



DELHI POLLUTION CONTROL COMMITTEE
DEPARTMENT OF ENVIRONMENT, GOVT. OF NCT OF DELHI
5th FLOOR, ISBT BUILDING, KASHMERE GATE, DELHI-110006
visit us at : <http://dpcc.delhigovt.nic.in>

F.No. DPCC/WMC-II/2018/AR/SWM/81-84

Dated: 29-07-2022

To,

Smt. Divya Sinha,
Additional Director & In-charge UPC-II,
Central Pollution Control Board, Parivesh Bhawan,
East Arjun Nagar, Delhi-110032

**Sub: Annual Report in Form V in respect of NCT of Delhi for the Year 2021-2022
on the Implementation of Solid Waste Management Rules, 2016.**

Madam,

Please find enclosed here with Annual Report in Form V in respect of NCT of Delhi for the Year 2021-2022 on the Implementation of Solid Waste Management Rules, 2016.

This issues with the approval of the Member Secretary, Delhi Pollution Control Committee.

Yours Sincerely,

(D. K. Singh)

Sr. Env. Engineer (WMC-II)

Enclosure: As Above

Copy to:

1. The Secretary, Ministry of Housing and Urban Affairs, Govt. of India, Nirman Bhawan, C Wing, Maulana Azad Road, New Delhi-110011.
2. The Secretary, Urban Development Department, Govt of NCT of Delhi, 9th Level, Delhi Secretariat, I.P. Estate, Delhi -110002.
3. PS to Chairman, DPCC – For kind information to Chairman, please.

(D. K. Singh)

Sr. Env. Engineer (WMC-II)

FORM V

[See rule 24(3)]

Annual Report in respect of NCT of Delhi for the Year 2021-2022 on the Implementation of Solid Waste Management Rules, 2016.

PART A

To,

The Chairman
Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
Delhi - 110 032

1	Name of the State / Union territory	NCT of Delhi
2	Name & address of the State Pollution Control Board / Committee	Delhi Pollution Control Committee, 5th Floor, ISBT Building, Kashmere Gate, Delhi-110006
3	Number of local bodies responsible for management of solid waste in the State / Union territory under these rules	5 [North DMC, SDMC, EDMC, NDMC & DCB]
4	No. of authorisation application received	Nil
5	A Summary Statement on progress made by local bodies in respect of Solid Waste Management.	<u>Annexure - I</u> attached.
6	A Summary Statement on progress made by local bodies in respect of waste collection , segregation, transportation and disposal	<u>Annexure- II</u> attached
7	A Summary Statement on progress made by local bodies in respect of implementation of Schedule II	<u>Annexure- III</u> attached
	Date : 29.07.2022 Place : Delhi.	 (Dr. K.S. Jayachandran) Member Secretary Delhi Pollution Control Committee

PART B

Towns / Cities	
Total number of towns/cities	1
Total number of ULBs	5
Number of class I & class II cities/towns	1
Authorisation Status (Names/ Number) - Number of applications received - Number of authorisations granted - Authorisations under scrutiny	1 1 Nil
Solid Waste Generation Status Solid waste generation in the state (TPD) - Collected - Treated - Landfilled	11108 TPD of Solid Waste is generated in NCT of Delhi as per the Annual Reports submitted by the Local Bodies. 11108 TPD is collected [100 %] 5280 TPD is processed/ treated [47.5 %] 5828 TPD waste is dumped [52.5 %] [Excluding 450 TPD of rejects landfilled at Engineered SLF at Bawana].
Compliance to Schedule I of SWM Rules (Number/Names of Towns/Capacity) - Good practices in cities/towns - House-to-house collection - Segregation - Storage - Covered transportation	Local Bodies are implementing waste segregation at source, door to door collection, intermediate storage and transport facility with GPS for the transportation of the collected solid waste to the operational Solid Waste Processing / Treatment Facilities or at the 3 existing Landfill / Dumpsites at Bhalaswa, Ghazipur& Okhla in Delhi. New Delhi Municipal Council (NDMC) & Delhi Cantonment Board (DCB) are implementing the provisions of the SWM Rules, 2016 in their areas in a better way. However other Local Bodies (North DMC, SDMC, EDMC) are also making efforts and taking measures to implement the provisions of the SWM Rules, 2016 in their areas. About 100% collection of Solid Waste including Door to Door Collection and Transportation of Solid Waste in covered vehicles have been reported by the Local Bodies in their Annual Reports. NDMC has reported that 100% Premises in the area are segregating the waste at source. Delhi Cantonment Board (DCB) has reported that 90% Premises in Civil Area & 60% Premises in Army Area are segregating the waste at source. SDMC has reported that 50% Premises in their area are segregating the waste at source. EDMC has reported that 30% Premises in their area are segregating the waste at source. North DMC has reported that 80 % Premises in their 3 Selected Model Wards are segregating the waste at source and also started in 32 Model wards, however, information not provided for other wards in their area.

Processing of MSW (Number/Names of Towns/Capacity)				
Solid Waste Processing Facilities Setup :				
Sl. No.	Composting	Vermi-Composting	Bio-gas/Bio-methanation Plant	RDF / Pelletization
1.	DCB - Composting - 20.175 TPD One Sorting Cum Composter of 20 TPD and 2 Food Waste Composters of 0.175 TPD [0.125+ 0.05TPD]	Nil	Nil	Nil
2.	EDMC - Composting - 10 TPD (10 Nos. of 1 TPD each)	Nil	10 TPD (2 Nos.)	1300 TPD (Ghazipur WTE under revamp & shut down w.e.f 09.11.2021)
3.	NDMC - Composting - 11.215 TPD (52 No. of Pits for Composting in Parks in NDMC Area) 28 Organic Waste Composters - 13.15 TPD	Nil	8.25 TPD (6 Nos.)	Nil
4.	North DMC - Composting - 705 TPD One Centralised Compost Plant in the Integrated Waste Complex at Bawana (being operated by M/s Delhi MSW Solutions Ltd.) + 5 Decentralised Compost Plants of 1 TPD each	Nil	20 TPD (4 Nos. of 5 TPD each)	1300 TPD (Bawana WTE)
5.	South DMC - Composting - 204 TPD One Centralised Compost Plant of 200 TPD at Okhla+ 4 Decentralised Compost Plants of 1 TPD each	1 TPD	20 TPD (4 Nos. of 5 TPD each)	1950 TPD (at Okhla WTE)
Operational Processing Facilities:				
Sl. No.	Composting	Vermi-Composting	Bio-gas/Bio-methanation Plant	RDF/ Pelletization
	24 (2 Centralised + 22 Others)	1	16	3 (with WTEs)
Processing facility under installation / planned:				
S. No.	Composting	Vermi-Composting	Bio-gas/Bio-methanation Plant	RDF/Pelletization
	• 4 Compost Plants of 1 TPD each at Ramleela Ground & Vishwas Nagar by October, 2022. • 02 Sorting Cum Composters plant of total 50 TPD capacity (1 of 20 TPD & 01 & 30 TPD in Delhi Cantt.) by September, 2022	-	• Upgradation of Compost Plant at Okhla of 200 TPD into Bio-CNG Plant of 300 TPD by July, 2023. • One CBG Plant of 100 TPD at Hastsal by April, 2023. • Bio-CNG Plants of 215 TPD capacity each are proposed at Nangli & Goyla Dairies (SDMC), 290 TPD at Ghogha	• One WtE at Tehkhand of 2000 TPD is under construction & likely to be commissioned by 30.09.2022. • New WtE of 3000 TPD proposed at Narela-Bawana is proposed and likely to be commissioned by 31.08.2025. • Expansion of Waste to Energy Plant at

			Village Dairy (North DMC) and 185 TPD capacity Bio-gas plant at Ghazipur (EDMC)* [* - Not included in Total MSW generation in Delhi]	Tehkhand from 23 MW to 40 MW. • Expansion of Waste to Energy Plant at Bawana from 24 MW to 60 MW.
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Waste-to-Energy Plants: (Number/Names of Towns/Capacity)

Sl. No.	Plant Location	Status of Operation	Power Generation (MW)	Remarks
1.	Okhla	Operational	23	-
2.	Ghazipur	Not Operational	12	WtE Plant was under revamp and was shut down w.e.f 09.11.2021. The plant restarted its operation w.e.f 15.06.2022 after revamping.
3.	Bawana	Operational	24	-

Disposal of Solid Waste (Number/Names of Towns/Capacity):

- Landfill sites identified
- Landfill constructed
- Landfill under construction
- Landfill in operation
- Landfill exhausted
- Landfill capped

01 Existing Operational Engineered SLF at Bawana. Another Engineered SLF is under construction at Tehkhand for which Environmental Clearance has already been given by MoEF&CC on 29.10.2020 and Consent to Establish has been issued by DPCC.

01 Engineered SLF at Bawana already constructed & operational.

One Engineered SLF at Tehkhand is expected to be commissioned by April, 2022.

Engineered SLF at Bawana.

None

However, all 3 non-engineered and unscientific MSW Dumpsites at Okhla, Ghazipur and Bhalswa have already been exhausted.

Nil

Solid Waste Dumpsites (Number/Names of Towns/Capacity):

- Total number of existing dumpsites
- Dumpsites reclaimed / capped
- Dumpsites converted to sanitary landfill

3

Remediation of Legacy Waste at Okhla, Ghazipur and Bhalswa Dumpsites is being carried out as per the directions of the Hon'ble National Green Tribunal in the orders including order dated 17.07.2019 in OA No. 519 / 2019 in the matter of News item published in "The Times of India" Authored by Jasjeev Gandhiok & Paras Singh Titled "Below mountains of trash lie poison lakes" and OA No. 386/2019 in the matter of "Centre for Wildlife and Environment Litigation" Vs Union of India &Ors."

Nil

Monitoring at Waste Processing / Landfill Sites						
Sl. No.	Name of Facilities	Ambient Air	Ground Water	Leachate Quality	Compost Quality	VOCs
Monitoring of 3 Operational Waste to Energy Plants (WTE Plants) in Delhi : As per the orders dated 09.10.2017 of Hon'ble National Green Tribunal in OA No. 22/2013 (T_{HC}) & 27.09.2018 in OA No. 640/2018 (earlier OA No. 22/2013) in the matter of Sukhdev Vihar Residents Welfare Association Vs GNCTD and Ors., joint inspections of all the above mentioned 3 operational WTEs in Delhi were being carried out by a team consisting of representatives of CPCB, DPCC, MOEF&CC and IIT, Delhi once in four months. Monitoring of the stack emissions and Ambient Air Quality was also carried out by CPCB during the joint inspections and report is submitted by CPCB to the Hon'ble NGT 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 the same are also connected to the server of CPCB & DPCC. Based on the Compliance Reports of Waste to Energy Plants in Delhi submitted by CPCB to Hon'ble NGT in the abovementioned cases, DPCC imposed total Environmental Compensation of Rs. 40 Lakh on the 3 operational WTEs in Delhi. The said amount of Environmental compensation has been received from 3 WTEs. As per the Directions u/s 5 of the Environment (Protection) Act, 1986 issued by CPCB vide letter dated 05.04.2021 to DPCC regarding Periodic Monitoring and Status Report of Waste to Energy Plants in Delhi, DPCC has engaged Laboratories empaneled with MoEF&CC for carrying out monitoring of Waste processing Facilities in Delhi. Out of three existing Waste to Energy Plants in Delhi, two WTE Plants at Okhla & Bawana have been monitored in the month of July, 2022 and Analysis Reports are awaited. Third WtE Plant at Ghazipur has been revamped and yet to be stabilized. Monitoring shall be conducted as soon as the said WtE Plant gets stabilized. Analysis Reports of DPCC for Ground Water Quality near the 3 Dumpsites at Okhla, Ghazipur & Bhalswa and one Engineered SLF at Bawana for the monitoring conducted in December, 2021 are collectively enclosed as <u>Annexure – IV</u>.						

Status of Action Plan prepared by Municipalities • Total number of municipalities • Number of Action Plan submitted	5 Earlier Action Plans were received from all the 5 Local Bodies in Delhi. Separate Action Plan for Bio-mining of Legacy Waste at 3 Dumpsites (Ghazipur, Bhalaswa & Okhla) were submitted by EDMC, SDMC, North DMC).
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Status of Solid Waste Management in NCT of Delhi including Summary Statement on Progress made by Local Bodies in respect of implementation of Schedule II of Solid Waste Management Rules, 2016

A. Solid Waste Generation, Processing/Treatment and Disposal

S.No.	Particulars	North DMC	SDMC	EDMC	NDMC	DCB	Total
1.	Area (in Sq. Km)	636	656.91	105.98	42.67	42.8	1484.36
2.	Population (in Lakh)	90	70	50	2.57	1.332	213.902
3.	No. of Wards	104	104	64	14 Circles	8	294
4.	No. of Households (in Lakh)	16.5	21.02216	10.5	0.474	0.1060	48.60
5.	Solid Waste Generation (in TPD)	4500	3600	2700	236	72	11108
6.	Collection of MSW in TPD (in %)	4500 (100%)	3600 (100%)	2700 (100%)	236 (100%)	72 (100%)	11108 (100%)
7.	Premises Segregating the waste at Source (in %)	80 % (in 3 Model Wards) & Started in 32 Model wards	50%	30%	100%	90% in Civil Area & 60% in Army Area	---
8.	Processing / Treatment of Solid Waste in TPD (in %)	2078 (46.2 %)	2102 (58.4%)	810 (30%)	236 (100%)	54 (75%)	5280 (47.5%)
9.	Disposal of Solid Waste in Landfill/ Dumpsite Sites (at Bhalaswa, Ghazipur & Okhla)	2422* (53.7%) (at Bhalaswa)	1498 (42%) (at Okhla)	1890 (70%) (at Ghazipur)	Nil	18 (25%) (at Okhla)	5828 (52.5%)
10.	Engineered Sanitary Land Fill(SLF)	One (Operational at Bawana)	- (Proposed at Tehkhand)	-	-	-	One
11.	Operational Waste to Energy Plant	One (at Bawana – 1300 TPD)	One (at Okhla- 1950 TPD)	One (at Ghazipur – 1300 TPD)** (under revamp, shut down w.e.f 09.11.2021)	-	-	3 (4550 TPD)
12.	Operational Centralised Compost Plants	One (at Bawana)	One (at Okhla)	-	-	-	2
13.	Operational Bio-methanation + Decentralised Compost Plants	4*** + 5	4*** + 4	2*** + 10	6 (Bio-Gas Plant)	3 (1 Sorting Cum Composter & 2 Food Waste Composters)	10+11

* Excluding 450 TPD of rejects landfilled at Engineered Landfill Facility at Bawana.

* - Waste to Energy Plant at Ghazipur was under revamp and was shut down w.e.f 09.11.2021. The plant restarted its operation w.e.f 15.06.2022 after revamping.

*** Biomethanation Plants though commissioned, however, presently are not in operation.

(a) Collection, Segregation & Transportation of Municipal Solid Waste:

There are 5 Local Bodies in Delhi responsible for implementation of the Solid Waste Management Rules, 2016. Total Municipal Solid Waste generation in Delhi is 11108 Tonnes per day (TPD). Local Bodies are implementing waste segregation at source, door to door collection, intermediate storage and transport facility with GPS for the transportation of the collected solid waste to the operational Solid Waste Processing / Treatment Facilities or at the 3 existing Dumpsites at Bhalaswa, Ghazipur & Okhla in Delhi.

New Delhi Municipal Council (NDMC) & Delhi Cantonment Board (DCB) are implementing the provisions of the SWM Rules, 2016 in their areas more efficiently than other 3 DMCs (North DMC, SDMC, EDMC), however, they are also making all efforts and taking measures to implement the provisions of the SWM Rules, 2016 in their areas.

About 100 % collection of Solid Waste, Door to Door collection and Transportation of Solid Waste in covered vehicles have been reported by the Local Bodies in their Annual Reports.

NDMC has reported that 90% Premises in the area are segregating the waste at source. DCB has reported that 90% Premises in Civil Area & 60% Premises in Army Area are segregating the waste at source. SDMC has reported that 50% Premises in their areas are segregating the waste at source, EDMC has reported that 30% Premises in their areas are segregating the waste at source, North DMC has reported that 80 % Premises in their 3 Selected Model Wards are segregating the waste at source and also started in 32 Model wards, however, information not provided for other wards in their areas.

(b) 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 (EDMC) 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.

(c) Waste to Energy Plants :

Delhi has 3 Waste to Energy Plants (WTE Plants) of capacity 4550 TPD at 3 different locations in Delhi namely Okhla, Ghazipur and Bawana. One new Waste to Energy Plant of capacity of 2000 TPD is under construction at Tehkhand and another 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) and existing Waste to Energy Plant at Bawana from 24 MW to 60 MW Capacity (up to 3000 TPD) are proposed. Public Hearing for Expansion of existing WtE at Okhla is scheduled on 16.08.2022 and Public consultation will be done in case of proposed expansion of existing Waste to Energy Plant at Bawana as per the Terms of Reference issued by MoEF&CC vide letter dated 29.06.2022. After commissioning of the WtE at Tehkhand in September, 2022 and abovementioned proposed projects, the capacity of WTE Plants will enhance from 4550 TPD to 12350 TPD by August, 2025.

Operational Waste to Energy Plants in Delhi

S. No	Name of Waste to Energy Plant	Existing Capacity	
		Waste Processing (in TPD)	Electricity Generation(in MW)
1.	Timarpur Okhla Waste management Company Ltd., Old NDMC Compost Site, Okhla.	1950	23
2.	East Delhi Waste Processing Company Ltd., Ghazipur*	1300	12
3.	Delhi MSW Solutions Ltd Narela Bawana Road, Bawana	1300	24
	Total	4550	59

* - Waste to Energy Plant at Ghazipur was under revamp and was shut down w.e.f 09.11.2021. The plant restarted its operation w.e.f 15.06.2022 after revamping.

Implementation of Schedule II of Solid Waste Management Rules, 2016

(i) Waste Handling Concepts in WTE Plants in Delhi :

- Okhla WTE Plant** : SDMC provides waste at its door step. Processes waste for production of RDF for electricity production
- Bawana WTE Plant** : The plant has provision for Collection, transportation, processing, composting, WTE plant and engineered landfill facility.
- Ghazipur WTE Plant** : EDMC provides waste at its door step. Processes waste for production of RDF for electricity production.

(ii) (a) Waste to Energy Plant at Okhla

Waste-to-Energy Plant at Okhla receives approx. 1950 MTD of Mixed Municipal Waste from South DMC, New Delhi Municipal Council and Delhi Cantonment Board (DCB). The waste is transferred through tippers and is dumped in a storage pit where microbial culture (solid and/or aqueous form) is mixed with MSW and kept for nearly 5 days. The storage pit is equipped with 02 grab cranes and keeps on mixing the waste for homogenization. After 5 days MSW is sent to pre-processing section (covered under shed), which consist of two segregation channels. Each segregation channel has the following system :

Manual segregation on moving belt conveyor – to sort out large size recognizable wastes such as Construction & Demolition waste, sanitary hardware, fibre, plastic materials, etc.

Ballistic Separator, Shredder and Vibratory screen – A two deck density separation system where heavier and lighter fractions are separated. The heavier fractions are disposed into Okhla Landfill. The lighter fractions are separated into three sizes viz., (+) 100mm; (-) 100 mm to (+)10mm and (-) 10mm. (+) 100mm size is passed through a shredder and shredded material directly goes to storage pit for feed into the Boilers. (-) 100 mm to (+) 10mm size material from the Ballistic Separator directly goes to storage pit for feed into the Boilers.

10mm size from both the Ballistic Separator are being send to sieve of 6mm size, (+) 6mm is sent to RDF storage and (-) 6mm is sent to the compost section.

Magnetic Separator – An electromagnet with moving belt to trap ferrous metals is installed on the line transporting -100 mm material and +10 mm material to RDF storage Pit. Two magnetic separators have been installed on the conveyer belt carrying the bottom ash.

Plant has constructed a pit (50 meters x 28 meters) under a covered shed for storage of RDF equipped with Grab Cranes. The pre-processed waste from the RDF storage pit is fed into the Boilers (three Nos.) using grab crane to run turbine to generate electricity of up to 23 MW.

The temperature in the boilers are maintained above 950°C as per Solid Waste Management Rules, 2016. Bottom ash along with inert from pre-processing section is sent to landfill.

There are 03 flue gas cleaning units 01 for every boiler consisting of Lime spray reactor (lime slurry is added by atomizing), Activated Carbon Injection, Bag House filter followed by dispersion into the atmosphere through a common stack of height about 60 meters from the ground. Unit has installed brick manufacturing unit for utilization of fly ash.

The (-) 6mm material from pre-processing section is stacked and composted for 30-35 days as windrow. After completion of 30-35 days the decomposed material is passed through 4mm trammel (+)4mm is sent to RDF storage and (-) 4mm is sent to another sieve of 2mm. (+)2mm is sent to RDF storage and (-)2mm is the composted material which is being used for in house horticulture process.

The leachate generated in the storage pits is treated in Multi Effect Evaporator (MEE). The wet sludge from MEE is incinerated along with RDF in the boilers and treated water is reused.

(ii) (b) Waste to Energy Plant at Ghazipur

Waste-to-Energy plant at Ghazipur is having capacity of 12 MW electricity generation from burning of waste been run by IL&FS is presently under revamp by M/s Indo Enviro Integrated Solutions Limited. The facility receives mixed Municipal Solid Waste (MSW) in a covered pit (Size 62 meter X 20 meters and 13 meters high). The waste from the pit is subjected to pre-processing in two lines and each line has provision of manual segregation on moving conveyor belts, two trommels for segregation of various sized viz. (+)200mm, (-)200mm to (+)50 mm and (-)50mm, magnetic separator and Shredder(100mm Size). The flue gases are diluted with atmospheric air to bring down the temperature to the level of about 200-300 °C. The flue gas is subjected to air pollution control devices viz. Multicyclone, Venturi Scrubber with lime injection, demister (to remove moisture), and Activated Carbon Bed followed by dispersion into the atmosphere. The temperature in the boiler is maintained above 950°C as per Solid Waste Management Rules, 2016.

The flue gas from the boiler passes through air pollution control devices viz. Selective Non-catalytic reactor where urea is injected (for NO_x reduction), Semi-wet reactor where lime slurry is atomised, Activated Carbon Injection, Bag House (8 chamber and each having 14*14 bags) followed by dispersion into the atmosphere through a stack of height about 60 meters from ground.

Manual segregation on moving belt conveyor – to sort out large size recognizable wastes such as Construction & Demolition waste, sanitary hardware, fibre, plastic materials, etc. For the treatment of leachate an Effluent Treatment Plant (ETP) has been installed at Ghazipur site. It has provision to collect leachate generated from the mixed MSW and the leachate collected is thereafter treated at Effluent Treatment Plant.

Waste to Energy Plant at Ghazipur was under revamp and was shut down w.e.f 09.11.2021. The plant restarted its operation w.e.f 15.06.2022 after revamping. Operator of WTE Plant at Ghazipur [M/s East Delhi Waste Processing Company Limited (“EDWPCL”)] vide letter dated 14.07.2022 has informed that WTE Plant at Ghazipur has undergone a revamp thereafter the boiler was lighted up only on 15.06.2022 however the plant is yet to get stabilized.

Operator of WTE Plant at Ghazipur [M/s East Delhi Waste Processing Company Limited (“EDWPCL”)] vide email dated 29.07.2022 has informed regarding delay in restart of the WTE Plant at Ghazipur. It is informed that when the plant was with ILFS, the plant was badly damaged and many of the parts were to be replaced. Details of the job (overhauling of RDF Plant, Cranes, Grabs, various components of the Boiler, STP, Leachate Plant etc. & repair, replacement of some parts / items) carried out for revamping of the plant is given in the mail. Many of the parts were procured from various parts of India and abroad. It is informed that delay was majorly because of the delay in the supply of the material by vendors to EDWPCL and the logistic challenges faced by the country due to COVID-19.

(ii) (c) Waste to Energy Plant at Bawana

The Waste-to-Energy Plant at Bawana is being operated by M/s Delhi MSW Solutions Ltd, having capacity of 2000 TPD & Electricity generation capacity is 24 MW. The WTE Plant receives mixed Municipal Solid Waste (MSW) on covered tipping floor (of size 150 meters x 25 meters and 7.5 meters high), which is made of RCC and covered under shed. The tipping floor has provision to collect leachate generated from the mixed Solid Waste into storage tank. The pre-processing system has five trommels (cylindrical rotary equipment with a screen) to sort out (+) 50 mm size material which is stored separately in the said tipping floor and is used as Refuse Derived Fuel (RDF) and is conveyed to a storage pit to feed into Boilers.

Segregation on moving belt conveyor is carried out to sort out large sized recognizable wastes such as Construction & Demolition waste, sanitary hardware, fibre, plastic materials, etc. The waste is then processed and disposed into composting facility, RDF for Waste-to-Energy facility and rejects are sent to Secured Landfill Site. The temperature in the boilers are maintained above 950°C as per Solid Waste Management Rules, 2016. Bottom ash along with inert from pre-processing section is sent to Engineered landfill existing in the plant site at Bawana.

There are flue gas cleaning units for boilers consisting of Lime spray reactor (lime slurry is added by atomizing), Activated Carbon Injection, Bag House filter followed by dispersion into the atmosphere through a common stack of height about 60 meters from the ground.

The leachate collected is treated in Mechanical vapor Recompression (MVR) System within the Integrated MSW Facility and there is no discharge of untreated leachate. Leachate generated from Waste Storage Pit, Compost Facility and other sources including SLF is collected in three Leachate Collection Ponds of 3500 KL, 1100 KL & 800 KL. Collected Leachate is pumped to Mechanical Vapor Recompression (MVR) System of 200 KLD capacity which has been installed in April, 2021. MVR System found operational during the inspection. MVR is based on evaporation without use of steam and work on principle of heat recycling without any addition or blow down of heat. MVR raises the vapour temperature and pressure, recirculate it as heating medium making it an energy recovery process. There is maximum output of clean water (up to 95%). The treated leachate is recirculated and used in boilers of Waste to Energy Plant. Sludge from treatment of leachate is incinerated in Waste to Energy Plant due to its high calorific value (CV).

The Waste to Energy Plant also has Bottom Ash Recycling Facility. Bottom ash is screened twice for segregation of coarse and fine segregates. > 400 mm segregates are manually crushed while < 40 mm Segregates are crushed through cone crushing. The cone crushed segregates are then log washed creating a slurry. The slurry having < 0.75 mm particles is treated in Waste Water Treatment Plant and the settled sediments are used as Landfill Daily Soil Cover. The recycled water is reused. The > 0.75 mm aggregates after log-washing are screened into different fractions for processing them into products like paver blocks, kerbs, tiles, etc. As reported final product are being sold to private parties for construction purposes.

(d) Gap Analysis on Solid Waste Management

Generation (in TPD)	Processing (in TPD)	Gap (in TPD)	Proposed MSW Processing Facilities to fill the Gap
11108	5280	5828	(i) 2000 TPD WTE Plant at Tehkhand by September, 2022 (SDMC). (ii) Engineered Sanitary Landfill at Tehkhand by April, 2023 (SDMC). (iii) 3000 TPD Integrated Waste Collection, Segregation, Transportation, Processing & Disposal at Ranikhera by August, 2025 (North DMC). (iv) Upgradation of Compost Plant of 200 TPD at Okhla into Bio-CNG Plant of 300 TPD by July, 2023 (SDMC) (v) Compressed Bio-Gas Plant of 100 TPD at Hastal by April, 2023 (SDMC). (vi) 2 Sorting Cum Composters of 20 & 30 TPD capacity by September, 2022 (DCB) (vii) Decentralised Compost Plants at Ramleela Ground (North DMC) & Vishwas nagar (EDMC) of 1 TPD capacity each by September, 2022 & October, 2022 respectively. (viii) Bio-CNG Plants of 215 TPD capacity each are proposed at Nangli & Goyla Dairies (SDMC), 290 TPD at Ghogha Village Dairy (North DMC) and 185 TPD capacity Bio-gas plant at Ghazipur (EDMC)* [* - Not included in Total MSW generation in Delhi.] Total Capacity of Proposed MSW Processing Facilities- 8252 TPD (excluding abovementioned Bio-Gas Plants of Dairies)

(i) Proposed Waste to Energy Plant at Tehkhand :

A Waste to Energy Plant of 2000 TPD over an area of 15 Acres at Tehkhand near Okhla is under construction by M/s Tehkhand Waste to Electricity Project Ltd. & expected to be commissioned by **September, 2022**. Estimated cost of the project is Rs. 400 crores. The project involves generation of about 25 MW electricity. Environmental clearance has been obtained from MoEF&CC, Govt. of India on 26.07.2018. Consent to Establish has been granted by Delhi Pollution Control Committee on 31.01.2020.

(ii) Engineered Sanitary Landfill (SLF) at Tehkhand

The Engineered Sanitary Landfill (SLF) at Tehkhand is being developed over an area of 32.346 Acres. The land has been secured and is in possession of South Delhi Municipal Corporation. The estimated cost of project is Rs. 78.9 Crores. Environmental Clearance has been granted by MoEF&CC, Govt. of India on 29.10.2018. The project is expected to be completed by **April, 2023**.

(iii) Integrated Waste Collection, Segregation, Transportation, Processing & Disposal at Ranikhera for 3 Zones of North DMC (City – SP, Karol Bagh & Narela Zone). Expected time of completion for setting up processing facility is **August, 2025**.

(f) Decentralized Waste Management Facilities (Compost Plants /Biomethanation 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:

NORTH DMC

(i) Decentralised Composters of 1 TPD Capacity (6 Nos)

- 05 Plants commissioned at Bhorgarh Nursery, Rajendra Nagar Nursery and Maurya Enclave at Pitampura, Mori Gate & Sector 11 Rohini.
- 01 Plant at Ramleela Ground to be commissioned by September, 2022.

(ii) Bio-Methanation Plants 5-TPD Capacity (4 Nos)

- 04 Plants commissioned at Roshanara Bagh, MVID Hospital Naraina Industrial Area Ph-I & Mangolpuri Industrial Area Ph-I.

EAST DMC

(i) Decentralised Composters of 1 TPD Capacity (10 Nos)

- 10 Plants commissioned
- 01 Plant at Vishwas Nagar to be commissioned by October, 2022

(ii) Bio-Methanation Plants 5-TPD Capacity (2 Nos)

- 02 Plants at Geeta Colony and Shastri Park have been commissioned.

SOUTH DMC

(i) Decentralised Composters of 1 TPD Capacity (4 Nos)

- 04 plants commissioned at Chirag Delhi, Punjabi Bagh Nursery, near Lady Sriram College, East of Kailash and Dwarka Sec-14.

(ii) Bio-Methanation Plants 5-TPD Capacity (4 Nos)

- 04 Plants commissioned at Sarita Vihar, Dwarka Sec-14, Punjabi Bagh Nursery & Masood Pur in Vasant Kunj

2. NGT Case OA No. 606 / 2018 regarding Compliance of Municipal Solid Waste Management Rules, 2016.

Meetings are being taken by the Chief Secretary, GNCTD from time to time and compiled Information / Action Taken Reports of Govt. of NCT of Delhi are being submitted to CPCB. As per the orders dated 16.01.2019 & 11.03.2019 in the said matter Chief Secy., GNCTD was required to personally monitor the progress w.r.t compliance of said Rules & orders of Hon'ble NGT and to submit Quarterly Report to Hon'ble NGT. 1st & 2nd Quarterly Reports of Govt. of NCT of Delhi were filed before the Hon'ble NGT on 29.06.2019 and 10.10.2019 respectively. Subsequently orders dated 12.09.2019, 07.01.2020 14.12.2020 & 30.11.2021 were passed by the Hon'ble NGT and in compliance to the said orders Compliance Reports of Govt. of NCT of Delhi in respect of Solid Waste Management till the Order dated 30.11.2021 came into effect and thereafter Compliance Reports of Govt. of NCT of Delhi in respect of Solid Waste Management & Sewage management in Delhi are being submitted to CPCB (on quarterly basis) from time to time.

3. Remediation of Legacy Waste (Old MSW) :

There are 3 Dumpsites at Ghazipur, Bhalaswa and Okhla in Delhi where Municipal Solid Waste have been dumped and there was legacy waste of 28 Million Tons as mentioned in the orders dated 17.07.2019 of Hon'ble National Green Tribunal in OA No. 519 / 2019 in the matter of News item published in "The Times of India" Authored by Jasjeev Gandhiok & Paras Singh Titled "Below mountains of trash lie poison

lakes” and OA No. 386/2019 in the matter of “Centre for Wildlife and Environment Litigation” Vs Union of India & Ors.”.

In the said case Hon’ble National Green Tribunal has passed detailed order regarding Disposal of ‘Legacy’ Waste dumped at Bhalswa, Ghazipur and Okhla Dumpsites and given various directions. Hon’ble NGT has directed the Municipal Corporations to go for bio mining using trommels instead of capping of the dump sites at Bhalaswa, Ghazipur and Okhla. The estimated cost to clear the above three dump sites at Delhi may be approx. Rs. 250 Crores as given below :

- i. EDMC - Rs. 125 Crores
- ii. North MCD - Rs. 75 Crores
- iii. SDMC - Rs. 50 Crores

As per the directions of the Hon’ble Tribunal the contributions towards said amount of Rs. 250 Crores in three separate ESCROW accounts will be as follows :

i	EDMC	NCT Delhi EDMC NDMC* DCB**	Rs. 65 Crore Rs. 40 Crore Rs. 10 Crore Rs. 10 Crore	Total = 125 Crores
ii	North MCD	NCT Delhi North MCD NDMC DCB	Rs. 35 Crore Rs. 30 Crore Rs. 05 Crore Rs. 05 Crore	Total = 75 Crores
iii	SDMC	NCT Delhi SDMC NDMC DCB	Rs. 25 Crore Rs. 15 Crore Rs. 05 Crore Rs. 05 Crore	Total = 50 Crores
Total				250 Crores

As directed by the Hon’ble NGT, the Committee headed by Chief Secretary, Govt. of NCT of Delhi has been constituted vide order dated 25.07.2019. The ESCROW accounts for North DMC, East DMC and South DMC have been opened. Regular meetings of the Committee headed by Chief Secretary are held to review the progress in the said matter.

Out of Rs. 250 Crores, an amount of Rs. 245 Crores have been contributed by the DPCC, DMCs, DCB & NDMC. DCB has deposited only 15 Crores (out of Rs. 20 Crores) and filed an application before the Hon’ble Supreme Court for exemption of Rs. 5 Crores to be deposited to North DMC, because DCB is not dumping its MSW at Bhalaswa landfill site.

The implementation of the project has been started w.e.f. 01.10.2019. Inert material generated during the process is about 60% to 70% by weight or 40% by volume of the waste being processed, which needs to be disposed of in a scientific manner. It is a major challenge before the municipal corporations to make suitable land available for disposal of this inert material particularly since the availability of land is extremely scarce in Delhi. SDMC on behalf of all the three DMCs has moved an application to Forest Department for procurement of space in four empty pits of Bhatti mines for temporarily dumping inert materials generated due to bio-mining.

In pursuance of the Order dated 23.03.2020 passed by Hon’ble National Green Tribunal in above mentioned case and Integrated Special Purpose Vehicle (SPV) was constituted vide order dated 14.07.2020 for the scientific management, processing and disposal of Legacy Waste. The said committee is headed by Chief Secretary and having Pr. Secy. (Env.), Commissioners of SDMC, EDMC & North DMC, Secy. (UD Deptt), Sh. Manish Singh (IAS, Director, Swatch Bharat, Bhopal) and Sh. Vijay Nehra (IAS, Comm., Municipal Corp., Ahmedabad) as members.

As per the said order, a Joint Committee comprising representatives of CPCB, NEERI & IIT Delhi has assessed the Amount of Damage to Environment due to three dumpsites in Delhi as mentioned in following table:

S.No.	Name of the Municipal Corporation	Name of the Dumpsite	Damage Cost assessed, (Rupees)
1.	North DMC	Bhalaswa	155.9 Crore
2.	EDMC	Ghazipur	142.5 Crore
3.	SDMC	Okhla	151.1 Crore
Total			449.5 Crore

Hon'ble NGT has disposed off the above mentioned case vide order dated 29.01.2021 with following directions:

“Accordingly, we direct the NCT Delhi and the Municipal Corporations concerned to coordinate and execute the work of remediating the legacy waste dump sites for enforcing the rule of law and protection of environment and public health, expeditiously in terms of earlier orders of this Tribunal. Due care has to be taken for preventing fire accidents on the landfill sites and maintaining stability of the dumps. The Chief Secretary, Delhi, may continue to hold meetings for coordination with all the stake-holders, at least once in a month, as earlier directed to device ways and means to expedite the pending work, including coercive measures against those responsible for delay. The CPCB is at liberty to recover the compensation already assessed, with further compensation for continuing damage till compliance of law, following due process of law. The amount of recovered compensation be spent on restoration of environment in Delhi.”

As per the Action Plans submitted by EDMC, North DMC & SDMC to the Hon'ble NGT, following are the timelines for remediation of legacy waste at three dumpsites in Delhi

Dumpsite	Timeline for 100% remediation
Ghazipur	March, 2024
Bhalaswa	December, 2023
Okhla	December, 2023

The Status of Bio-Mining of Legacy Waste at 3 Dumpsites at Okhla, Ghazipur & Bhalaswa in Delhi (March, 2022) is given in following Table :

S. No.	Name of the Dumpsite	Quantity of Legacy Waste Dumped (As on 17.07.2019 in Lakh Ton)	Total Quantity of Legacy Waste Processed (Approx. in Lakh Ton)	No. of Trommels Operational
1	Ghazipur	140	9.45	21
2	Okhla	60	13	25
3	Bhalaswa	80	23.20	40 + 4 Kleeman Machines
Total		280 Lakh Ton	45.65	90

Urban Development Department, Govt. of NCT of Delhi is coordinating the said matter, conducting meetings of the said Committee and filing Status Report on behalf of Govt. of NCT of Delhi to Hon'ble National Green Tribunal from time to time.



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ANALYSIS REPORT OF GROUND WATER NEARBY BAWANA LANDFILL SITE

Report No.: DPCC/W/LF/21-22/4569

Dated : 14/02/2022

Date of monitoring: -24.12.2021

S. No	Sampling Location	pH	TDS (mg/l)	Cl (mg/l)	Hardness as CaCO ₃ (mg/l)	Ca as Ca (mg/l)	SO ₄ (mg/l)	Turbidity (NTU)	Nitrate (mg/l)	Mg (mg/l)
Desirable Limit for Drinking Water		6.5-8.5	500	250	300	75	200	5	45	30
1.	Main Gate Bawana (SLF)	7.5	429	17.5	390	16	176	Nil	0.266	83.8
2.	Store Waste to Energy	7.4	310	27.5	130	40	307	Nil	0.457	20.1
3.	Sonot Village Bawana	7.3	551	72.5	160	60	884	Nil	0.442	22.4
4.	Bawana Village	7.1	568	52.5	90	44	307	Nil	0.248	10.3
5.	Sector 5 Bawana	8.1	852	47.5	220	64	639	Nil	0.119	35

N. Mitra
 (I/C Water Lab)

Scientist 'C'



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ANALYSIS REPORT OF GROUND WATER NEARBY OKHLA LAND FILL SITE

Report No.: DPCC/W/LF/21-22/4568

Dated: 14/02/2022

Date of monitoring: - 23.12.2021

S. No	Sampling Location	pH	TDS (mg/l)	Cl (mg/l)	Hardness as CaCO ₃ (mg/l)	Ca as Ca (mg/l)	SO ₄ (mg/l)	Turbidity (NTU)	Nitrate (mg/l)	Mg (mg/l)
Desirable Limit for Drinking Water		6.5- 8.5	500	250	300	75	200	5	45	30
1.	Okhla Landfill Site	7.2	894	62.5	310	76	471	Nil	0.288	52.4
2.	ESI Hospital Okhla	6.6	1060	47.5	1400	152	602	Nil	0.295	279.5
3.	Okhla Bus Depot	7.3	652	107.5	310	40	383	Nil	0.299	60.4
4.	B.P .Singh Camp Colony, Near Shiv Mandir	6.8	388	67.5	930	52	284	Nil	0.319	196.6

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ANALYSIS REPORT OF GROUND WATER NEARBY GAZIPUR LAND FILL SITE

Report No.: DPCC/W/LF/21-22/ 4566

Dated: 14/02/2022

Date of monitoring: -21.12.2021

S. No	Sampling Location	pH	TDS (mg/l)	Cl (mg/l)	Hardness as CaCO ₃ (mg/l)	Ca as Ca (mg/l)	SO ₄ (mg/l)	Turbidity (NTU)	Nitrate (mg/l)	Mg (mg/l)
Desirable Limit for Drinking Water		6.5-8.5	500	250	300	75	200	5	45	30
1.	Gazipur Dairy Farm, Gali No.-4	7.2	1040	97.5	530	76	490	Nil	0.321	101.7
2.	Gazipur Dairy near Masjid	6.8	1080	117.5	710	168	359	Nil	0.315	121.4
3.	Gazipur Landfill Site Near Entry Gate	6.9	1860	167.5	550	84	385	Nil	0.249	104.3
4.	Fish Market Landfill site Gazipur	7.3	2170	167.5	860	176	333	Nil	0.379	153.2

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ANALYSIS REPORT OF GROUND WATER NEARBY BHALSWA LAND FILL SITE

Report No.: DPCC/W/LF/21-22/4567

Dated: 14/02/2022

Date of monitoring: -22.12.2021

S. No	Sampling Location	pH	TDS (mg/l)	Cl (mg/l)	Hardness as CaCO ₃ (mg/l)	Ca as Ca (mg/l)	SO ₄ (mg/l)	Turbidity (NTU)	Nitrate (mg/l)	Mg (mg/l)
Desirable Limit for Drinking Water		6.5-8.5	500	250	300	75	200	5	45	30
1.	Bhalswa Sanjay Gandhi Transport	7.8	115	107.5	560	92	521	Nil	0.52	104.8
2.	Bhalswa Dairy	7.6	2160	192.5	970	144	785	Nil	0.346	185
3.	Bhalswa landfill site	6.6	287	332.5	1780	272	606	Nil	0.651	337.7
4.	Bhalswa Janta Colony	7.8	104	97.5	700	116	826	Nil	0.201	130.8

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