

# Scaling our Waste Mountains

Fixing solid waste  
management in  
India's cities

September 2023

Published in September 2023 by  
Godrej Consumer Products Limited

**DESIGN AND LAYOUT**

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# FOREWORD



**Vidya Tate**  
Waste worker,  
Lakhera,  
North Goa district

As dawn casts its first light, while most of you are still lost in the embrace of your dreams, I start my day.

By the time you have your morning cup of tea, I am at the waste management facility, ready to take on yet another mountain of refuse.

As the first truckloads of waste arrive I stand atop the vehicle and brace myself for the most precarious part of my day. One wrong step, one momentary lapse in concentration, and the results could be catastrophic. With utmost care, I offload the waste, ensuring I don't become part of the tragedy that these trucks sometimes bear.

Now imagine, for a moment, sorting through 2,000 kgs of waste with your bare hands. Imagine touching soiled sanitary pads, discarded diapers, and hospital refuse, all the while surrounded by a stench so potent it's often hard to breathe. Yet, this is my everyday reality.

Why do I, or any one of us for that matter, willingly wade through the waste of society? Because managing and recycling our waste will eventually eliminate the mountains of waste we have produced.

But I cannot do it alone.

While we are the final checkpoint, the real change begins with you.

Sort your waste. Take the initiative.

Understand that with every piece of garbage you throw away thoughtlessly, it's someone like me who must sift through it, bearing the physical and emotional weight of our collective indifference.

Sorting your waste might seem like a minuscule act but it's the most powerful step you can take to make a change today. The health of our community, and frontline workers like me depends on it.

# INTRODUCTION



**Gayatri Divecha**  
CSR & Sustainability Head,  
Godrej Industries Limited  
and Associate Companies

What we throw gathers in an expanding sea of 3,150 dumpsites across our country. By 2030, our waste is predicted to triple. To hold this waste without any management or processing would need a landfill that outstrips the sprawling size of Mumbai.

In the face of rapid urbanisation, surging populations, and the sheer magnitude of roadblocks, prevailing solid waste management systems are drowning. Piles of waste lie exposed and are a menace to public health, our environment, and our economies. This report, with a collaborative effort with Dasra, delves into urban spaces, dissects challenges, and spotlights opportunities for stakeholder action, fashioning a blueprint for transformation.

We've found that it's the non-profits who lead the charge. We've highlighted their grassroots efforts and every account ignites a reminder that action is imperative. As this report unearths their stories, it compels us to channel our capacities for change.

Within this report, we hope to achieve more than mere words.

We want to strengthen our resolve to combat municipal solid waste management and propel this discussion to the forefront of practitioners, implementers, co-funders, and the expansive philanthropic community.

The problem of waste management is daunting, but positive shifts are shaping the way forward. We must propagate diverse, contextually fitting solutions that can ripple across the nation, transforming our towering heaps of waste into fountains of wealth.

# EXECUTIVE SUMMARY

Solid waste affects everyone at an individual, community and public level.

With India's per capita, per day waste generation estimated at 0.6 kg, and notwithstanding industrial solid waste generation, solid waste management (SWM) is a daily million-ton problem for India - and it is projected to increase.

As we try to make good on economic goals - India's demographic, migratory, consumption and waste patterns are changing. India continues to urbanize, and its cities face compounding challenges in waste management due to increasing population, limited space, overburdened systems, and vast socio-economic disparities.

Amidst rapid urbanization, only 26% of urban areas are covered by waste management systems deployed by municipal bodies.<sup>1</sup>

The cascading effects of this gap are for all to see - openly dumped garbage, waste mountains in decades-old landfills, polluted land and waterbodies, breakdown in public health, and stagnating neighborhoods.

This report takes a deep dive into solid waste management in India's cities, with a focus on the human dimension of SWM, and the roles and challenges of three of these actors: Urban Local Bodies, Informal Waste Workers, and Citizens.

At the frontier of this problem is a diverse ecosystem, composed of various formal and informal actors, including:

- » Central government ministries and agencies
- » State governments
- » Urban local bodies
- » Waste management companies
- » Informal recycling agencies
- » Independent informal waste workers
- » Non-Government Organizations and Civil Society Organizations
- » Academics and research institutions
- » Citizens



**26%**

of urban areas are covered by waste management systems deployed by municipal bodies.

We find that while their challenges are tied to hyper-local contexts, there are some universal linkages in their experience of Solid Waste Management

Beyond these three stakeholders, we have also looked at and amplified the pathbreaking work of NGOs whose interventions have solved for several intersecting challenges in SWM, from the individual to the community, and more broadly the local - affecting lasting change and quantum leaps in quality of life, livelihoods, public health and wellbeing, and greater environmental health.

### INTERVENTIONS FOR THE SECTOR

- » Undertaking research, documentation, and advocacy on under-researched issues of SWM
- » Supporting private sector actors to fulfill mandates towards resource efficient, environmentally sustainable, and less wasteful means of production
- » Building alliances, convenings, and collaboratives

Based on our research, key cornerstones that can support such interventions and stakeholders are:

- » Strengthening citizen ownership, action, and accountability towards SWM by focusing on knowledge, attitudes, and behaviors. This has the potential to reduce landfilling by up to 90%, costs attached to waste collection and processing by 50%, and generate resources from recycling and upcycling.
- » Securing dignity, equity, and safety for workers and their families by enabling formal recognition, social protection, and diverse livelihood opportunities. This catalyses the reversal of multigenerational poverty, enables safer working conditions, and creates a ripple change in under-resourced communities.
- » Leveraging local administrations as champions of SWM by equipping them with greater technical, social, and financial knowledge, resources, and decision-making. This inspires innovation in SWM, enables scale, and achieve sustained transformation.
- » Developing capital infrastructure which prioritises hyper-local contexts, financial and administrative needs.
- » Fostering consultative planning, policy action, and targets for every stakeholder by deploying a rigorous framework.
- » Converging intervention pathways at the national level by fostering collaboration, consultation, and SWM consciousness in development plans and agendas

As we grapple with our own consumption and waste practices, it is vital to understand our local SWM systems, the humans behind these systems, and our role in the transformations we wish to see. While waste mountains represent several inconvenient truths about cities, we need to come together to get the wheels of true, just, and sustainable circularity turning. This report concludes with the following recommendations:

#### For State and Civil Society

- » Set up pan-India alliances for SWM
- » Bolster data driven ULB empowerment
- » Innovate to move away from toxic materials
- » Build fair and inclusive compliance mechanisms
- » Focus on bulk waste generators
- » Design intersectoral programmes spotlighting climate and workers in waste management
- » Bolster flexible, supportive, and co-creative partnerships for circularity

#### For Citizens

- » Segregate waste at source
- » Work cooperatively with Resident Welfare Associations (RWA) and waste workers
- » Hold governments accountable for waste management

#### For Funders

- » Fund innovations and develop integrated projects
- » Strengthen collaborative action between funders and governments
- » Support human centered interventions

| ROLE IN SWM   | CHALLENGES  | INTERVENTIONS  |
|---|---|--|
|  <p><b>URBAN LOCAL BODIES</b></p> <ul style="list-style-type: none"> <li>» Preparation of SWM Plans</li> <li>» Primary &amp; secondary municipal waste collection/ transport</li> <li>» Street sweeping and drain cleaning</li> <li>» Treatment &amp; disposal</li> <li>» Information, education and communication to influence behavior change</li> </ul> | <ul style="list-style-type: none"> <li>» Lack of source segregation</li> <li>» Difficulty in creating awareness, changing attitudes, behavior and habits</li> <li>» Occupational hazards</li> <li>» Barriers to regular and accurate documentation</li> <li>» Urbanization, density in settlements and lack of real estate</li> </ul>               | <ul style="list-style-type: none"> <li>» Providing capacity building, project management and personnel support for ULBs</li> <li>» Setting up replicable SWM implementation models</li> <li>» Facilitating public private partnerships and targeted financing models</li> </ul>                                  |
|  <p><b>INFORMAL WASTE WORKERS</b></p> <ul style="list-style-type: none"> <li>» Collection of waste from households, industries, streets, waterways, dumps, and landfills</li> <li>» Sorting and segregation</li> <li>» Reducing environmental harm</li> <li>» Driving economic growth</li> <li>» Supporting recycling industry</li> </ul>                | <ul style="list-style-type: none"> <li>» Intergenerational poverty burden</li> <li>» Social perceptions and discrimination</li> <li>» Financial structures</li> <li>» Power dynamics with scrap dealers</li> <li>» Access to education</li> <li>» Working Conditions and Health</li> <li>» Developing threats</li> <li>» Gender dynamics</li> </ul> | <ul style="list-style-type: none"> <li>» Collectivizing to upskill informal waste workers through membership models</li> <li>» Enabling social security, formalization, and integration of informal waste workers</li> <li>» Addressing the health and wellbeing needs of informal waste workers</li> </ul>      |
|  <p><b>CITIZENS</b></p> <ul style="list-style-type: none"> <li>» Household recycling</li> <li>» Traditional upcycling</li> <li>» Source segregation &amp; composting</li> <li>» Paying for waste management services</li> </ul>  | <ul style="list-style-type: none"> <li>» Limited capacity/resources to segregate waste at home, especially in under-resourced communities</li> <li>» Limited awareness about solid waste materials, their subcategories, and disposal guidelines</li> <li>» Lack of agency over their habitats and the waste in them</li> </ul>                     | <ul style="list-style-type: none"> <li>» Using communications as a tool to improve citizen awareness of SWM</li> <li>» Creating opportunities for volunteering and cleaning up habitats</li> <li>» Promoting source segregation through residential composting and neighborhood regeneration programs</li> </ul> |

# METHODOLOGY & LIMITATIONS

## Methodology

This report demonstrates the lay of the land, the roles of different stakeholders involved, their challenges, and the way forward in the Solid Waste Management sector of urban India.

The report was completed using a mix of primary and secondary research. The different steps involved in putting the report together are defined below.

## Literature review

- » Articles/ reports/ documents by think tanks, government, non-profit sector, newspaper/ news website, and multi-lateral agencies examined
- » Relevant information gleaned and collated to form central premises and arguments

## Primary research

- » 10 non-profits working with informal and migrant workers to identify resource persons interviewed
- » Key experts from academia, government, industry, think tanks, and multi-lateral agencies, identified for interviews
- » Semi-structured interviews with a selected cohort set up based on sampling and availability of resource persons

## Analysis and collation

- » Breakpoint analysis undertaken to identify critical challenges where non-profit interventions can be posited as solutions
- » Stakeholder, personas, and journeys, mapped to understand the sector from a stakeholder-centric perspective
- » Insights from interviews and secondary analyzed thematically, across breakpoints and intersections in stakeholders' lives

## Writing and consolidation

- » Narratives and critical messages, emerging from the analysis played back to experts, for due validation
- » Report collated and written thematically to detail out the different aspects linked with SWM
- » NGO interventions highlighted through "spotlights" throughout the report

## Limitations

The data available is largely qualitative, and the knowledge gleaned could be subjective and influenced by the researchers' biases.

# BEYOND WASTELANDS

## An Overview of India's Solid Waste Management Sector

Solid waste is a wicked problem, with multiple interdependent, incomplete, in flux, and difficult to define factors.

The jury is not yet out on exactly how much solid waste urban areas of the world generate annually – the number ranges from 2 to nearly 11 billion tons<sup>2</sup>, and 0.8 kilograms per capita, per day. While the numbers reported in India are wide ranges too, per capita generation of waste has been calibrated between 0.2 to 0.6 kgs.<sup>3</sup> Within the next three decades, this number is pegged to double.<sup>4</sup>

Despite the uncertainty in numbers, it is a fact that our waste is here to stay and grow. How can we really solve a problem that manifests as microplastics in our air, soil, and water, garbage islands in our oceans, and waste mountains in our landscapes? The only way, perhaps, is to scale those mountains, and see their human dimensions:

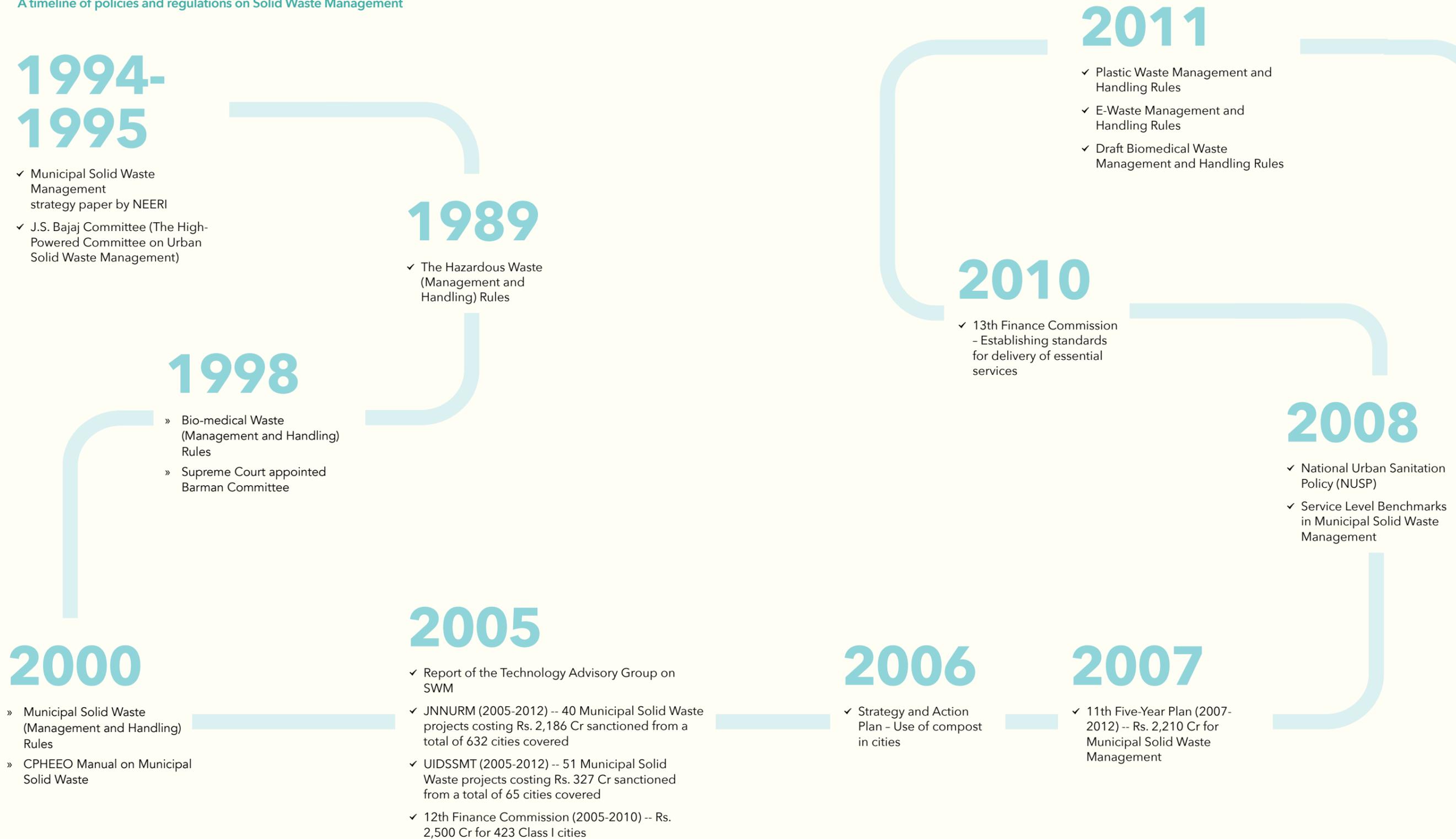
India's SWM sector employs over 5 million people formally<sup>5</sup> and informally, whose work is spread across 700 districts, 3,100 landfills (some of which are 65 meters high and decades past their carrying capacity), 2000 centralized waste processing plants, and the unique municipal wastes of over a billion people, daily.

Understanding this sector is engaging with the circumstances and policies that bring people together to manage waste, and exploring the unique challenges encountered by those people. While technology and finances will undoubtedly shape India's waste trajectory over the upcoming decades, it is critical for development practitioners to cultivate empathy, see from a human-centric lens, and then solve for the lives at the start and end of the solid waste value chain.

To start off, India has had several multi-layered policies and programmes to address the issue of solid waste management.

FIGURE 1

A timeline of policies and regulations on Solid Waste Management



Source: [http://swachhbharaturban.gov.in/writereaddata/SBM\\_Guideline.pdf](http://swachhbharaturban.gov.in/writereaddata/SBM_Guideline.pdf)

# 2014

## Swachh Bharat Mission

### FEATURES

Launched by the Ministry of Housing & Urban Affairs to provide states with a roadmap to achieve hygiene, waste management, and sanitation. It has been promoted through Swachh Survekshan survey and awards: a ranking exercise taken up by the Government of India to assess rural and urban areas for their levels of cleanliness and active implementation of cleanliness mission initiatives in a timely and innovative manner.

### IMPACT

- ✓ 100 million rural households and 500 million residents gained access to toilets, across 6,30,000 villages
- ✓ Households in open defecation free villages saved up to INR 50,000 every year and total benefits exceeded costs by 4.7 times for them (UNICEF, 2018)
- ✓ Ripple effects: fewer days of illness, time saved waiting and traveling for treatment
- ✓ Soil and groundwater sources in ODF villages were less contaminated overall compared to the villages that did not have 100 per cent toilet coverage (UNICEF, 2019)
- ✓ An equivalent of 7.5 million full-time jobs had been created by Swachh Bharat Mission

### KEY OBJECTIVES

- ✓ Eliminating open defecation
- ✓ Ending manual scavenging and rehabilitating manual scavengers
- ✓ Upgrading insanitary toilets
- ✓ Affecting behavioral change for better hygiene
- ✓ Formalizing SWM and integrating informal SWM workers
- ✓ Capacity augmentation for ULBs to enable private sector participation in Capex (capital expenditure) and Opex (operations and maintenance)

### GOVERNANCE MECHANISMS

- » National level monitoring and supervising, advisory, approvals: National Advisory and Review Committee headed by the Ministry of Urban Development
- » Strategy preparation, approval and publishing, preparation of Detailed Project Plans, resource mobilization: State High Powered Committee (SHPC) under the State Chief Secretary, located in the State Urban Development Department
- » Local level activation: Urban Local Bodies along with citizen, civil society, NGO participation and Swachh Saathi (friend of cleanliness)
- » Swachh Survekshan: The Swachh Survekshan program is a national cleanliness survey conducted by the Government of India to assess and rank cities and towns based on their cleanliness and sanitation levels. The program has been successful in driving change in the waste value chain by encouraging cities to adopt sustainable waste management practices. It has also created awareness among citizens about the importance of waste management and their role in it. The Swachh Survekshan program has been instrumental in driving change in the waste value chain in India.

# 2016

## Solid Waste Management Rules

### FEATURES

Notified by the Union Ministry of Environment, Forests and Climate Change (MoEF&CC). The rules:

- ✓ expanded the scope of waste to more categories
- ✓ identified key players in the SWM value chain
- ✓ set up a central monitoring committee

### It delineated responsibilities and guidelines for each stakeholder:

- ✓ segregation at source
- ✓ collection and disposal of sanitary waste
- ✓ collect Back scheme for packaging waste
- ✓ user fees for collection
- ✓ waste processing and treatment
- ✓ promoting the use of compost and waste to energy
- ✓ management of waste in hilly areas

### IMPACT

- ✓ Impetus to several organizations for innovating and rolling out interventions in the SWM
- ✓ Spotlighted various intersections that could be drawn between various stakeholders

The latest rules now also cover construction and demolition waste, hazardous waste, and e-waste, ensuring a comprehensive approach to waste management in India.



### GOVERNANCE MECHANISMS

**Ministry of Urban Development:** State wise promotion of research and development, technical guidelines and project finance; Formulation of national policies and strategy on SWM and waste to energy

**Ministry of Chemicals and Fertilizers:** Providing market development assistance for city composting

**Ministry of Agriculture:** Setting up laboratories for testing the quality of compost produced by local authorities

**Ministry of Power:** Deciding charge of energy generated from waste to energy plants and ensuring the mandatory purchase of energy generated by Distribution Companies (DISCOM)

**Ministry of New and Renewable Energy Sources:** Facilitating the creation of infrastructure for waste to energy plants



CHAPTER 02

# SCOPING THE TERRAIN

## A Profile of India's Solid Waste Value Chain

Per capita waste generation varies between 0.2 Kg to 0.6 Kg per day in cities. Annual increase in the overall quantity of solid waste in the cities is estimated at about 5%.

According to official sources, urban India generates nearly 42 million tons of solid municipal waste annually, or 1,15,000 metric tons per day (TPD).<sup>6</sup> Sources on the ground claim that the real value is much higher, including solid waste which is openly dumped and not accurately accounted for in the formal value chain.

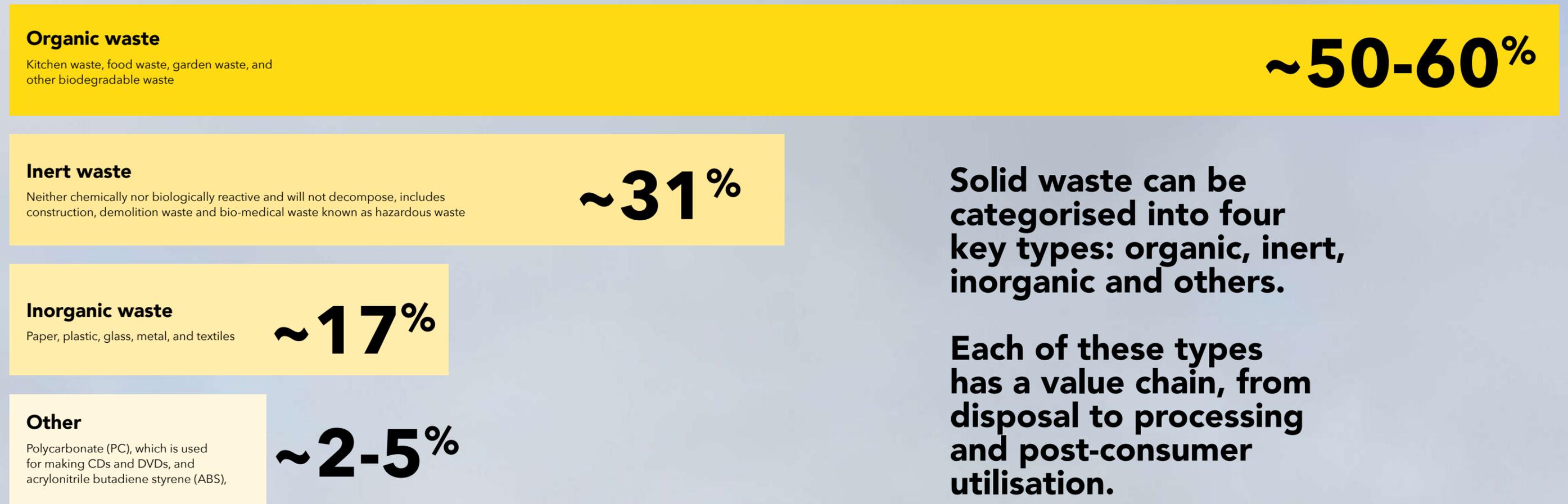
The quantity and quality of waste generated varies from city to city based on living standards and economic activities in the place.

This mass of solid waste can be categorised into four key types: organic, inorganic, inert and others. Each of these types has a value chain, from disposal to processing and post-consumer utilisation.

Remarkably, about half of the municipal waste holds significant value. The organic portion, being biodegradable, can be efficiently transformed into beneficial products like compost and methane gas, essential for agriculture, cooking, heating, and energy production.

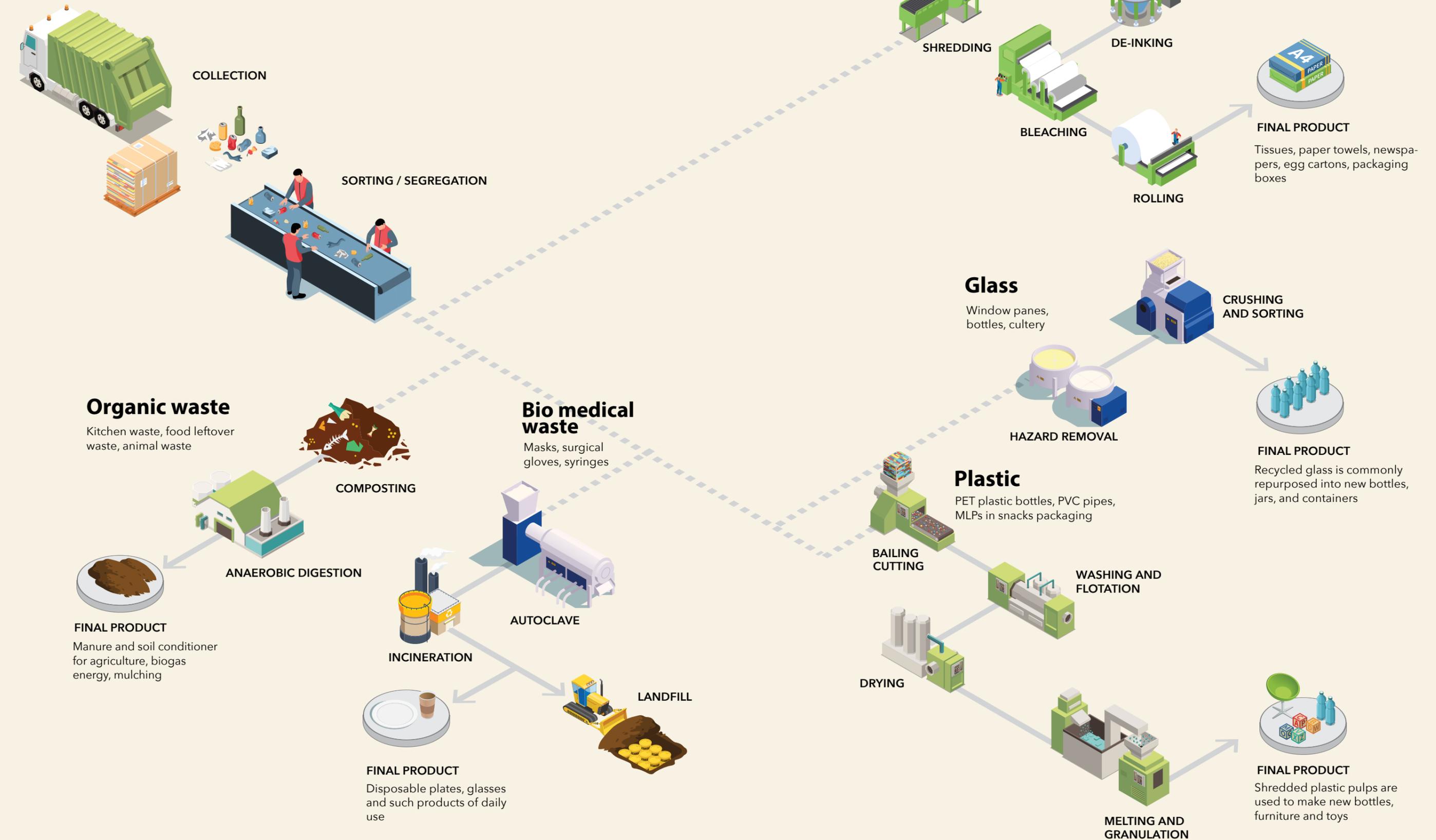
Moreover, materials such as paper, plastics, metals, and glass can be recycled, harnessing valuable resources. It's imperative to recognise and capitalise on this potential for sustainable growth.

FIGURE 2  
Types of solid waste



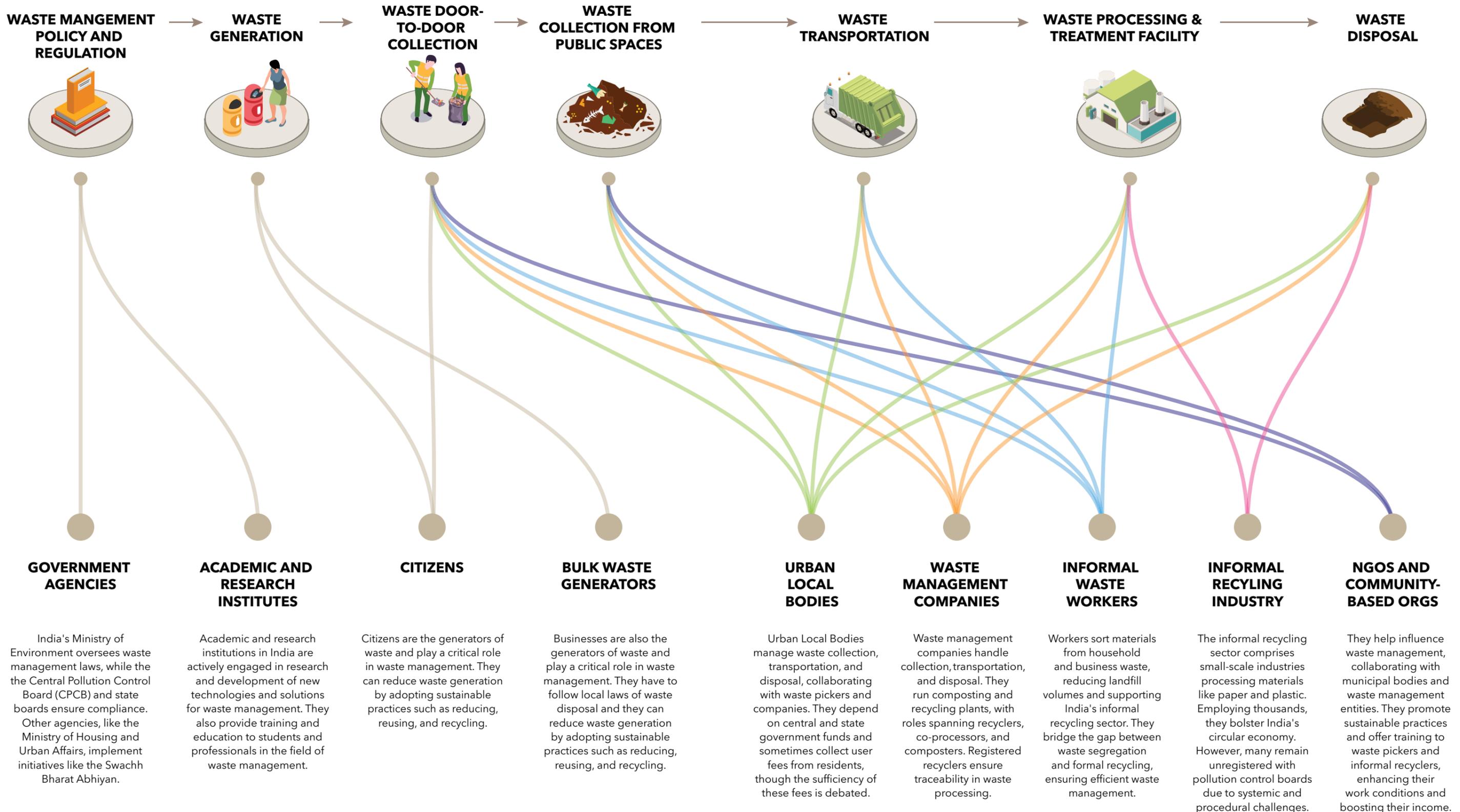
# Beyond the Bin

Discovering the hidden value in waste materials



# Solid Waste Management Journey

Each waste stream is composed of a variety of stakeholders, across various stages, from waste generation to disposal.



# THE VANTAGE POINT

## Spotlighting Key Stakeholders

Out of the various stakeholders within the SWM ecosystem, this chapter focuses on three which are the most active at the local level: ULBs, informal waste pickers, and citizens.

This chapter is a window into each stakeholder's experiences and offers key opportunities emerging from the challenges they face as they deal with solid waste in their places of work and home.

First are Urban Local Bodies (ULBs). They are the primary entities responsible for waste management in urban areas. Their responsibilities encompass waste collection, transportation, treatment, and disposal. They set up and manage waste processing facilities, including landfills, composting plants, and recycling units. They also help formulate and implement waste management policies, guidelines, and awareness campaigns.

Next are informal waste pickers. These are individuals or groups who collect, sort, and sell recyclable waste, often without formal recognition or protection. They play a crucial role in the value chain by collecting waste from various sources, segregating it, and selling the recyclables to larger recyclers or industries.

Finally we have the citizens who are the primary waste generators. They are primarily responsible for waste disposal and segregation at source.

Together, these stakeholders form the backbone of the local solid waste management ecosystem in India.



# 1 Urban Local Bodies

Today, significantly built-up urban, semi-urban and peri-urban areas are proliferating across the country, raising the urban population share to 47% of the total population.<sup>7</sup>

Since the shift towards urbanization centuries ago, burgeoning cities in India have deployed mechanisms to deal with municipal solid waste generated by their growing populations.

Anchoring these mechanisms to this day, for half a billion people, are Urban Local Bodies (ULBs): Municipal Corporations, Municipal Committees/ Councils, and Nagar Panchayats (Town Councils). Often known as the third tier of governance, ULBs are self-governing local bodies having the mandate to carry out functions relating to public health, welfare, safety, infrastructure, and development. At present, India has almost 5000 ULBs<sup>8</sup> (according to Swachh Bharat Urban).

ULBs have four key features:<sup>9</sup>

- » Democracy in structure
- » Autonomy in functioning
- » Heterogeneity of units
- » Diverse yet fraternal constitution

The genesis of the ULB lies in principles of democracy and decentralization; therefore, although ULBs fall under the purview of their respective state governments, each ULB is distinct in character - especially regarding provisions for devolution of powers, functions, and funds.<sup>10</sup> Given the diversity across ULBs in India, and the fact that solid waste generation is highly dependent on geography, population size, level of industrialization, etc., - the organizational structure, methodologies, and challenges of ULBs in SWM differ significantly even regionally. Their roles and responsibilities vis a vis SWM, however, have been standardized through policy.

## Roles and responsibilities of ULBs in solid waste management

### Preparation of Solid Waste Management Plans (SWMPs)<sup>11</sup>

According to the SWM Rules (2016), every ULB prepares Solid Waste Management Plans by:

- » Reviewing existing SWM and environmental policy and legal framework
- » Assessing the current situation and gaps
- » Conducting stakeholder consultations
- » Circulating a draft plan and implementation schedule
- » Obtaining stakeholder validation
- » Final implementation

By all global standards on waste management, SWMPs are a critical step towards sustainable and efficient solid waste management. These plans are meant to account for important parameters - demography, infrastructural projects, strategies, institutions involved, financials, environmental concerns, technical aspects, population and lifestyle projections, byelaws, timelines, etc.

While this is a key step in SWM, SWMPs drafted by ULBs in India are rarely in circulation. Importantly, whether ULBs across the board are trained and enabled to methodically prioritize problem areas, draw SWM plans, disseminate them, compare them with other land use plans, and execute them on the ground is doubtful.<sup>12</sup>

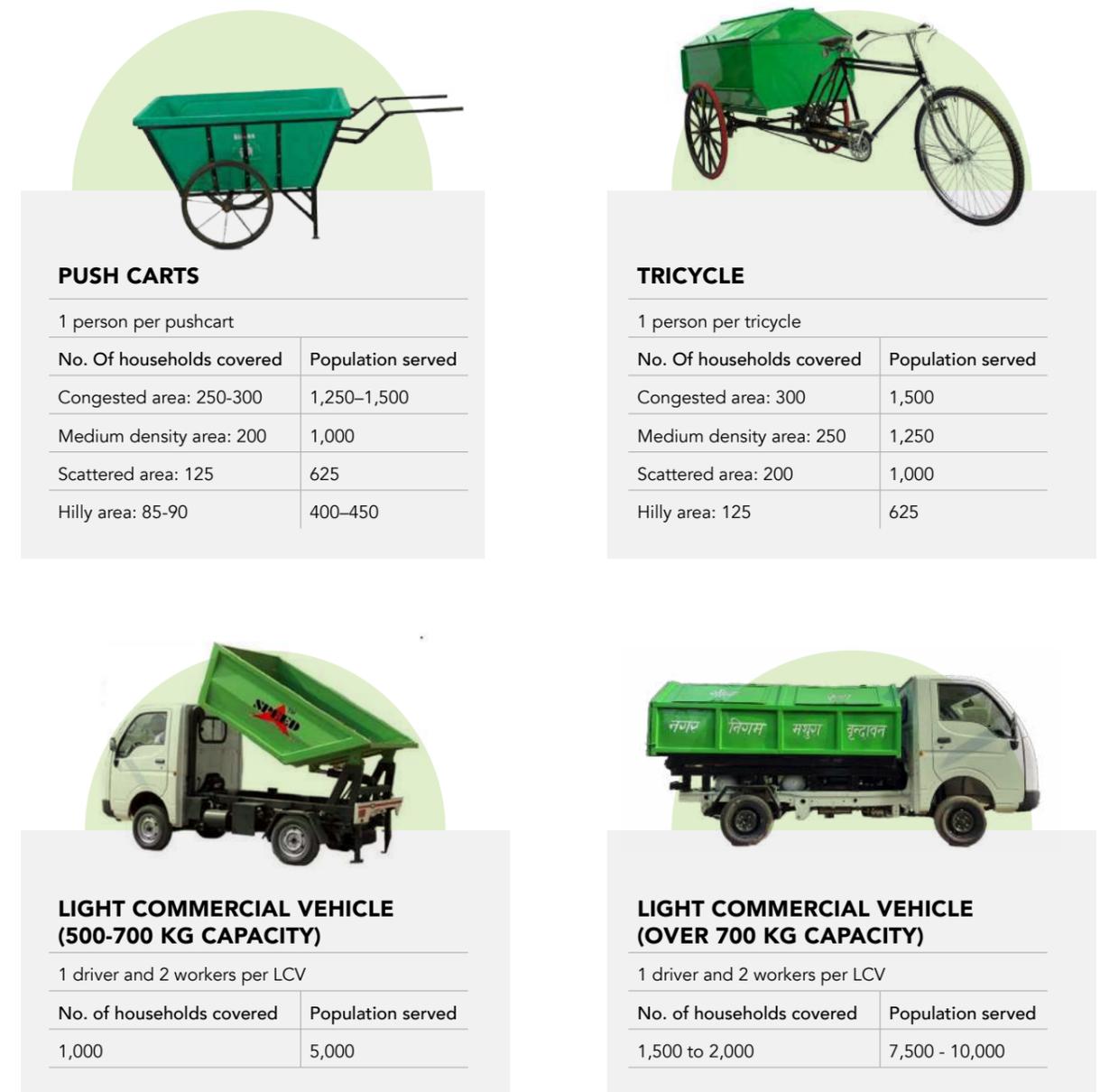
### Primary waste collection

Next, ULBs are mandated to achieve 100% door-to-door/ gate-to-gate collection of segregated solid waste from their constituencies - including housing societies, commercial and business districts, and informal settlements. Logistically, this means mapping transport routes, staffing, investing in and maintaining vehicles, and so on. Moreover, ULBs are supposed to integrate informal waste pickers in primary collection to facilitate their formalization in SWM.

For primary waste collection, ULBs often enter contracts with third party vendors, including private recyclers for e-waste and biomedical waste, and monitoring agencies.

FIGURE 3

Infrastructure and resources involved in primary waste collection



Source: <http://swachhbharaturban.gov.in/writereaddata/Manual.pdf>

**Street sweeping and drain cleaning**

ULBs are responsible for daily street sweeping, and periodic surface drain cleaning. Street sweeping and drain cleaning is done in residential neighborhoods, lanes, highways, slums, and markets. ULBs are also mandated to set up street, community bins, and waste storage depots - which include cement-concrete bins, masonry bins, dhalaos, metal bins or containers.

**Secondary waste collection and transportation**

Secondary storage/ collection and transportation is done for waste collected from households through primary collection. Secondary collection vehicles are parked at specific locations for the entire time during primary collection and are loaded once primary rounds are over. An efficient fleet of primary and secondary collection teams ensures that public bins do not overflow and stagnate - and enable a bin-less waste collection system. Often un-segregated waste is segregated at the secondary waste collection stage.

**Information, Education, Communications**

In addition to the logistical task of managing solid waste, ULBs are mandated to carry out information, education, and communication (IEC) exercises to promote cleanliness, spread awareness among the public about solid waste, and foster sustainable practices among consumers. An IEC campaign is not a one-time activity; on the contrary, depending on the stage of planning or implementation, multilevel and constant communication with the community and all relevant stakeholders is necessary.

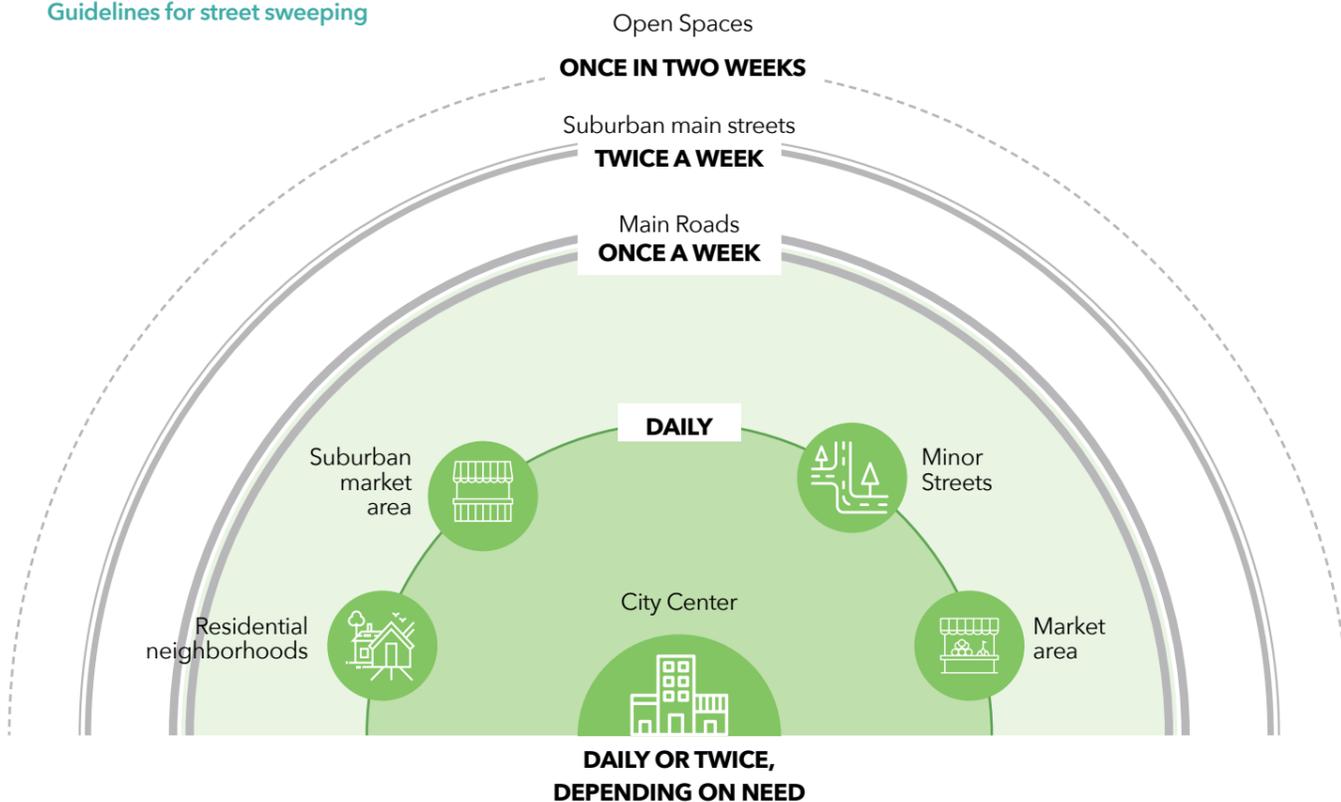
Types of IEC include campaigns, meetings with residents and resident welfare associations, wall paintings, pamphlets, advertising, and street plays. Several ULBs across India have come up with ingenious ways to undertake IEC programs.<sup>13</sup>

*An IEC campaign is not a one-time activity; on the contrary, depending on the stage of planning or implementation, multilevel and constant communication with the community and all relevant stakeholders is necessary.*

**Treatment and disposal**

ULBs are mandated to treat collected solid waste, which includes setting up:

**FIGURE 4**  
Guidelines for street sweeping



Source: <http://swachhbharaturban.gov.in/writereaddata/Manual.pdf>



## Financing SWM at the ULB level

For SWM, ULBs receive funding from three key sources :<sup>14</sup>

### SOURCES OF FUNDING

- 1. Internal funds:** income generated from taxes levied by the municipality, like property tax, water charges, rent from commercial establishments, trade licenses, user fees and taxes
- 2. External funds:** funds obtained from the Central government, State government, domestic institutions, financial intermediaries, capital markets, funding through Public Private Partnerships (PPP), and bilateral and multi-lateral donor agencies, state funds tied to the SBM program, prizes from Swachh Survekshan, grants allocated in response to Detailed Project Reports (DPRs)
- 3. Earnings from waste:** tipping fees, user charges, sale of compost, biogas, recyclables after processing

Given the sheer scale of roles, responsibilities, and reach, ULBs have several revenue and expenditure streams for SWM.

### KEY EXPENSES FOR SWM

- 1. Program expenses:** operations and maintenance, IEC, capex for procurement of machines, vehicles, payment for vendors
- 2. Human resources:** salaries, social security
- 3. General expenses:** transportation, local administrative expenses, inspection, monitoring
- 4. Interest and finance charges:** on borrowings from a State or Central Government

For SWM, the High-Powered Expert Committee (HPEC) 2011 has set per-capita operation and maintenance expenditure benchmarks considering 100% waste collection, treatment, and disposal of solid waste for all cities (HPEC, 2011).

ULB expenses differ as on moving away across regions, as budget inflows, requirements and ground conditions change too. For a quick dive into ULB budgeting for SWM, here's a case study which delves into the revenue and expenditure streams of a ULB from a city in Maharashtra.

FIGURE 5  
Sources of funding and expenses for ULBs

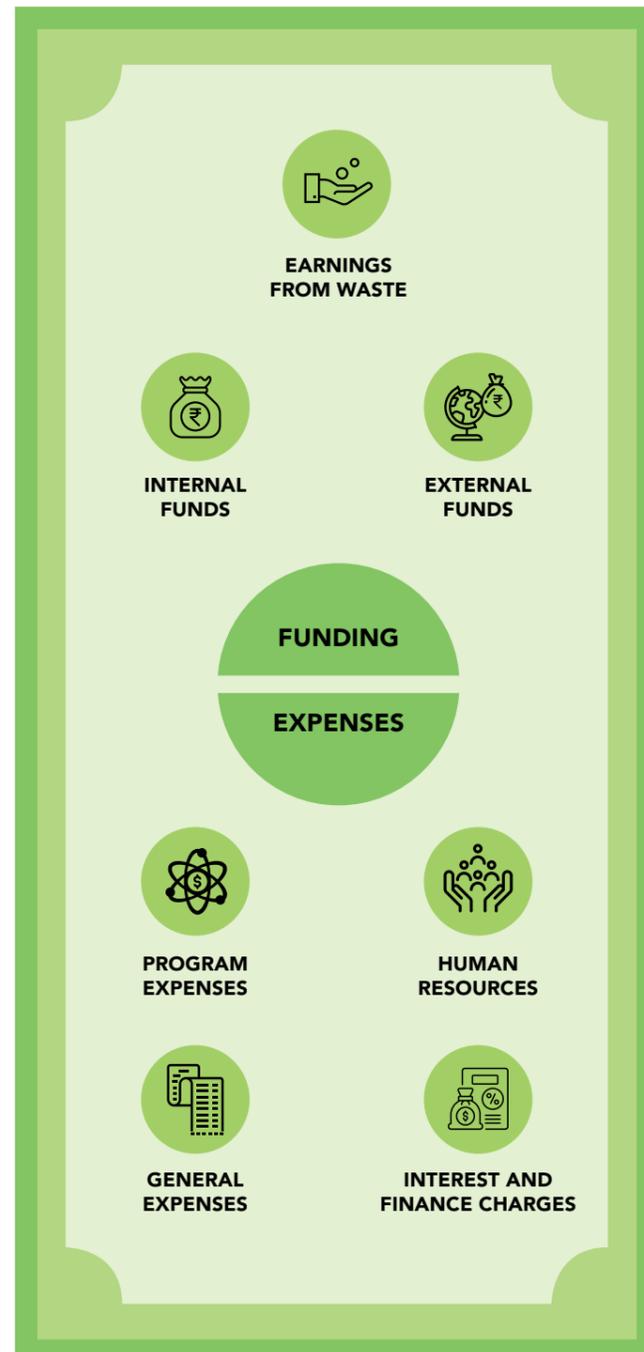
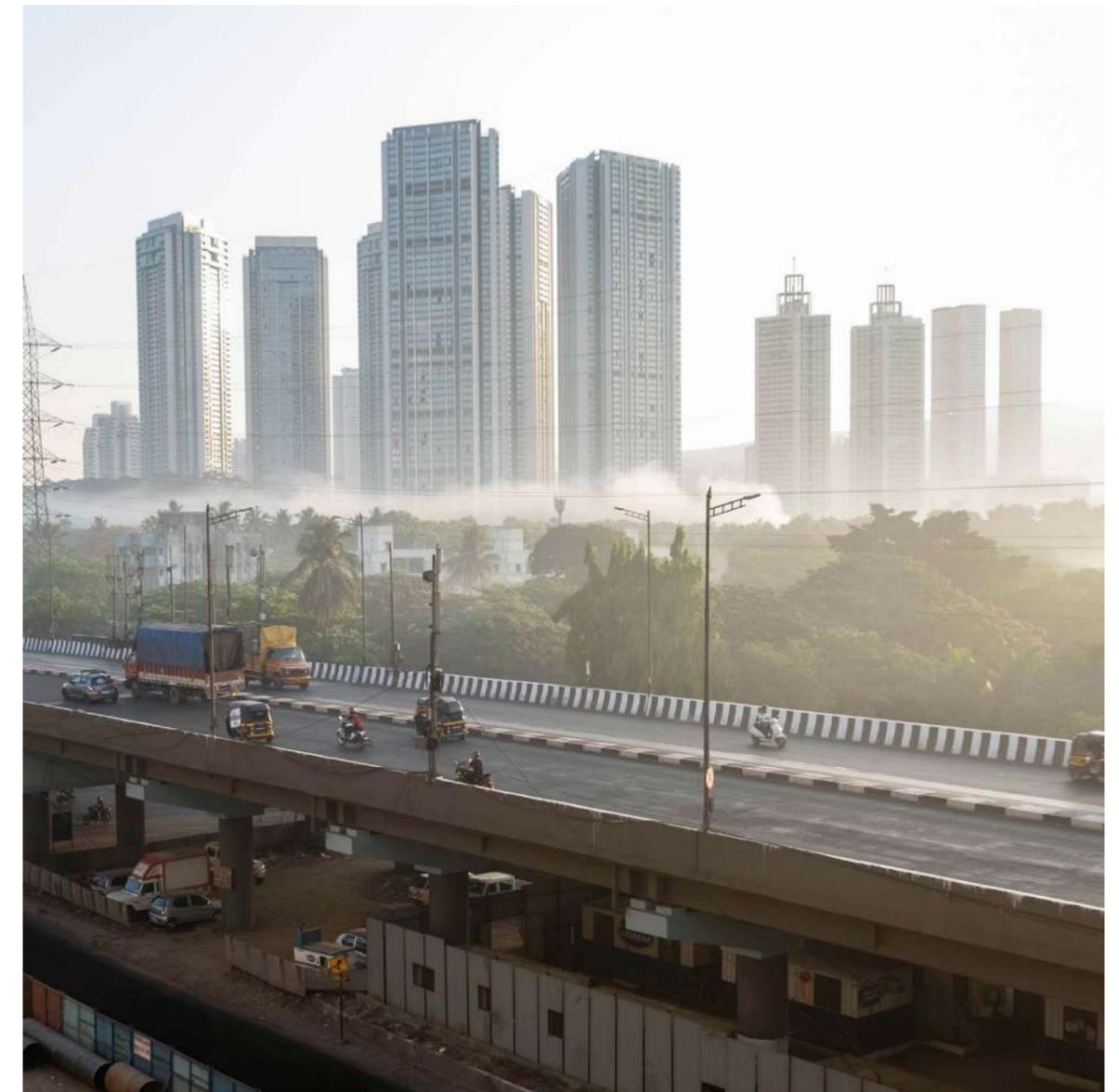


TABLE 2

Amounts for per-capita operations and maintenance of SWM

| Population classification | HPEC - O&M prices per capita INR (2016) |
|---------------------------|---|
| >5 million                | 430                                     |
| 1-5 million               | 302                                     |
| 100,000-1 million         | 216                                     |
| 50,000-100,000            | 181                                     |
| 20,000-50,000             | 181                                     |
| <20,000                   | 181                                     |

Sources: HPEC Report & Recommendation, <https://csep.org/working-paper/revisiting-the-role-of-funding-lessons-from-expenditure-and-performance-on-cleanliness-in-indian-cities/>



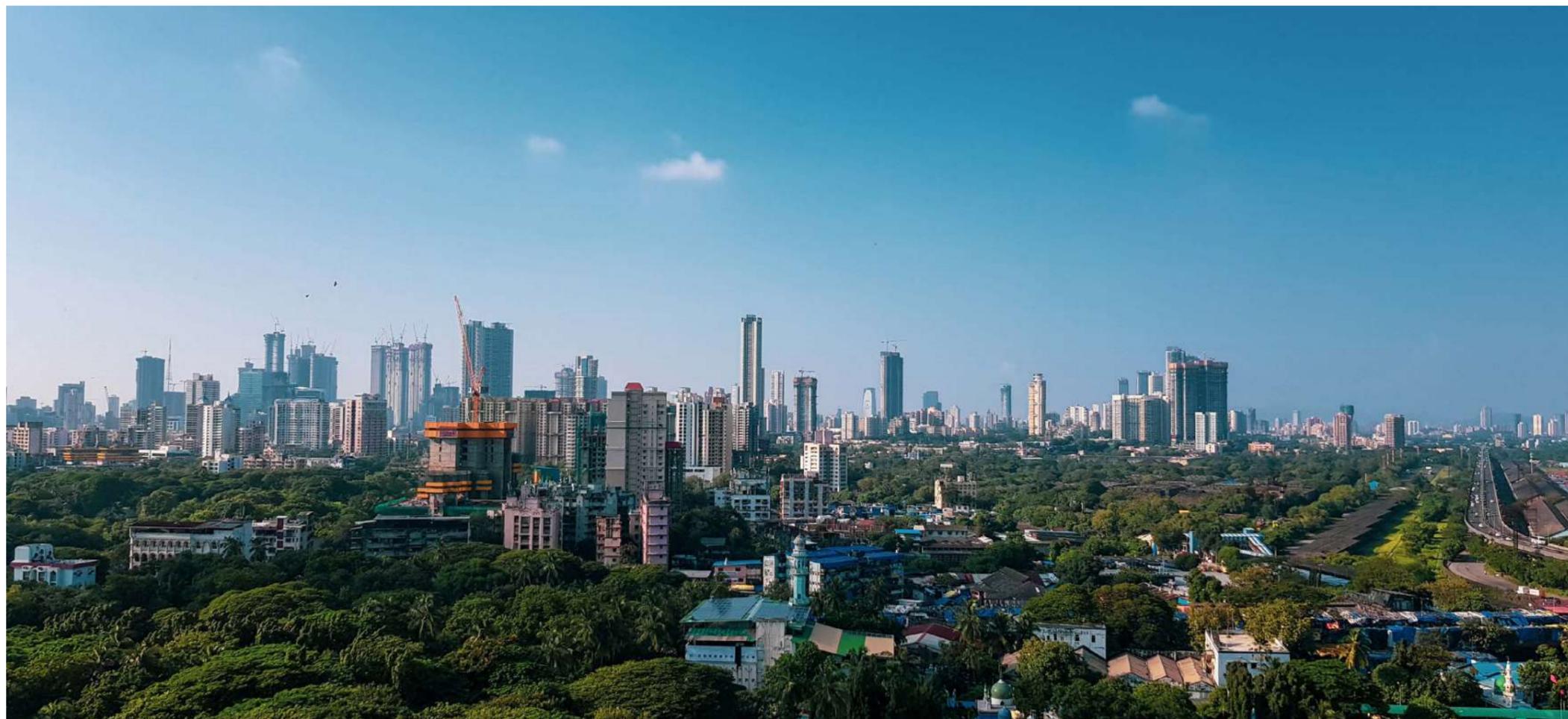
# Financing Urban Local Waste Management

ULB Type: Municipal Council | Population: 20,476

A case study which delves into the revenue and expenditure streams of a ULB from a city in Maharashtra.

## SWM PROCESSES FOLLOWED

- ✔ Windrow composting
- ✔ Waste to energy: biogas plant
- ✔ 13-way dry waste segregation and sale
- ✔ Sanitary waste transported to incinerator



## DAILY WASTE QUANTITIES & OUTCOMES

| Waste type  | Quantity (TPD) | Outcome  |
|-------------|----------------|--|
| Solid waste | 12-13          | 2.5 tons converted to biogas to power the processing plant |
| Wet waste   | 7-8            | Composted in-house   |
| Dry waste   | 5-6            | Sold to vendors  |

## REVENUE

| Operational expenditure per month | Revenue per month                              |
|-----------------------------------|--|
| INR 32 lakhs                      | INR 2 lakhs from sale of compost and dry waste |
|                                   | INR 8 lakhs collected through user fees        |
|                                   | INR 25 lakhs crores annually property taxes*   |

\*Based on property tax rates from 2021-2022 & 80-90% tax collection

## SOURCES

User fees, sale of compost and dry waste, property tax, central government through Swachh Bharat Mission prizes, central government allocation basis Detailed Project Reports for capex (prepared annually)

## PRECONDITIONS

- ✔ This ULB does not incur expenses for land acquisition, as it owns the land where its waste processing plants are located
- ✔ This ULB has received two Swachh Survekshan awards in 2019 and 2020, amounting to INR 30 crores. 50% has been received till date, and can only be used for activities under the awards
- ✔ This ULB has received grants worth INR 6.5 crores based on their Detailed Project Report (DPR) for SBM 1

## KEY INSIGHTS

### WATERTIGHT BUCKETING

Despite the obvious balance between income and expenditure, a quantum of the funds is frozen for specific activities; it is difficult for ULBs to divert grants towards other objectives - if a grant has been made for IEC, it must be used towards IEC activities only

### REVENUE MODELS

Although this municipal council practices windrow composting, which requires lower manual work, there is not enough awareness among farmers about city compost, and therefore revenue from compost is not as high

### SKILLED LABOR

Dry waste segregation requires high person-power and skill; this municipal council integrated informal waste pickers from the region to work at the processing plant and found that due to their skilled segregation, vendors are willing to pay

### NUANCES IN CAPEX AND OPEX

- » With low automation and high person power, operational expenditure (Opex) tends to run high
- » For small municipal councils, having a capital expenditure (Capex) heavy model is difficult - it would require much higher amounts of waste collected and segregated. For example bigger cities need 500 tons of waste to run an efficient and profitable biogas plant. If a small municipal council attempts this, they will face high losses.
- » Pit composting requires more person-power, and is therefore Opex heavy

### SHORTFALLS IN FINANCING

ULBs who do not have SBM prize money face significant financial deficit; and ULBs who purchase or rent land for waste management have much higher expenditure values

# Challenges faced by Urban Local Bodies

## Creating awareness and changing attitudes, behavior, and habits

When solid waste is not segregated at source, it adds considerable human resources, time, and effort further down in the management value chain, becoming very difficult to manage and unprofitable at the get go. The greatest challenge for ULBs has been to create a sustained practice of source segregation among India's populations.

If we look deeper at the larger resistance, then skewed perceptions of hygiene, waste and waste workers, and the caste system appear to be barriers even today - which affect peoples' behavior and attitudes towards both the formal and informal waste management sector, especially those involved in the collection element.<sup>15</sup>

This adds to the task of waste workers, who are trying to change the habits of people who have been socially removed from waste work for generations - workers who have been unable to assume authority or be persuasive. Moreover, given the heterogeneity in urban populations - there is no "one size fits all" communication strategy that can transcend socio-economic strata and literacy levels, influencing a change in behavior.



*The Municipal Councils of today are erstwhile Gram Panchayats - who used to work using local dialects and languages. Today, although English is predominantly used on web portals, it isn't the language municipal workers are familiar with. Language, therefore, is often a barrier in standardizing data and transition of knowledge from SWM experts to Ongoing workers.*

**Ashish Rokade**  
Solid Waste Management Co-ordinator,  
Karad Municipal Council

## Documentation

Another gap in understanding SWM in India, and charting the way forward is the lack of reliable data, which is meant to be accurately and regularly recorded by ULBs. On the ground, however, documentation is difficult.

Secondly, the depth of documentation required for a sector like SWM is not easy to grasp for all ULB workers. It is, therefore, imperative to support building their capabilities, and communicate to them why documentation matters, and what depth is required.

For this knowledge to become seeped into routine takes time and patience. Daily, ULB workers need to record the weight of dry waste (and all its subcategories - sanitary waste, biomedical waste, paper, glass, etc.), wet waste, and how much was processed.

Thirdly, the ground staff needs to be trained in carrying out this documentation, along with technological training. If daily reports don't come from the ground - this in turn impacts documentation at all levels, hampering projections, interventions, and the capacity to ideate.

## Occupational Hazards

Solid waste management is highly strenuous, hazardous, and unsafe. It is daily labor. In May 2020, in the wake of Cyclone Tauktae that made a landfall in Maharashtra, Mumbai's ULBs removed trash weighing 62,010 kgs from the city's seven beaches - nearly 90% more than what was collected days before (33,110 kgs). This happened during the early months of the COVID-19 pandemic, which itself had brought ULB workers to be the first and primary line of defence for the public against the coronavirus. A 2020 report<sup>16</sup> stated that in Pune, face masks dumped by users in household garbage were being collected by ULBs. "There is no mechanism for collection and disposal of masks and medical waste generated by more than 2,000 people under home-quarantine across the district for having a travel history or showing Covid-19 symptoms," the report said. This meant waste collectors, and workers at the MRF and landfills were rendered extremely vulnerable to the virus.

Furthermore, a report by the World Bank<sup>17</sup> has cautioned that as temperatures increase in India on account of climate change, it could become one of the first places in the world where wet-bulb temperatures could soar past the survivability threshold of 35° C. What fresh challenges will this bring to the rigorous work of solid waste management, especially for the humans behind the operations?

Even without natural calamities and pandemics, and under ordinary circumstances waste collectors bear the brunt effects of the work they do. In a study conducted on the health of municipal SWM workers in Kerala, morbidities from respiratory diseases, eye diseases, dermatological problems, nail infections were high, ranging from 21% to 47%. The reported prevalence of occupation related morbidities like falls (63.6%), accidents (22%), injuries (73.2%), and water-vector borne disease (7.1%) were high.<sup>18</sup> Often, municipal waste workers are caught in the human-stray conflict too, as they navigate neighborhoods with high stray dog and rodent populations.

Due to this, although all functional verticals of ULBs have the same salary structure, the Solid Waste Management function is the least preferred one.

*After cyclone Tauktae, Mumbai's ULBs removed trash weighing 62,010 kgs from the city's seven beaches - nearly 90% more than what was collected days before (33,110 kgs)*



## Real estate

To set up effective solid waste processing facilities, ULBs need land. In densely populated cities especially, where the quantum of waste generated and collected is high - finding land to process waste is incredibly difficult. The challenge is compounded due to zoning requirements, notified areas which are off limits, and the 'not in my backyard' sentiment among citizens. Furthermore, waste processing plants have the potential of bringing down real-estate values, which prevents land from being earmarked for waste disposal. Often, this pushes ULBs to find land outside of city limits, or on the outskirts - increasing the cost of transport.

### Political Alignment

Solid waste is not simply a managerial problem but is a political issue that involves power structures. Whether or not SWM features as a priority at the local political level greatly influences the support ULBs receive to carry out SWM. ULBs are often forced to work in tandem with development agendas set by elected representatives, rather than on issues they face on a daily basis in SWM.

This implies that there are some SWM causes that are more appealing than others, but not necessarily more severe. For example, there is emphasis on solid waste which washes into the sea, backed up by widely circulated images of seahorses clutching plastic earbuds, turtles caught in plastic nets, and plastic submerged in water.<sup>19</sup> On the ground, this leads to ULBs being directed towards keeping prominent areas, like beaches, clean. However, the human narrative behind beach littering, the caste question in solid waste management, unique challenges in informal settlements do not get as much traction politically, and seldom become core agendas at the ULB level.

Lastly, the attitude of city councillors and local politicians towards SWM often determines the hierarchy of workers involved. For example, if the city councillor doesn't enforce the precedent that all the steps that must be taken for efficient SWM – the waste collectors, vehicle operators and drivers will follow this approach. Therefore, the leadership cadre has to be passionate about achieving efficiency and sustainability in SWM.

*One of the issues is that whenever the Swachh Survekshan survey is rolled out, ULBs amp up their services with the goal of winning prizes; but once that survey season is over, our areas go back to being dirty.*

Anonymous

*In one case, the day before municipal elections, we observed an official making a series of calls to his staff, giving orders to clean areas of the city. Each conversation was punctuated with 'a garbage free city...' In another city, a recently elected municipal councillor detailed plans to clean up main roads that are visible and the object of popular complaints. An increase in road cleaning from one to two times a day would be made possible by shifting sweepers from other areas of the municipality.*

*Both initiatives were about more than solid waste management in a purely technical-organizational sense. Rather, one must see them as part of political strategies to build political capital and form an image of a proactive, effective political actor. Conversely, strategies to manage garbage and create a clean city can also be risky for those concerned with their political 'popularity' when initiatives are not welcomed by the electorate.*

**Clean city politics: An urban political ecology of solid waste in West Bengal, India**  
(<https://journals.sagepub.com/doi/abs/10.1177/0308518X16682028?journalCode=epna>)



# Zero Waste, Zero Cost

Sanitation park by Feedback Foundation

Until 2019, Dehradun, a capital city in the Himalayan foothills, had only one centralized plant to process solid waste generated by local industries and a million people - covering 69 wards of the city, with 32 wards uncovered.

Against this context, in 2019 the Nagar Palika Parishad (ULB) in Dehradun conducted a pilot to assess decentralized SWM. The anchor of this pilot was Feedback Foundation, an NGO that had been working on multiple facets of the waste management sector since 2014. Obtaining land to set up a processing plant was difficult, and several sites had to be let go due to public objections. Finally, following a trust building exercise between municipal workers and residents, 30,000 square feet of land were obtained at Nathuawala Ward No. 100.

Feedback Foundation conceptualized the processing plant as a Sanitation Park, with only 4500 square feet used for Solid Waste Management and the rest developed as a public park. Out of the 4500 square feet, three parts were set up for SWM.

Feedback Foundation has been able to create an innovative, demonstrable, and scalable model for integrated municipal SWM in the selected pilot ward under Nagar Nigam Dehradun. While this should be scaled, there are a few challenges which require local streamlining and strategizing.



## CHALLENGES

- » Ensuring that funding is available to set up a sanitation park and materials recovery facility (MRF)
- » Ensuring that operational and maintenance costs can be covered fully by revenue streams
- » Mobilizing markets to build space for waste
- » Ensuring that the government comes up with regular and extendable tenders to set up such plants widely
- » Ensuring full decentralization and agency of ULBs
- » Incentivizing non-performing ULBs to mobilize and do better

## INTERVENTIONS

- ✔ A waste tipping area to weigh waste daily and segregate it into 28 sub-types
- ✔ A shed with 28 cabins where vendors come in to purchase recyclable materials
- ✔ A compost shed with 10 compost pits where organic waste is turned to compost
- ✔ A designated post in the outer wall for needy people to come and collect usable resources like clothes - called "Neki ki Deewar"
- ✔ Construction and demolition waste was used for construction of internal roads

## IMPACT

**2,877** USD

User charges collected

**433** USD

Average earnings from sale of waste

Through IEC, Nathuawala residents were equipped to practice 4-way source segregation: biodegradable, dry waste, domestic biomedical waste, domestic hazardous waste



The park is a public space - with a badminton court and basketball court which locals use recreationally



## KEY TAKEAWAY

**For interventions to work, people, political will, and financial circularity need to align.**

**"Zero Waste Zero Cost" is possible if we collaborate with our local bodies and play to each other's strengths.**

# Brownfield Waste Processing Plants & Systems Change

Goa waste management corporation

To safeguard its iconic beaches and tackle pressing waste management issues, in 2016, Goa converted a massive landfill into a state-of-the-art integrated solid waste management facility.

Goa has several unique challenges when it comes to SWM. First, being a coastal state, its waste is prone to reaching the sea, having cascading effects on marine life, fisherfolk livelihoods and tourism.

Second, being a tourism hotspot with the highest floating population, it is difficult to ingrain sustainable waste management practices at the household level.

Third, Goa has a coastline of about 110 kms, availability of land for SWM is scarce, and land acquisition is very difficult.

Within this context, in December 2016, the Government of Goa set up the Goa Waste Management Corporation (GWMC) to undertake scientific waste management for the state's unique challenges.

GWMC brought together state ULBs, relevant ministries, local Panchayati Raj (village government) institutions, educational institutions, and NGOs working in the sector. Importantly, the Chief Minister of Goa himself championed GWMC by serving as the Chairman of its High-Level Task Force and of the Corporation.



## INTERVENTIONS

- ✔ Integrated Solid Waste Management Facility at Saligao: developed as a "brownfield" project, i.e., utilizing legacy dump areas for the new plant

### IEC activities:

- ✔ Over 300 awareness and training sessions conducted in schools and panchayats across the state targeting 50,000 stakeholders
- ✔ Training audience on 4-way source segregation through slide presentations and hands-on activities
- ✔ 4-way bin-system for waste segregation and collection formalized in all the educational institutes targeted
- ✔ Waste Wagon Project: refurbishing condemned runner buses from the Kadamba Transport Corporation to use as mobile segregation units (one per each taluka)
- ✔ Goa Waste Management Hackathon 2020 to provide students a platform to solve challenges faced in SWM in Goa, incubating a culture of product/process innovation

## COLLABORATIONS

- ✔ Goa Waste Management Corporation (GWMC) has partnered with SINTEF, a registered scientific research organization in Scandinavia to implement safe and sound treatment and utilization of C&D waste in Goa
- ✔ GWMC had collaborated with UNDP from 2018 to 2022 to execute a plastic waste recycling program in the state of Goa. The partnership promotes collection, segregation and recycling of all kinds of plastics to move towards a circular economy.
- ✔ GWMC initiated a soap recycling initiative with Sundara - a Mumbai-based NGO, in association with Travel and Tourism Association of Goa (TTAG). GWMC collects discarded bars of soap from hotels and delivers them to Sundara for recycling
- ✔ GWMC, in association with e-waste management solutions provider 'Karo Sambhav', has been conducting awareness sessions on e-waste in schools, colleges, industries and other places. Collection of e-waste from the state has yielded approximately 41.5 tons of e-waste as of March 2020



### KEY TAKEAWAY

Partnerships which solve for the "hyper-local" can help overcome unique challenges and tend to be sustainable and economically viable.

# From Awareness to Accountability

By The Municipal Council of Karad, Maharashtra

In 2015, the Municipal Council of Karad, a small city in Maharashtra, began its effort to achieve 100% source segregation by focusing on information, education, and communications (IEC) interventions.

By partnering with the Self-Help Group “Greeny”, they undertook a comprehensive communication exercise to:

- » Create awareness about source segregation among households
- » Demonstrate source segregation
- » Monitoring responses and change among stakeholders
- » Repeating the awareness exercise with houses not following source segregation
- » Penalizing households not source segregating despite multiple IEC attempts

Alongside, the Municipal Council also amped up their infrastructure to support segregated collection. They also made an agreement with the Common Biomedical Waste Treatment Facility (CBWTF) to process sanitary waste without any additional cost to the KMC.

Within five years, Karad has achieved nearly 100% source segregation. This was achieved through minimal investment in infrastructure, and a sustained emphasis on citizen accountability through a combination of communication and enforcement.

This is particularly poignant, as sanitary waste management has been the least explored and debated of all the streams of solid waste that is generated at the household level.<sup>20</sup>



## ULBS AT A GLANCE

- ✔ ULBs are decentralised local governments, who anchor solid waste management in urban areas
- ✔ Their key responsibilities are waste collection, transport, disposal, dissemination of information on good practices, and enforcing behavioral change
- ✔ They operate on tight finances, with revenues coming in through government grants, property rent, user fees, competitions, sale of recyclable waste materials and compost, and expenses incurred towards infrastructure, operations, waste collection and processing
- ✔ Their key challenges include occupational hazards, hard-to-influence citizen groups, lack of political alignment, regular and consistent documentation, and finding real estate
- ✔ NGO interventions in the ULB space include providing capacity building, project management and personnel support for ULBs, setting up replicable SWM implementation models and facilitating public private partnerships and targeted financing models



## KEY TAKEAWAY

**Influencing behavioral change is a slow, consistent and ongoing process, not a one-time activity. IEC, visible transformation by investment in infrastructure, and social proof are key ingredients in SWM transformation.**

# 2 Informal Waste Workers

Shouldering solid waste management with ULBs is the informal solid waste management ecosystem, spearheaded by informal waste pickers.

According to a study by CSE<sup>21</sup>, India's overall recycling rates are impressive, with 30-60% of paper and cardboard, 50-80% of plastic, and almost all glass bottles produced in the country are being recycled. Although the annual generation of plastic waste is approximately 3.36 million tons, only 2-2.35 million tons are being recycled formally. However, informal recycling by waste pickers and Kabadiwala<sup>22</sup> Associations is estimated to recycle around 6.5-8.5 million tons of plastic waste, which is not reflected in official waste management data. These findings suggest that informal sector interventions play a significant role in the recycling of plastic waste in India.

The waste management sector provides employment opportunities for many people, especially in the Global South. The table below shows India's population range, number of reported informal workers, and percentage share in terms of population.

**TABLE 3**  
The distribution of informal workers in the waste management sector

| City      | Population range (year)         | Number of reported informal workers (range) | Percentage of informal actors in overall population |
|-----------|---------------------------------|---|---|
| Ahmedabad | 4,800,000-5,570,585 (2003-11)   | 20,000-50,000                               | 0.36-0.42   |
| Amritsar  | 1,132,761-1,183,705 (2011)      | 3,000-3,500                                 | 0.25-0.31   |
| Bengaluru | 5,000,000-8,425,970 (2000-11)   | 25,000-70,000                               | 0.30-1.40   |
| Delhi     | 11,007,835-18,680,000 (2010-11) | 80,000-300,000                              | 0.43-2.73   |
| Kanpur    | 2,767,031-2,920,067 (2011)      | 15,000-20,000                               | 0.51-0.72   |
| Kolkata   | 4,486,679-15,100,000 (2010-11)  | 20,000-80,000                               | 0.13-1.78   |
| Mumbai    | 12,478,447-19,200,000 (2010-11) | 85,000-135,000                              | 0.44-1.08   |

Source: CSE, Linzner, R. and Lange, U. 2013.

*Around 1% of the urban population in India consists of informal sector waste recyclers who are involved in gathering waste from various sources such as households, waste stations, landfills, roadsides, factories, and so on.*

**Sunita Patil**  
Stree Mukti, Sanghatana

## Profiles of informal waste pickers

The informal sector in solid waste management (SWM) includes individuals, families, and businesses that operate informally in SWM services. Their activities are not "organized," in that they are not financed, contracted, managed, documented, or taxed by government authorities. These include:

- » Pickers at dumpsites and communal waste collection points
- » Door to door waste collectors
- » Itinerant waste buyers
- » Small junkshop dealers
- » Large waste godown (warehouse) owners

## Contributions of Informal Waste Pickers To SWM

Every region in India has a network of informal waste management. Despite it being informal, there are systems in place. For example, every day, nearly 150,000 waste pickers work on the streets of Mumbai to extract value from waste and direct it towards industries and vendors who build on it. In doing so, informal waste workers add tremendous value to the sector<sup>23</sup>

## Reducing environmental harm

Construction debris, plastic in oceans, leachate from landfills - all harm the environment in the form of increased pollution, habitat destruction, climate change, and harming local ecosystems by contaminating soil and groundwater. Nearly all recyclable plastic waste generated in Mumbai is collected and sorted by waste pickers. Without their impressive work, well over 700 million tons per day (TPD) of recyclable plastic waste would remain as litter in the streets or find its way to landfills, waterbodies, drainage systems, and sewers. Informal recycling also has unique environmental benefits due to its low capital model - which reduces greenhouse gas emissions and energy consumption; making products from reused materials takes less energy, and is a valuable commodity in the Indian context, than those made from raw materials. They do their work with ingenuity, fostering innovation.

## INFORMAL WASTE PICKERS AT A GLANCE

- » Waste pickers are critical to India's SWM sector
- » In addition to their direct impact in helping the nation manage its rapidly increasing amounts of solid waste, they contribute to economic growth and environmental stewardship
- » However, they face an inordinate amount of hardship caused by a variety of factors including poor working conditions, low bargaining power, and discrimination. These obstacles are amplified by cross-cutting intersectional traits like gender and caste
- » While these challenges persist, several organizations are working tirelessly to improve the lives of waste pickers. Nonprofits like Hasiru Dala and KKPKP, and ULBs have advocated for their rights, distributed safety equipment, and worked to educate citizens on the importance of the waste picker to the urban ecosystem

## Driving economic growth

At its core, the informal waste management sector turns unusable materials into productive tradable goods, and the waste pickers are a critical part of that important transformation. This makes suppliers more competitive, as raw material, transportation, and energy costs are all reduced. In fact, a recent study<sup>24</sup> found in general that informal waste pickers generated a net profit, while their formal counterparts were unable to do so. The sector also offers employment to a tranche of individuals that may otherwise not be able to find work, including those who face hiring discrimination, have physical or mental disabilities that impair their ability to access other jobs, or require flexible hours due to other obligations such as caregiving. Lastly, waste pickers, by sorting waste prior to processing, ensure that each product receives the correct specialized treatment based on each material, reducing the costs associated with this step which would otherwise have to be borne by the ULBs.

**Challenges faced by Informal Waste Workers**

Despite the important role the waste pickers play in India's fast-growing cities, they face a variety of challenges, and barriers to economic and social advancement.



# 7 CHALLENGES FACED BY WOMEN WASTE WORKERS



**INTERGENERATIONAL POVERTY BURDENS**

Women are inherently less financially secure and have fewer assets, and less likely to inherit wealth relative to their male counterparts

Women waste pickers also navigate male partners, where struggle with addiction or alcoholism is prevalent



**SOCIAL PERCEPTIONS AND DISCRIMINATION**

Women in India are often the subject of sexism, which translates over to their work as waste pickers

Women are at a higher risk of facing abuse or violence, making it difficult affecting mobility to collect waste



**FINANCIAL STRUCTURES**

Women are more likely to work in lower paying components of the waste management value chain such as collecting and segregating

Men work in higher-paid, decision making roles, such as scrap dealers who buy and sell recyclables



**POWER DYNAMICS WITH SCRAP DEALERS**

As men are more likely to work as scrap dealers, and women more likely to serve as pickers, gender dynamics amplify power dynamics between the two



**ACCESS TO EDUCATION**

Women and girls in India are less likely to be educated; if parents can send children for schooling, it is more likely to be the male child



**WORKING CONDITIONS AND HEALTH**

Many women in waste picking roles often don't have access to menstrual hygiene products, and menstruation is still stigmatized

Days of menstruation may result in lost income for women

Women are more likely to have to take part in unpaid care work in the home following the completion of waste-picking activities as a breadwinner, leading to fatigue, burnout and mental distress.

Mothers who are waste pickers may lack access to viable childcare options, and may have to forgo incomes, or take their child to work, putting their health at risk

While men often have access to push carts and improved equipment, women are more likely to have to bend over and pick up waste and must carry what they find for long hours



**DEVELOPING THREATS**

As the waste picking industry becomes increasingly formalized or integrated into government programming, women are less likely to be hired due to systemic sexism, social gender biases, and ignorant perspectives

### 1. Intergenerational poverty burdens

Informal waste workers in most contexts, especially in India where socio-economic divisions run deep, disproportionately bear the burden of intergenerational poverty. Hailing from remote or underserved geographies, at-risk genders, Scheduled Castes or Backward Classes, and minority religions, they face complex interlinked issues while finding work:

- » Casteism and other prejudice
- » Lack of educational background/vocational foundation
- » Lack of social capital for support, networking
- » Language barriers
- » Low confidence

With such barriers, waste picking for daily wages becomes one of the few options in cities, where the cost of living is already extremely high. Alternate, safer, or better paying work, therefore, draws further away from reach for them.

### 2. Social perceptions and discrimination

Working as waste pickers further aggravates the prejudice these individuals face. Society views waste pickers as unclean and undervalues their work. They are stigmatized, isolated, and shunned by various strata of society. Tangibly, this results in harassment from the authorities. In such instances, the waste pickers have little recourse, with constraints on their time and financial resources, they are precluded from accessing formal judicial systems. This social position provides little incentive for politicians to heed their plights and concerns.

TABLE 4  
Selling price of recyclable materials in Mumbai

| Material                             | Selling price to scrap dealer from waste pickers (Rs/kg) |
|--------------------------------------|--|
| HDP                                  | 40-45  |
| PET (after fine sorting and bailing) | 35-40  |
| LD (Milk bag): cleaned               | 17-18  |
| LD (Milk bag): uncleaned             | 12-15  |
| PVC                                  | 7-8  |
| MLP                                  | 2  |

Source: These numbers are based on primary research by local nonprofit organizations. But these prices tend to vary greatly from time to time and region to region.

### 3. Financial structures

Despite the key role waste pickers play, their work is grossly undervalued. As most waste pickers are paid solely for the items they collect, their services, labour, and time are provided to municipalities for free. The price of the waste they collect is also objectively low, as one may expect (Table 4). Per these prices, a waste picker would have to collect 25 kilograms of cleaned milk bags to earn Mumbai's daily minimum wage of 467 INR.<sup>25</sup> As they earn wages on a day-to-day basis, waste pickers' incomes and livelihoods are persistently volatile. Those who undertake this profession lack any semblance of job security, and are behest of price fluctuations on recyclable materials, increasing competition from new and large entrants to the waste management industry, and even conditions as simple as bad weather. Legal, political nor financial incentives exist for governments to create policies or for corporations to consider operations that expand the types of goods that can be recycled.

### 4. Power dynamics with scrap dealers

The incomes of waste pickers are reliant on purchasers who hold tremendous "buyer power" due to information asymmetry, and consequently, have complete control when setting daily prices for collections. To further complicate this relationship, intermediary-level buyers, or scrap dealers, known colloquially as "kabadiwalas," frequently hold waste pickers' debts. As waste management workers typically have little access to credit markets or formal financial institutions, they are often forced to turn to the kabadiwalas for loans, which are typically given at discretionary rates, observed between 15-40% by practitioners. This credit relationship has two downstream effects: first, the waste pickers are then required to sell collected waste to their creditor even if they could fetch better prices elsewhere, and second, the high interest rate places them in vicious cycles of debt and poverty.

*When plastic prices drop, waste workers are the ones who feel that compression. The retailers, scrap dealers, and even the supply chain don't feel any immediate condensation. Waste pickers are basically like farmers in that sense as they see the maximum compression.*

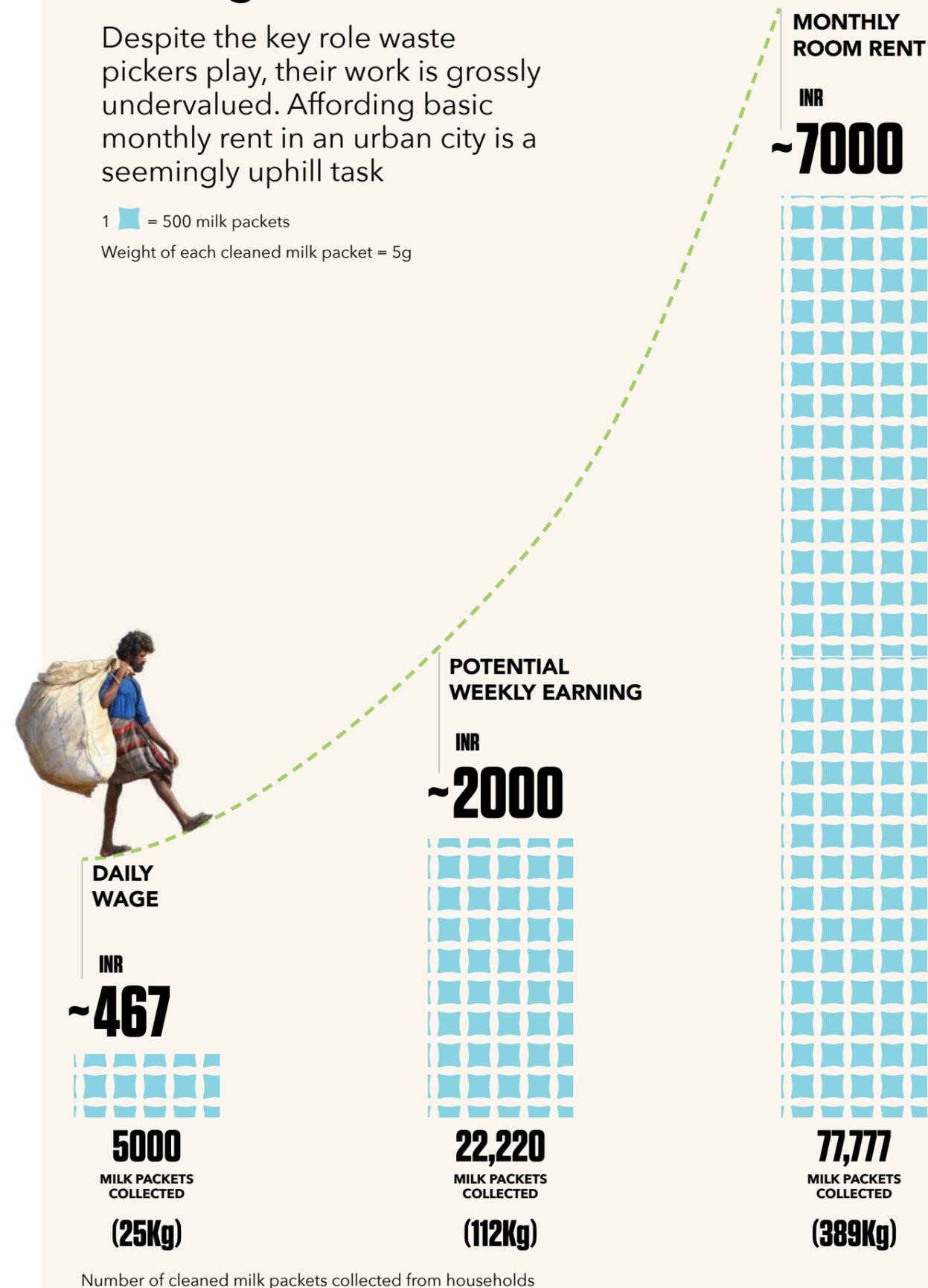
**Akshay Soni**  
Saamuhika Shakti

## Milking a livelihood

Despite the key role waste pickers play, their work is grossly undervalued. Affording basic monthly rent in an urban city is a seemingly uphill task

1  = 500 milk packets

Weight of each cleaned milk packet = 5g



## 5. Access to education

Barriers make it challenging for waste pickers to gain an education. Parents are quite likely to encourage their children to join them in the sector to supplement the family's income - for example, it is estimated that roughly 20% of Delhi's waste pickers are children, and most start work between the young ages of five and eight.<sup>26</sup>

The obstacles that waste pickers face in attaining a formal education limit their career mobility into other roles outside of the sector, but also within it. Waste pickers with formal education are nearly four times more likely than their uneducated counterparts to work in formal waste management roles with municipalities.<sup>27</sup> Those with no schooling typically find themselves as informal waste pickers, roles that generally offer substantially lower salaries, no benefits, and no stability.

## 6. Working conditions and health

Waste dumps where such workers toil often lacks basic amenities available at most worksites, including access to water, electricity, and lavatories. According to the United Nations Development Programme (UNDP), only 60% of dump sites had lavatories, which means that many waste pickers are required to limit or regulate their liquid intake throughout the day to ensure they could continue working.

Waste pickers, because of their work, are prone to a variety of serious health risks. Given that they spend their days working among waste, including items such as sharps, hazardous material, used medical supplies and excrement, they are prone to contract disease, or physical injury. Most work in the absence of any safety equipment or protective gear such as gloves or masks. As the work involves constantly bending over at the hip, waste pickers frequently encounter back problems. These health concerns are aggravated by the waste pickers' lack of basic healthcare due to prohibitive cost and inaccessibility; the UNDP estimates that health insurance subscription rates among waste pickers stand at under 5%.

## 7. Developing threats

In addition to these decades-old challenges faced by those who work as waste pickers, new threats and concerns are emerging, in the form of government regulation and corporate privatization.

The livelihoods of waste pickers are also threatened by new government policies around waste picking, which frequently change with little or no consultation of the informal workers in this industry themselves. For example, while bans on single-use plastics which have recently been imposed in India have recognizable benefits for the environment, it has dramatic impacts on the well-being of waste management workers. Governments across the globe are also increasingly pivoting towards incineration, further encroaching on the work of waste pickers.

Privatization in the sector is also pushing out informal waste workers, as these organizations reduce access to waste - particularly recyclable goods, which provide economic value to waste pickers.

*The livelihoods of waste pickers are also threatened by new government policies around waste picking, which frequently change with little or no consultation of the informal workers in this industry themselves.*



# From Shadows to Spotlight

Kagad Kach Patra Kashtakari Pachayat, Pune

The independent model that's operational for the last few years, is the only one in India that is fully owned by the informal sector



This is the story of a cooperative by the Kagad Kach Patra Kashtakari Panchayat (KKPKP), waste pickers' membership-based trade union in Pune, Maharashtra. KKPKP collaborated with the Pune Municipal Corporation (PMC) and SNDT Women's University in 2005 to initiate a pilot program that aimed to educate approximately 1,500 waste pickers on collecting waste from 125,000 households in the city through door-to-door collection. The initiative focused on citizens and waste pickers.

*The model is successful in terms of the scale of integration of waste pickers who have stability, dignity and sustainable livelihoods), environmental cost, and savings to the municipality*

## INTERVENTIONS

- ✔ The municipal government authorised waste pickers and itinerant waste buyers to collect recyclables by issuing them photo identity cards
- ✔ To provide these services, KKPKP formed the Solid Waste Collection Handling (SWaCH)—a wholly-owned workers' cooperative—as a pro-poor public-private partnership in 2007. The cooperative entered a five-year contract with PMC in 2008, which was renewed for 2016-20
- ✔ Waste pickers provide doorstep waste collection services in three categories: wet waste, dry waste, and sanitary waste. After collection, they sort the recyclable material and sell it to kabadiwalas. The wet waste is either composted at the society level or transferred into the PMC secondary collection system where it's taken to a centralized waste management facility. Non-recyclables are transferred into the PMC system. The sanitary waste is handled separately, so that waste pickers don't have to bear the indignity and the health risk of handling it directly
- ✔ In this model, waste pickers have two sources of income. First, citizens pay user fee of Rs. 80/month per household to the waste picker. Second, amount waste pickers earn by selling recyclables

*Door-to-door collection is successful as waste pickers are able to hold citizens equally accountable - as partners. A waste picker coming to your doorstep for fifteen years can convince you to segregate your waste because you are interacting every single day with the person who is sorting through your waste. And that has a very high segregation level in Pune city.*

Lubna Anantkrishnan  
KKPKP

## IMPACT

**110**

By incorporating SWaCH model, annual savings to the PMC are upwards of 110 Crores in waste handling, tipping fees, and labor expenses.

**3,750**

Waste picker members of SWaCH Cooperative (70% women) are currently providing doorstep waste

**107**

waste pickers have been trained in and are providing at-source organic waste management services to citizens (composting and biomethanation)

**11,000**

kgs of waste handled at source daily



## KEY TAKEAWAY

The SWaCH model has demonstrated good practices in integrated solid waste management, the key good practice being a partnership between the ULB and informal waste workers. It has achieved a higher rate of recycling, sustainable SWM, and a more stable and dignified livelihood for waste pickers.

# Transforming Trash and Lives

*This story is based on conversations with Stree Mukti Sanghatana and a study done by the National Institute of Urban Affairs.<sup>28</sup>*

Stree Mukti Sangathan worked with women waste pickers to organise and train them to provide waste management services to housing societies and campuses.



The story highlights the work of Stree Mukti Sangathan (SMS), Mumbai, Maharashtra (est. in 1975). SMS initiated the Parisar Vikas programme through which women waste pickers are organised and trained to provide waste management services to housing societies and campuses. Organising women waste pickers and providing them with identification cards endorsed supported by BMC.

The waste pickers who received training are known as "Parisar Bhaginis" or neighbourhood sisters. These individuals-self employed women-collected dry and wet waste separately from households, composting the wet waste and sorting and recycling the dry waste for sale in the scrap market. The Parisar Bhaginis kept the profits earned from selling recycled materials.

## INTERVENTIONS

- ✓ Recognition in the form of ID cards for the waste pickers from Brihanmumbai Municipal Corporation (BMC)
- ✓ Providing aid for children's education
- ✓ Establishing study classes providing support to children of waste pickers for primary, secondary and other courses.
- ✓ Establishing self-help groups (SHGs)
- ✓ Conducting health checkups and offering medical services
- ✓ Building female waste pickers capacities in new skills, such as gardening, vermiculture, and operating biogas plants

The intervention focused on waste pickers from marginalised communities, particularly women from low-income groups, castes facing discrimination, and those residing in informal settlements. Additionally, it also targetted colleges (such as Tata Institute of Social Sciences) for setting up biogas facilities, housing societies, and the Municipal Corporation of Greater Mumbai.



## IMPACT

**50,000**

The program has reached over 50,000 households and multiple institutions in the city

**200-300+**

The Parisar Bhaginis redirects nearly 200-300 + metric tons of waste per day from ending up in landfills

**1,000**

Vocational training programs have diversified livelihoods for over 1000 women who collect waste for a living

**1,000**

More than 1000 women who collect waste for a living have found employment as housekeepers, facility managers, and waste managers



## KEY TAKEAWAY

**Parisar Bhagini Vikas Program has successfully demonstrated a sustainable and financially viable decentralized method of waste management. This is done by shifting power dynamics in the sector by mobilizing and collectivizing the most marginalized.**

# Leadership Training

This story is based on conversations and information shared by Hasiru Dala, Bengaluru, Karnataka

## Grassroots leadership and barefoot leaders will lead transformations in India's SWM sector

This spotlight focuses on Hasiru Dala's Leadership Program for informal waste pickers. Local governments have emphasized efficient door-to-door collection under the Swachh Bharat Campaign. As a result, waste pickers' access to recyclables has undergone a transformation. However, this change can be challenging for waste pickers, and it requires all stakeholders in the waste sector to modify their behavior, which is a long-term process. Consequently, leadership training has emerged as a potent tool to generate awareness and impart scientific knowledge that underscores the urgency for change, in conjunction with a robust regulatory mechanism to enforce compliance.

*If you spend just half an hour with waste pickers, you will realize that as a community they are so hopeful, agile, and cheerful. There is so much to learn from them.*

**Nalini Shekar**  
Co-Founder and Executive Director of Hasiru Dala



### IMPACT

**600-650**

people have been trained for level 2; 50 people are trained in level 3

**6 DAYS**

For level 3, training is for 6 days over a period of 3 months.



Training manuals, as well as sessions are translated into Hindi, Kannada, Telugu, Tamil, and Bengali

Indumathi, a waste picker supported by Hasiru Dala, spoke on behalf of Indian waste pickers at the Intergovernmental Negotiating Committee of the Plastics Treaty, in Uruguay. In the multiple pieces of training from Hasiru Dala, she learned to handle her workforce, retain her network of informal waste workers, save money, use a smartphone, be a leader in her community, and what it meant to be a climate champion. She now employs 88 workers, has diversified her services, and is seen as a leader in her community.

### INTERVENTIONS

- ✓ The leadership workshops aim to develop leaders from within the waste pickers community by dismantling traditional structures of power and control. Training helps to create a framework to deconstruct structures of discrimination, hierarchies, and power, and work with the community to understand and engage in larger class politics and community organizing.
- ✓ Trainings are conducted at three levels and includes sessions on awareness raising for their rights and privileges as citizens of the country, the power of organizing to advocate for their rights, the constructs of the caste system, and other social constructs that restrict mobility and keep people marginalized.
- ✓ In the first session, attendees were nominated by Hasiru Dala field workers who noted members of the community taking initiative, stepping forward, and raising questions. For future batches, participants can self-nominate from the community. Sessions are conducted in an Interactive manner instead of a series of lectures discussing their concerns, measuring impact, and the role of the leader.



### KEY TAKEAWAY

**Hasiru Dala's Leadership Training program proves that the grassroots leadership and barefoot leaders will lead transformations in India's SWM sector.**

# Integrating Waste Pickers into the Urban Fabric

This story is based on information shared by Urban Management Centre, Dhankanal, Odisha

Highlighting the work of the Urban Management Centre (UMC), a not-for-profit organisation dedicated to "making cities work for everyone".

UMC provides technical support to the Deendayal Antyodaya Yojana - National Urban Livelihood Mission (DAY-NULM) at the national, state, and city levels for the formation of self-help groups (SHGs) of sanitation workers and waste pickers and engaging them in the sanitation-based livelihood under convergence with Swachh Bharat Mission - Urban (SBM-U). In partnership with UMC, the state government of Odisha piloted interventions in 2019, in the model city of Dhankanal by successfully identifying and integrating all the waste pickers in the city.



## INTERVENTIONS

- ✔ The intervention targeted marginalized urban communities of informal waste pickers and sanitation workers, facing community neglect and irregular income that impacted their family's health and wellbeing.
- ✔ Understanding the challenges in collectivising waste pickers and tailoring the SHG formation process accordingly.
- ✔ Women were federated in two SHGs - "Laxmi Narayan" and "Brundabati".
- ✔ The absence of residential proof was a major challenge in forming SHGs for waste pickers in Dhankanal, but the Executive Officer provided authorized residential proof certificates, enabling the waste pickers to obtain their Aadhaar cards.
- ✔ The Dhankanal Municipality with technical support from UMC, identified livelihood opportunities across the solid waste management value chain. The interested waste picker SHGs were oriented on various opportunities across waste collection, transportation and processing at the wealth centers (dry and wet waste processing centers established in Odisha).
- ✔ Continued handholding support to the waste pickers SHGs as service providers to the ULB.



## KEY TAKEAWAY

The process of collectivising waste pickers enhances their abilities in leadership and management, establishes interpersonal connections, comprehends the concept of saving and investment, explores government initiatives that may be advantageous to them, and collectively apply for loans to initiate entrepreneurial ventures. This model has been scaled up at the state level and is being emulated nationally.

## IMPACT

Collectivisation into SHGs provided waste pickers with:

1. Voice and agency to represent themselves within the community and the ULB.
2. Increased awareness about their rights and entitlements.
3. Better access to formal credit systems
4. Access to sanitation based as well as alternative livelihoods.
5. Improved digital and financial literacy.

The waste pickers received their first entitlement.

This became their proof of identity and residence for availing more government schemes and entitlements at state and national level.

## 2

SHG members trained and engaged as drivers of battery-operated vehicles (BOV) for waste collection.

## 12

SHG members engaged as swachh karmis at the wealth centers.



Improved working conditions - provision of uniforms, accident insurance, personal protective equipment (PPE), medical check-up, resting lounge, safe drinking water and toilets.



Improved standard of living due to increase in monthly income.



Better access to education and health for children.

# A day in the life of

Stories of real workers to amplify the voices of the most vulnerable and underserved.

These narratives have been built through interviews with informal waste workers, secondary data, and field notes from practitioners. Names and some non-integral aspects have been altered to maintain anonymity.

## Laxmi

### A hair picker from Karnataka

This story is based on conversations and information shared by Saamuhika Shakti.

Hair pickers gather and procure fallen human hair, which has been abandoned or trimmed, from various locations such as residential areas, streets, and religious institutions. They do so to earn a living, classifying, and categorizing the hair according to its quality, and then selling it to the hair trade - a billion-dollar industry for wigs, weaves, toupees, and more. Waste pickers engaged in this earn between INR 1,300 and 2,500 for a kilo of long hair, with an average monthly income not more than INR Rs 10,000.

Laxmi (36) is a hair picker from Yelachaguppe, a small village in Karnataka. Her husband is an itinerant mechanic for kitchen appliances at a local market. They have three children, the eldest being 5 years old. She starts working at 8am and covers 20-25 households by 5pm. She cooks at night for the next day's lunch and keeps it in the neighbor's fridge. She is one of 500 hair pickers who work in Bengaluru and are migrants from rural Karnataka and Andhra Pradesh.

CARE India, an organization under the Saamuhika Shakti collective, started working with Laxmi and other hair picker women in July 2021, to train them for alternate livelihoods. CARE India's Alternate Livelihood Program addresses soft skill training, digital and financial literacy, and entrepreneurship development training by collectivizing the women into a Self-Help Group (SHG). CARE India has trained over

*I bought jewellery worth rupees thirty thousand and television and an almirah for my house. I dream of providing quality education to my three kids.*

4,000 waste pickers in the three life skills programs. Interventions have helped women waste pickers from Self Help Groups (SHGs) and collectives which in turn have led to i) financial independence, ii) access to government schemes, and iii) leadership skills.

Her training equipped Laxmi to supplement her income through a second job to improve her income. Last year, she started selling spices on weekends along with her hair picking work during the week. CARE India supported with her a pushcart to sell the spices in the market - how a pushcart is a game changer.

After a year of business, she has enough savings to put toward her household, and her children's education, and can inspire women like her to take more control over their work. She is also a motivator to other women in the community because of her undying spirit in continuing her business despite non-cooperation from her husband who is an alcoholic.

CARE continues to work with waste picker communities, particularly women, form collectives, and access government schemes created for small entrepreneurs.

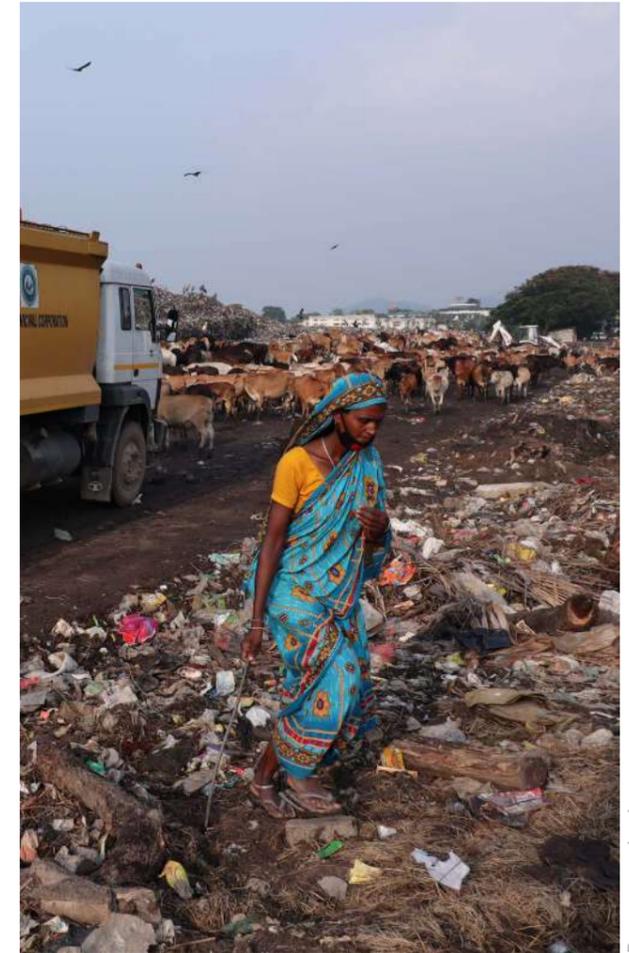
## Jagruti

### A landfill worker from Mumbai

This story is based on an interview conducted with a waste picker and an employee at Stree Mukti Sanghatana.

Jagruti, at the age of 38, works at a landfill in Mumbai. After about 26 years of doing this work, Jagruti has begun to face health concerns that she says hold her back from collecting as much waste as she needs to. Her back has begun to hurt as she bends over for much of the day to collect recyclable goods. The dump site at which she works doesn't have private toilets, and so she must carefully regulate her water intake throughout the day to ensure she doesn't have to leave work to relieve herself. She accidentally poked herself with a needle while sorting through a pile of waste a few days ago and is nervous that she may have contracted a disease, but such occurrences are common in her line of work.

Her parents were both waste pickers as well. Obtaining an education wasn't a thought that crossed her mind, as from an early age, she had a responsibility to contribute to the family income. She barely makes INR 15,000 a month. Her husband has a back injury, and has struggled to find work, so Jagruti has found herself increasingly worried about finances, especially with her newborn son to feed. She hopes that at least he will be able to attend school and pull their family out of the day-to-day struggles faced by most waste pickers. She talks of the burden she carries, the pain she feels when people stare at her when she's carrying bags of trash and hopes that her son won't face the same stigmatisation.



Representative image

*Children, some of them as young as four, comprise about 20% of the total number of waste pickers in an average Indian city.*

**No Child in Trash Report, Chintan**

*Once you have waste picking in your blood, it's always there, no matter how many generations removed you are*

## Afsha

### A waste collector at crematoriums and burial grounds

This story is based on an interview conducted with a waste picker and an employee at Stree Mukti Sanghatana.

Afsha is 51 years old and has four children. Her son is married but doesn't earn much of a living. He takes more than he contributes, Afsha says, given his alcoholism. Her daughters were all also married, but one returned home following frequent mental breakdowns following her marriage. She now works as a waste picker alongside her mother. They need all the income they can get to feed their family.

Afsha and her daughter start work at 6 PM and return home early in the morning. These night shifts are typical at the crematorium where she works. She, her daughter, and five others, all men, share a van together to reach the worksite. There, they search the ashes for any valuable items - like gold fillings or knee rods, that may have been left behind after the dead were burned.

*The mental burden of the work ensures that I don't feel hungry as often.*

The work is long, and Afsha hates the thought of picking through human remains. She admitted that sometimes the bodies don't always burn completely, and she's touched human mass; she nearly threw up the first time but now it's become a part of her routine. During her shift, she can constantly hear families crying for their lost loved ones. She has trouble eating roti (Indian flatbreads) because of all the blisters on her hands from working with the greasy ash. However, she says, "the mental burden of the work ensures that I don't feel hungry as often."



# 3 Citizens

Alongside two stakeholders who manage solid waste are the generators of solid waste – the citizens.

The Swachh Bharat Mission envisions cleanliness as a “janandolan” or people’s movement, emphasizing the importance of community involvement in cleaning up their environs. Whereas ULBs have an obligatory role in SWM, and informal workers look towards it as a source of livelihood, the citizens’ involvement in SWM is crucial – as an intangible, yet key determinant of change.

## Reduce, Reuse, Recycle – an Age-Old Indian Story

Historically, working class Indian communities have been resourceful and resource-efficient to a fault, with their very freedom movement being built on principles of self-sufficiency and minimalism – embodying the philosophy of “circularity”.

Generations of Indians have grown up piling newspapers and magazines at home to give the “pastiwala” (informal paper recycler) every month and bartering old clothes for utensils with the “bartanwali” (informal recycler dealing in utensils and waste fabric) – a uniquely Indian intra-recycling system known as the Waghri Chindi (rag) trade.<sup>30</sup> The Waghri, a nomadic community of India, identify themselves with the word ‘chindi’, and have been operating the trade for over a century.

While this can be attributed to the spirit of being resource-efficient on the one hand, it is also deeply connected to the stark socio-economic disparities which exist within the country – which continue to shape how citizens use and waste materials across urban and rural India.



*India developed the three pillars of circularity – sharing resources, making goods yourself and reusing-recycling. India has a deep philosophical tradition of being able to live a good life without excessive goods. Traditional Indian society celebrated balancing one’s desires with respecting nature as the source of everything. India can offer this worldview to the world while it modernizes its own circular practices.*

**Jaideep Prabhu**  
Judge Business School – Cambridge<sup>29</sup>

## Modernizing household waste practices

In addition to traditional waste management systems, several policies have called on people to source segregate and compost, and ensure participation in:

- » Reducing, reusing, and recycling
- » Not littering
- » Storing organic/bio-degradable and recyclable waste separately at source
- » Community storage/collection of waste in buildings, societies, commercial complexes, etc.
- » Managing excreta of pet dogs and cats appropriately
- » Waste processing at a community level
- » Paying adequately for the services provided

The scientific temper, however, to source segregate daily and consistently, has not yet become ingrained in majority of Indian households. For instance, in Gurugram, situated near the capital of India, only 36% households practice source segregation in the household – which means half a million kilograms of unsegregated waste per day.<sup>31</sup> Statistics reveal an alarming reality for most of urban India – over 377 million urban people generate 62 million tons of municipal solid waste per annum; out of this, only 43 million tons are collected, 11.9 million tons treated, and 31 million tons are dumped in landfills. When it comes to citizen mobilization, therefore, IEC activities are paramount.

Some interventions in source segregation, however, have been anchored by spirited citizen groups. An example is the Advanced Locality Management (ALM) Program of Mumbai. Advanced Locality Management (ALM) is the management of solid waste by residents of a locality who organize themselves to manage their waste. Wet waste is segregated at household level and composted locally in any available area – usually their building compounds, while sweepers or rag pickers take dry waste away. There are nearly 1000 ALMs spread over six zones of the ULB’s jurisdiction, who are able to prevent approximately 20-25 tons of garbage from reaching the landfill. An encouraging fact is that women run 80% of these ALMs. All over the world, citizens have similarly come together to solve solid waste problems in their neighborhoods.

*The challenge is in terms of understanding what waste is actually in reality for a lot of people, whether they come from a mainstream society or within an informal community. The amount of waste that citizens create is based on a lack of understanding of what would be the repercussion once that’s out of the household. The waste ends up in landfills and inside water bodies because there is no proper segregation at the source. Thus, educating citizens on source segregation is a powerful tool.*

**Preeti Prada**  
Janaagraaha

## CITIZENS AT A GLANCE:

- » Citizens, although they qualify as generators of waste, also have tremendous potential in reducing India’s SWM challenges by source segregation, and conscientious behavior that helps reverse increases in the amount of waste generated
- » Traditionally, working class Indian communities and indigenous craft communities have always been resourceful, minimal, and experts at reusing and recycling
- » There are, however, several barriers to achieving scientific and consistent source segregation among citizens, due to: socio-economic conditions, lack of SWM infrastructure, unauthorized waste dumping, and limited knowledge
- » Interventions to overcome some of these barriers include Advanced Locality Management (ALMs), community level interventions which support under-resourced communities (Mumbai), consistent IEC efforts (Karad), and 16-way source segregation (Panjim)

FIGURE 6

Models from emerging economies



**EGYPT**

A community group known as the Zabbaleen have managed Cairo's waste since the 1940s. Residents pay what they can for this service which has worked successfully to keep the city clean, reduce plastic pollution in waterways, and minimize carbon emissions. The Zabbaleen also reduce poverty levels as each ton of collected waste in Cairo is estimated to create about 17 direct and indirect jobs.<sup>32</sup>



**VIETNAM**

The community members of Da Chong, sponsored by the World Wildlife Fund, led the first community-based waste management program in the country. The sponsors provided equipment, waste separation training, and technical support to the residents, equipping them to ultimately run the town's waste management without support. The community elected two formerly low-income waste pickers, to lead waste management in their area. They collect waste twice weekly, organize broader beach cleanups, and ensure that waste is no longer dumped in the ocean. Both women have, as a result, gained a stable income.<sup>34</sup>



**MYANMAR**

A community-led waste picking initiative was also successful in Myanmar, where the Asian Development Bank sponsored a project in Dawbon Township in the outskirts of Yangon. Here, waste bins and trolleys were distributed so that citizens could collect and deposit their own waste at a central location for government pickup or pay a minimal fee to have it done by a formal waste worker. These households then served as educators to new households joining the program, and as peers taught their neighbors about sorting and the importance of solid waste sanitation.<sup>33</sup>

# Lost in Landfills

Urban slum settlements face significant socio-economic barriers in waste management.

## Socio-economic barriers

India has over 33,000 informal urban settlements, inhabited by severely under-resourced communities. For example, Dharavi - a large informal settlement in Mumbai - is situated over 2 square kilometers of land yet houses about one million people. Residents of such communities have extremely limited scope, capacity and resources to segregate waste at home.

## Unauthorized waste dumping

Citizens are often unable to exercise agency over their landscapes, especially in the face of SWM. While citizens are considered to be generators of waste, they also have to contend with the solid waste generated outside of their neighborhoods regularly. Street dumps created due to abandoned construction waste and other hazardous waste is a huge issue, one which citizen groups are often helpless against. A far more serious issue is the illegal and unauthorized dumping of industrial waste. This is a problem for citizens in urban and rural areas. For instance, the entire village of Nibra (West Bengal) sits on a hazardous waste site - 4440 tones of chromium residue lies beneath the ground on which the settlement is built.<sup>35</sup>

Against such mammoth problems, citizens require institutional support to manage waste and deal with waste issues.

## Lack of local SWM infrastructure

In some instances, citizen willingness to segregate waste at source is not backed up by the necessary institutional mechanism for its collection, transportation, treatment, recycling, or disposal.

This barrier is made worse by the fact that there isn't SWM infrastructure suited to the various demographic groups that live in cities. Senior citizens, for instance, may not be able to source segregate manually, but there aren't targeted systems that solve this.

## Limited knowledge

Citizens require knowledge and information support to understand the various types of solid waste and the harm they can do if not segregated. As a result, most citizens do not know how and where to dispose of their hazardous waste.

# Talking Trash

*If you go into an informal settlement like a slum, most people don't have the space in their home for a dustbin - let alone two. This means that the trash gets taken out several times a day. I have observed this pattern usually: in the morning, when the child goes to school, the mother hands him a bag of trash to dump on the way; next, when the husband leaves for work, she hands him a trash bag to dump; finally, at night after the cooking and cleaning is done, and if the man of the house steps out to smoke or socialize, he will take another bag and dump it. Now if there is no community bin, you can be sure that these bags will be openly dumped at a curb or in a waterbody nearby. How you try to influence the waste habits of populations who are so bound by circumstance and so under resourced is completely different from how you would do with residents of formal neighborhoods.*

**Seema Redkar**

*Former Officer on Special Duty, Municipal Corporation of Greater Mumbai*

*Nibra village is not the only one, there are at least 320 sites across the country that host hazardous waste which affects around 2 lakh people, directly or indirectly. They are called orphan sites because industries and municipal agencies dumped hazardous waste at such sites and abandoned them. The environment ministry is yet to finalise even guidelines and rules to tackle hazardous waste polluted sites. Most of the sites are located in the states of Uttar Pradesh, West Bengal, Orissa, Delhi, Karnataka, Gujarat, Jharkhand, Tamil Nadu, Kerala, Andhra Pradesh/Telangana and Punjab.*

**Over 300 sites across India hazardous waste are part of the landscape and life", Hindustan Times (2017)**

*Even before the Swachh Bharat Mission was announced, we used to segregate waste at home, but noticed that outside our doorstep, both wet and dry waste would be tossed into one common bin, and all that waste would go into the same municipal van. If the entire system is that way, what good will source segregation do? The idea of segregation is great, but unfortunately exists on paper only. At markets, where large bins are placed, people can be seen throwing waste indiscriminately - regardless of which color bin is meant for organic vs. inorganic waste. The same is lifted by automated vehicles and carried away.*

**Sunita Patel**

*Citizen residing in Mumbai*

*Why is there such a huge waste problem in India? It has much to do with people's understanding of waste, the lack of facilities to manage that waste at a local level, and population density. Take Versova Beach in Mumbai - inhabited by 1,00,000 people including the ultra-rich, working-class, indigenous fisherfolk, and migrants. All these people live right on this human-ocean conflict zone, where there was absolutely no waste management happening from the ULB side.*

*For most people in the area, especially migrants living in informal settlements, the ocean was a big garbage can, and that's where they could throw their trash and it would magically disappear. That's where we started our mindset change programs where we first engaged with the people to make them understand what's happening to the ocean. Then, we would go into their home and begin to clear their daily garbage, using the bins we gave them.*

**Capt Ashwin Malwade**

*Ek Saath The Earth Foundation*

# The ocean was a big garbage can, and that's where they could throw their trash and it would magically disappear.

That's where we started our mindset change programs where we first engaged with the people to make them understand what's happening to the ocean. Then, we would go into their home and begin to clear their daily garbage, using the bins we gave them.

**Capt Ashwin Malwade**  
*Ek Saath The Earth Foundation*



## Interventions led by the people

Youth for Unity and Voluntary Action (YUVA) Mumbai, Maharashtra

The greatest advantage of citizen involvement in SWM has been the citizen's ability to reach where ULBs cannot, and citizen led interventions tend to be the most sustainable and successful ones.

Youth for Unity and Voluntary Action (YUVA) is a non-profit working with marginalized communities to empower them and help them access their rights. Founded in Mumbai in 1984, currently YUVA works in informal settlements across Greater Mumbai and in some other select cities. At the community-level, through an integrated 360-degree approach, YUVA works on issues of housing, livelihood, environment, and governance.

YUVA works in Ambujwadi, Malad - where several gaps exist in the provisioning of basic services, solid waste management included. There were gaps in service provisions due to resource allocation based on the 2011 census. With the expanding population of the area, the quantum of waste generated had been rising too. However, the tenders floated by the local ward offices were severely limited by comparison. Given the complex housing layouts in the city, the area has a mix of recognized concrete housing, illegal slums, and declared slums. Common to these houses are the people living in them, who are daily wage laborers.

The NGO began an intervention to holistically address solid waste management. It began with the citizens of the area, where a campaign called 'Eco Savior' was run within the community, who were encouraged to segregate dry, wet and e-waste. It conducted film screenings with women in the area. Children and youth became change agents where they made posters on creating wealth out of waste and seeing the climate linages, sloganeered in their areas, and advocated for the uptake of good practices in source segregation.

*Children and youth became change agents where they made posters on creating wealth out of waste and seeing the climate linages, sloganeered in their areas, and advocated for the uptake of good practices in source segregation.*



Representative image



Representative image

To create a more holistic buy-in for the issue - faith leaders, men and relevant local stakeholders were onboarded.

However, some of this momentum saw a drop when the community provided feedback that the garbage truck arriving in their community mixed up all their segregated waste. To address this issue, the organization set up processes that involved engaging with the local ward office. In alignment with the 74th Amendment under the Constitution of India, which points towards citizens engaging more intentionally with urban local bodies, YUVA facilitated meetings with the authorities. At the discussion, tender takers, government engineers, local supervisors, etc. were part of the process. Representatives from the community discussed various issues ranging from solid waste to, drainage systems, meter systems for utilities, toilets, etc. A key issue linked with solid waste management was related to the number of tenders rolled out against the rising population and resultant waste generated. While there were some uncomfortable exchanges on

sharing accountability at the session, the result of the discussion was a shared alignment on different stakeholders acting towards effective solid waste management.

Currently, citizen's associations have nominated leaders who monitor the arrival of designated garbage trucks. When the trucks don't arrive, these leaders act by writing to the local administration. At intervals, the organization arranges for social audits of the facilities and organises roundtable discussions and meetings with key decision-makers to expedite action on the ground. To ensure accountability across the system - the citizens' groups contribute to pay regular maintenance fees to the tendering agencies and laborers collecting the waste.

YUVA has emphasized facilitating citizen action while relying on constitutional frameworks available to them. From leveraging social audits to running behavior change campaigns - it is building more efficient SWM mechanisms in the urban context.

# An active citizen is the hallmark of clean cities and neighborhood rejuvenation

*Carter clean up by Ek Saath Earth Foundation*

Carter Road in Mumbai is a seaside promenade in Mumbai, that sees daily crowds of joggers, vendors, senior citizen groups, children, and pets for whom this space is invaluable in the space-starved metropolis.

The promenade is lined with mangroves, rocky tidal beaches, a fishing village, cafes, and informal slums. Despite its centrality, the area is littered with construction debris and plastic waste.

In June 2021 during the pandemic induced lockdown, two residents of the area Harold Fernandes and Bhavna Nandwani began a clean-up drive in the area. Over subsequent weekends, they were joined by a fleet of concerned citizens from all walks of life - over 10,000 people from corporate companies, schools and colleges, and armed forces. Today, it is anchored by Ek Saath Earth Foundation.



## IMPACT

Their efforts were soon noticed by the ULB, who floated a tender to deploy beach combers and a Clean-Up Team to keep this stretch of beach clean throughout the week. This has led to:

Behavioral change among cafes and shops along the promenade to adopt source segregation and handling of recyclables to relevant vendors

Tie ups between resident associations and SWM enterprises like Sampurna Earth which recycle marine litter

The installation of dry and wet waste bins along the promenade, and a behavior change in joggers who now bring their own sippers and avoid discarding as much plastic as possible

So far, they have cleared and recycled 32,000 kgs of marine debris from the beach and mangroves of Carter Road beach

They have cleared and recycled 36,000 kgs of illegally dumped construction debris

Recycled debris was used to build benches that were installed on the promenade

# Aiming for inter-generational change, starting with the children

Clean green schools

The Centre for Environment Education (CEE) empowers students through 'Eco-clubs' for waste management awareness and action

The Centre for Environment Education (CEE) has been working on environmental education curricula and specific projects focused on waste management in schools all over India. Within these programs, students are made aware of waste scenarios and challenges. By mobilizing students through "Eco-clubs", they are trained in conducting surveys of the waste generated in their schools, houses, and towns. They also observe the ways in which people contribute to waste generation by using products.

Based on this information and their work with CEE, students formulate action plans to minimize waste. The students also engage in green games, activities with strong environmental messages, community walks, clean-up drives, street plays, and nature walks.<sup>36</sup>



Representative image

# Panaji's innovative model of solid waste management

City of Panaji, Goa

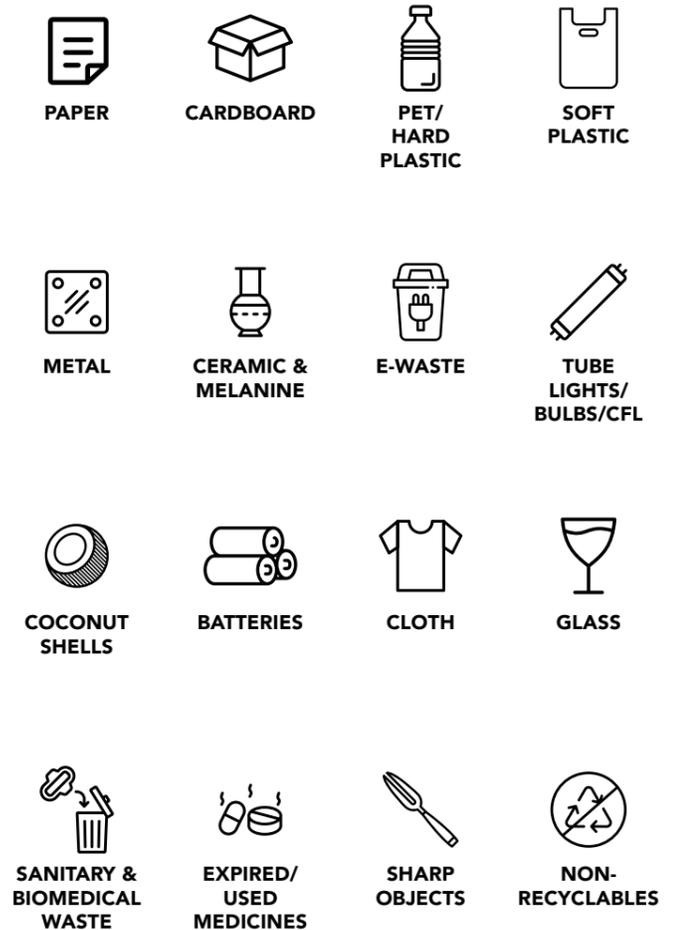
An innovative 16-way waste segregation system to enhance recycling, and eliminate landfill needs.

The city of Panaji<sup>37</sup> produces approximately 42 tonnes of waste per day, which is separated into wet and dry waste. Wet waste is composted, while recyclable dry waste is sent to recyclers and non-recyclables are sent to cement factories as Refuse Derived Fuel (RDF) for co-processing. Panaji has adopted a unique waste segregation system under the HDFC-United Nations Development Programme (UNDP) Dry Waste Management project.

Unlike most cities in India that implement a 2-way segregation system, Panaji's 16-way segregation system requires bulk waste generators to sort their dry waste into 16 different categories such as e-waste, paper, ceramic, cloth, cardboard, sharps, and more. The segregated waste is then processed through different recycling and resource recovery methods, eliminating the need for a landfill.

*This innovative model is cost-effective, requires minimal sorting, and reduces health risks for waste pickers.*

FIGURE 7  
16 ways to segregate waste



# An overview of breakpoints – challenges which present opportunities



Breakpoints reveal interconnected problems within the solid waste management ecosystem.

However, they also contain inherent opportunities for various stakeholders to anchor. Based on the previous section and findings related to sector issues, ULBs, informal waste workers and citizens.



# THE CORNERSTONES

## Steps Towards Change

Equip local administrations, ensure dignity and safety for waste workers, strengthen citizen accountability, promote consultative planning, fund SWM infrastructure and foster collaboration

Given that waste is the common denominator across stakeholder groups, approaching change with a collaborative approach is the only viable way to bridge some of the gaps highlighted in this report. To trigger holistic change, intentionality by means of resourcing, and convergence towards SWM efforts is the foremost priority. This chapter narrows down the points practitioners need to align on to bring about lasting change in SWM.

For local administrations given the multifaceted challenges they face, collaboration and targeted capacity-building are essential for effective SWM. Dignity for workers is pivotal and their formal recognition, social protection, and diverse livelihood opportunities are crucial.

Citizen ownership can enable responsible waste disposal and can significantly reduce landfill needs and collection costs. Consultative planning with each stakeholder will lead to more sustainable waste management practices.

Funding SWM infrastructure by addressing hyper-local challenges requires moving beyond generic solutions. Lastly, national collaboration can align development plans with sustainable goals, ensuring a more cohesive approach to waste management.

The biggest priority is to trigger holistic change and intentionality by converging the solid waste management efforts of all stakeholders in the process.

#### CORNERSTONE 01

**Leverage local administrations as champions of SWM by equipping them with greater technical, social, and financial knowledge, resources, and decision-making**

##### CATALYTIC IMPACT

By focusing on this cornerstone, we could address India's 5000 ULBs, their SWM teams, and the neighborhoods they serve daily:

- » Achieving total decentralization
- » Achieving scale
- » Accessing and resolving regional bottlenecks
- » Achieving behavior change
- » Achieving systems change

#### CORNERSTONE 02

**Secure dignity, equity, and safety for workers and their families across the SWM ecosystem by enabling formal recognition, social protection, and diverse livelihood opportunities**

##### CATALYTIC IMPACT

By focusing on this cornerstone, we could address India's more than 4 million waste pickers and their families:

- » Earn higher and more stable income
- » Access to safer working conditions
- » Recognize and respect for their work
- » Right to social security by holding ID proofs

#### CORNERSTONE 03

**Strengthen citizen ownership, action, and accountability towards SWM by focusing on knowledge, attitudes, and behaviors**

##### CATALYTIC IMPACT

By entailing behavioral change interventions, citizen's source segregating, disposing, and processing waste responsibly leads to:

- » The space required for the landfills is reduced by 90%
- » The cost of collection and transportation is reduced by at least 50%, as waste will be treated much closer to the source
- » Additional resources are generated from composting and recycling, as more than 90% of waste can be recycled and reused.

#### CORNERSTONE 04

**Foster consultative planning, policy action, and resource efficiency targets for every stakeholder by deploying a rigorous framework to leverage each stakeholder's capability set for SWM**

##### CATALYTIC IMPACT

By focusing on this cornerstone, we could solve for millions of tons<sup>38</sup> of solid waste generated in India annually, leading to:

- » Reduction in the number of new landfills
- » Making circularity fair across socio-economic levels
- » Freeing up of space
- » Converting all materials to resources
- » Cleaner environmental conditions
- » Moving toward soil, air and water table stabilization

#### CORNERSTONE 05

**Fund SWM infrastructure which solves hyper-local financial, contextual, and administrative issues, by moving beyond a one size fits approach**

##### CATALYTIC IMPACT

By focusing on this cornerstone, we could address India's more than 4 million waste pickers and their families:

- » Earn higher and more stable income
- » Access to safer working conditions
- » Recognize and respect for their work
- » Right to social security by holding ID proofs

#### CORNERSTONE 06

**Converge intervention pathways at the national level by fostering collaboration, consultation, and SWM consciousness in development plans and agendas**

##### CATALYTIC IMPACT

Formalizing interstate waste dependencies, strategizing for efficiency, and placing accountability for the social, economic, and environmental wellbeing across the value chain, would help in:

- » Preventing open dumping in agricultural areas
- » Preventing disproportionate waste burdens on regions and communities
- » Protecting water sources/ public reservoirs from contaminants
- » Planning cities around scientific, transparent, and sustainable waste, water supply, and socially just systems

# Talking Trash

*You have to build the capacity of ULBs to move from a centralized model of SWM to a decentralized one - they cannot be expected to know it as historically, SWM meant one team which simply transported waste from the whole city to the local landfill.*

**Ajay Sinha**  
Feedback Foundation

*The biggest challenge that waste pickers face is the frequent harassment from authorities often accusing them of being thieves. We made a case at Lok Adalat that they save 600 tonnes of recyclables per day from reaching landfills and were successful in recognizing their efforts by issuing ID cards.*

**Nalini Shekar**  
Hasiru Dala

*When industries and brands commit to 100% carbon neutral production and 100% recycled packaging - even if you don't meet 100%, any progress there would be enormous for India. Commercially, it would increase costs, but it would create a demand for recyclables, be inclusive of waste pickers, and cultivate a circularity temper amongst consumers. Government and brands have a concentration of power that enables them to be the change.*

**Akshay Soni**  
The/Nudge, Saamuhika Shakti



# REACHING THE SUMMIT

## A Roadmap For Changemakers

A way forward through concrete steps that can be taken by key stakeholders as well as practitioners who fall within the larger ecosystem of solid waste management.

To wholly embrace waste management and seize its inherent opportunities, we must champion a tripartite participation mode between local authorities, citizens and funders.

The private sector can collaborate with the Government to educate the last-mile consumer about waste segregation and help build waste management infrastructure. In turn, local authorities can enforce regulations requiring households to segregate waste.

Source segregation is an imperative cornerstone of a sustainable waste management ecosystem. A significant amount of waste recycling resources are expended in separating degradable and non-biodegradable waste, an issue effortlessly resolved by source segregation.

It is essential that people and resident associations internalise this system, making it the bedrock of scientific waste segregation, collection, and disposal.

FIGURE 8  
Overview of actions for each SWM stakeholder

## State and Civil Society



### Set up pan-India alliances for SWM

Design intersectoral programmes to protect the environment and workers



### Bolster data driven ULB empowerment

Use data to empower local bodies



### Innovate to move away from toxic materials

Innovate towards non-toxic materials



### Build fair and inclusive compliance mechanisms

A combination of legislative, facilitative and governance actions constitute the preconditions for fair compliance



### Focus on bulk waste generators

Plastic taxes on manufacturing and imports



### Design intersectoral programmes spotlighting climate and workers

Policy action must address convergence of higher temperatures, increased solid waste and the effects on health, such as an increased risk of vector-borne diseases



### Bolster flexible, supportive, and co-creative partnerships for circularity

Entrepreneurial and innovative thinking within partnering institutions is a key success factor for long-term existence of partnerships

## Citizens



### Segregate waste at source

Sorting waste is the best way to ensure the likelihood of waste to be recycled



### Hold governments accountable for waste management

Citizens have a crucial role to play as advocates for policy change. One way is to lobby policymakers to expand the range of goods that can be recycled.



### Work co-operatively with Resident Welfare Associations (RWA)

At a community level, citizens should work to hold RWAs accountable for workers' safety

## Funders



### Fund innovations

There is a need for innovative financing such as blended venture capital, seed money, or targeted grant that can be channeled only for waste management start-ups



### Strengthen collaborative action between funders and governments

The philanthropic ecosystem, CSR funders, and institutional donors can together address the complex issues of waste management



### Develop integrated projects

Fund sustainable waste management projects that have technical solutions, as well as links to the community



### Support human centered interventions

Focus on behavioral change communications for citizens and improve professional pride among waste pickers

# What Role Should State and Civil Society Play?

India must prioritise improving solid waste management by setting up alliances, using data to empower local bodies, innovating towards non-toxic materials, focusing bulk waste generators, and designing intersectoral programmes to protect the environment and workers. Civil society and the state must collaborate to implement these strategies effectively.



## Set up pan-India alliances for SWM

When solid waste management in India is explored in entirety, it becomes evident that the challenges, opportunities, interventions, and insights of the sector are as diverse as India's geography and demography is. There isn't, however, a common ground where key stakeholders can come together to collaborate. Given the scale of the problem and the quantum of goals India needs to meet as a nation to be sustainable and equitable - this is a critical step.

Alliances can be the perfect facilitators for this to happen; examples include The National Faecal Sludge and Septage Management Alliance (NFSSM) - a collaborative body that drives the discourse of faecal sludge and septage management (FSSM) forward in India, the C40 Cities Alliance - a global network of mayors taking urgent action to confront the climate crisis, etc.



## Bolster data driven ULB empowerment

Bolster data driven ULB empowerment: State and Central governments can be instrumental in furthering the work of local ULBs by framing evidence-based policy informed by intersectoral research findings. This would involve methodical generation of data, including:

- » Developing a comprehensive diagnostic tool to assess local municipal solid waste issues
- » Conducting surveys and assessments within waste generation, characterization, recovery, disposal, and leakages
- » Defining localized priority intervention areas
- » Framing decentralized and localized action plans
- » Developing concept proposals which focus on circular investments and livelihood generation



## Innovate to move away from toxic materials

The G20 emphasizes circularity as a cornerstone for sustainable economies; importantly, circularity is also hailed as an SWM best practice. For India to realize it fully, circularity and solid waste need to converge formally. Towards that end, the government needs to build a strong policy for shifts in production: moving away from toxic materials to environmentally efficient ones. The Organization for Economic Cooperation and Development (OECD) recommends four principles to guide this:

1. Resource efficiency through full lifecycle of products
2. Alignment between sectoral policies and resource efficiency objectives
3. Building transparent, honest, and critical datasets
4. Enhancing international cooperation

Despite the Government of India setting precedent for circularity through Sustainable Public Procurement, its reporting on the environmental impacts of transport, the environmental friendliness of production processes, and the social elements of sustainable procurement like human rights and child labor has been limited.<sup>39</sup>

Given that public procurement expenditure in India accounts for almost 30% of the country's GDP, that ministries spend as much as 50% of their total budgets on procurement, and that most public sector enterprises are involved in businesses that depend directly on natural resources such as mining, energy, and power sectors - transparency and accountability about all facets of materials at the top will trickle down to making SWM transparent and just at the ground too.



### Build fair and inclusive compliance mechanisms

Extended Producer Responsibility (EPR) poses unique opportunities as well as threats to the informal waste picking community. A combination of legislative, facilitative and governance actions constitute the preconditions for inclusive EPR. The fundamental principles of fair EPR entail:

- » Comprehensive research and mapping of stakeholders
- » Their direct engagement in formulating policy and determining details of implementation
- » A commitment by producers to improve packaging and the management of materials
- » Inclusive EPR needs to be mandatory, and government led
- » Ascribing comprehensive financial responsibility and risk protection squarely on producers
- » Being transparent with robust oversight mechanisms
- » Facilitating clear communication and training on EPR systems

**A “just transition” underscores the recognition, participation, and contribution of waste pickers in both the design and implementation of alternative paradigms of material handling.**

**The Global Alliance of Waste Pickers<sup>40</sup>**



### Focus on bulk waste generators

While Indian policies have attempted charging plastic taxes through manufacturing duty, VAT and GST, the results haven’t been favorable.<sup>41</sup> For instance, after the imposition of 18% GST on plastics in 2017, there was confusion on the ground about the various types of plastics in use and corresponding rates; this in turn discouraged traders from buying recyclable plastic from ragpickers and scrap-sellers - the income of informal ragpickers fell by about 40%.<sup>42</sup> While taxing at the consumer level tends to produce such confusion, experts recommend plastic taxes on manufacture and import levels where regulatory checks and balances can be streamlined; for e.g., the British Treasury announced a new tax on the manufacture and import of plastic packaging that contains less than 30% recycled content.

How would this help?

- » Increase the use of and upstream demand for recycled materials
- » Incentivize collection and recycling of plastic material downstream
- » Revenues collected via this tax could be further used to enhance the solid waste management and recycling infrastructure in India

The 2022 Plastic Waste Management Rules are a step in this direction, but with a focus on the grade of plastic used, and aimed at improving plastic waste management systems, promoting the use of plastic waste for road construction as per Indian Road Congress guidelines or energy recovery, or waste to oil etc. Similar focus needs to be applied to materials which end up as inert waste on landfills.



### Design intersectoral programmes spotlighting climate and workers in waste management

Accumulating solid waste has brunt effects on sensitive ecological habitats and populations, sending them closer to tipping points irreversible loss. For instance, in India, urban waste has a close relationship with “heat islands” - hotspots within cities that record extreme heat. Studies reveal that one of Mumbai’s heat islands occurs around the Deonar dumping ground - with temperatures going over 40° C.<sup>43</sup> This can be attributed to the thermal bulk property of landfills.

The World Bank projects that rapid urbanization, population growth and economic development will increase global waste by 70 percent over the next 30 years—to 3.40 billion metric tons annually. Global average temperatures are also expected to increase significantly by 2050, with particularly large increases in cities and in areas of the world such as sub-Saharan Africa, South and Southeast Asia and the Middle East that are expected to face the greatest increase in solid waste output—in some cases, double to triple the current level. This convergence of higher temperatures and increased solid waste will challenge city officials, particularly to manage the effects on human health, such as an increased risk of water contamination and waterborne diseases (e.g., cholera, dysentery, typhoid), pests, and vector-borne diseases (e.g., malaria, dengue).<sup>44</sup>

Such intersectionality between waste management, housing, climate, and ecological habitats must guide policy action and help governments build ecosystems that allow the solid waste management sector to thrive.



### Bolster flexible, supportive, and co-creative partnerships for circularity

SWM collaborations between formal and informal actors, predominantly built on trust, need to be bolstered against changing local conditions. The e-waste sector, for example, is characterized by a highly dynamic market environment, comprising of heterogeneous stakeholders with diverse socio-cultural backgrounds. Legally binding agreements may hamper the informal sector from signing such agreements in the first place.

Keeping the balance of formal and informal in mind, long term financial and technical support from private sector producers to partnering institutions is invaluable and may prove to be more beneficial than sudden formalization. Incremental formalization would mean that private sector producers also co-create methodologies to assess the quality of materials, recommend changes in organizational set-ups and prevent leakages of collected waste towards unsustainable channels.<sup>45</sup>

Entrepreneurial and innovative thinking within partnering institutions is a key success factor for long-term existence of partnerships. Such abilities need to be fostered systemically, e.g., by providing training in technical know-how and management skills, such as profit and loss calculations, marketing of business activities as well as organizational coordination and communication.<sup>46</sup>

# What Role Should Citizens Play?

Citizens can play a critical role at the individual, community, and state levels. Some actions include sorting waste at home, ensuring safety gear and fair pay for waste pickers through community associations, and holding governments accountable for waste management.



## AT INDIVIDUAL LEVEL

### Segregate waste at source

One aspect of the waste management cycle that citizens are often involved globally is segregating the waste at source, prior to collection or disposal. This step may seem simple, but it plays a critical role, with exponential benefits as waste moves along the value chain.

Sorting waste reduces the likelihood that waste will be contaminated or misdirected and is therefore more likely to ultimately be recycled. The economic and financial costs of pre-sorting are also reduced if sorted by the producer of the waste. In many parts of India, this work is done by informal waste pickers, who are not paid for their time and efforts in sorting waste. Citizen sorting also makes the work of these unpaid pickers easier and safer. Properly sorting the waste also reduces transportation costs, as only truly recyclable goods are transported for further processing and waste is taken to the correct designated facility for that specific material upon collection. This reduces environmental impacts and supports decentralized treatment options like community-level composting - which leads to an even more dramatic reduction in carbon footprint.



## AT STATE LEVEL

### Hold governments accountable for waste management

Citizens also have a role to play as advocates for policy change. As good Samaritans, recognizing the value of waste picking and the informal workers that undertake this task, citizens can lobby policymakers to expand the range of goods that can be recycled.

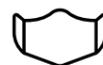
For example, some cities have created an application where residents can inform governments of areas requiring cleanup, which holds governments accountable and helps them identify where resources need to be deployed. One case of this is Janaagraha's Swachhata mobile and web application. Here, when citizens post a civic-related issue such as a trash pile, the complaint is forwarded to the appropriate responsible department. Engagement with apps such as this one encourages broader knowledge of waste management subjects and reduces citizen apathy. In the long run, some citizens or municipal staff may escalate these issues brought forward in the app to elected officials if unheeded.



## AT COMMUNITY LEVEL

### Work cooperatively with Resident Welfare Associations (RWA)

At a community level, citizens should work to hold RWAs accountable for workers' safety. RWAs are non-governmental organizations that represent the interests of co-habitants, and manage the day-to-day challenges faced by a housing community. They are often otherwise known as homeowners' associations or strata organizations. The RWAs can and should ensure that waste workers have access to, and are using, safety gear such as:



FACE MASKS



HELMETS



EYE PROTECTORS / SAFETY GOGGLES



OVERALLS (COVERALLS)



INDUSTRIAL APRONS



DISPOSABLE GLOVES / HEAVY-DUTY GLOVES

In New Delhi, for example, user charges are a mere INR 40-75 per month; however, this is an amount that citizens are still hesitant to pay. It is therefore important that residents are educated and informed of the fundamentally important service these waste pickers currently provide at no cost, and understand that at present, many local governments would be unable to financially support formalized waste management programs on their own.

*It is hoped that citizens could band together to insist that their community organise and pay waste pickers a small fee, to ensure these informal workers are compensated fairly for keeping neighborhoods clean.*

# What Role Should Funders Play?

Philanthropists should support civil society organizations to implement solid waste programs and ensure the safety and dignity of waste workers. Furthermore, funders can play a catalytic role by supporting innovative financing mechanisms, collaborative action, integrated projects, and human-centered interventions to improve waste management.



## Fund innovations

Many NGOs, start-ups, and social enterprises have entered the field of waste management with very interesting solutions for monitoring the profession, segregation, and better machinery in wet waste and dry waste management that needs support.

However, compared to start-ups in e-commerce, waste management organizations often struggle to attract investment and support. As a result, their returns on investment are low, which can make it difficult for them to attract funding for their operations and achieve impact at scale.

There is an increasing need for innovative financing mechanisms such as blended venture capital, seed money, or some targeted grant that can be channeled to important programs only for waste management start-ups to help achieve their full potential.



## Strengthen collaborative action between funders and governments

There is a need for collaborative action and coordination alongside a diverse group of funders. The philanthropic ecosystem, CSR funders, and institutional givers can together address the complex issues pertaining to waste management. Participating in roundtables as a forum to exchange ideas, have synergies in their interventions, and peer learning platform would be beneficial. It provides a platform for funders to share their experiences, successes, and challenges in waste management initiatives.

Philanthropists and funders should support civil society organizations in partnership with local governments to implement solid waste programs. Local governments require funding to implement services, and private funders should fill the gap by funding institutional processes that allow for long-term sustainable outcomes in waste management for the cities.



## Develop integrated projects

Funding integrated projects on waste management that have both the competence of technical solutions, as well as links to the community is key to achieving effective and sustainable waste management solutions.

Technical solutions aim to recover as much recyclable material from waste, leading to a reduced amount reaching landfills. These solutions require technical expertise and investment in infrastructure, equipment, and technology. However, technical solutions don't always lead to sustainable waste management and thus need to be supplemented with community perspectives that rely on engagement and awareness-raising activities, capacity-building initiatives, and partnerships with local stakeholders.



## Support human centered interventions

Interventions in the sector target waste management such as using technology to reduce the amount of waste reaching landfills and not waste pickers. Funders should make human-centered interventions focusing on behavioral change communications for citizens and improve professional pride among waste pickers.

By partnering with civil society organizations, philanthropists should design programs for the safety and dignity of the informal workers. Through strong recommendations, philanthropists should work in close tandem with the government to push for institutional processes such as ensuring timely payments, providing waste workers with ID cards to recognize them as municipal workers, and creating opportunities for safe and dignified livelihoods.



# NGO PARTNERS

A landscaping of the sector has revealed that credible non-profit organizations, vary in size, scale, and experience are all trying to make a difference in the field of solid waste management.

In this section, we have enlisted key intervention archetypes, linked with the cornerstones. We have also provided a glimpse of the action landscape and spotlight some key non-profits working in this space.

An analysis of their programs shows that there are 12 primary types of interventions that exemplify distinct practice, operating on ground.

**TABLE 5**  
Intervention Archetypes in the Solid Waste Management Sector

| Linked Cornerstones  | Intervention Archetypes   | NGO names   |
|--|---|---|
| Strengthen citizen ownership, action, and accountability towards SWM by focusing on knowledge, attitudes, and behaviors  | 1. Use communications for development as a tool   | BBC Media Action, Ek Saath, Janaagraha                                |
|  | 2. Create opportunities for volunteering  |   |
| Secure dignity, equity, and safety for workers and their families across the SWM ecosystem by enabling formal recognition, social protection, and diverse livelihood opportunities         | 3. Conduct sector-specific training, upskilling and/ or entrepreneurship development                    | Saahas, Hasiru Dala, KKP, Saamuhika Shakti                            |
|  | 4. Collectivizing workers through member-based organizations  |   |
|  | 5. Addressing health and wellbeing needs  |   |
| Leverage local administrations as champions of SWM by equipping them with greater technical, social, and financial knowledge, resources, and decision-making                               | 6. Set up replicable implementation models  | Feedback Foundation, Waste Warriors, CARPE, Mineral Foundation of Goa |
|  | 7. Provide support for project management and personnel   |   |
| Fund SWM infrastructure which solves hyper-local financial, contextual, and administrative issues, by moving beyond a one size fits approach   | 8. Unlock PPP and targeted financing models*  | Janaagraha, Urban Management Center                                   |
|  | 9. Train and build capacities of ULBs   |   |
| Foster consultative planning, policy action, and resource efficiency targets for every stakeholder by deploying a rigorous framework to leverage each stakeholder's capability set for SWM | 10. Support industry in fulfilling sustainability and resource efficiency mandates holistically*        | Recity, Sampurnearth, Saahas Recykal, CSE*                            |
|  | 11. Undertake research and advocacy on renewables, waste management practices, and localized solutions* |   |
| Converge intervention pathways at the national level by fostering collaboration, consultation, and SWM consciousness in development plans and agendas                                      | 12. Build fields, alliances, and collaboratives*  | Waste Warriors, The Nudge Institute, KKP                              |

\*Based on our research, these interventions are largely undertaken by intermediaries, social enterprises or think tanks.

\*\*The mapping undertaken in this table is indicative, and not exhaustive. To see a more detailed listing of the landscape of actors - please see Annexure 2

Based on our preliminary landscaping of the sector - we have highlighted 14 non-profits with an interlinked focus on the three key stakeholders of urban local bodies, informal waste workers and citizens.

The mapping undertaken in this table is indicative, and not exhaustive. To see a more detailed listing of the landscape of actors - please see Annexure 2.

Every organisation has an FCRA license and an 80G exemption.

**TABLE 6**  
Preliminary landscape of the sector

| # | Name                            | Budget (in INR) | Area of work in SWM  |
|---|---------------------------------|-----------------|--|
| 1 | Chintan                         | 11,00,00,000    | Chintan, through its core functions of research, outreach, and advocacy, uses waste as a tool to fight poverty, child labor, gender-based violence, and climate change, while creating green livelihoods. It also manages over 30 tons of solid and electronic waste every day in the Delhi region by doorstep collection, segregation, recycling, and composting. |
| 2 | Ek Saath - The Earth Foundation | 2,26,43,780     | Ek Saath is an organization working in the field of environment pan India, mainly focusing on Waste Management through citizen-led interventions, CSR, and volunteering.   |
| 3 | Enviu                           | 3,49,76,000     | Enviu works to create a circular B2B textile service model, starting with the hotel industry. Hotel linen waste will be recycled and brought back into the loop as new towels - integrating waste pickers in the collection and sorting process.   |
| 4 | Feedback Foundation             | 14,74,42,583    | Feedback Foundation provides sustainable solutions for sanitation in urban and rural India, through capacity-building, planning, and implementation support to various public, private and international agencies.   |
| 5 | Goonj                           | 80,00,00,000    | Goonj works on upcycling textile waste and processing it into useful materials for under-resourced communities across rural and urban India, using material as a tool to address crucial gaps in rural infrastructure, water, environment, livelihood, education, health, disaster relief and rehabilitation.  |
| 6 | Hasiru Dala                     | 1,8072,000      | Hasiru Dala is a social impact organisation working with waste pickers and other waste workers to ensure a life with dignity. They currently support dry waste collection centers in Bengaluru, diverting inorganic waste from landfills and into recycling.   |
| 7 | Janaagraha                      | 24,50,00,000    | Janaagraha works on city finance, urban governance reform, public participation and research to solve for urban issues, including waste management.  |

| #  | Name                                   | Budget (in INR) | Area of work in SWM   |
|----|--|-----------------|---|
| 8  | Kagad Kach Patra Kashtakari Panchayat  | 7,54,00,000     | KKPKP is a trade union which brings together waste pickers, itinerant waste buyers, waste collectors and other informal recyclers and provides garbage collection, composting and related waste management services.  |
| 9  | Saahas                                 | 15,08,00,000    | Saahas provides end-to-end waste management services based on the principles of circular economy. They handle waste management for MNCs, tech parks, residential communities and other bulk generating organizations and institutions.                          |
| 10 | Stree Mukti Sanghatana                 | 8,00,00,000     | Stree Mukti Sanghatana is a women's liberation organization, with training programs aimed at enabling female informal waste workers to become self-reliant.   |
| 11 | The Nudge Institute & Saamuhika Shakti | 1,77,96,000     | The/Nudge Institute serves as the backbone organization to Saamuhika Shakti - a collective of 9 organizations working to enable informal waste pickers to have greater agency, and lead secure and dignified lives, with a specific focus on gender and equity. |
| 12 | Urban Management Centre                | 15,08,00,000    | Within waste management, UMC works in sanitation, focusing on sanitation workers' safety, capacity building, technical assistance to ULBs, and urban focused policy research.   |
| 13 | Waste Warriors                         | 5,00,00,000     | Waste Warriors works on systemic change to solve the waste management crisis of the Indian Himalayan Region.  |
| 14 | Water Aid                              | 1,67,94,000     | WaterAid India focuses on providing access to safe drinking water and improved sanitation for waste picker communities by building awareness, creating evidence of exclusion and liaising with the government.  |

# ACTION LANDSCAPE

| S.No. | Name  | Organization Type    | Website   |
|-------|---|----------------------|---|
| 1     | BBC Media Action                                    | Foundation/ Funder   | <a href="https://www.bbc.co.uk/mediaaction">https://www.bbc.co.uk/mediaaction</a>   |
| 2     | Centre for Science and Environment                  | Think tank           | <a href="https://www.cseindia.org/">https://www.cseindia.org/</a>                   |
| 3     | Cupable(Recube)                                     | Social Enterprise    | <a href="https://www.recube.co.in/cupable">https://www.recube.co.in/cupable</a>     |
| 4     | Feedback Foundation                                 | Foundation/ Funder   | <a href="http://feedbackfoundation.in/">http://feedbackfoundation.in/</a>           |
| 5     | Footprint (Bihar)                                   | NGO                  | <a href="https://footprint.org.in/">https://footprint.org.in/</a>                   |
| 6     | Gem Enviro Management                               | Social Enterprise    | <a href="https://gemrecycling.com/">https://gemrecycling.com/</a>                   |
| 7     | Global Alliance for Incinerator Alternatives (GAIA) | Alliance/ Collective | <a href="https://www.no-burn.org/">https://www.no-burn.org/</a>                     |
| 8     | Goa Mineral Foundation                              | Non profit           | <a href="https://goamining.org/">https://goamining.org/</a>                         |
| 9     | Goonj   | NGO                  | <a href="https://goonj.org/">https://goonj.org/</a>                                 |
| 10    | H&M Foundation                                      | Foundation/ Funder   | <a href="https://hmfoundation.com/">https://hmfoundation.com/</a>                   |
| 11    | Hasiru Dala   | Hybrid               | <a href="https://hasirudala.in/">https://hasirudala.in/</a>                         |
| 12    | Indian Pollution Control Association                | NGO                  | <a href="https://www.ipcaworld.co.in/">https://www.ipcaworld.co.in/</a>             |
| 13    | Indian Youth For Society                            | NGO                  | <a href="https://iyfs.in/">https://iyfs.in/</a>                                     |
| 14    | Infinitybox   | Social Enterprise    | <a href="https://getinfinitybox.com/">https://getinfinitybox.com/</a>               |
| 15    | Intellectap   | Hybrid               | <a href="https://www.intellecap.com/">https://www.intellecap.com/</a>               |
| 16    | International Water Management Institute            | NGO                  | <a href="https://www.iwmi.cgiar.org/">https://www.iwmi.cgiar.org/</a>               |
| 17    | Janaagraha  | NGO                  | <a href="https://www.janaagraha.org/">https://www.janaagraha.org/</a>               |
| 18    | Kagad Kach Patra Kashtakari Panchayat (KKPKP)       | Alliance/ Collective | <a href="https://kkpkp.org/">https://kkpkp.org/</a>                                 |
| 19    | Karo Sambhav  | Social Enterprise    | <a href="https://www.karosambhav.com/">https://www.karosambhav.com/</a>             |
| 20    | National Solid Waste Association of India (NSWAI)   | NGO                  | <a href="https://www.nswai.org/">https://www.nswai.org/</a>                         |
| 21    | PadCare Labs  | Social Enterprise    | <a href="https://www.padcarelabs.com/">https://www.padcarelabs.com/</a>             |
| 22    | Paperman Foundation                                 | NGO                  | <a href="http://www.papermanfoundation.org/">http://www.papermanfoundation.org/</a> |
| 23    | Plastics for Change                                 | Social Enterprise    | <a href="https://www.plasticsforchange.org/">https://www.plasticsforchange.org/</a> |
| 24    | Rainmatter Foundation                               | Foundation/ Funder   | <a href="https://rainmatter.org/">https://rainmatter.org/</a>                       |
| 25    | Recity  | NGO                  | <a href="https://recity.in/">https://recity.in/</a>                                 |
| 26    | Saahas Zero Waste                                   | NGO                  | <a href="https://saahaszerowaste.com/">https://saahaszerowaste.com/</a>             |
| 27    | Saamuhika Shakti                                    | Alliance/ Collective | <a href="https://www.saamuhikashakti.org/">https://www.saamuhikashakti.org/</a>     |
| 28    | Sambhav Foundation                                  | Foundation/ Funder   | <a href="https://sambhavfoundation.org/">https://sambhavfoundation.org/</a>         |

| S.No. | Name                                       | Organization Type        | Website   |
|-------|--|--------------------------|---|
| 29    | Sampurn(e)arth                             | Social Enterprise        | <a href="http://www.sampurnearth.com/">http://www.sampurnearth.com/</a>   |
| 30    | Skrp.zerowaste                             | Social Enterprise        | <a href="https://www.skrp.in/">https://www.skrp.in/</a>   |
| 31    | Social Alpha                               | Foundation/ Funder       | <a href="https://www.socialalpha.org/">https://www.socialalpha.org/</a>   |
| 32    | Stree Mukti Sanghatana                     | NGO                      | <a href="https://stremuktisanghatana.org/">https://stremuktisanghatana.org/</a>   |
| 33    | SWaCH                                      | Alliance/ Collective     | <a href="https://swachcoop.com/">https://swachcoop.com/</a>   |
| 34    | TERI                                       | Think tank               | <a href="https://www.teriin.org/">https://www.teriin.org/</a>   |
| 35    | The Alliance of Indian Waste Pickers (AIW) | Alliance/ Collective     | <a href="https://aiw.globalrec.org/">https://aiw.globalrec.org/</a>   |
| 36    | The Coca-Cola Foundation                   | Foundation/ Funder       | <a href="https://www.coca-colacompany.com/social-impact/coca-cola-foundation">https://www.coca-colacompany.com/social-impact/coca-cola-foundation</a> |
| 37    | The Shakti Plastic Industries              | Social Enterprise        | <a href="https://www.shaktiplasticinds.com/">https://www.shaktiplasticinds.com/</a>   |
| 38    | UNDP                                       | Government/ Multilateral | <a href="https://www.undp.org/india">https://www.undp.org/india</a>   |
| 39    | Urban Management Centre                    | Hybrid                   | <a href="https://umcasia.org/">https://umcasia.org/</a>   |
| 40    | Vital Waste                                | Social Enterprise        | <a href="http://vitalwaste.com/">http://vitalwaste.com/</a>   |
| 41    | Waste Warriors                             | NGO                      | <a href="https://www.wastewarriors.org/">https://www.wastewarriors.org/</a>   |

\*\*The mapping undertaken in this table is indicative, and not exhaustive.

# ACKNOWLEDGEMENTS

We would like to thank the following individuals, who contributed rich insights to this report through their conversations with the authors.

Ajay Sinha, Feedback Foundation

Akshay Soni, Saamuhika Shakti

Amit Gawali, YUVA

Anita Patil, Goonj

Archana Tripathi, Saahas

Ashish Rokade, Karad Municipal Council

Ashwin Malwade, Ek Saath Foundation

Bharath Sequeira, Saamuhika Shakti

Charles Porwal, Feedback Foundation

Damodar Pujari, IIT Bombay

Debartha Banerjee, Sampurnearth

Dwaipayan Aich, Feedback Foundation

Etosha Chatterjee, Waste Warriors

Lubna Anantakrishnan, KKPKP

Meha Lahiri, Recity

Nalini Shekar, Hasiru Dala

Natasha Zarine, CARPE

Preeti Prada Panigrahi, Janaagraha

Seema Redkar, Former Officer on Special Duty to Municipal Corporation of Greater Mumbai

Shoukan Teli, Goa Waste Management Corporation

Siddharth Ghanshyam Singh, Center for Science and Environment

Sunita Patil, Stree Mukti Sanghatana

Srikrishna Balachandran, Recykal

Vaidehi Gohil, Urban Management Center

Xerxes Rao, Urban Management Center

Stories of informal waste pickers were co-created and brought to the fore by non-profit networks. We humbly thank them for sharing their experiences, insights, and perspectives.

These narratives are based on primary and secondary data to provide an overview of the landscape. Personal identifiers have not been disclosed.

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## About Godrej Consumer Products Limited

Godrej Consumer Products is a leading emerging markets company. As part of the over 125-year young Godrej Group, we are fortunate to have a proud legacy built on the strong values of trust, integrity and respect for others. At the same time, we are growing fast and have exciting, ambitious aspirations.

[www.godrejcp.com](http://www.godrejcp.com)



## About Dasra

Dasra is a pioneering strategic philanthropic organization, aiming to transform India where a billion thrive with dignity and equity. Since its inception in 1999, it has accelerated social change by driving collaborative action among a trust-based network of stakeholders (corporates and private sector, foundations, families, non-profits, social businesses, government, and media).

[www.dasra.org](http://www.dasra.org)

