WHILE THE VOLUME OF SOLID WASTE GENERATED IN THE CITY INCREASES EVERY YEAR, WASTE PROCESSING MECHANISMS HAVE NOT KEPT PACE. IN A FOUR-PART SERIES, HT EXAMINES ISSUES SUCH AS OVERFLOWING LANDFILLS, THE CITY'S GARBAGE FOOTPRINT, NEW PROBLEMS CAUSED BY E-WASTE – AND DISCUSSES SOME ALTERNATIVES

## Micro measures, macro results

SEGREGATE DRY AND WET WASTE

WHAT NEXT To manage city's waste successfully, BMC must encourage people to take steps at the level of hsg societies, ALMs: experts

MUMBAI: The civic body's latest circular lists an ambitious plan to collect 100% of the city's waste on a door-to-door basis and segregate it. Housing societies have been asked to spruce up their waste management plans, or face a fine of up to Rs50,000.

While this sounds promising, the Brihanmumbai Municipal Corporation's (BMC) enthusiastic cir-Municipal cular, which has its origins in the Municipal Solid Waste Rules, 2000, acitivist said it has failed in two crucial ways: It does not introduce any incentives in the new property tax regime for housing societies to carry out smarter waste management, and it fails to identify land in each ward where

garbage can be micro-managed.
Citizen activists from Advanced Locality Managements (ALM) said given that the BMC manages to segregate only 15 per cent of its daily garbage, the penalty levied is both pre-mature and uncalled for. "The circular shows positive intent, but Rs50 000 is too high Citizens and housing societies may approach corpo rators to intervene when slapped with fines, which might complicate matters again," said GR Vora, member, F-north ward citizens' federation. "The BMC should instead utilise the services of ALMs and co-ordinate better to manage waste at local levels. If ragpickers are organised better, the BMC will benefit economically and socially."

Incentivisation, according to some activists, may prove to be a catalyst.
"In Pune, the municipal body provides tax exemptions to housing societies and this has worked. The BMC should try it in Mumbai, at least for a while," said Jyoti Mhapsekar, president, Stree Mukti

Sanghtana. BMC officials said that while it has set segregation targets for 2014, concerned officers at the ward level will draw up plans to micro-manage the garbage generated in that ward as part of the decentralised waste management. Ward-level officers say they have other priorities such as water supply and san itation, and garbage segregation and management will eventually be addressed.

"We are waiting for reports from all ward-level officers, who have been asked to identify plots of land where decentralised waste management can happen," said Prakash Patil, deputy municipal commissioner (solid waste management). "Some ALM's are already doing this and we look forward to part-ner with many others, but rigorous implementation of garbage segregation in housing societies is the first thing we have to ensure for better waste man-

Some activists such as environmentalist Rishi Agarwal believe the solutions are merely meant to gloss over the persistent discrepancies. "The discussion now needs to change from BMC's failures to how citizens can make it enforce its responsibilities. These solutions are not new," said Agarwal.

garbage and don't want to send the wet waste to the community bins, you can convert it to manure in you

IN OTHER BIG CITIES

**NEW YORK** is the biggest Around 3 million house holds, public schools and institutions recycle waste New York buildings keep their recyclables separate It is also mandatory for

businesses to separate recyclable materials

**LONDON** municipal corporation has a waste management guide for citizens on its website. up from street corners

Recyclable waste is picked Household waste is burnt at a plant at Bexley, and energy is generated from this garbage.

**USE PLASTIC FOR** talktous **DRIP IRRIGATION** 

What steps has your housing society or colony taken towards managing its waste? What part of the responsibility lies with citizens themselves? htmetro@

hindustantimes.com

Old plastic bottles can be used Fill it them with water and tie them upside

down to a stick erected in your potted plants Make a small opening to allow water to drip from it

from roads and public gardens This is

Get a cardboard box

with dimensions of at least 1.5 ft x 1 ft

whenever you put wet waste twice the quantity of dry The dry leaves will absorb the liquid secreted by wet waste, thus close the box

MANURE FROM COMPOST PITS CAN BE USED IN THE SOCIETY GARDENS AND FOR PLANTS

AT HOME

**HOW HOUSING SOCIETIES CAN USE COMPOST PITS** 

Put around four inches of

Spread the

separated

leaves Cover it with

another thin

laver of wet

After this

dry leaves collected

**Advanced Locality** Managements (ALM) across the city are successfully running waste composting pits inside their society premises

> These ALMs reach out to **the committees** of the housing societies to enforce smooth segrega-tion and collection of dry and wet waste

They then approach local corporators and ward leve officers to help them set up compost pits with the help of a few experts. Funds can be sought to build these compost pits

IF YOUR HSG SOCIETY **DOES NOT HAVE AN ALM** ents and make them understand the importance of

> The managing committee can identify a spot on the premises where compost pits can be created. There, waste can be mixed with dry leaves to create compost

Workers from rappickers' cooperatives can be hired for their expertise. Societies pay these workers between Rs2,000 and Rs4,000 a month

Presently, housing societies and ALM's are processing as much as 200kg of wet waste a day in such pits

HERE. BIOGAS MEANS NO WASTE

All these institutions, which have installed biogas plants, have zero-waste campuses.

> SHATABDI HOSPITAL: The BMC started a biogas plant at Shatabdi hospital in 2003 and the Stree Mukti Sanghtana runs it. The plant provides

cooking gas to the hospital TATA INSTITUTE OF SOCIAL SCIENCES (TISS): Started in the year 2011, the biogas plant on TISS campus produces cooking gas equivalent to 15kg of LPG in a day, which is sent to

the canteens. Waste

Mukti Sanghtana are

plant and collect waste. TATA POWER PLANT was started in 2007 and is managed by the company authorities.

SEEPZ: It started its first biogas plant in Sept 2012. The gas produced will provide fuel to around 20 cooking gas cylinders in their can-

ВНАВНА АТОМІС RESEARCH CENTRE (BARC): The first biogas plant in the city was started here in 2002. Today, BARC has two plants.

Tata Institute of Fundamental Research (TIFR): This plant was started in 2007 and is also managed by the Stree Mukti Sanghtana.

casestudies

## 'Our waste does not travel into the city

t the Tata Power employee colony in Chembur, wet waste gener-ated — from fallen leaves to vegetable peels — is put into a shredder every day. Once broken into bits, it is transferred to an organic waste converter and comes out as manure, which used in the complex's gardens and

flower pots.

Tired of waiting for the civic body to give them licences to throw waste directat the nearby Deonar dumping ground, the residents' association decided to

process waste on its own premises.
"Our colony houses 540 families. We opted for this system as BMC's collec-tion was erratic and caused a garbage pile up in the area. We had tried pro cessing waste in compost pits earlier, but they attracted a lot of vectors,

rodents and dogs.," Pradeep said Manjrekar, a res ident. "So we hired these machines. The money was sourced from the colony's civil upkeep fund and partially from the company's sustainability fund." The waste is segregated at each house-

hold and collected by hired workers who take it to the machine shed.

Around 90kg of organic wet waste and 200kg of leaf litter is generated every day from the colony; the conversion process creates around 150kg of manure. The waste is put into the shredder in batches of 5-7kg, and it takes about 15 minutes to convert it into manure. Around one unit of energy is

■ The Tata Power employee colony in Chembur converts 200kg of wet waste into manure every day. This is used in their gardens and flower pots. PRAFUL GANGURDE

consumed to crush 50kgs of waste and

The small processing unit serves the dual purpose of waste management and manure production, a fact resi-dents are thrilled with. Jyoti Mistry, who lives there, said, "Ever since this manure has been made available, I have taken keen interest in gardening and I come to collect the manure regularly



fter working as a medical representative and running a busi ness for two decades, Airoli resident Julius Rego decided to pursue a life-long passion — gardening and teaching schoolchildren about the environment.

Rego undertook two projects: reuse as much household plastic as possible and make kitchen waste

His home from kitchen scraps and dry leaf litter, is enough to support ornamental plants and herbs. In the past two years, the 53-year-old has turned his front yard into an organic garden, and has taught composting, organic gardening and vegetable farming at various schools and colleges around

"I enjoy working with soil and mud. I have grown more than 200 plants and about 30% of the food in my kitchen comes from my garden," said

the city for a year now.

Rego's four-member family generates about half a kilo of wet waste every day and all of it goes into the gardens. The manure is produced inside his home, but doesn't attract flies or mosquitoes. In a cardboard container, four layers of wet waste are overlapped with dry leaves to absorb the moisture and stem the odour. The box is then covered tightly. The process is slow — about three to four weeks long — but it involves no expenditure.

Using the no-till, no dig method, Rego roots all his plants, herbs, and vegetables in reusable plastic such as containers, bottles, cooking oil canisters, broken plastic pipes and even old cloth bags. His household wastes next to nothing, and the only things they buy regularly are soil and seeds. "While growing up in Belgaum, we had space to grow fruits and veg-etables. But in a city, one must opti-mise the use of available space."



## 'Area is now a mini biodiversity hotspot'

t's 12.15pm at a housing society at Maheshwari Nagar, Andheri (East). A group of workers plough through a heap of vegetable skins and food waste, picking out plastic wrappers and paper. Soon, wet waste from 500-odd apartments in the area will be brought, and layered into five separate compost pits.

Sabrina Kannampilly, a resident from one of the buildings holds up a fistful of soil from a pit. "Smell this, it is completely odourless and ready to be used as manure," she says.

With sustained efforts by residents, the Maheshwari Nagar Federation has been running a composting programme in its locality for six years now. Funded by their MLA Suresh Shetty and former corporator Clive Dias, around 160 kilograms of wet waste is put into the

pits every day.
"We first started basic compost pits, then moved to the pits we now use. The wet waste from most of the Kondvita area comes here to be turned into manure and used in the adjacent munic ipal garden - Vrindavan," said

Kannampilly.
Vrindavan garden has about 150 trees, home to 25 species of birds, residents say. "This place has become a mini biodiversity hotspot," said Uday Vijayan, secretary of the federation.
The federation has employed two workers from the Stree Mukti Sanghtana, a co-operative of waste pickers to maintain the pits. "The output from the waste is only 10%, but sufficient for use in the garden," said Malati Rai, another resident.

There group does have some detrac-tors though. "We still have people who don't segregate waste and hence the pits contain a lot of plastic and paper, which has to be manually pulled out. But by and large, we are happy that the waste management functions smoothly," added Vijayan.

## 'It is amazing to see a barren patch turn green'

ronment studies did not garner much enthusiasm from the firstyear students at Kamla Raheja Vidyanidhi Institute for Architecture and Environmental Studies in the beginning.

But in the past few weeks, their work has borne fruit. They now will harvest the vegetables they grew in manure they created from waste.

The assignment on urban waste management and urban farming was designed by assistant professor Shweta Wagh. "We started in August last year by composting vegetables skins sourced from the canteen and dry leaves from around the campus and a nearby park, said Wagh.

Around 80 students from the first year are involved in the assignment presently. Bamboo, plastic bottles, plas-

Bamboo used for modeling assignments in the past were used to make trellis stands for the creepers. Plastic bottles are used for drip irrigation; plastic cups are used to hold small quantities of wet waste and dry leaves.

"We planted methi, shepu, spinach

and brinjal. It is amazing to see how a barren patch of soil and dry leaves has turned green slowly. We are enjoying the assignment," said Deepti Patil," 18, a student.

After the initial success of compost ing and urban farming, the faculty is now planning to scale this up by integrating waste segregation on a large cale and create a zero waste campus "Presently, waste segregation is inconsistent. We plan to install bins near the canteen where lots of wet waste can be sourced for composting," added Wagh.



■ The students of Kamla Raheja Vidyanidhi Institute for Architecture and Environmental Studies planted herbs and vegetables after creating manure from campus waste.