs per acre including STPs, ₹ 3.55 lakhs per acre for creation / development of new parks without maintenance cost of STPs. One time financial assistance for



setting up of decentralized STPs increased from ₹ 2.00 lakhs to ₹ 3.50 lakhs per acre in Delhi, based on the NOC from the concerned land owning agency, Delhi Jal Board and the area MLA.

## 8.2 Performance of DPGS during 2020-21 and 2021-22 & for FA 2022-23 (as on 31.12.2022)

During the year 2020-21, financial assistance of ₹ 801 lakhs for maintenance of parks and gardens provided for area measuring 555.26 acres with the participation of 414 RWAs /NGOs covering 1722 No of parks, and for the financial year 2021-2022 up to March-2022, for area measuring 518 acres with the participation of 368 RWAs /NGOs covering 1560 number of parks. & for Financial Year 2022-23 area measuring 505.659 acres with the participation of 388 RWAs /NGOs covering 1839 No of parks amount of ₹ 703 lakhs.

### Target For 2022-23

During the financial year 2022-23, DPGS intends to cover 2000 parks covering an area of 600 acres with the participation of 500 RWAs /NGOs.

### Free Distribution of Plants From DPGS Nursery

During 2020-21, 258491 plants were procured / raised and maintained in DPGS Nursery and distributed for plantation. During the financial year 2021-22 up to March, 2022, 290257 and for F.A. 2022-23 on 31.12.2022 is 303590 plants have been procured / raised and maintained in DPGS Nursery and distributed for plantation to RWAs/NGOs, Educational Institutions/ Armed Forces and general public of Delhi for plantation. A target of 250000 plants for free distribution from DPGS Nursery has been fixed for the year 2022-23.

### Financial Assistance of Setting Up To Decentralised STP

DPGS also provides one time financial assistance to RWAs/ NGOs for setting-up of decentralized STPs @ ₹ 3.50 lakhs per acre, on receipt of NOC form the concerned land owning agency, Delhi Jal Board and area MLA.

- DPGS also provides technical support to other agencies in the greening activities

### Rejuvenation of Water Bodies in Delhi

- Wetland Authority of Delhi (Delhi Parks and Gardens Society) is the nodal agency for wetlands conservation, protection and management of listed 1045 water bodies as on 31.12.2022 in Delhi, out of which 1018 water bodies have been mapped. Brief document is a statutory requirement under Wetland (Conservation and Management) Rules, 2017 has been prepared for 710 water bodies through co ordination with 16 line departments/land owning agencies.
- Citizen engagement and public participation in the conservation of wetlands is done through declaring engagement of Wetland Mitras, Currently, 112 wetland mitras are engaged with Wetland Authority in protection and restoration of wetlands of Delhi on pro-bono basis for wetland conservation and management activities.

## 9. FOREST IN DELHI

- 9.1 Delhi has the unique distinction of being the second most populous city in the world with a population of 16.79 million people as well as one of the greenest city in the country with 23.06% of total geographical area of the state under Green Cover (*India State of Forest Report, 2021*). The Delhi government is making sustained efforts to enhance the green cover in Delhi with aim to maintain a balance between ecology and development.
- 9.2 As per Champion and Seth classification the forest types of Delhi fall broadly into two groups: (i) Tropical Dry Deciduous Forests (Group 5) and (ii) Tropical Thorn Forests (Group 6). The vegetation of Delhi is thorny scrub, which is found in the arid and semi-arid zone
- 9.3 The green cover of Delhi is increasing year after year on the lines of National Forest Policy, 1988 which stipulates that a minimum of 1/3<sup>rd</sup> of the total land area of the country should be under forest or tree cover. Taking the above in view, the Govt. of NCT of Delhi is making all endeavors to meet the national goal as set by the Central Govt. and is constantly adding to the green cover of the State Government As a result of the initiatives taken by the Government of NCT of Delhi, forest and tree cover area has been increasing since last ten years which is reflected in the change in forest and tree cover given in statement 8.9:

### STATEMENT 8.9

#### FOREST AND TREE COVER AREA OF DELHI 1997-2021

(Sq. Km)

S. No.	Year	Forest and Tree Cover	Absolute Increase In Area	% of Total Area
1.	1997	26	--	1.75
2.	1999	88	62	5.93
3.	2001	151	63	10.20
4.	2003	268	117	18.07
5.	2005	283	15	19.09
6.	2009	299.58	16.58	20.20
7.	2011	296.20	-3.38	19.97
8.	2013	297.81	1.61	20.08
9.	2015	299.77	1.96	20.22
10.	2017	305.41	5.64	20.59
11.	2019	324.44	19.03	21.88
12.	2021	342.00	17.56	23.06

Source: India State of Forest Report, 2021

- 9.4 Government of NCT of Delhi has taken initiatives to increase forests and tree cover area to keep the environment green in Delhi. As a result of the initiatives taken by the Government of NCT of Delhi, forest and tree cover area has been increasing since last ten years. The forest and tree cover in Delhi in 2021 provided in statement 8.10

**STATEMENT 8.10**  
**FOREST AND TREE COVER IN DELHI IN 2021**

(Area in Sq Km)

FOREST AND TREE COVER IN DELHI	2021 Assessment
Geographical Area	1483
Very Dense Forest	6.72
Moderate Dense Forest	56.60
Open Forest	131.68
(A) Total Forest	<b>195.00</b>
(Per cent of the Geographical Area)	<b>13.15</b>
(B) Tree cover	<b>147</b>
(Per cent of the Geographical Area)	<b>9.91</b>
Total Forest and Tree Cover (A+B)	<b>342</b>
(Per cent of the Geographical Area)	<b>23.06</b>

Source: India State of Forest Report, 2021

- 9.5 The India State Forest Report 2021 reveals that Very Dense Forest cover has more than 70% canopy, medium dense forest cover has a canopy of 40% to 70%. These are the actual carbon sinks. Increase or constant form of such dense forests is a good sign as it increases a city's capacity to sequester carbon. The open forests with a canopy cover of 10% to 40%, covers 131.68 sq. km area in Delhi. (Statement 8.10)
- 9.6 Numbers of trees to be felled/ transplanted have been rationalized for minimizing loss of existing green cover in Delhi. Further at the same time, afforestation drives were also undertaken. The new plants have not been accounted for as they are too small to have their canopy. They would only come under the medium dense forest or very dense forest after a period of five to 10 years at least.
- 9.7 As far as tree cover is concerned, sparse vegetation along roads or small scale plantations, Delhi has the second-highest tree cover as a percentage of the total geographical area among states,
- 9.8 Forest Cover in Major Mega Cities:**

Among the seven major mega cities, Delhi has largest forest cover 194.24 sq km followed by Mumbai 110.77 sq km and Bengaluru 89.02 sq km. (Statement 8.11)

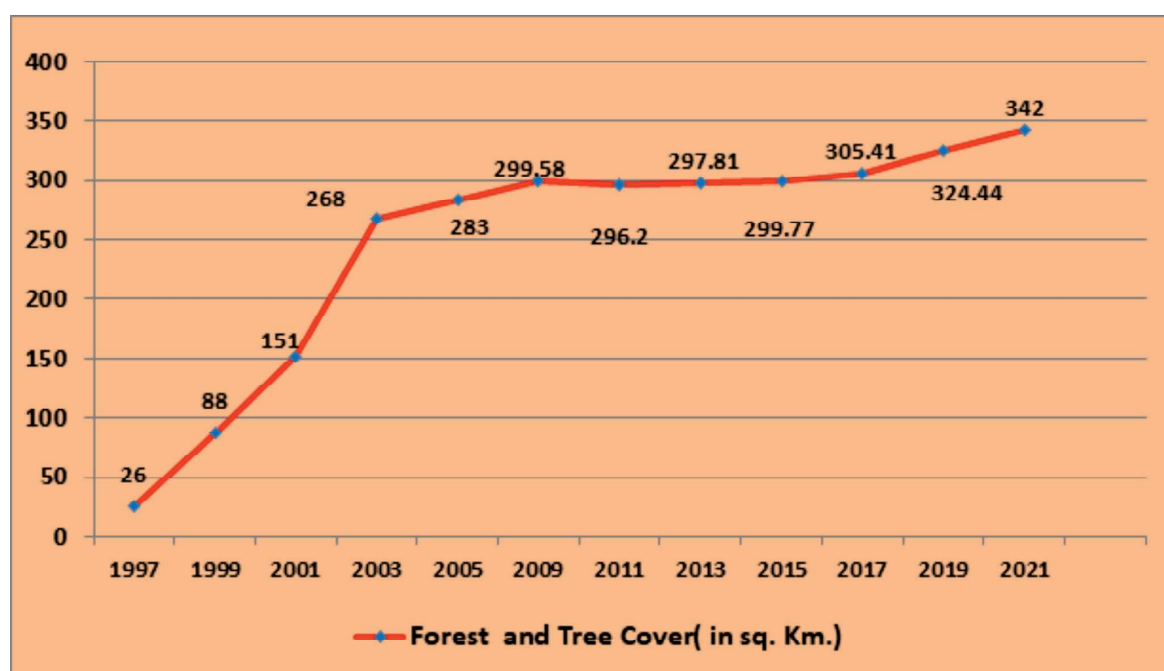
**STATEMENT 8.11****FOREST COVER IN MAJOR MEGA CITIES (ISFR 2021)**

(Area in Sq. Km.)

S. No.	Name	Area as Per digitized Boundary	Very Dense Forest	Medium Dense Forest	Open Forest	Total Forest Cover	% of total Forest Cover w.r.t area of digitized boundary	Scrub
1.	Ahmedabad	455.32	0.00	1.59	7.82	9.41	2.07	4.85
2.	Bengaluru	1307.35	0.00	12.66	76.36	89.02	6.81	14.87
3.	Chennai	430.07	0.00	7.66	15.04	22.70	5.28	1.77
4.	Delhi	1540.63	6.74	56.34	131.15	194.24	12.61	0.45
5.	Hyderabad	634.18	0.00	17.68	64.13	81.81	12.90	29.96
6.	Kolkata	186.55	0.00	0.10	1.67	1.77	0.95	0.00
7.	Mumbai	435.91	0.00	51.13	59.65	110.77	25.41	0.00
	<b>Total</b>	<b>4990.01</b>	<b>6.74</b>	<b>147.16</b>	<b>355.82</b>	<b>509.72</b>	<b>10.21</b>	<b>51.90</b>

Source: India State of Forest Report, 2021

\*Shapefile of digitized boundaries as provided by NIC Delhi in 2021

**CHART 8.4****FOREST AND TREE COVER AREA OF DELHI 1997-2021**

9.12 The information regarding the district-wise forest cover area and total geographical area of Delhi is presented in Statement 8.12.

**STATEMENT 8.12**  
**DISTRICT-WISE FOREST COVER IN DELHI - 2021**

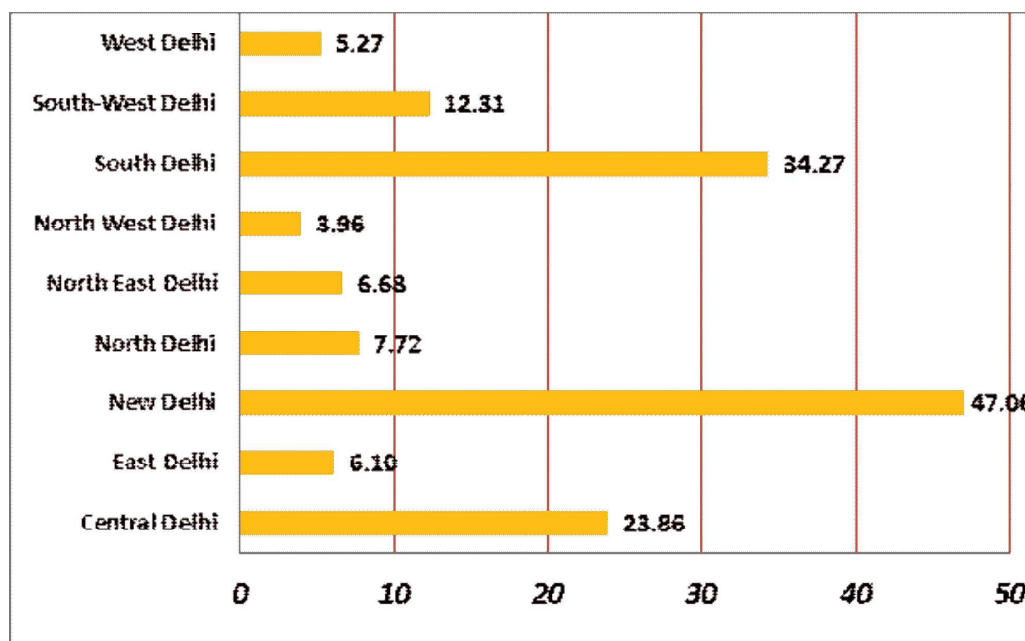
(Sq. Km)

S. No.	Districts	Geographical Area	Forest Cover Area	% of Forest Cover w.r.t. Geographical Area
1.	Central Delhi	21	5.01	23.86
2.	East Delhi	63	3.84	6.10
3.	New Delhi	35	16.47	47.06
4.	North Delhi	61	4.71	7.72
5.	North East Delhi	62	4.14	6.68
6.	North West Delhi	443	17.53	3.96
7.	South Delhi	247	84.64	34.27
8.	South-West Delhi	421	51.81	12.31
9.	West Delhi	130	6.85	5.27
	<b>Total</b>	<b>1483</b>	<b>195.00</b>	<b>13.15</b>

Source: India State of Forest Report, 2021

The information regarding district-wise percentage forest cover w.r.t. geographical area in Delhi is also depicted in Chart 8.5

**CHART 8.5**  
**DISTRICT-WISE PERCENTAGE FOREST COVERS OF GEOGRAPHICAL AREA IN DELHI – 2021**



**Forest Cover inside Green Wash:**

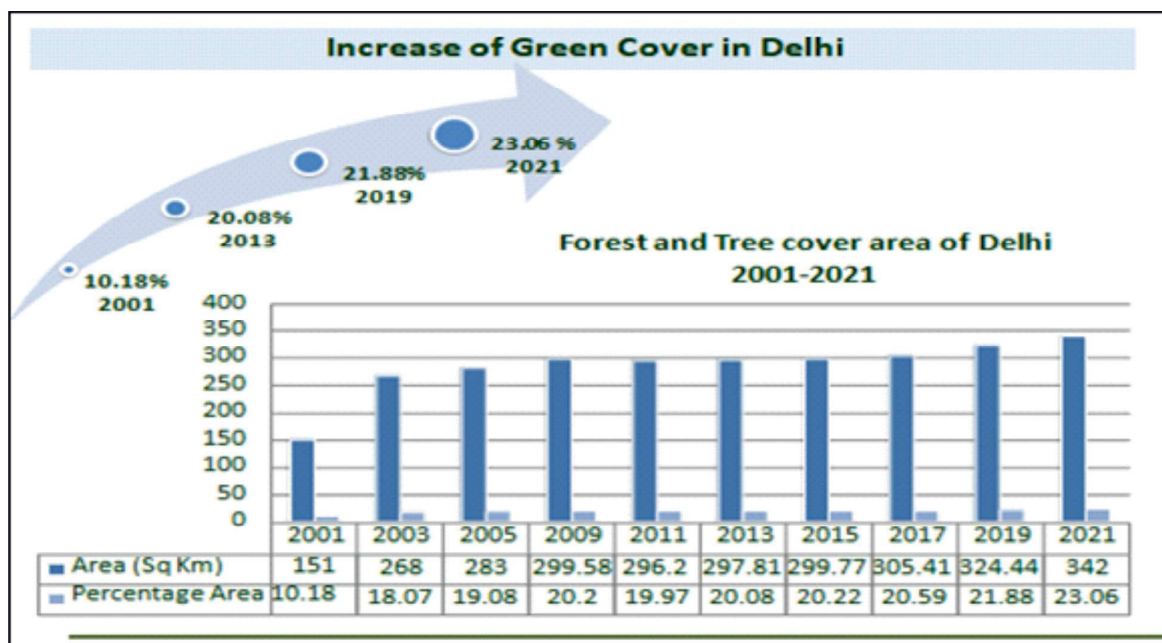
Very Dense Forest	3.19 sq. km
Moderately Dense Forest	16.05 sq. km
Open Forest	<u>39.93 sq. km</u>
Sub Total	<u>59.17 sq. km</u>

**Forest Cover outside Green Wash:**

Very Dense Forest	3.53 sq. km
Moderately Dense Forest	40.55 sq. km
Open Forest	<u>91.75 sq. km</u>
Sub Total	<u>135.83 sq. Km</u>
Total Forest Cover	195 sq. km
Tree Cover	<u>147 sq. km</u>
Total Forest & Tree Cover	<u>342 sq. km</u>
Of State's Geographical Area	23.06 %

**CHART 8.6**

**FOREST AND TREE COVER AREA OF DELHI 2001-2021**



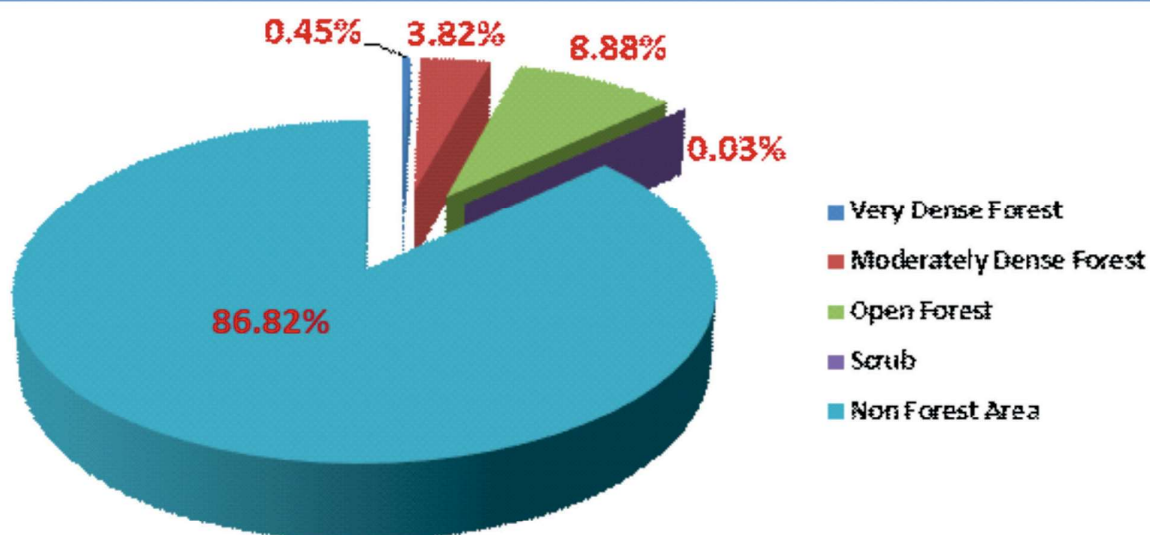
9.14 Composition of forests in terms of its density is shown in Chart 8.6. Out of the total geographical area of NCT of Delhi, a very dense forest is spread over 0.45 per cent,



a moderately dense forest is spread over 3.82 per cent, an open forest is spread over 8.88 per cent and scrub is spread over 0.03 per cent, which is almost negligible.

CHART 8.7

## COMPOSITION OF FOREST COVER (%AGE) IN NCT OF DELHI IN 2021



Source: India State of Forest Report, 2021

### 9.15 Extent of Trees Outside Forest (TOF)

Trees outside Forests (TOF) refer to tree resources found outside the forests as defined in the Government records. Forest cover outside the Recorded Forest Area (RFA) is derived using boundaries of RFA or Green Wash (GW). Extent of Trees Outside Forest therefore, may be estimated as the sum of extent of forest cover outside the recorded forest area (RFA) and tree cover as given in the statement 8.13:

STATEMENT 8.13

## EXTENT OF TREES OUTSIDE FOREST (TOF)

(Sq Km)

Forest Cover Outside the RFA/GW	Tree Cover	Extent of TOF
136	147	283

Source: India State of Forest Report, 2021

## 10. Water Conservation by Wetland Authority of Delhi

10.1 The Wetland Authority of Delhi was constituted on 23<sup>rd</sup> April 2019 under the Department of Environment and Forests, GNCTD. The Authority in coordination with sixteen water body owning agencies

- 10.2 Inventorisation and reconciliation of 1040 water bodies in Delhi is completed through coordination with 16 water body owning agencies.
- 10.3 Seven Districts has been identified model ponds (North, North West, South, South West, New Delhi, North East and West). Bench marks for Model Ponds prepared and sent to all District Magistrates by Wetland Authority of Delhi.
- 10.4 Brief Documents in prescribed format of Ministry of Environment Forest and Climate Change, Government of India, is a statutory requirement under Wetland Rules, 2017. This crucial document which contains ecological attributes and management challenges of the water body has been prepared in respect of 685 water bodies of Delhi.
- 10.5 Hon'ble NGT, had directed preparation of action plans for restoration of all wetlands. These action plans which propose conservation actions to be done in each water body has been completed in respect of 685 water bodies.
- 10.6 Citizen engagement and public participation in the conservation of wetlands is planned through declaring wetland mitras, who can assist the authority in protection and restoration of wetlands.
- 10.7 In pursuance of Wetlands (Conservation and Management) Rules, 2017 a Technical Committee under Chairmanship of Dr. Madhu Verma, Chief Economist at the World Resources Institute at Delhi consisting of six wetland experts formed on 01.07.2021. Five significant wetlands were declared by MoEF&CC on 09.05.2019 and Sanjay Lake was declared by MoEF&CC as a potential Ramsar site (Communication dated 22.09.2021). Wetland Authority has prioritized 10 waterbodies for immediate notification which are Sanjay Lake, Hauz khas Lake, Bhalswa Lake, Smriti Van (Kondli), Smriti Van (Vasant Kunj), Najafgarh Jheel, Welcome Jheel, Daryapur Kalan, Sultanpur Dabas and Poth Kalan (Sardar Sarovar Lake).
- 10.8 In pursuance of Wetlands (Conservation and Management) Rules, 2017 a "Grievance Committee under Wetland Authority of Delhi was constituted on 01.07.2021 as a mechanism for hearing and forwarding grievances raised by the public to the Wetland Authority on Wetlands falling under their respective jurisdiction.
- 10.9 The future plan of the Wetland Authority is to prepare a protocol for catchment area management, evolving low cost restoration techniques, and actively engage, coordinate and help land owning agencies to prioritize wetlands based on the brief documents prepared and notify them, thus ensuring long term protection and conservation of wetlands in Delhi.

**STATEMENT 8.14****WETLANDS IN DELHI**

Natural Wetlands	Human made Wetlands
Najafgarh Jheel	Bhalswa Lake
Sanjay Lake	Hauz khas Lake
Welcome Jheel	Smtiti Van Lake ( Kondli)
Tikrikhurd Lake	PoothKalan ( Sardar Patel Lake)
Smriti Van ( Vasant Kunj)	DaryapurKalan ( Kh. No. 107(19-17)

**10.18 Fire Prone Forest Classes**

Geographical area GNCTD having only less fire prone forest cover of 195 sq Km.

**10.19 Major Species of Trees in Delhi**

10.19.1 Diameter class-wise distribution of top five species in numbers derived from the forest inventory is presented in the statement 8.15:

**STATEMENT 8.15**

(In Sq Km)

S. No.	Species	10-30	30-60	>60
1.	Prosopis Juliflora	475	25	6
2.	Acacia Lenticularis	172	8	0
3.	Azadirachta Integrifolia	45	18	0
4.	Holoptelea Integrifolia	33	4	0
5.	Ficus Virene	6	8	0

Source: India State of Forest Report, 2021

**10.19.2 Dominant Tree Species in Trees Outside Forests (TOF)**

Top five species in numbers of Trees Outside Forests in Delhi in Rural and Urban areas are given in the statement 8.16.

**STATEMENT 8.16****TOP FIVE TREE SPECIES IN TREES OUTSIDE FORESTS (RURAL) IN DELHI**

S. No.	Species	Relative Abundance (%)
1.	Prosopis Juliflora	29.52
2.	Azadirachta Indica	13.06
3.	Eucalyptus spp.	8.07
4.	Leucaena leucocephala	7.72
5.	Ficus spp.	5.29

Source: India State of Forest Report, 2021

**STATEMENT 8.17****TOP FIVE TREE SPECIES IN TREES OUTSIDE FORESTS (URBAN) IN DELHI**

S. No.	Species	Relative abundance (%)
1.	Azadirachta Indica	10.77
2.	Prosopis Juliflora	8.11
3.	Poyalthia longifolla	6.20
4.	Morus spp.	6.03
5.	Ficus religiosa	5.80

Source: India State of Forest Report, 2021

**11. Asola Bhatti Wild Life Sanctuary**

Asola Bhatti Wildlife Sanctuary spread over 4872.91 acres is situated near Tughlakabad Fort in South Delhi. The Wildlife Sanctuary is considered the breathing lung of the cosmopolitan city of Delhi. It was established in 1992 with the aim to protect the wildlife in the area between Delhi and Surajkund (Delhi-Haryana border). The legal status of the Southern Ridge was considered uncertain till 1986 when the community land of villages Asola, Sahurpur and Maidangari (2679.29 Acre) were notified and the land of Bhatti village area (2166.28 Acre) was notified in 1991 and land of Tughlakabad village area (29.64 Acre) was notified in 1992.

The Delhi Forest Department has also undertaken several soil moisture conservation works in the Southern and Central Ridge area in the form of small checkdams breathing lung of the cosmopolitan city of Delhi. This is very important to check run off, soil erosion and increase the percolation of rainwater in the underground aquifers thereby serving an important ecosystem function of enhancing the water security of the city.

**11.1 Details of City Forests under Department of Forest & Wildlife, GNCTD:**

Keeping the objective of having more green/tree cover in Delhi and resultant benefit on environment, Department of Forest and Wildlife, Govt. of NCT of Delhi has created and planned to create City Forests at following sites.

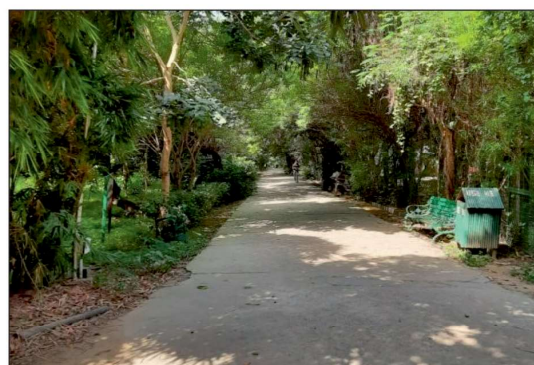
**CITY FORESTS DEVELOPED IN DELHI**

S. No.	Name of City Forest	Name of City Forests under Development/ Planning Stage
1	Mitraon City Forest-Pkt A	City Forest At Shastri Park Metro Station
2	Nasirpur City Forest	Mamoorpur City Forest
3	Alipur City Forest	City Forest Aya Nagar
4	Mitraon City Forest-Pkt B	City Forest Jaunapur
5	Butterfly Park, Tughlaqabad	City Forest Dera Mandi
6	Aravali Arenya Kendra, Tughlaqabad	City Forest Chhattarpur

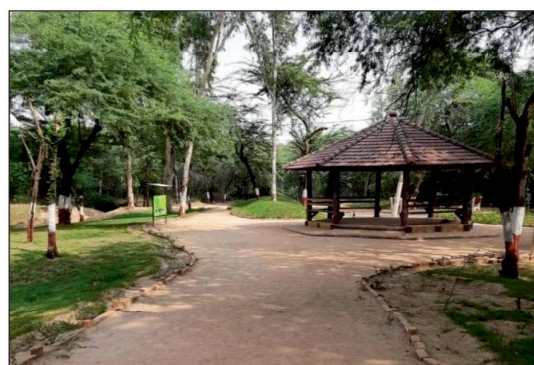


S. No.	Name of City Forest	
7	Taj Enclave City Forest	
8	Shastri Park near colony City Forest	
9	Garhi Mandu Pkt A2 City Forest	
10	City Forest at ITO chungi Loop No. 4	
11	City Forest Hauz Rani	

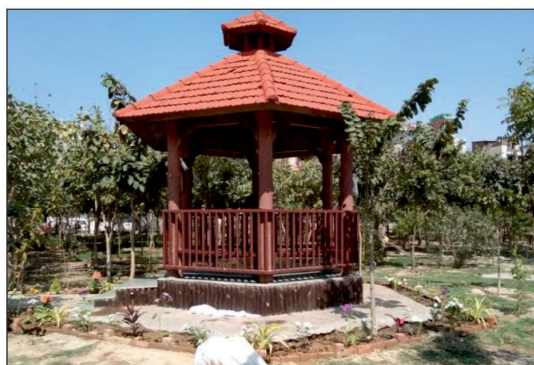
**Photos of City Forests under Department of Forest and Wildlife, GNCTD**



**HAUZRANI CITY FOREST**



**MITRAON CITY FOREST**



**GARHI MANDU CITY FORESTS**

**12. Major Achievements:****PLANTATION WORK IN LAST 8 YEARS BY CIVIC AGENCIES**

S. No.	Year	Plantation	Distribution	Total
1.	2014-15	9,66,032	6,46,857	16,12,889
2.	2015-16	9,73,822	6,77,626	16,51,448
3.	2016-17	21,04,246	3,71,419	24,75,665
4.	2017-18	16,08,105	Nil	16,08,105
5.	2018-19	24,59,730	4,36,086	28,95,816
6.	2019-20	23,45,274	5,24,242	28,69,516
7.	2020-21	25,80,144	6,60,678	32,40,822
8.	2021-22	27,75,539	7,20,109	34,95,648

**13. Plantation by Forest Department from 2016-17 to 2022-23 (upto Jan, 2023) :**

S. No.	Year	Plantation by Forest Department (in Lakhs)
1.	2016-17	2.96
2.	2017-18	1.29
3.	2018-19	4.51
4.	2019-20	5.21
5.	2020-21	5.48
6.	2021-22	4.93
7.	2022-23 (upto January ,2023)	10.78

- 30 km of Forest Boundary Wall to be constructed in 2022-23.
- 95 km of Forest Boundary wall constructed till date.
- 25 lakh seedlings to be raised in various sites under Forest Department

**14. During 2022-23 (Till October, 2022)**

- 14.1 In pursuance of the direction of Hon'ble NGT vide its order dated 15.01.2021 in O.A. No. 58/2013 in the matter of Sonya Ghosh Vs Govt. of NCT of Delhi, the Department of Forest and Wildlife, Govt. of NCT of Delhi has initiated the process of declaration of Reserved Forest under Section 20 of Indian Forest Act, 1927. The Delhi Forest Department is undertaking continuous effort to remove encroachment, construct boundary walls, notifying the forest area as reserved forest and till now around 319.23 hectare area has been remained to be made free of encroachment and Chhattarpur and Rangpuri villages have already been notified as Reserved Forest under Section 20 of Indian Forest Act, 1927. Around 101.7 km long boundary wall has been constructed along the Southern Ridge. The process of encroachment removal and notification of Reserved Forest is under progress.
- 14.2 The tree plantation drive in current year (2022-23) is being conducted by Govt. of NCT of Delhi involving 20 greening agencies, eco-clubs and RWAs. Till September, 2022 the Department of Forest and Wildlife, Govt. of NCT of Delhi with other greening

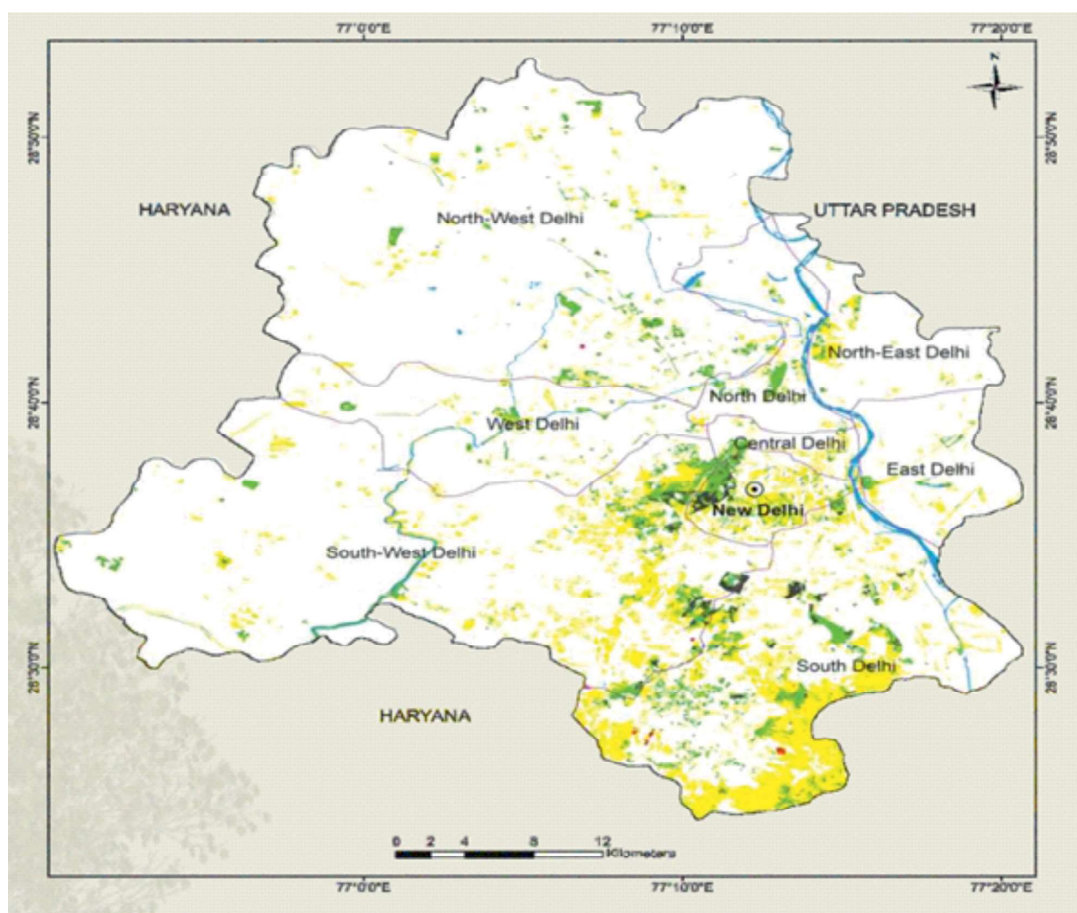


- agencies have planted 36.09 lakh saplings and distributed 6.45 lakh saplings to general public of Delhi.
- 14.3 The process of modernization of these nurseries of Forest Department has been initiated recently where construction of polyhouses, greenhouses, pucca beds, mother beds, chambers for vermicompost, leaf compost and installation of water sprinklers etc. are being carried out. The nurseries located at ITO Chungi, Mamurpur and Pooth kalan have been modernized till date.
- 14.4 Around 14 checkdams have been constructed in Central Ridge.
- 14.5 In current financial year (2022-23) eco-restoration of habitat is being carried out through Eco-Task Force in Asola Bhatti Wildlife Sanctuary (ABWLS) which has planted around 6.60 lakh saplings till September, 2022.
- 14.6 The following initiatives have been taken for wildlife conservation and management:
- i. Establishment of two 'Wildlife Transit Rescue Centres' at ABWLS and Rajokri each.
  - ii. 14 'Monkey Feeding Points' at Asola Bhatti Wildlife Sanctuary to feed the rescued monkeys so that do not move out of the sanctuary and enters into human habitation.
  - iii. Construction of various "Water Bodies" inside the sanctuary to serve as a water source for wild animals and to maintain soil moisture.
  - iv. Establishment of Veterinary Facility Centre at ABWLS.
  - v. Establishment of – Butterfly Park, Aravalli Forest Centre, Aravalli Native Plant Nursery, Tall Seedling Nursery, Cycle Track at ABLWS.
  - vi. The department has initiated the documentation of wild animals through '**Camera Traps**' techniques and it is come to know that the sanctuary thrives a population of **8 leopards** along with other wild animals.
  - vii. 'Wildlife Rescue Squads' have been established at all four divisions. The squad comprises of Animal Handlers and Wildlife Guards. The squad regularly deals with the matters of wildlife raids and inspection on complaints received for wildlife article trade, illegal possession of wild animals or sale-purchase, intelligence collection etc. The rescued animals first kept in rehabilitation centre before releasing them into wild once they are declared fit by the veterinary team.
- 14.7 Department of Forests and Wildlife has issued one public helpline number, known as "**Green Helpline Number 1800-11-8600**" on which the complainants/informer gets their complaint/information registered which is then transferred to the concerned division for successful rescue and rehabilitation operation. Majorly receives complaints include

tree felling, snakes, python, sand boa entered into human inhabitation, monkey got injured or monkey got electric shock due to open electric poles, Nilgai (blue bull) got injured or entered into human inhabitation etc..Approximately, about 450 complaints have been received by the Department during current financial year.

- 14.8 The Department has celebrated various environmental events during current financial year which includes World Earth Day, World Biodiversity Day, World Environment Day (as Harith Uthsav), Van Mahotsav-2022, World Wildlife Week 2022 in view of Azadi Ka Amrit Mahotsav.

**CHART 8.7**  
**FOREST COVER MAP OF DELHI**



LEGEND	
<span style="display:inline-block; width:15px; height:10px; background-color:darkgreen;"></span>	Very Dense Forest
<span style="display:inline-block; width:15px; height:10px; background-color:lightgreen;"></span>	Moderately Dense Forest
<span style="display:inline-block; width:15px; height:10px; background-color:yellow;"></span>	Open Forest
<span style="display:inline-block; width:15px; height:10px; background-color:orange;"></span>	Scrub
<span style="display:inline-block; width:15px; height:10px; background-color:lightgrey;"></span>	Non-Forest
<span style="display:inline-block; width:15px; height:10px; border-bottom: 1px solid blue;"></span>	Water-bodies
<span style="display:inline-block; width:15px; height:10px; border-bottom: 1px solid black;"></span>	International Boundary
<span style="display:inline-block; width:15px; height:10px; border-bottom: 1px solid black;"></span>	State Boundary
<span style="display:inline-block; width:15px; height:10px; border-bottom: 1px solid purple;"></span>	District Boundary
<span style="display:inline-block; width:15px; height:10px; border: 1px solid black; border-radius: 50%;"></span>	Capital

## CHAPTER AT A GLANCE

➤	Delhi Govt. established a policy 'Delhi Electric Vehicles Policy, 2020' to improve Delhi's air quality and create an entire supply-chain ecosystem for this new segment of vehicles. This policy intends to deploy 25% of all new vehicles to be battery-operated vehicles by 2024.
➤	Forest and tree cover area increased to 342 sq km in 2021 making the share of forests in the total area to 23.06 per cent. Delhi has the second-highest tree cover as a percentage (9.91%) of the total geographical area of the States/ UTs after Chandigarh (13.16%).
➤	Complete Ban on Firecrackers: GNCTD on 14.09.2022 upto 01.01.2023 in the territory of Delhi.
➤	Graded Response Action Plan for NCR has been classified under 4 different stages of adverse air quality in Delhi, reflected through the AQI: (i) POOR Category: 201-300, (ii) VERY POOR Category: 301-400, (iii) SEVERE Category: 401-450, (iv) SEVERE + Category: > 450
➤	Till 22.11.2022, Bio-Decomposer is sprayed on 4285.5 acres (85.71 % achieved).
➤	DPCC issued a direction on 28.10.2022 to Delhi Fire Services, Delhi to ensure sprinkling of water during the GRAP period by deployment of atleast 50% of fire tankers (water tenders and water bousers) to suppress the dust on roads.
➤	Water quality monitoring results of the drains indicate that most of the drains still have to meet the standards with respect to Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Total Suspended Solids (TSS).
➤	There are 1799 unauthorized colonies out of which sewer lines have been laid and commissioned in 706 colonies and the work is in progress in 448 colonies. In 161 Colonies NOC is awaited/O Zone.
➤	Common Bio-Medical Waste Treatment Facilities have a total capacity of 63 Tons/Day and having Incinerators, Autoclave and Shredders for the treatment and disposal of the Bio-Medical Waste.
➤	There are 1854 no. of registered Plastic Manufacturing or Recycling Units
➤	The Department of Environment and DPCC organized a 3-day fair "Plastic Vikalp Mela" from 1st – 3rd July, 2022 on alternatives to single-use plastics to encourage and promote Startups/ Entrepreneurs/ SHGs/ Traders/ Manufacturers/ Associations/ Institutions etc.
➤	Among the seven major mega cities, Delhi has largest forest cover 194.24 sq km followed by Mumbai 110.77 sq km and Bengaluru 89.02 sq km.
➤	Wetland Authority has prioritized 100 water bodies for beautification based on their size and water quality and free from encroachment.
➤	Till September 2022, the Department of Forest and Wildlife, GNCTD with other greening agencies have planted 36.09 lakh saplings and distributed 6.45 lakh saplings to general public of Delhi.
➤	Various environmental events were celebrated during current financial year which included World Earth Day, World Biodiversity Day, World Environment Day (as Harith Uthsav), Van Mahotsav-2022, World Wildlife Week 2022 in view of Azadi Ka Amrit Mahotsav.