WHY CITIES NEED TO OPEN THE FLOODGATES

Provided there is civic intent, there are solutions to stop India's cities from flooding



ihar's capital Patna went under this week. Water entered the city's biggest government hospitals, low-lying residential neighbourhoods adjoining the Sarayu river, and reportedly even the state Assembly and deputy chief minister's home.

This isn't a malaise unique to the east

Indian state.

A thousand kilometres away to the north, in the national capital New Delhi, iconic commercial hub Connaught Place was submerged after rain lashed the city. Last week, swanky areas in Gurugram were flooded, including Golf Course Extension Road, where homes are sold for tens of crores.

In the west, parts of Mumbai were submerged, from the perennially troubled Andheri subway to parts of the swanky BKC office district, where brands such as Apple, and now Tesla, have opened stores. Last month, Pune's IT district was flooded after heavy rains. Down south, Bengaluru, too, was inundated in May. Chennai and Bengaluru flood so routinely that the cities' residents have almost accepted it as inevitable.

Why this happens is known: a combination of poor urban planning, haphazard and illegal development, poor sewage collection, struggling municipalities, and public and administrative apathy.

What is the long-term impact of this repeated assault on urban centres? And more importantly, can anything concrete orimmediate be done to fix it? *Mint* spoke to companies and people in the business of solid waste management, reinsurance, and real estate consulting to find out.

TRASHY TROUBLES

ast month, Delhi's newly elected chief minister, Rekha Gupta, told

Reinsurance firm Swiss Re

Group estimated in a January

2025 report that India has

suffered losses of over

\$1 billion since 2000 due to

extreme flood events.

reporters that it was normal for water to take up to 1.5 hours to drain in the city, adding sarcastically that there is no frying pan within drains that can magically evaporate excess water.

Gupta's point is valid not just in Delhi, but across the country. But

the root cause isn't a lack of frying pans; it's waste. Drains and stormwater channels in nearly all of India's cities are perennially blocked by discarded solid waste and debris, causing waterlogging and floods when the monsoons arrive.

Why does this happen?

To begin with, cities generate more waste than their processing capacity can keep up with. Compounding matters, even the richest municipalities, such as Mumbai and Delhi, struggle with inefficient management of solid waste. Most large cities rely on the 'collection and transportation' or C&T model. This is where a private contractor or municipality employs sanitation workers and a fleet of vehicles to collect waste generated in residential and commercial areas.

There are several problems with transporting trash to a central location. Most cities have few dedicated sites for depositing and processing solid waste. In Mumbai, for instance, there are only two sites, where all the city's trash is taken every day. One is

in the central suburb of Kanjurmarg and the other in the eastern suburb of Deonar. Of these, Deonar is about to be closed, while Kanjurmarg is under litigation after it was declared a protected forest area.





"We throw garbage where it is not supposed to go," says N.G. Subramanian Iyer, chief financial officer of Antony Waste, the private contractor for Mumbai's municipal body, Brihanmumbai Municipal Corporation (BMC). Antony Waste is among the country's largest solid waste management companies, with contracts for cities such as Noida, Varanasi, and Nagpur, among others. "Most older cities like Chennai do not | 2022, torrential rain flooded the have a gutter or stormwater drain system. Those that do, such as Mumbai, have gutters choked with plastic and this garbage," adds Iyer.

Solid waste chokes not just stormwater drains but also larger *nallahs* or channels that drain into the sea in Mumbai or carry away wastewater in landlocked cities. But why does this untreated waste land in the gutters in the first place?

"There is a lack of discipline in maintaining a (garbage collection) schedule in our cities," Iyer says. "If you go to a city like Panjim or Indore, you will notice they are

cleaner. That is because the trash collection trucks come to your area at 8 am as promised. But in a city like Mumbai, a collection truck can take, at most, three trips a day. Traffic and congested roads prevent trucks from conducting door-to-door collection on time."

This means, if shopkeepers or a residential area have cleaned their premises and collected waste in the open, it can remain there the entire day. Eventually, piled-up garbage ends up in drains and nallahs, which then become de facto local dumping grounds.

Worst of all, there is cultural, castebased baggage around picking up trash. "Kachra uthana mera kaam nahin hai (picking up trash is not my job)... there is this mental block in our society," Iyer points out.

PRICEY PLANNING

X / aste blocking drains is only one VV part of a complex problem. The population in Indian cities is exploding. And haphazard, rapid development has left them with few means to deal with the rains. Addressing the problem now will need not just administrative intent and good planning, it will also

need money. Consider the case of Bengaluru, whose population has grown from 2.9 million in the 1980s to nearly 13 million in 2021, per estimates from the

(BBMP), the city's municipal body. As the boundaries of the city expanded, and migrants flocked in, its population doubled between 2001 to 2021, and may touch 18 million in

another six years. But Bengaluru's stormwater drainage network remained the same, leading to floods nearly every year. In September so-called Billionaire Street in Koramangala, which is home to famous tech startup founders. That's when edtech company Unacademy's founder, Gaurav Munjal, posted a photo of himself and his dog being rescued in a tractor.

Three years later, the mess hasn't been fixed. Parts of Bengaluru flooded again this May, including major bus depots and Manyata Tech Park, an office district built on the bed of the erstwhile Nagawara Lake.

In a 2023 report, real estate consulting firm Knight Frank estimated that over half of the city's stormwater drainage infrastructure had fallen into disrepair; there are now only 842 km of drains within the BBMP limits, comprising 633 drains. Besides, the city's famous lakes, which acted as rainwater harvesting reservoirs, are rapidly disappearing.

Knight Frank estimated that the city needs an additional 658km of stormwater drains to make sure it doesn't flood again. At a cost of ₹2.2 crore per km, this will take over ₹1,400 crore to build, with another ₹556 crore needed to fix and maintain existing drains.

The consulting firm further estimated that the city will need another ₹800 crore to clean lakes, nallahs, and reservoirs, which are all crucial in managing excess rainwater.

Other innovative solutions for flooding also need funding. Consider the case of Pimpri Chinchwad, the satellite city next to Pune in the rain-soaked western ghats of Maharashtra. In 2023, it inaugurated a waste-to-energy plant worth ₹300 crore to turn the city's waste into usable electricity. The plant, set up by Antony watts of electricity for the city to use.

"With this project, PCMC (Pimpri Chinchwad Municipal Corporation) has been able to do two things," Antony Waste's Iyer explains. "They have reduced their electricity cost. The cost of energy from this plant is at ₹5/unit while buying it from a thermal power plant costs₹18/unit. And two, the electricity generated is a byproduct. The main solution of solid waste management is also taken care of."

Waste-to-energy plants are not a novel thing. In the cities of devel-Bruhat Bengaluru Mahanagara Palike oped economies, such as Japan

mint SHORT STORY

WHAT

Every year, the monsoon floods cities large and small, sparing neither slum nor fancy address. The country has to bear a huge economic cost because of this flooding.

A combination of poor urban planning, haphazard and illegal development, poor sewage collection, struggling municipalities, and public apathy is responsible.

NOW

Many municipalities are in a position to implement long-term solutions provided they have funding. But most struggle with corruption, low revenue and poor bookkeeping.

and Germany, these are a common solution for solid waste management. But in India, high costs and the relatively easy solution of just building a landfill has kept municipal bodies away from the idea.

"Capex (capital expenditure) per megawatt for a waste-to-energy plant is ₹23-25 crore per megawatt versus a thermal power plant, where it costs ₹4.5 crore per megawatt," Iyer explains. "The capex itself is a deciding factor. There are high costs associated with installing things like scrubbers to protect the environment because you are going to burn mixed waste."

MONEY MATTERS

Waste, now generates nearly 12 mega- \ \ \ \ \ \ any of these structural, long-term V solutions to flooding can be implemented by well-funded, functional municipalities. But, most are struggling with inefficient revenue collection and poorbookkeeping. And consequently, a lack of solid funding.

"Most of the municipalities, even today, totally depend on grants from the state and central government," Venkatakrishnan Srinivasan, founder and managing partner of Rockfort Fincap LLP, who has

India's bonds market for over three decades, tells *Mint* in an interview. Then, some revenue comes from

property tax, parking fees, land banks given to cinemas and public conveniences such as public toilets etc. "But mostly these are not well-maintained, so revenue collection is low.

These bodies don't even have a proper accounting system; most are running on single-ledger entry and minimal have begun to compound the problem. accounting standards," he adds.

Most Indian municipalities have continued to rely on grants from the Swachh Bharat Mission, the Smart Cities Mission, and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) programme to provide basics such as better water supply and sewage treatment plants.

What can be done to fix the problem? One solution championed by the government and by markets regulator Sebi is the municipal bonds market. India's muni bonds market is small (-₹3,300 crore raised) and rather illiquid, with limited participation from financial institu-

tions. But in FY18, the government introduced incentives that encouraged cities to issue paper for relatively small amounts: from ₹20-25 crore going up to around ₹200 crore each. The government granted ₹13 crore for every ₹100 crore raised in muni bonds and roped in US Treasury officials to help municipalities get their

books markets-ready. "The authorities began looking at cashrich municipalities first, introducing standard accounting practices and appointing experts to help these bodies achieve a

credit rating," says Rockfort's Srinivasan. Richer bodies such as the BMC in Mumbai began streamlining revenue collection, moving the process online and offering concessions to tax defaulters to clear property tax and other major dues.

Sebi officials conducted workshops on bond markets, showing municipal officers the value of raising money independently and strengthening their balance sheets. A special purpose vehicle structure was also rolled out to help municipal bodies restructure their finances so that their

bonds can get investment grade ratings. Immediately, bond issuances jumped. But even as new cities, including Gandhinagar, Agra, and Varanasi, enter the market, the pace has slowed.

"The majority of municipalities are small and they will neither get the rating required for a bond issue, nor do they need to raise tens of crores from the market," been working in Srinivasan says. "Besides, if they borrow,

how will they repay? There is still no mechanism for a municipal bond default. No one can come and take over a baddebt."

Getting finances right is a crucial step for cities to start tackling their flooding problem quickly. The extra cash can also come handy as the threat of flooding increases year on year, not just because of climate change and its impact on rainfall but because years of poor management

Urban flooding is no longer a big city problem; it is a major risk to public infrastructure and business zones in smaller cities and industrial belts, as well.

"There is no doubt that the frequency and impact of floods have increased," Nikhil Kharkar, practice lead for consulting solutions at Marsh Advisory India, an insurance broking and risk management firm, tells Mint in an email. "More so, areas that were least expected to have water logging now experience considerable inundation. For example, Bharuch, Valsad, Surat, Vadodara, Udaipur, and Hyderabad.'

Reinsurance firm Swiss Re 早级社会的 Group estimated in a January 2025 report that India has suffered losses of over \$1 billion since 2000 due to extreme flood events, including the floods in Mumbai (2005), Uttarakhand (2013), Jammu &

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Kashmir (2014), Chennai, (2015), Kerala (2018), and northern India (2023). Crucial infrastructure, including airports, ports, renewable energy plants, and manufacturing facilities, are left vulnera-

ble to severe damage. These events have a long-term economic impact,

Marsh Advisory's Khakar says.

What does this mean for municipal bodies with special economic zones and industrial areas? A higher risk of flooding means a higher cost of protecting and maintaining critical infrastructure. If the cost of insurance and rein-

surance becomes too high to justify factories and energy plants, private companies may reconsider their investment plans.

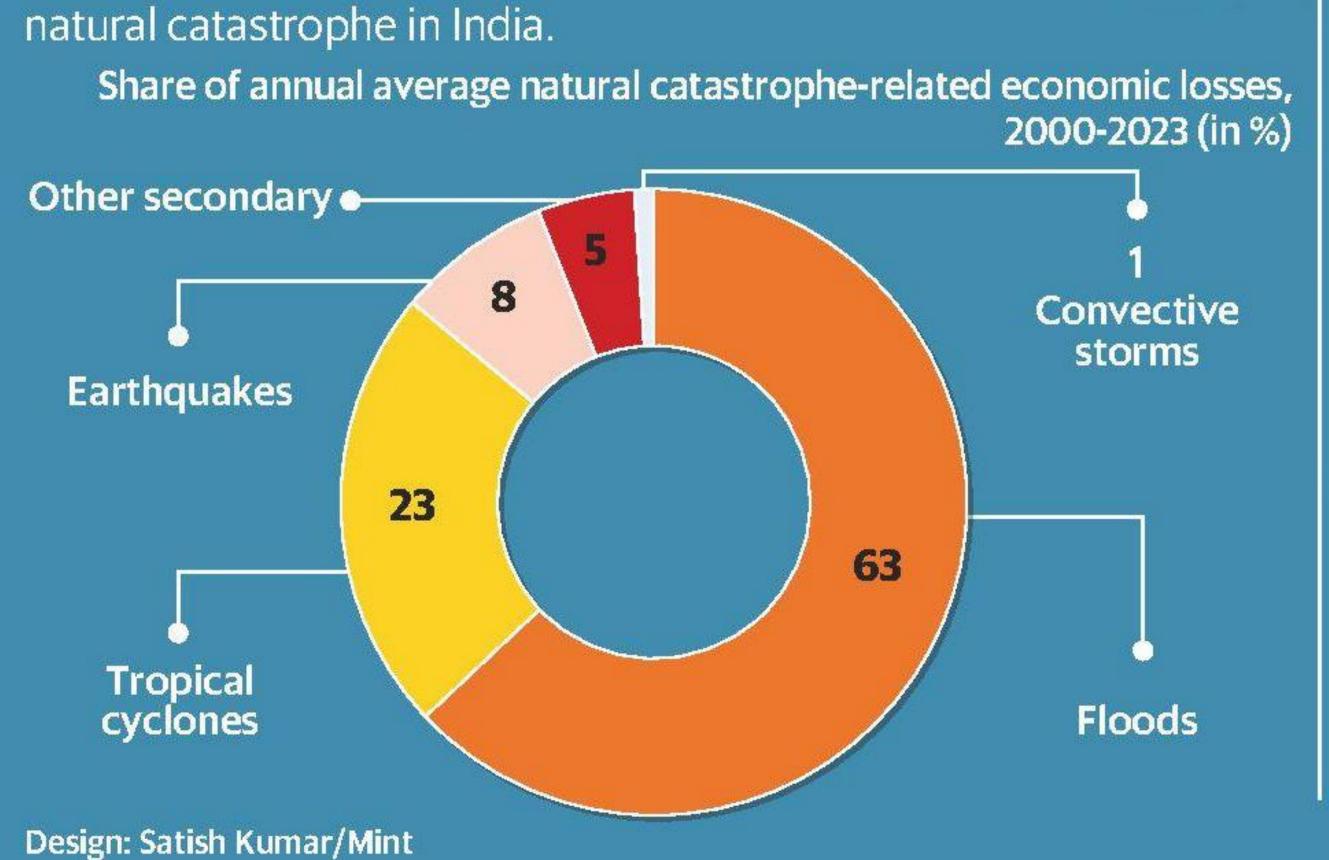
But the bigger risk with flooding is accepting it as business as usual. Hundreds of people die gruesome deaths every year due to rainfall and flooding, fall sick from water-borne diseases or are injured while wading through streets and homes that turn into rivers and pools.

Fixing urban local bodies, including municipal corporations, takes time and is complex. But, without fixing the basics—waste management, drain infrastructure, and funding—India risks losing its cities to murky waters.

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DESIGN BY RAJESH KUMAR/MINT





GAINS FROM WASTE

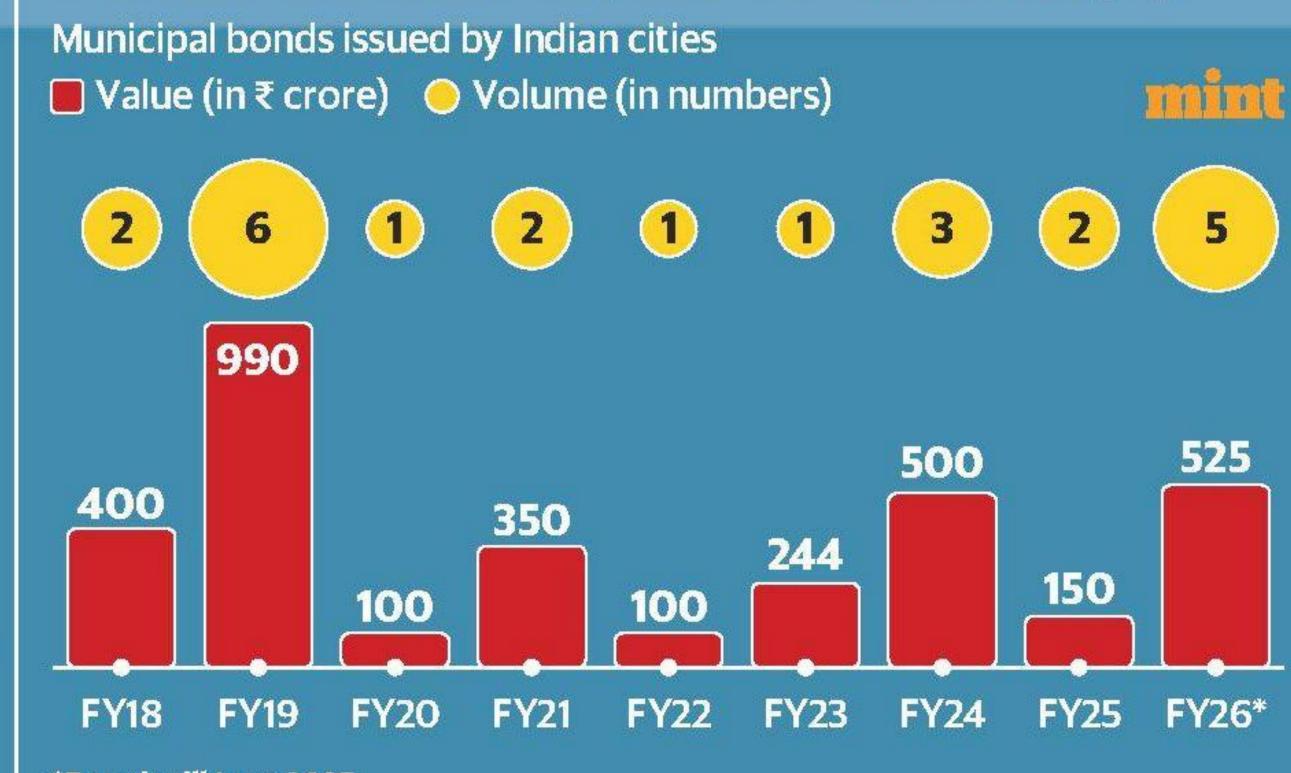
Collection and transportation is still the dominant means of waste management in India.

Antony Waste Handling Cell Ltd's revenue breakup (in ₹ crore)



SPORADIC BOND

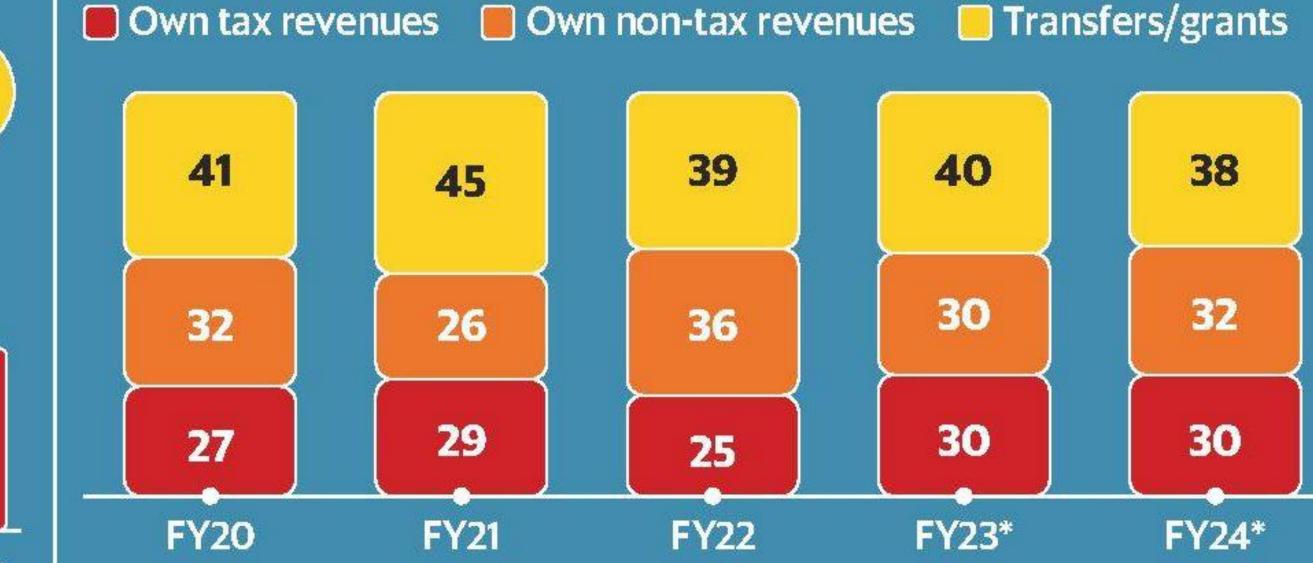
The market for India's municipal bonds remains challenging.



TAKEN FOR GRANTED

Municipalities continue to rely on grants and transfers for their financial needs .

Proportion of total municipal revenue (in %)



*Figures for FY23 and FY24 are revised and budget estimates,

respectively, provided by RBI.

Note: Antony Waste is a private solid waste management firm *Data is till June 2025 Source: India's economy and insurance market: growing rapidly, but mind the risk hot spots', Swiss RE Institute, January 2025, Company filings, Sebi, 'Indian Municipal Bond Market', ICRA, March 2025