

Convert municipal waste to wealth.

How we can and why we must

Urban India faces a huge waste disposal challenge, producing 1,20,000 metric tonnes of garbage daily. Mumbai's Gorai dumpsite sets a great example for tackling this challenge. It used to be an eyesore and a health hazard. Now, it's picturesque and pulls in carbon credits too



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WHEN you visit the beautiful green grounds covering an area close to 48 acres in Gorai in the western suburbs of Mumbai by the side of a creek overlooking Asia's largest Pagoda, it is hard to imagine that this picturesque location was until recently home to approximately 2.3 million tonnes of garbage in an open dump with an average height of 26 metres, about as high as a 5-storey building. The wide green expanse and the revived mangroves have brought about a marked improvement in the quality of life of the residents in the surrounding neighbourhoods.

Before we tell you the Gorai story of rags to riches, let us first get a sense of the urban waste challenge in India. Urban India produces an average of 120 thousand metric tonnes of garbage daily. With a population of over 12 million, Mumbai alone generates garbage of 6,500 tonnes per day.

Municipalities in India spend from 10 to 50 per cent of their budget on solid waste management

(SWM), but most of this is consumed in salaries of sanitation workers and transport of waste, while a minuscule proportion is spent on its scientific disposal. The abysmal state of affairs with regard to the collection and transport of the waste is all too well known. Less understood are the implications of the neglect of waste treatment and disposal as the garbage lies untreated and unprocessed in open dumpsites with its grave consequences for public health and the environment.

Not very long ago, nearly 1,200 tonnes of garbage was being dumped daily at the open dumping grounds in Gorai. The site had been used for this purpose since 1972, and had become a huge public health hazard. The foul odour emanating from the dump created a situation where residents in the surrounding neighbourhoods could not open their windows. The toxic leachate (the liquid that drains through the garbage) from the waste had led to the degeneration of mangroves in the creek that runs parallel to the dumpsite. A court directive in March 2007 led to the shutting down of the dumpsite for further dumping.

Thanks to an innovative public-private partnership led by the Municipal Corporation of Greater Mumbai (MCGM), the scientific closure of the dumpsite at Gorai has transformed this waste accumulated over several decades into wealth. Sanitary landfills are large and deep



Gorai dumpsite—before and after scientific closure

underground pits into which the residual waste is put in between scientific layering of geo-textile material and high density polyethylene sheets to ensure complete and airtight closure. The onsite conversion of methane gas is carried out using flaring systems, and the area is developed so as to provide a green cover over the dumpsite.

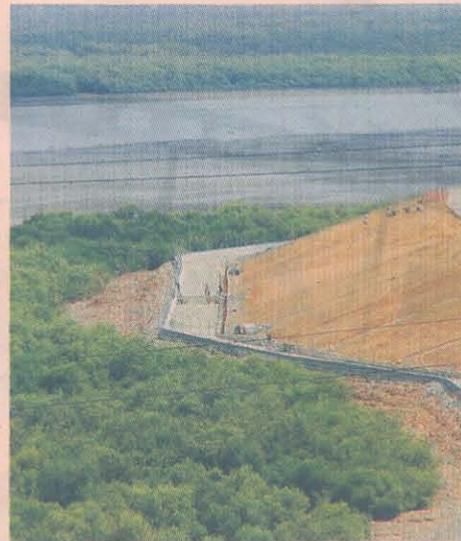
MCGM earns carbon credits for the capture and combustion of methane (landfill gas) from Gorai, and the transaction is one of the largest carbon advance transactions in the Clean Development Mechanism (CDM). A tonne of methane is equivalent to

21 tonnes of carbon in its global warming potential. The leachate is collected and transported off-site to Versova where the municipal corporation operates

POSTCARDS OF CHANGE

a sewerage treatment plant.

Gorai is the first dumpsite closure project in India to be registered with the United Nations Framework Convention on Climate Change (UNFCCC). MCGM has already received a carbon advance of Rs 25 crore against future delivery of carbon credits



After competitive bidding, IL&FS was selected as the project developer and environmental consultants to MCGM and the contract for construction was awarded to a consortium led by United Phosphorus Limited and M/s Van Der Weil Strotgas BV for a period of 15 years. The operations and maintenance of the site will be done by the consortium for a period of 15 years at an agreed cost of Rs 12 crore.

The project required clearances from multiple authorities of the Government of India and the Government of Maharashtra, and has been developed in accordance with the Municipal Solid Waste Rules 2000, which make it mandatory for urban local bodies (ULBs) to collect, transport and process/treat garbage and dispose of the residual in sanitary landfills. The rules have typically been ignored by ULBs in India.

Admittedly, solid waste management in urban India is a much larger challenge than attending to the menace of an over-piled dumpsite, no matter how huge. But while the Gorai scientific closure addresses only the backlog in solid waste management, it sets a great example for what is possible. Gorai is a part of Mumbai's overall Integrated Waste Management Strategy, which involves a comprehensive waste disposal plan developed on a public-private partnership framework as a set of independent but well synchronised projects that covers multiple projects

including large landfills at Kanjur (4,000 tonnes per day), Deonar (2,000 tonnes per day) and Mulund (500 tonnes per day).

Besides carbon credits, the integrated strategy includes projects that generate revenue from sources such as compost (an organic manure prepared by microbial decomposition of organic matter under aerobic conditions), biogas from organic waste that can be used to power electricity generators, construction debris waste that can be used in pavement blocks, etc. While no specific plan was devised for the 150 or so rag-pickers in Gorai, MCGM has built in a social rehabilitation programme for the new scientific landfill sites at Kanjur, Deonar and Mulund, with the possibility of using their skills at the material recovery facility.

It was good to hear from RA Rajeev, the additional municipal commissioner who oversees the solid waste management for Mumbai, that for the next 25 years, the city does not have to worry about its solid waste management. Mumbai has shown the way. Other cities must follow.

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This is the 3rd in a monthly series on urban infrastructure issues

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