

Solid Waste Management Overview

Bengaluru generates about 3000 - 3500 tons of Solid Waste daily. The BBMP is carrying out collection, street sweeping, transportation, processing and disposal of Municipal Solid Waste from generators. BBMP has a system of door to door collection for collecting the MSW. The MSW collected has to be processed before land filling. BBMP has taken several steps to streamline the MSW management in the city. The present status report is as below:

1. Collection of waste:

a) House to House collection

- BBMP is providing daily waste collection service to all the households, slums, shops and establishment. About 80 % of the collection and transportation activities has been outsourced. Auto tipper / Autos and pushcarts are used for the primary collection. An Auto tipper has been provided for every 1000 households and a pushcart for every 200 households. About 20000 pourakarmikas are being utilised (both BBMP and contractors) in door to door collection, street sweeping and transportation of MSW. Self Help Group's (SHGs) and Residential Welfare Association (RWAs) are also involved in door to door collection, segregation & decentralized composting in some of the areas.

a) Vegetable/ Fruit Market Waste

- Separate system has been put in place or collection of waste from the Large Vegetable and Fruit markets. The Vendors are directed to store the waste in their premises and is collected by the Pourakarmikas and it is ensured that the market waste is transported to Compost plants.

b) Construction Demolition Waste :

- Debris, sand, earth, bricks, building materials, etc. were dumped on roads and footpaths causing hazards to traffic and pedestrians. In order to streamline the Collection of C&D waste, BBMP has

identified 7 sites and taken authorization for disposal of Construction and debris waste.

- Draft guidelines on C&D waste have been prepared and objections called and as Central Government is preparing the C&D Policy, the same shall be adopted once finalized.
- Further it is proposed to arrange for collection and transportation of debris through appointed contractors who can be allowed to charge the generators at a predetermined rate. The contractors can also be allowed to recycle or “sell” such debris to other construction sites that require land filling or it can also be used for making brick and tiles. It is mandatory for citizens to get their debris removed through the helpline system. Debris generated from individual home/ office/ school etc will be charged, depending on the quantity. Since new rules of C&D (Management and Handling) Rules are under formulation the same shall be adopted once it is published.

c) Collection Mechanism for Bulk Waste Generators

- A separate system has been put in place to collect waste from large waste producers like hotels, restaurants, marriage halls, markets, offices, etc. As per the High Court directions, the BBMP as notified Bulk Generators to segregate waste into different categories and manage their waste either in-situ or to utilize the services of BBMP Empanelled Service Providers.
- In this regard BBMP is facilitating the Bulk Generators with options of authorized service providers to engage for collection, transportation and processing of MSW. SWM Service Provider Empanelment program aims to create a platform for solid waste service providers to enlist themselves. It will also ensure that Bulk Generators can meet the requirement of segregated waste processing in a responsible decentralized way.

- Empanelment of service providers for various categories of MSW has been taken up and the first list has been published empanelling 60 service providers. The empanelment process is continued.
- Also as a novel initiative BBMP has entered into an Agreement with Bruhat Bangalore Hoteliers Association for setting up a Biometanization unit of 250 MTPD of wet waste generated in hotels. As per the Agreement 5 acres of land has been handed over to Bruhat Bangalore Hoteliers Association on permissive use basis for a period of 20 years. The plant will start receiving the waste in phases from April 2015 to June 2015.
- All waste generators are covered by door to door except Bulk Waste Generators. At present 85% of the waste is collected from households.

2. Segregation of Waste:

- Segregation at source has been emphasized. IEC activities are being intensified and penalties are being levied for non compliance. The households are required to segregate their wastes into two categories namely wet and dry waste. At the later stage, household hazardous waste like discarded medicine, sanitary napkins, diapers, batteries paints etc is proposed to be collected separately.
- Dry waste Management

When access to dry waste is given to the collector, it acts as an inbuilt incentive for them to encourage / coax each generator to segregate their waste. It has to be remembered that not all dry waste is recyclable. Residents are not always able to give away all the dry waste produced by them. While they may be able to sell / hand over plastics, paper, card board, metals, etc to waste pickers, etc., there would be some dry waste which has no resale value; this would include thin plastics, broken tube lights & bulbs, small empty bottles, and the like. The dry waste does not decompose and

hence it is possible for the generators to store it for a longer period. Thus it is proposed to fix weekly twice / thrice collection frequency in areas generating less waste.

- Recycling of waste is also possible by setting up purchase / processing centers for dry waste, like plastics, paper, etc. About 185 Dry Waste Collection Centers (DWCC) have been established BBMP. It is one of its kinds and first time in a metro a DWCC concept is established. These DWCC called Kartavya – meaning duty that will remind the public of their duty towards recycling the waste they have created. This will be in their own neighborhood and over a period of time the Kartavya centers will become part of the local community fabric. DWCCs are set up on municipal / Government / private lands and various NGO's, have been roped in for effective functioning. A separate MOU has been entered into by the BBMP with the operator In addition, corporate companies are being encouraged to come forward to provide gap funding required under the EPR (Extended Producer Responsibility) of such centers also ensure that the recyclable material is sold through properly created channels to ensure that the recycled goods are not misused. The DWCC shall pay the Pourakarmika /Public/Waste-picker or any individual who bring the waste to the centers as notified by BBMP from time to time, which will encourage the public to segregate the waste at source. Also a part of the dry waste center is earmarked to store e- waste collected from the households.
- Presently about 30% of waste is segregated at source.

3. Intra-city Activities:

- Street sweeping is performed both manually & mechanically. In some of the highly commercial activity areas sweeping is done during night.

- SWM cess (user fees) is being collected from the year 2011-12. The cess is collected from the properties along with property tax. Presently about 15 to 20% of the cess is being recovered as against the overall expenditure on SWM. Plans are being made to revise the cess so as to meet 100% operational cost incurred on SWM activities.
- Burning of Leaves has been prohibited in the city. Awareness is being created on the same Instructions have also been given for composting of leaf litter in nearby parks and open spaces.
- Amendment has been brought to The Karnataka Municipal Corporation (KMC) Act by amending various sections and inserting new sections enabling levy of penalties for littering and other offences.
- Bruhat Bangalore Mahanagara Palike has authorized the Senior Health Inspector/Junior Health Inspector of respective Wards in addition to the Assistant Executive Engineer/Assistant Engineer of respective Wards to levy and collect penalty as provided in columns (3) and (4) of Schedule-XIII of the Karnataka Municipal Corporations Act, 1976.
- For improving livelihood of Rag pickers SAMARTH Project has been initiated BBMP has taken up waste picker enumeration project under which already 6000 Waste pickers have been identified and ID cards has been issued. They have been involved in the Dry waste collection Centres.
- Plastic carry bags with less than 40 micron in thickness have been banned in the BBMP jurisdiction from 15-03-2011. BBMP has fixed the Minimum price for carry bag depending upon the quality and size. Waste Plastic is being used in the construction of pavement roads as per the Indian Road Congress guidelines for 'The use of waste plastic in Hot Bituminous Mixes (Dry Process) in wearing Courses' under the code: IRC:SP:98-2013.
- A Common Complaint redressal system is maintained in all the Zones in which the SMW complaints are addressed.

4. Storage of waste:

Bangalore city is a bin less city and the bins/ Litter bins are placed only in the commercial areas. The MSW collected from Door to Door is brought to a common point from where the waste is transferred to the Disposal sites through compactors & tipper Lorries.

5. Transportation of the waste:

About 670 MSW transportation vehicles including 240 Compactors, & 430 Tipper Lorries, Dumper placers & Mechanical Sweepers both BBMP and contractors are used for transportation of MSW to the Processing and Landfill sites.

6 (a) Processing of waste:

As per the Municipal Solid Waste (Management and Handling) Rules 2000, the Municipal Bodies are responsible for processing of waste and only rejects are to be sent for landfill site. Efforts are made by BBMP to establish the processing and Landfill facilities and the details are as below.

- Decentralised Wet waste processing units & Dry Waste Collection Centers:

Initiation has been taken to setup Decentralized wet waste processing projects.

i. Bio-methanization units:

To process wet waste, 5 ton capacity Bio-methanization plants are being established at 16 locations, out of which 4 have been made functional. The biogas generated from these plants is being utilized to light the street lights in that locality.

ii. Pelletisation:

A 40MTPD unit to convert the organic waste into bio fuel through pelletisation at Ward No 94, adjacent to Freedom Park, Gandhinagar,

West zone by M/s CIPL Resurge Private Limited (CRPL) is commissioned from Dec 2014.

iii. Organic Waste Converter:

Also organic waste converters are being used in a decentralized way to process small quantity of wet waste.

iv. Plastic to Crude oil

In order to recycle the plastic waste the proposal to establish 10 TPD capacity plant to process plastic waste into crude oil has been approved by the Government and the agreement execution is under process.

v. Dry Waste Collection Centers

The dry waste generated in the wards is collected & further segregated & also sent for recycling from Dry Waste Collection Centers.

After taking all these measures, the quantum of waste which is being received at the BBMP processing centers is around 3000 TPD. The same is being presently managed through the following facilities.

1.	M/s.Terra-Firma	1000 TPD
2.	M/s.MSGP	500 TPD
3.	Bingipura	750 TPD
4.	KCDC	300 TPD
5.	Mavallipura	100 TPD
6.	M/s.Maltoes	100 TPD

Out of the above facilities, landfill without processing is being done only at Bingipura sites.

(b) Expansion of processing capacity of waste:

New Sites

To achieve 100% processing of waste, Government has sanctioned six new facilities. These new facilities are being set up at the following locations:

- 1) Kanahalli - 500 TPD

2) Seegihalli	-	200 TPD
3) Doddabidarakallu	-	200 TPD
4) Lingaderenahalli	-	200 TPD
5) Subrayanpalya	-	200 TPD
6) Chikkanagamangala	-	500 TPD
7) KCDC(upgradation)	-	500 TPD
		<u>2300 TPD</u>

Out of the above 4 plants have started functioning (Kanahalli, Seegihalli, Doddabidarakallu and Lingaderenahalli) remaining 3 plants are expected to start functioning in another three months

This would ensure 100% processing of waste being generated in the city. In addition to these, approvals have been given to following waste management plants on PPP framework.

1) M/s.Satarem Enterprises	-	1000 TPD
2) M/s.Organic Waste India	-	600 TPD
3) M/s.Essel Group	-	600 TPD

These plants are on PPP framework and would take about 2 years' time to be established. Once all the above facilities are made fully functional, the city would have facilities catering to the requirement of Waste Management for next 10 years.

(C) Old Dumpsites

Proposal has been sent to the Government for carrying out the Bio Remediation process in the Old dumpsites