

In This Issue

Exploring the current approach towards solid waste management in India and the way forward, with a focus on Mumbai



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Big Story

India is rapidly transitioning from being an agriculture-based nation to an industrial and services-oriented country. Approximately 31% of India's population is now living in urban areas, which amounts to over 377 million urban people. It is estimated that by 2050, 60% of India's population will be living in cities. Correspondingly, India currently generates 1,09,589 tonnes of Municipal Solid Waste daily. This number is projected to triple by 2025. In India, it is the duty of Urban Local Bodies to manage municipal solid waste; segregation, storage, collection, relocation, carry-age, processing, and disposal of waste generated by households, hotels, communities. Yet, despite this meteoric rise in waste generation, more than 90% of India does not have a structured waste management system.

Solid Waste Management is one of the key areas in the integrated development of any city. For the city of Mumbai with around 9000 MTD of solid waste, effectiveness of solid waste management plays an important role in having the sustainable environmental health. In contrast to the other civic utility services (e.g. water, sewage, electricity), the responsibility of this effectiveness lies not only with the MCGM but also with the people living in the city.

The purpose of this newsletter is to insist on the decentralised methods of processing of solid waste especially wet waste processing to be adopted by the MCGM. The newsletter is also intended to spread conviction among people regarding these effective methods and their contribution in the same in achieving the dream of 'Zero Garbage' future for Mumbai.

In most Indian cities, the problem of solid waste management is acute. Solid waste management is a critical service for the urban local bodies since many public health issues are connected with it. The situation is particularly bad in the unauthorized settlements and slums in urban areas where municipal solid waste management is virtually absent. Inadequate waste disposal may cause severe environmental and health problems. These problems may be attributed to the partial segregation of recyclable waste, absence of waste collection at source, unavailability of suitable infrastructure to treat and dispose the huge amount of waste generated.

This paper attempts to assess the various factors that govern the sustenance of a decentralised solid waste

management system in Mumbai as well as need for zero-waste management. Our findings indicate that the success and long-term sustainability of the model depends on sustenance parameters to a varying degree. Apart from the municipal corporation, there are multiple players who play a crucial role in managing the waste. Much of this is managed by informal sector and now emerging recyclers who are setting up processes for decentralised waste management. Most people are unable to achieve 100% decentralised management due to lack of appropriate channels for managing rejects and sanitary waste. More importantly, it is imperative to understand the failure and limitations of the municipal corporation since they are financially dependent on the centre and state for their functioning. But despite all those constraints, it makes sense to gauge energy and material recovery potentials and correlate to municipal waste management. By adopting a scientific and structured approach to Solid Waste Management, urban governments across India have the potential to set an example for the world to follow.



377 million Urban Population in 2018



Towns/Cities & generates



of Municipal Solid Waste daily.



Urban Population by 2050 (Estimated)



projected to generate waste daily by 2025

Centralised v/s Decentralised

Collection Process Flowchart



Door to door collection

Community bins

Community bin collection (carried out once in 24 hrs.) requires manual an multiple handing of waste to dump into transportation vehicles.







Transfer station

Disposal sites

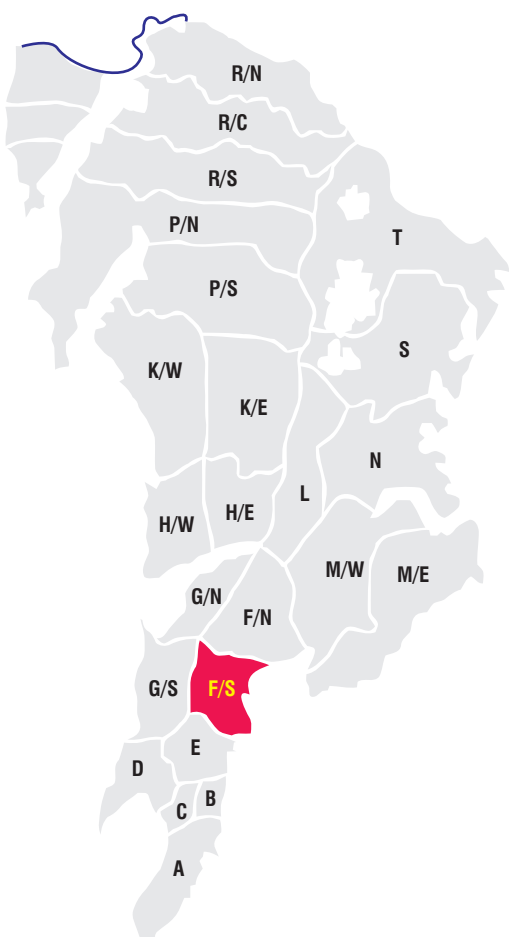
This current method which is adopted is a heavily centralised one – waste is collected and dumped in a landfill far away from the city. It is therefore not sustainable and is monetarily and environmentally costly. Therefore, a decentralised approach to solid waste management is the only way forward. It becomes a system to provide a clean environment and hygienic living conditions by reducing the amount of waste at the source. It involves the management of municipal solid waste by several small waste management centres within the locality. Decentralised organic Solid Waste composting promotes green growth, reduces greenhouse gas emissions and also reduces transportation of organic solid waste to waste disposal site. In order to encourage innovation and adoption of decentralised waste recycling solutions, government should consider fiscal and financial incentives for setting up and operation of ‘Garbage to Garden’ and ‘Garbage to Gas’.

It's very evident that the solid waste management is a critical issue in India today. Most of the challenges of the solid waste management and environmental

sustainability are still unanswered. It is pertinent to note that the improvement in the solid waste management is the greatest challenge being faced by the municipal authorities. The decentralised approach could be one of the effective methods to solve the problems of waste management in India as it has potential to reduce the quantity of waste by changing the mindset of the people and reduce the transportation cost, traffic congestion, amount of air pollution, road maintenance cost, and contamination of ground water through the seepage of leachates. More importantly, it reduces the amount of waste in landfill sites as the land is a major constraint of the solid waste management system. Finding new landfill sites around cities is nearly impossible because of various constraints like lack of space for locally unwanted land uses, population density and the scale of India's increasing urban sprawl. Decentralised approach is not only sustainable and financially viable but also helps to improve the quality of life and working condition of the waste pickers. It could bring about citizen participation, and contribute to environmental sustainability and economic efficiency.

	Current Centralised method (in Rs. Crores)	Proposed decentralised method (in Rs. Crores)
 Budget Provision (Rs. Crores)	2500	2025
 Administrative Expenses	1625	1600
 Transport (per year)	500	100
 Other maintenance (per year)	125	125
 For Capital (5 years)	250	250
 Income	Nil	1100

F/S Ward (Parel) – A success story in Mumbai



F/S Ward (Parel area) under the Municipal Corporation of Greater Mumbai (MCGM) has endeavoured to implement a ‘Zero garbage’ concept across the ward, converting wet waste into compost and recycling dry waste. The focus behind the initiative taken up by the ward is adding another ‘R’ to the existing three ‘R’s; Recovery. Two main projects are at the fore currently.

Project 1

The Model:

- Step 1: House-to-house dustbin (wet and dry separate) distribution, widespread awareness programmes.
- Step 2: Separate collection of wet and dry waste from each household and chawl.
- Step 3: Transportation to one of five centres through mini-trucks with provision for waste to be collected and transported separately.
- Step 4: Garbage is checked once again to see if it is well segregated. If not, manual segregation is carried out at the centre itself.
- Step 5: Wet waste is converted into compost/manure through composting. Dry waste is sold to a predetermined MCGM contractor, who recycles the waste.

F/S, why did it start?

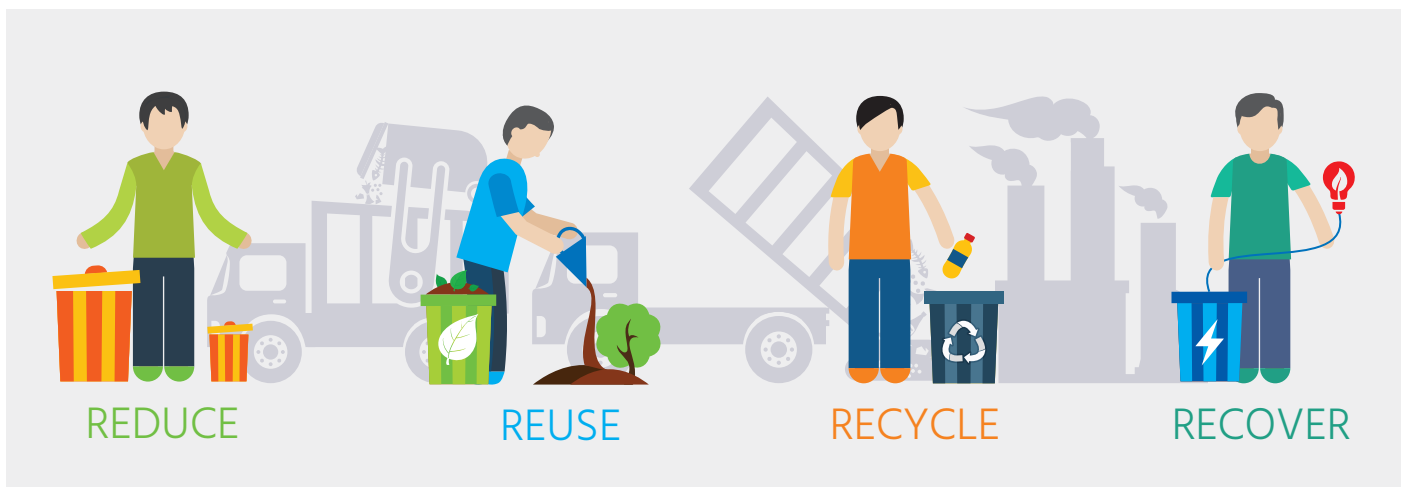
Under the adoption scheme, the Swacch Mumbai Prabhodan, the MCGM encouraged adoption of areas in Mumbai for purposes of cleanliness, maintenance, and upgradation of sanitation services. In 2014, availing this scheme, Mumbai Councillor Mr. Sanjay Ambole (then constituency no. 198) adopted an area encompassing 14,500 households and 256 chawls for the duration of one year. After submitting a proposal to make the area garbage bin-free, the MCGM put out a tender to accept options not just limited to collecting garbage, but also cleaning public and community toilers, sweeping streets and housegullies, etc. The proposal was pitched to have the following benefits;

1. The adopted area would be completely dustbin-free, deterring unwanted pathogens.
2. Various health issues associated with open, untreated garbage, like malaria, dengue, diarrhoea, etc. would be eradicated.
3. The Corporation will benefit greatly monetarily as well, as the need to hire employees to clean, pickup and mainly transportation will be eliminated. Moreover, a revenue will also be generated from the dry as well as wet waste.

A one-year pilot was started in the year 2015-16 after NGOs Shiv Sneh Samajik Pratishtan and Prateek won the

tender. At the end of the first year, 5 centres were proposed for segregation and composting of waste, and land would be provided by the MCGM to the NGOs. In 2017, post municipal elections, constituency 198 got delimited into 203, which was now represented by Ms. Sindhu Masurkar. Under Ms. Masurkar's leadership, the project got a further extension to 2017-18.

The tender has proposed decentralised disposal of garbage from 256 chawls and 14,500 houses of the aforementioned area. The NGOs involved will be employing a total of 252 volunteers, who will be paid an honorarium of Rs. 6000 per month per person from the MCGM. These 252 volunteers are proposed to pick up garbage from all the individual households and slums, transfer this waste to a segregation facility in an area which is given by the MCGM, and segregate the waste. The ratio of volunteers to houses will be aimed at approximately 2:200. The dry waste will be sold and/or recycled to pre-determined vendors. The wet waste will be composted and the resulting compost will be used in green spaces and/or sold to generate revenue. The goal is to make 14,500 households and 256 chawls in F/S are entirely garbage free and to make revenue from waste. The need for garbage bins will also be completely eradicated, which will also destroy prevalent diseases. Currently, approximately 20% of the garbage is getting composted and the area is inching towards its green goals.



Next Issue Watch out for our January 2019 newsletter to know more about State of Municipal Education in Mumbai.

To _____

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