The Cost of Cherry-Picking:

Understanding Waste Worker Inclusion in Municipal Circularity Initiatives

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Questions about this report may be directed to:
Ami Misra at ami@dasra.org or Dr. Nidhi Subramanyam at nidhi.subramanyam@utoronto.ca

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LIST OF ACRONYMS

CE- Circular Economy

CLA- Causal Layered Analysis

CSR- Corporate Social Responsibility

DRCCs- District Resource Conservation Centers

DWCCs- Dry Waste Collection Centres

ESI- Employees' State Insurance

FGD- Focused group discussions

ICDS- Integrated Child Development Services

IIHS- Institute of Human Settlements

MOUs- Memoranda of Understanding

MRFs- Material Recovery Facilities

MSW- Municipal Solid Waste

NBFCs- Non-Banking Financial Companies

NGOs- Non-Governmental Organizations

PET- Polyethylene terephthalate

PF- Provident Fund

SBM- Swachh Bharat Mission

SHGs- Self-help groups

SWM- Solid Waste Management

TPD- onnes per day

ULBs- Urban Local Bodies

UNDP0- United Nations Development Programme

WIEGO- Women in Informal Employment: Globalizing & Organizing

WtE- Waste-to-energy

EXECUTIVE SUMMARY

India's residential waste systems rely on an estimated

4 million

informal workers

India's residential waste systems rely on an estimated 4 million informal workers whose labor enables recycling, material recovery, and landfill diversion. Yet circularity transitions, understood as the move away from disposal toward systems that recover and reuse materials, continue to overlook the very workforce that keeps cities functioning. This study, which focuses on cases of informal worker incorporation in Bengaluru, Bhubaneswar, and Goa, reveals how policies, institutions, governance, and remuneration structures shape the conditions under which informal waste workers are recognized, protected, and included in emerging circular economy transitions.

This report is titled "The Cost of Cherry Picking" following a phrase we repeatedly encountered during our research in this circularity-focused waste landscape. Practitioners across the sector often used the term *cherry-picking* to refer to the common practice of selecting the highest-value recyclables while leaving behind lower-value, harder-to-process materials. The title is also a metaphor for the layered and selective nature of worker inclusion in waste management and its deeper, less visible impacts that this report seeks to surface.

1

What is the Core Problem?

Urban India generates ~170,000 tonnes of waste per day. While infrastructure and policy have expanded, **labor remains the unacknowledged backbone.**

Waste workers face:

Partial and reversible inclusion through IDs, registration, and formal roles without meaningful authority or security

Income ceilings and volatility with predictable but low wages, delayed payments, and reliance on high interest debt

High bodily risk through daily exposure to hazardous waste without adequate protection

Spatial marginalization with work and home boundaries collapsing into unsafe environments

Limited mobility with aspirations for children's education undermined by instability, migration, documentation gaps

Cities appear stable because workers and intermediaries continuously absorb systemic risks.

2

Why Current Circularity Falls Short?

Contemporary waste reforms prioritize material efficiency, infrastructure, and compliance. But policies render labor visible, not secure. Contracting systems reward tonnage moved, not material recovery or worker safety. Infrastructure choices (e.g., Waste-to-Energy) often undermine informal recovery and recycling practices without generating equivalent environmental gains. Gender-responsive initiatives exist programmatically, not structurally. Community-based governance improves trust and accountability, yet remains under-funded and under-recognized.

Circularity is treated as a materials problem, not a labor-dependent socio-technical system.

3

How Does Worker Inclusion Remain Partial and Unstable Across India?

The study foregrounds three overlapping lenses through which worker integration in urban waste systems is shaped and contested: **an institutional lens**, which shows how organisational models, partnerships, and the governance of waste produces partial and often reversible forms of inclusion; **a socio-economic lens**, which reveals how contract designs, payment structures, work schedules, and local markets interact with household budgets, care needs, and future aspirations to influence workers' opportunities and sense of stability; and **a policy and regulatory lens**, which highlights how laws, schemes, and municipal decisions frame rights, responsibilities, and pathways for recognition and inclusion. Together, these lenses intersect, occasionally align, and sometimes contradict each other, showing that worker inclusion occurs but is rarely secure, equitable, or empowering.

Our key findings across these lenses are:

1. **Formalization Pathways for Informal Waste Labor:** Urban waste management is governed through diverse inclusion pathways, but formal, efficiency-oriented pathways focus on routes, contracts, quantification, and service delivery. The outcome is precarious stability: systems appear orderly because workers and intermediaries absorb risks.

Multiple models of inclusion coexist: Municipal payroll, Self Help Groups, Dry Waste Collection Centers operators, independent pickers, each offering partial, reversible forms of recognition

Inclusion is administrative, not protective: Workers gain visibility through IDs and attendance systems, yet remain vulnerable to everyday precarity

Institutional power reorganizes slowly: Responsibility is activated early, but authority over waste governance rarely transfers to workers

Intermediaries perform "repair work": Unions, nonprofits, and social enterprises are intermediaries that fill absent state gaps, translate rules, and hold systems together

2. **Socio-Economic Endurance:** Workers enter waste work due to income volatility, migration pressures, spatial proximity, and caste-based barriers that continue to structure access to labor markets. Waste work offers predictability, even with low and sometimes delayed wages—an important stabilizer for households living on the brink.

Income & Cash Flows: Binds workers to rigid schedules and income caps; side work bridges gaps while payment delays cascade into debt

Bodies & Identity: Workers endure hazardous waste, musculoskeletal strain, burns, infections, and stigma that are insufficiently compensated

Managing Pressure: Households and intermediaries absorb systemic pressure through unpaid care, debt, conflict mediation, documentation support, and emergency problem-solving

Caste and Occupational Concentration: Caste and proximity lock communities into waste work generationally; gender and caste dictate tasks, mobility, and bargaining power

3. **Policy Choices – Work, Risk, & Recognition:** Policies for circularity and segregation mandates actively restructure labor, work, and risk, often reducing or changing workers' roles without offering transition pathways.

Recognition is hard-won but fragile: Workers gain IDs and global visibility but remain excluded from local waste management decisions that matter most

Gender responsiveness is emerging but thin: Women in SHG-linked roles lack benefits like Provident Fund/ Employees' State Insurance, ergonomic tools, and workplace safety

Community-based governance strengthens accountability: Enables local monitoring, grievance resolution, and worker engagement. SHGs, unions, and NGOs anchor service delivery

Waste remains a service problem: Unlike a climate or circular economy issue, which creates misaligned incentives that reward volume over recovery and sustainability

4

What Key Stakeholders Must Do (Strategic Priorities)?

1. Reorient System Design Around Labor

- Embed labor protections and wage regularity into municipal contracts
- Preserve multiple livelihood pathways, across cooperatives, entrepreneurs, SHGs, hybrid models
- Guarantee safe, legitimate access to recyclables

2. Treat Intermediaries as Governance Infrastructure

- Provide multi-year core funding to SHGs, collectives, NGOs, and worker organizations
- Create city-level facilitation centres for documentation, entitlements, grievance redressal

3. Strengthen Worker Agency

- Support leadership development, recognize wage ceilings in this job and support training and upskilling to transition into advanced roles where workers might desire
- Finance worker-led data systems for enumeration, data ownership, and platforms that enable collective representation in policy and market negotiations
- Build low-interest credit and emergency funds to reduce dependence on informal lenders

4. Drive Inclusive Circularity through Philanthropic Capital

- Establish wage-buffer funds for payment delays
- Co-finance transition protection during contractor changeovers
- Fund occupational health systems (PPE, health camps, audits), including establishing long-term health insurance and care pathways for waste workers that extend beyond contract or employment periods
- Invest in access to quality education for children of waste workers as a pathway to intergenerational mobility and exit from precarious labor
- Support inclusive contract pilots and pooled city-level inclusion funds

5

What Remains Unresolved (The Big Shift)?

India's waste systems are not chaotic—they are highly ordered around performance without protection. Circularity already exists, produced by decentralized and mostly informal labor. The question for leadership is: will circular transitions continue to rely on the endurance of marginalized workers, or can they be redesigned around dignity, security, and shared responsibility?

A just circular future is possible, and it requires placing the workers at the center of the system design, not the waste.

1. INTRODUCTION

LABOR, CASTE, GENDER, AND THE BODY IN WASTE

WASTE, VISIBILITY, AND THE MAKING OF URBAN ORDER

Waste has a journey: from a doorstep to a *dhalao*[i] , to a truck, and the very boundaries of a city. Across countries, "modern" waste management has often meant moving waste out of sight: into landfills, incinerators, or distant peripheries. While most of this journey is designed to be unseen, it is still held together by work that is anything but invisible to those who do it.

As waste grows into mountains, what was once hidden has now become a common public struggle – driven by rapid urbanization and a global culture of consumption. India's official data suggests that as of 2021–22, the country generated an average of 170,000 tonnes of municipal solid waste per day (TPD) underscoring the urgency of solutions at the intersection of urbanization, climate, and resource recovery.[1]

Over the past decade, solid waste has moved from being a marginal civic function to a policy priority. New rules, compliance frameworks, performance metrics, and technical advisories have proliferated. Waste is increasingly framed not only as a sanitation concern, but as a question of climate mitigation, resource recovery, and urban efficiency[ii]. The world is not stopping, and neither is waste.

This shift, from waste as a visible urban crisis to waste as a managed technical system, raises a more fundamental question about whose work makes this management possible, and at what cost. Across this rapid churn, the question of how the core workforce in waste, predominantly informal, caste-oppressed, and historically structurally excluded, will secure dignified and liveable livelihoods remains largely unaddressed.

WHAT IS

170,000 TONNES

TANGIBLY?

LOADED ONTO STANDARD INDIAN GARBAGE TRUCKS (CAPACITY ~4–5 TONNES), IT WOULD TAKE 35,000–40,000 TRUCKS DAILY — LINED UP BUMPER TO BUMPER. THAT'S A CONVOY STRETCHING FROM MUMBAI TO PUNE AND BACK.

Framing waste management primarily as a technical or environmental problem and positioning scientific or infrastructural solutions as the dominant response has increasingly been criticized for its limited and uneven outcomes. Scholars today characterise it as a 'wicked problem' with multiple interdependent actors and contexts, and despite numerous policies and technical interventions, limited progress is often observed due to the neglect of underlying social dynamics and governance relationships.[2]

Everyday circularity pathways, which refer to how waste is sorted, recovered, and kept in circulation instead of being dumped or burned, ultimately rest on human sorting, handling, and risk. This work continues to remain disproportionately informal and undervalued. To understand the persistence of informality and inequality, it is necessary to look beyond contemporary reforms and understand the social hierarchies that have historically structured waste and sanitation labor in India.

LABOR, CASTE, GENDER, AND THE BODY IN WASTE

Policies and technologies change yet landfills like Ghazipur – described as "garbage mountains"—continue to grow, even as waste pickers there work and "breathe poison."[3] Cities like Thane, near Mumbai meanwhile, struggle with basic municipal waste collection, leaving tonnes of garbage uncollected for days.[4] These and many similar instances point to deeper flaws in dominant narratives of waste management. Its invisible workforce is complex, with structural issues of caste, gender, labor, exclusion, shaping its governance and everyday realities, in policy and practice.

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[i] A dhalao is a traditional, concrete neighbourhood garbage collection and storage structure in North Indian cities and towns, used for temporarily storing waste before it is transported to landfills.

[ii] Data from India Climate & Energy Dashboard, which pulls data from India's Biennial Update Report to the UNFCCC (BUR-4) shows that waste contributes nearly 75,641 GgCO2e of emissions (2.56% of total emissions).

The history of waste in India is also a history of caste-based divisions of labor that normalized social stigma alongside economic exclusion. As B. R. Ambedkar repeatedly argued, caste is sustained not only through social attitudes but through the organization of labor, space, and everyday life. Contemporary informal waste work sits squarely within this history, where certain forms of labor are rendered essential but degraded, and invisibility becomes a condition of both efficiency and social order. These historical arrangements continue to shape present-day reforms. They influence how circularity and formalization efforts are designed, implemented, and experienced.

Gender intersects with this caste-structured terrain to shape how labor is assigned, valued, and paid across the system. Women are often found at the most physically intimate points of the waste chain: sorting by hand, separating food from plastic, walking door-to-door routes, bending over mixed waste for hours. Their work is more manual and repetitive, with direct exposure to waste. Men are more likely to handle transportation and sale—operating carts, managing bulk aggregation, and negotiating with scrap dealers—and are therefore positioned closer to pricing and transactions.[5]

Workers' bodies bear the burdens of waste management. Respiratory illness, skin infections, musculoskeletal strain, and chronic fatigue are not accidental by-products; they are embedded in the daily performance of recovery. Yet this risk rarely appears in performance dashboards monitoring urban waste management. Waste may be tracked by tonnage and diversion rates, but the bodies that make those numbers possible remain largely unrecorded. If waste governance is to be understood seriously, it must be read not only through infrastructure and policy but through the social and bodily arrangements that sustain it.

GOVERNING WASTE IN A TIME OF ESCALATING EXPECTATIONS

Over the past decade, urban waste governance in India has expanded in scope and ambition. Segregation mandates, extended producer responsibility frameworks,[iii] performance rankings, and circular economy strategies have reshaped expectations of how waste should be collected, processed, and monitored. Material recovery is increasingly framed as a measurable and optimizable objective.[iv]

As infrastructures expand and contractualization processes intensify, waste becomes governed through metrics, compliance systems, and traceability mechanisms. The organization of waste work shifts alongside these reforms with implications for the labor that sustains them. Informal labor is a long-established feature of Indian cities' waste management systems—one that precedes these reforms. Across Indian cities, waste collection, sorting, and recovery have long been done by informal labor that are socially stratified, institutionally uneven, and spatially marginal. As new governance arrangements take shape, they engage with existing informal workers and practices. This study looks at what unfolds through those interactions.

[iii] Extended producer responsibility (EPR) refers to the waste governance principle where producers are financially or operationally responsible for products at the end of life. The OECD and UNEP treat EPR as a core circular economy tool for transforming production practices

[iv] Segregation mandates refer to policies such as the Solid Waste Management Rules, 2016, which require households to separate waste at source. Extended Producer Responsibility (EPR) frameworks place responsibility on producers for the collection and processing of post-consumer waste, particularly plastics, under the Plastic Waste Management Rules and subsequent guidelines. Performance rankings include initiatives such as the Swachh Survekshan, which assess cities on waste management indicators. Circular economy strategies emphasize reducing waste through reuse, recycling, and material recovery rather than disposal.

RESEARCH PURPOSE AND OBJECTIVES

The study examines how informal waste workers are currently recognized, protected, and included within urban residential solid waste management systems, and how these arrangements emerge through a combination of formal policy frameworks, institutional design, and everyday labor practices. The central research question guiding the inquiry is:

How are informal waste workers recognized, included, and protected in emerging institutional and labor arrangements for urban residential waste management?

The research moves beyond binary framings of formalization and informality to understand their mutual constitution, and approaches integration as a negotiated and uneven process. It examines how policies, infrastructures, institutional arrangements, market structures, and spatial transformations shape the vulnerabilities and inclusion of informal waste workers within rapidly evolving urban waste ecosystems.

Research Objectives

Grounded in this overarching question, the study pursued the following objectives:

1. **To document and analyze models of circular waste management across different urban contexts,** with specific attention to how residential municipal solid-waste systems are structured, operationalized, and governed through diverse organizational models and intermediaries.

2. **To examine the nature and extent of informal waste workers' engagement with municipal waste management systems,** including the policies, institutional mechanisms, operational practices, and socio-economic conditions shaping their livelihoods, recognition, and protections.

3. **To understand the roles of municipal governments, civil society organizations, social enterprises, and philanthropic actors** in fostering inclusive circular waste ecosystems, and how these stakeholder relationships influence formalization, welfare access, income stability, and pathways for worker integration.

4. **To analyze the institutional, economic, social, spatial, and infrastructural factors** that enable or inhibit meaningful integration of informal workers within circular economy transitions, identifying both city-specific and cross-city factors.

5. **To generate actionable insights and recommendations** for policy, waste program design, and philanthropic strategy, aimed at strengthening governance, improving protections, and advancing inclusive, equitable, and sustainable circular waste systems in urban India.

RESEARCH APPROACH AND SCOPE

This report draws on qualitative, multiple case studies conducted in Bengaluru, Bhubaneswar, and South Goa, India. These case studies reflect diverse institutional arrangements for incorporating informal waste pickers into municipal solid waste management, including municipal contracting models and facilitation by established intermediary organizations such as nonprofits, unions, and social enterprises that employ informal waste workers.

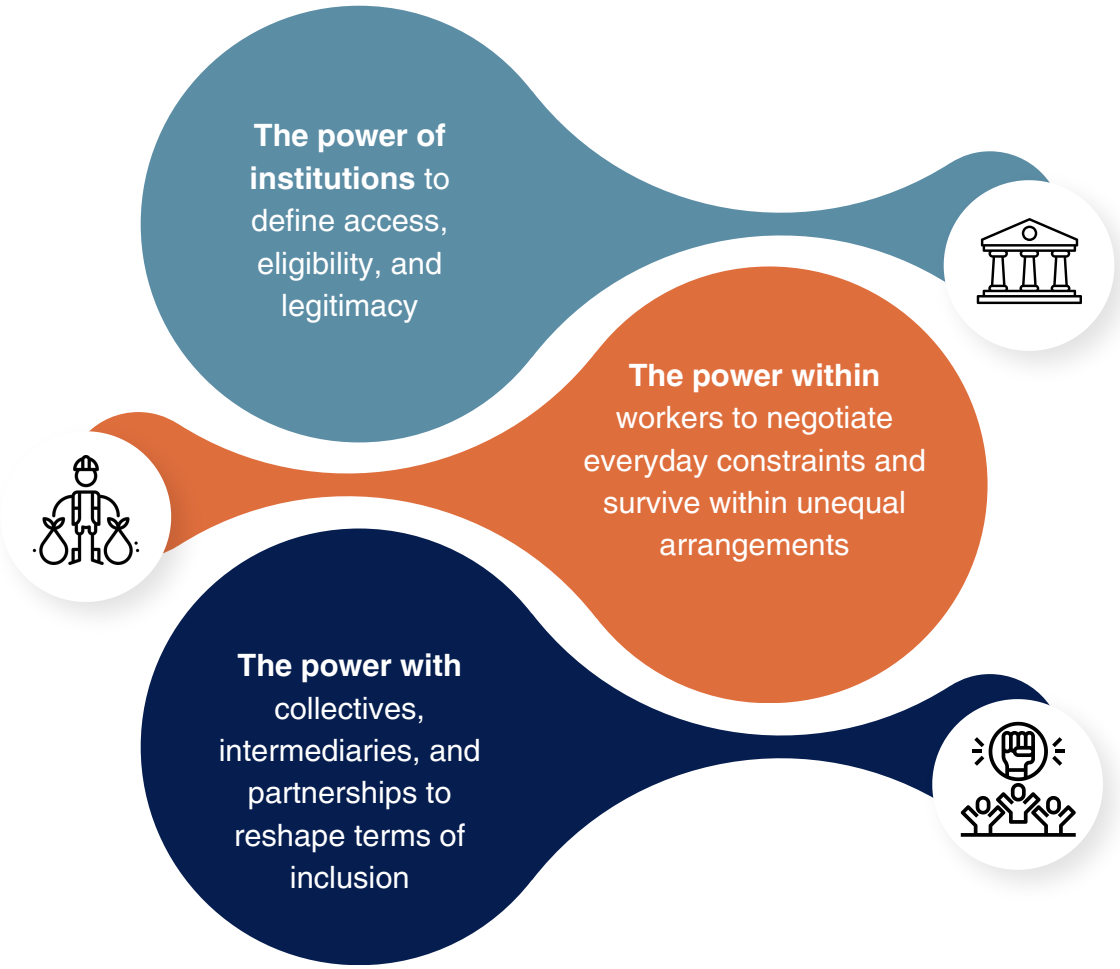
Field engagement was conducted in collaboration with four established organizations embedded within the waste ecosystems of their respective cities: Hasiru Dala in Bengaluru, Urban Management Centre (UMC) and the Centre for Advocacy and Research (CFAR) in Bhubaneswar, and Saahas Zero Waste in South Goa. These organizations function as institutional intermediaries, bridging municipal systems, worker collectives, and waste infrastructures. This kind of intermediation is a defining feature of urban waste governance in India, where worker integration and system participation are often negotiated through such institutions.

Our data sources include key informant interviews with municipal officials, civil society organizations actively involved in waste governance, and sectoral experts, alongside field interviews and focus group discussions with informal waste workers. In total, 89 participants were engaged (37 semi-structured interviews and 52 waste workers through focus group discussions). Interviews were transcribed, anonymized, and analyzed through iterative thematic coding that combined deductive and inductive approaches.[6]

HOW TO READ THIS REPORT

This report approaches municipal solid waste not only as an environmental or technical problem, but as a question of governance and labor, shaped by decisions about who designs systems, who is recognized within them and how, and who bears the risks.

We read waste systems through questions of power



These dynamics cut across policy design, infrastructure planning, financial systems, and governance practices. Accordingly, the report is organized to foreground these relationships. To make sense of these dynamics as you read, it may be useful to hold onto a phrase that emerged repeatedly during our fieldwork, also inspiring the title of this report. Across cities, practitioners described a common practice — the selection of high-value recyclables, while leaving behind lower-value, harder-to-process materials as "cherrypicking". Borrowed from everyday speech, this phrase stayed with us. It reflects how value, visibility, and inclusion are unevenly distributed across the system. We use it in this report as a way to read these layered dynamics, and to surface what remains unseen in how waste systems are designed and experienced.

The chapters that follow examine how policies, institutional arrangements, socio-economic conditions and lived realities intersect in the making of circular municipal solid waste management systems, drawing on comparative insights from multiple cities. The report moves beyond a technical assessment of waste management models. It centers labor, access, and governance to understand what current models enable and what they leave out.

2. LABOR, GOVERNANCE, AND THE CIRCULAR TURN IN URBAN WASTE MANAGEMENT

Contemporary waste governance is being reshaped by shifting expectations around informality, inclusion, and circularity. These shifts are often presented as progressive or transformative. This section examines how these frameworks conceptualize labor, authority, and transition—and what they assume about the organization of waste work.

INFORMALITY AS STRUCTURAL AND NOT TRANSITIONAL

Informality occupies an uneasy position within contemporary waste governance; simultaneously recognized as environmentally indispensable and administratively irregular. Policy initiatives have treated informal labor as a temporary feature of service systems, one that formal contracting, enumeration, and infrastructural expansion would gradually resolve.[7] However, empirical research and urban theory suggest a more complicated picture: informality does not simply precede formal governance; it is entangled with formal governance.

INFORMALITY AS A PRE-FORMAL CONDITION AWAITING INSTITUTIONAL INCORPORATION

A substantial body of reform-oriented scholarship approaches informal waste work through a developmental lens. Informality is associated with precarity, the absence of regulations, and inefficiency, while formalization is positioned as corrective. Structured and formal integration of informal recyclers is presented as a way to improve recovery rates while stabilizing incomes and reducing worker vulnerability through clearer remuneration systems, contractual clarity, and institutional recognition.[8]

This literature rests on the premise that informal waste workers already perform valuable environmental functions but lack institutional embedding. A widely cited sector report notes that governments can "catalyze processes by helping waste pickers form associations" and establish formal agreements integrating them into municipal systems.[9] Formalization appears as a rational progression: from invisibility to enumeration, from ad hoc exchange to contractual service provision.

These contributions recognize the important role of informality, especially the environmental value created by waste pickers. At the same time, they treat informality as a sign of incomplete institutional integration. Registration, identity cards, route rationalization, and participation in municipal contracts are positioned as key steps in the move toward formalization. Informal work becomes positioned as pre-formal, awaiting incorporation. The temporal assumption underpinning this literature is clear: as governance consolidates, informal arrangements will be reorganized into structured and formal service delivery.

At its strongest, this research does not imagine inclusion as mere absorption, but as formal recognition of waste pickers as paid service providers within municipal systems, with clear responsibilities, longer-term contracts, and access to segregated waste streams.[10] However, the dominant logic remains developmental: informality is treated as something to be progressively ordered, standardized, and incorporated.

INFORMALITY
IS USUALLY ASSOCIATED WITH PRECARITY, THE ABSENCE OF REGULATIONS, AND INEFFICIENCY, WHILE
FORMALIZATION
IS POSITIONED AS CORRECTIVE

INFORMALITY AS A MODE OF GOVERNANCE

Urban scholarship complicates the transitional assumption by reframing informality not as absence but as a mode of governance.

> *"Informality must be understood not as the object of state regulation but rather as produced by it."*[11]
>
> Ananya Roy, in Urban Informality: Toward an Epistemology of Planning

Regulatory frameworks actively differentiate between legal and tolerated practices, generating ambiguity around supposedly illegal or unregulated practices instead of eliminating them.

In waste governance, contracting regimes, licensing decisions, and infrastructure allocation do not simply absorb informal labor. These redraw and further blur the boundaries between the formal and the informal. Workers may be partially recognized through documentation or program participation while remaining excluded from durable employment protections. Workers frequently move between formal and informal arrangements in response to commodity price fluctuations and contract cycles.[12] Informality persists alongside and within formal structures under conditions of fiscal constraint, institutional fragmentation, and uneven policy enforcement, generating differentiated forms of recognition and exclusion. When national recognition is not necessarily matched by municipal by-laws, and private-sector or Extended Producer Responsibility (EPR) linked worker absorption, informality might continue to persist.[13]

INFORMAL LABOR FUNCTIONS AS A KEY INFRASTRUCTURAL NODE WITHIN WASTE SYSTEMS

Beyond questions of legality and regulation, a further strand of scholarship examines the material organization of waste systems themselves. Research across India and the Global South demonstrates that informal recyclers often achieve high recovery rates at comparatively low cost.[14] Informal collection routes, itinerant buying systems, scrap-dealer markets, and neighborhood aggregation practices frequently predate and underpin formal contracting arrangements.[15] These networks regulate access to materials, stabilize supply chains, and absorb fluctuations in commodity prices. Particularly in fiscally constrained municipal environments, informal labor often absorbs operational volatility and reduces the fiscal burden of recovery.[16]

The persistence of informal arrangements cannot be understood solely through regulatory ambiguity or institutional lag. It is also linked to how waste systems achieve continuity under conditions of volatility. Informality in this sense operates as a major infrastructural node; it is key to continuity where institutional capacity is uneven. Therefore, its persistence also reflects systemic reliance alongside regulatory ambiguity.

INFORMALITY IS SOCIALLY STRATIFIED BY CASTE, GENDER, AND SPATIAL MARGINALITY

The structural embedding of informality cannot be understood without attending to its social distribution. Informal waste labor is not randomly constituted; it is patterned through historical systems of socially hierarchized labor. In India, sanitation and waste removal have long been organized through caste-based occupational segregation, where "dirty work" is not only economically marginal but socially stigmatized. Contemporary waste picking, while not identical to historically hereditary sanitation labor, remains disproportionately concentrated among Dalit and other historically marginalized communities. This reflects continuity in the social organization of waste work even with change in its organizational form.[17]

This matters because caste operates as more than a background identity, structuring mechanisms across multiple dimensions of waste governance. It shows who enters waste work, what tasks become "available," what kinds of risk exposure are normalized, and what forms of recognition and inclusion are even imaginable. Caste stigma shapes how waste work is socially perceived and institutionally treated, often producing a double bind in which the labor is indispensable to urban functioning but remains symbolically degraded.[18] It also shapes bargaining power: the capacity to refuse dangerous work, negotiate prices, or contest exclusion is unevenly distributed along social lines, and often constrained by inherited stigma, limited education, and precarious residence status.[19]

Gender further compounds these stratifications, not simply by adding vulnerability but by organizing work internally. Across Indian cities, women are concentrated in tasks involving direct contact with mixed waste—collection, sorting, cleaning—while men are more likely to occupy roles linked to mobility, negotiation, bulk transport, and higher-margin aggregation.[20] Work that is spatially dispersed and bodily intensive (walking routes, household collection, open dumping grounds) is done by women and remains less legible to formal systems, while work that moves through depots, vehicles, and transactions is usually done by men and more likely to become recognizable as "economic activity."

INFORMAL WASTE LABOR

IS NOT RANDOMLY CONSTITUTED; IT IS PATTERNED THROUGH HISTORICAL SYSTEMS OF

SOCIALLY HIERARCHIZED LABOR

The Gendered Burden of Waste Work

Women are concentrated in the most labor-intensive and least remunerative segments of waste systems. They pick, sort, and segregate waste by hand, often from mixed and contaminated streams. National estimates suggest that of roughly 2.2 million waste pickers, about a third are women.[21] This share is similar in urban areas. Their presence is visible, but their earnings are not. Women work longer hours and earn less. A significant proportion report working more than 53 hours a week. Daily earnings remain low and often fall below minimum wage benchmarks. In Maharashtra, women typically earn between INR 500 to INR 600 per day, compared to INR 600 to INR 800 for men.[22] Hourly differences persist. The gap reflects not only time spent, but the value assigned to different parts of the chain. Control over value is also gendered. Women handle low-value materials such as mixed plastics. Men are more likely to control access to higher-value streams like Polyethylene Terephthalate (PET) and bulk scrap. They also dominate aggregation and resale. More than 70 percent of recycling profits accrue to intermediaries. Women remain at the base of this chain, despite doing the most physically demanding work.[23] Despite this, 90 percent of these women, as per some estimates, often carry primary financial responsibility within households. However, they remain excluded from leadership roles, decision-making spaces, and formal recognition. Transitions toward formalized systems have also displaced them. Access to organized workspaces such as material recovery facilities can increase household incomes beyond INR 25,000 per month.[24] Stability allows for savings, and in some cases, higher spending on children's education.

These social structures also shape where workers live and work. Many caste-marginalized communities have historically been pushed to the edges of cities, such as into informal settlements. Living and sorting waste in these spaces leaves workers constantly exposed to the threat of eviction and displacement. Formalization privileges labor that is spatially fixed, contractually enumerable, and administratively legible. Workers operating through diffuse, informal, or mobile arrangements remain more easily excluded.

Across this scholarship, informality emerges as a condition reproduced through governance, system design, and social hierarchy, not a temporary disorder. Reform initiatives that promise inclusion thus operate within systems already structured by differentiated authority and dependency. Scholarship on just circularity also reinforces attention to the intersections of caste, gender, and migration status. These shape who can access formal jobs, navigate documentation requirements, or speak in planning forums.[25]

DOES INCLUSION THROUGH FORMALIZATION REDISTRIBUTE AUTHORITY?

Inclusion has become the dominant language through which informal waste labor is addressed in contemporary solid waste management. Across policy and scholarship, inclusion is framed as both ethical and operational: informal workers are to be recognized, organized, contracted, and integrated into service delivery systems.[26] Unlike a singular act, inclusion unfolds through administrative instruments, contractual arrangements, and institutional interfaces that may stabilize participation without shifting the architecture of decision-making. The question is not whether inclusion occurs, but through which pathways, and how it reorganizes work, power, and precarity.

INCLUSION APPEARS PROGRESSIVE WHEN JUSTICE SERVES SYSTEM EFFICIENCY

Much of solid waste management scholarship presents inclusion as a corrective response to the paradox of informal recycling. Workers generate public environmental value but remain excluded from recognition and protection. Inclusion is articulated as both a justice imperative and an efficiency strategy.[27] Yet this convergence can also narrow the terms of inclusion, making workers legible above all as instruments of system performance. Recognition is framed as movement—from invisibility to enumeration, from informal exchange to contractual participation. Documentation, identity cards, route allocation, and infrastructure access become visible markers of formalization and institutional progress. What is less consistently examined is the relationship between participation in the workforce and power, i.e., if inclusion alters workers' influence over contracting terms, infrastructure allocation, price formation, or control of recyclable waste streams.[28]

FORMALIZATION PRODUCES LEGIBILITY AND CONDITIONAL STABILITY

In practice, formalization commonly unfolds through mechanisms that render labor legible to municipal systems: registration drives, identity cards, uniforms, attendance registers, standardized routes, performance monitoring, and supervisory reporting.[29] These instruments can reduce everyday harassment, provide a degree of administrative protection, and stabilise participation within waste recovery chains.

The primary function of these instruments is not the redistribution of power, resources, or agency. It is manageability. Legibility enables monitoring, compliance, and contractual accountability. It also allows labor to be enrolled in performance monitoring systems without necessarily altering the distribution of decision-making power within waste governance. As a result, recognition often becomes conditional. It is activated through documentation and compliance, sustained through institutional continuity, and vulnerable to contract cycles, political shifts, and market volatility. Formalization can therefore stabilize participation without securing the wider conditions under which waste work becomes dignified, safe, and socially sustainable.

WORKER PARTICIPATION EXPANDS, AUTHORITY REDISTRIBUTION REMAINS LIMITED

Real authority in waste governance means more than just delivering a service. It means workers having a say in how contracts are designed, how long they last, how pay is structured, and who gets access to which waste streams. Without that, participation remains surface-level.[30]

Many inclusion initiatives bring more workers into the system, but decision-making power stays with municipalities, contractors, producer responsibility systems, and upstream aggregators. Workers gain recognition and take on defined roles, yet their influence over how the system is designed and governed remains limited. Critical scholarship cautions that formalization can generate new forms of enclosure and displacement alongside recognition. Formalization through circular economy reforms can consolidate private or municipal control over recyclable materials, limiting access for waste pickers.[31] Other studies show that vulnerabilities tied to commodity price volatility and asymmetrical bargaining often persist even within formal arrangements.[32]

Inclusion often works as a way to stabilize labor so that services continue and materials keep moving. It leaves existing power structures largely intact. Any gains in redistribution tend to be negotiated case by case and remain contingent, instead of being built into the system.[33] This becomes especially consequential as circular transition frameworks intensify performance pressures around material recovery, traceability, and policy compliance—amplifying demand for legible and governable labor.

INCLUSION AND AUTHORITY VARY ACROSS WORKER INCORPORATION MODELS

Inclusion and authority vary substantially across the organizational arrangements and institutional models through which workers are absorbed into waste governance. As noted, formalization and assimilation through private enterprises focused on circularity, Extended Producer Responsibility (EPR) obligations, or municipal waste management can lead to the "enclosure" of the waste commons. This includes waste materials, public spaces, and facilities that waste pickers rely on for storage and sorting. As a result, workers may be displaced or incorporated as precarious labor. In such arrangements, they often have little say over their terms of inclusion or their working conditions.[34]

Municipal solid waste management programs might also include informal waste pickers in household waste collection and sorting programs. This can either happen through individual, or collective contracts. However, they do not always equate to municipal employment and the security it affords.[35] These instrumental arrangements designed to help municipalities manage waste and meet recycling goals often result in underpayment and over-regulation of informal waste pickers. They also stop short of involving workers in waste governance.

In contrast, collective hiring through contracts with waste picker cooperatives and associations has proven to be more inclusive and empowering. These arrangements often involve co-managing collection routes, sorting facilities, and pricing. They have helped workers maximize their income and access social protections, loans, and legal aid. Working conditions have improved through collective bargaining. Workers have also gained access to training and are able to participate collectively in waste governance and decision-making. Thus, enabling improved inclusion.[36] Prior research suggests that inclusion is shaped not only by whether workers are incorporated, but by the organizational form through which incorporation occurs, and the degree of power workers exercise within it.

IS CIRCULARITY A SOCIALLY NEUTRAL TRANSITION?

Circular economy (CE) discourse does not enter an empty field, as evidenced above. It lands in systems already structured by differentiated authority, partial inclusion, and socially stratified labor. The balancing question is whether the transition proposed is materially transformative and socially conscious.

CIRCULAR ECONOMY PRIORITIZES MATERIAL OPTIMIZATION

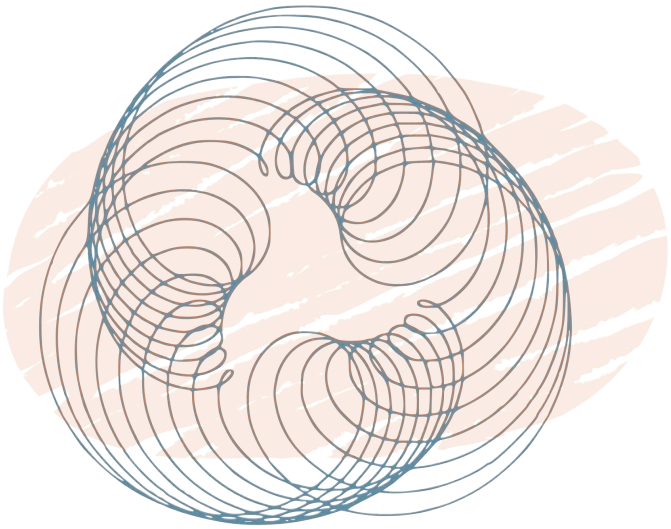
Popularized by the Ellen MacArthur Foundation, the circular economy (CE) is framed as a systemic shift away from linear "take–make–dispose" production. Instead, it focuses on regenerative and closed-loop material flows. These are designed to eliminate waste and retain value within the economy. Further academic scholarship has sought to systematize these definitions. A review of over a hundred CE definitions that most conceptualizations centre resource loops, recycling, and waste reduction, with being inconsistently articulated emphasise CE as an environmental and economic strategy grounded in efficiency, recovery, and systemic optimisation.[37]

Across these approaches, materials take center stage as waste is reimagined as a resource. Labor appears only as an operational input within material circulation, instead of being treated as a core part of circular economy governance. Circularity reframes waste as resource; it does not automatically reframe the relations through which that resource is recovered. This concern is echoed in scoping reviews which find that social impacts remain weakly theorized in urban circular economy transitions, even where labor-intensive recycling systems are central to their practical functioning.[38]

LABOR IS RARELY CENTRED IN CIRCULAR ECONOMY GOVERNANCE

Critical scholars note that CE discourse often privileges technological and managerial solutions over distributive and political questions.[39] They caution that circular economy discourse risks depoliticizing waste by abstracting it into technical flows.[40] They situate circularity within broader accumulation dynamics, arguing that environmental transitions through CE reforms promotes accumulation, coexisting with intensified and unequal value capture.

For contexts where informal labor is a structural feature of waste governance, like in India, this selective (in)visibility matters. When labor is recognized mainly for its environmental contribution, inclusion gets tied to performance, not to rights. The capacity to meet recovery targets becomes the basis for workers' incorporation. Questions of bargaining power, infrastructure control, and value capture remain secondary.



CIRCULAR ECONOMY

FOCUSES ON REGENERATIVE AND CLOSED-LOOP MATERIAL FLOWS. THESE ARE DESIGNED TO

ELIMINATE WASTE AND RETAIN VALUE WITHIN THE ECONOMY

CIRCULARITY IS OVERLAID ONTO STRATIFIED WASTE SYSTEMS

Circular transition policies operate through performance targets, traceability requirements, contracting frameworks, and compliance mechanisms. These instruments do not replace existing labor arrangements or hierarchies; they reorganize them.

Where informality is already structurally embedded and selectively formalized, circularity intensifies the demand for legible, governable labor. It can stabilize certain functions of informal work, particularly those that align with recovery metrics. However, unequal authority over infrastructure, pricing, and contractual terms often remains unchanged. Empirical studies caution that formalization within circular transitions can consolidate elite control over material streams even as worker participation expands.[41] Green jobs discourse, particularly in emerging economies, similarly frames employment generation around growth in recycling industries. However, it does not necessarily address existing labor hierarchies or bargaining asymmetries.[42]

Circularity, then, is not socially neutral. It operates as a governance intervention layered onto already stratified systems. Its distributive consequences depend not only on diversion rates, but on how authority and value are reorganized within that layered terrain. Consequences can differ systematically by CE governance model. Municipal systems and commons-based arrangements might deepen recognition and collective power. Whereas technocratic, high-tech, and privatized CE models are more likely to displace workers, individualise risk, or reintegrate them as precarious labor with little say over rules, prices, or working conditions.[43]

Across these debates, a pattern emerges. Informality is often described as transitional, yet it remains deeply embedded in practice. Inclusion is framed as progress. In reality, it often reorganizes labor without redistributing authority. Circularity is positioned as transformative. However, in practice, it prioritizes material performance over labor relations. While these seem contradictory, these positions reflect what institutional scholars describe as layering. New governance reforms accumulate over existing arrangements without fully displacing them.[44]

The following chapters examine how organizational models for incorporating informal workers into emerging CE transitions. They focus on how these models engage with existing forms of informal, socially stratified labor. They also assess how authority is structured and distributed within these systems.

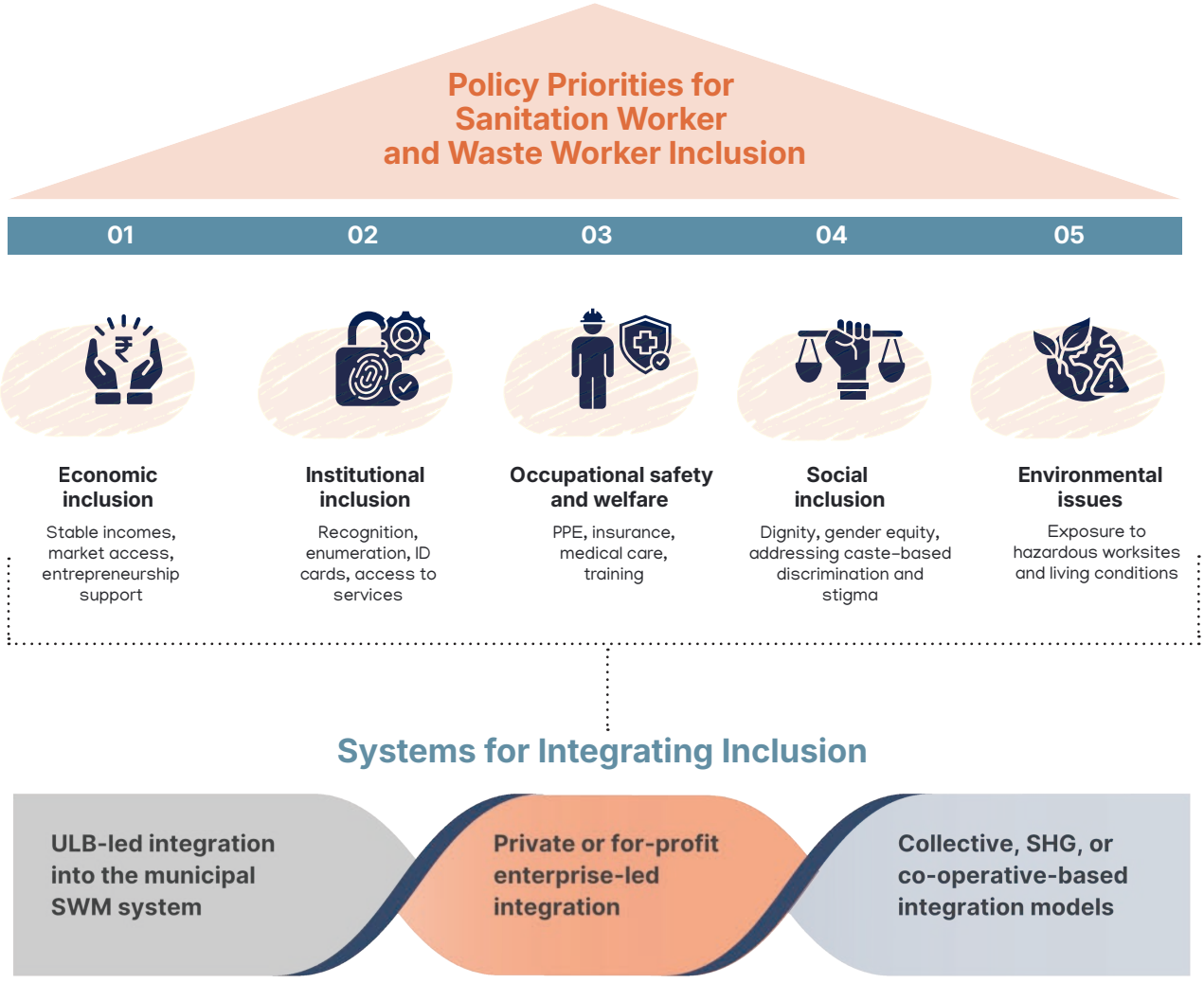
REVIEW OF SOLID WASTE MANAGEMENT POLICIES

Over the past 25 years, India's municipal solid waste management (SWM) policies have shifted in focus. Early approaches were largely technical and environmental. More recent policies increasingly recognize sanitation workers and informal waste pickers as essential actors within the SWM ecosystem. This brief review examines how national and state-level policies recognize informal waste pickers, outline pathways for their inclusion, and address (or fail to address) social, economic, and environmental concerns.

Policies increasingly acknowledge the vital role that informal waste pickers play in decentralized waste management systems. They do so by formally recognizing workers and enumerating them and their worksites. They also provide access to safety gear, health insurance, and other welfare measures.

Simultaneously, there has also been encouragement for of the private sector to employ these workers and create livelihoods in emerging circular economy practices. The focus has largely been on economic inclusion through the creation of stable and recognized income streams as well as through providing business training and support in the waste sector.

Social exclusions (e.g., gender pay gap), although acknowledged, remain unaddressed. Similarly, recent policy changes and concept notes advocate for improving quality of life and placemaking around legacy dumpsites and landfills. However, they remain largely silent on the environmental inequities and risks faced by informal waste pickers. City assessments of sanitation and cleanliness have rarely included indicators for assessing the structural inclusion of informal workers in formal SWM systems.



LANDSCAPE
KEY SHIFTS OVER TIME

National guidelines on SWM have helped enumerate thousands of waste pickers and improve safety and income stability in some contexts. However, it remains unclear whether these policies acknowledge or address historical and structural injustices. Since 2014, along with waste management centric guidelines, the national development agenda has also adopted the Swachh Bharat Mission (Clean India Mission) promoting shifts in waste governance towards increasingly decentralized approaches. The following sections will trace how worker inclusion has evolved with this policy landscape.

THE **THREE PHASES** OF WORKER INCLUSION IN WASTE MANAGEMENT

PHASE 1 SETTING TECHNICAL STANDARDS

The **Municipal Solid Waste Management and Handling Rules (2000)** set technical standards for waste collection, transportation, segregation, processing, and disposal to minimize work-related environmental and health risks. These rules include a brief allusion to waste collectors' safety at landfill sites through accident-prevention measures and the provision of water, lighting, and optional bathing facilities.

TAKEAWAY

In this early framing, workers are visible mainly as potential recipients of minimal site-level protections—not as rights-holders or central system actors.

PHASE 2 WASTE AS RESOURCE WITH EXPLICIT RECOGNITION

The **2016 Solid Waste Management Rules** sought to mandate waste segregation at source. It also encouraged processing, recycling, and reuse in a decentralized manner. These measures aimed to reduce the amount of waste being sent to landfills, and to treat waste as a resource by investing in material recovery and reuse.

In adopting a decentralized, systems approach, the 2016 Rules recognized and sought to set clear working standards for diverse actors in the SWM chain. Notably, in Section 3, the policy defines a 'waste picker' as "a person or groups of persons informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood." In Section 15, the Rules acknowledge and encourage the recognition of these informal workers by Urban Local Bodies (ULBs) through training, registration and ID Cards, and by providing them with the necessary equipment to undertake waste collection safely. The updated Rules significantly strengthen horizontal integration by explicitly linking households, bulk waste generators, ULBs, producers, and waste workers into a single regulatory ecosystem.

TAKEAWAY

The 2016 Rules clearly name waste pickers and bring them into a systems approach. In practice, inclusion remains focused on procedural recognition and economic roles, with limited attention to justice, voice, or addressing structural harms.

PHASE 3 WORKER-CENTRIC SAFETY, DIGNITY, AND LIVELIHOODS

Beginning in 2023, the **National Action for Mechanised Sanitation Ecosystem (NAMASTE)** scheme demonstrated a marked shift in waste management policies by centering worker safety, dignity, and livelihoods in waste-related service delivery. The scheme focuses on mechanizing sanitation services, and formalizing sanitation work by providing health insurance, occupational safety training, vehicle capital subsidies, and personal protective equipment (PPE) kits to workers. The scheme integrates multiple ministries (Ministry of Housing and Urban Affairs (MoHUA), Ministry of Social Justice and Empowerment (MoSJE), the Ministries of Health and Finance — with ULBs, bridging silos to ensure a systems thinking approach to the welfare and well-being of sanitation workers.

The 2024 guidelines for the inclusion of waste pickers under NAMASTE intend to recognize and strengthen these workers' contributions to waste collection, recovery, and recycling; improve their access to finance, social security, health insurance, and educational scholarships; provide ID Cards, occupational safety training, business training to access loans for businesses related to material recovery and reuse, and capital subsidies for waste collection vehicles; and create a safe work environment with sustained livelihoods.

The guidelines recognize that informal waste pickers lack access to a stable income source, with gender gaps in pay, and remain cut off from ULB's waste management services. The guidelines also advocate for encouraging waste pickers' organizations like collectives, self-help groups (SHGs), and co-operatives to be better connected to dry waste collection centers (DWCCs) for waste access. Additionally, the guidelines include a mobile app to register waste pickers and create a national database of these unorganized workers.

TAKEAWAY

NAMASTE reframes sanitation work through welfare and dignity and attempts a systems governance approach by integrating multiple ministries with ULBs. It also seeks to promote economic inclusion for workers by providing business support and by connecting them to municipal systems.

SWACHH BHARAT MISSION AND THE RISE OF ENTREPRENEURIAL GOVERNANCE

Since 2014, government initiatives like the **Swachh Bharat Mission (SBM)** have sought to increase source segregation, improve waste processing, and expand the formal integration of waste pickers into city-level solid waste management (SWM) systems. The **2017 Swachh Bharat Mission (SBM) - Urban Guidelines**, directed urban local bodies (ULBs) to enumerate and integrate informal waste pickers into formal SWM systems through worker protections, ID cards, improved equipment, and greater workplace security. The policy's behavior change communication component also aimed to sensitize the wider public to sanitation, including the contributions of waste workers and the associated health and environmental stakes.

The updated Swachh Bharat Mission (SBM) - Urban 2.0 (2021) Guidelines continued to position waste pickers as key stakeholders and tracked progress toward their formal integration. At the same time, they retained a strong emphasis on training and upskilling as mechanisms of inclusion, without specifying what forms of training would substantively advance social, economic, or environmental justice.

Subsequent policy updates signal a broader shift in the terms of inclusion. The **'Concept Note on Reducing Waste to Landfills'** advances a lifecycle approach to identifying inefficiencies, embedding circular economy principles, and strengthening monitoring and accountability. But it also appears to shift away from integration through ULB-led SWM systems toward a model of structured inclusion mediated by private, for-profit enterprises that "promote circular economy practices," alongside the involvement of self-help groups (SHGs) at different stages of the waste chain.

This signals a shift toward entrepreneurial governance, where inclusion is increasingly delivered through market-oriented actors and performance frameworks, instead of being secured through public systems.

However, the policy remains unclear on how such enterprises will be held accountable for ensuring just inclusion, reducing occupational risks, or improving worker welfare, protections, and dignity. Likewise, the growing emphasis on a tech-enabled ecosystem of data-driven and strategic waste solutions leaves unresolved how these interventions might reshape waste pickers' livelihoods and terms of inclusion. The concept note also calls for stronger partnerships between ULBs and civil society organizations (CSOs) to enable decentralized waste treatment and landfill diversion, but the implications of these partnerships for waste pickers' livelihoods, bargaining power, and forms of organizing remain clear.

SBM's assessment architecture reinforces this managerial shift. **Cleanliness rankings at the city and village level** are meant to drive competition across jurisdictions, but they focus mainly on infrastructure and operations, with limited attention to the quality of worker inclusion. For example, the 2024 User Manual for Self-Assessment of Garbage-Free Cities directs cities to map waste pickers' worksites, waste processing facilities, and dumpsites as indicators of progress toward becoming a "garbage-free city." However, it does not include indicators that assess workers' integration, protections, or welfare. SBM's competitive metrics, thus, make waste systems more visible and governable, but they leave unclear whether high-performing jurisdictions are also producing more secure, dignified, and empowering forms of inclusion for informal waste workers.

NATIONAL SYNTHESIS: WHAT THE POLICY TRAJECTORY SUGGESTS

Across national rules, schemes, and assessments, the trajectory indicates that worker recognition has steadily deepened over time. From minimal mention (2000) to formal definitions and clearly articulated ULB responsibilities (2016), and more recently to welfare-focused integration mechanisms under NAMASTE (2023–24), the policy shifts follow a broadly positive arc. Within this landscape, cleanliness rankings prioritized under SBM increasingly privilege infrastructure and operational performance metrics, while routinely overlooking indicators centred on workers themselves. Success metrics tend to focus on worksites, which pushes labor conditions and worker inclusion to the margins of how progress is assessed. At the same time, the broader SBM narrative signals a strong intent to prioritise solid waste management, heightening visibility around waste as a public issue and embedding it more firmly within policy discourse.

Governance has also been shifting toward mixed models. ULB-led systems for waste management remain central, but policies increasingly anticipate private and for-profit participation, alongside technology-enabled monitoring systems that introduce new layers of oversight with unclear lines of accountability for just integration. This evolving model creates a formative institutional window for engaging private actors to support worker inclusion.

The privatization trends and heightened visibility provided under SBM create a strategic arena for intermediaries across civil society, private sector, philanthropy, and allied sectors to influence the recognition and inclusion of the workers who sustain this vision. Strengthened dialogue and alignment between the NAMASTE scheme and SBM hold the potential to build the policy momentum needed to elevate social inclusion as a core pillar of waste governance reform.

STATE-LEVEL POLICIES

The study incorporated fieldwork across the states of Goa, Karnataka, and Odisha, enabling an examination of how the dynamics of worker inclusion unfold within and across distinct administrative and socio-political contexts. Given that waste management is constitutionally a state subject under the 7th Schedule, state-specific nuances are essential for understanding the differentiated trajectories and constraints surrounding the informal waste workers' inclusion.

Policy Vision

Goa's revised SWM policy (2024) is aligned with the National SWM Policy and the National Urban Sanitation Policy. It advances a "Zero Waste Goa" vision that prioritizes waste prevention and reduction, alongside reuse, recovery, and recycling, responding to Goa's unique coastal ecology, wetlands, and fragmented settlement patterns.

Worker Recognition

Waste pickers are formally recognized, but references are often indirect and uneven. Safai Karamcharis (municipal sanitation workers) receive clearer attention through training and welfare provisions, while informal waste pickers are more commonly framed through authorization, registration, and compliance mechanisms.

Inclusion Mechanisms

- **Operational inclusion:** Waste pickers are positioned as core actors in recovery tasks: collection, segregation, sorting, and recovery of recyclables, yet the emphasis leans toward oversight and efficiency
- **Monitoring without empowerment:** Waste pickers are subject to Information and Communication Technology (ICT) enabled monitoring without parallel empowerment or protective measures clearly articulated
- **Welfare skew:** Welfare provisions (training, insurance, skill development, health services) are articulated more strongly for Safai Karamcharis than for waste pickers

Local bodies are directed to recognize and integrate waste picker organizations into SWM systems (including door-to-door collection), and waste generators are asked to hand over recyclables to authorized waste pickers or recyclers. However, incentives appear more clearly specified for other stakeholders than for waste pickers, who are obligated to submit monthly plastic waste returns under Model Municipal Plastic Waste Byelaws. Overall, Goa's approach leans toward regulation and efficiency; it is less clear how waste picker livelihoods, incentives, protections, and welfare will be strengthened beyond monitoring and compliance.

Policy Vision

Karnataka's 2020 Urban Solid Waste Management Policy aims to achieve sustainable solid waste management through waste minimization and maximum recovery of resources along with worker equity and inclusion and protection of public health. The policy emphasizes a shift from a "linear approach" of waste disposal to "circular economy" principles, with a focus on encouraging entrepreneurship in the SWM sector and deepening environmental and social safety for formal and informal waste workers.

Worker Recognition

A distinctive feature is explicit recognition of SWM labor and the informal sector. The policy situates worker protection historically (including Karnataka's early ban on carrying night soil and the renaming of sanitation workers as "Pourakarmikas") and names informal waste workers as key actors who provide environmental and public health services through material recovery. Section 8 provisions in the state policy combine welfare commitments with integration mandates.

Inclusion Mechanisms

- **Changing the nomenclature:** The state policy renames sanitation workers as "Pourakarmikas" (Health Workers). This extends to ULBs ensuring minimum wages and statutory benefits and facilitate access to welfare schemes (housing, healthcare, insurance)
- **Occupational safety:** PPE provision and regular medical check-ups are framed as core ULB responsibilities, notably extending to authorized third-party staff in SWM
- **Informal workers:** ULBs are called to promote and protect safe and decent livelihoods for waste pickers, collectors, and aggregators, acknowledging the informal sector's primary role in material recovery

The 2019 model SWM byelaws extend these commitments into municipal responsibilities via a dedicated section on "Welfare of Pourakarmikas and Integration of the Informal sector." They specify facilities and protections (e.g., wages and benefits compliance, PPE, toilets, first aid, training, accident compensation, and biometric attendance). For informal workers, they mandate enumeration and ID cards, registration and licensing of waste traders, and integration steps such as employing waste-picker organizations in the operations of Material Recovery Facilities (MRFs) and enabling the sale of recovered materials.

Karnataka's policies are explicit about dignity, welfare, and formal recognition for both Pourakarmikas and informal waste workers, but the practical pathways for integration beyond enumeration, training, and employment linkages remain high-level and oriented primarily towards procedural and economic inclusion.

Policy Vision

Odisha's 2024 Urban Sanitation Policy aims to provide inclusive, equitable, safe, and sustainable sanitation services through participatory and climate-sensitive approaches, with explicit emphasis on empowerment, inclusion, and dignity of sanitation professionals.

Worker Recognition

Waste pickers are not directly referenced in the 2024 policy. Inclusion is instead pursued indirectly through a broader pro-poor and gender-responsive agenda that expands livelihoods and protections across the solid and liquid waste management (SLWM) value chain.

Inclusion Mechanisms

- **Employment creation:** The policy emphasizes jobs in the operations and maintenance of solid and liquid waste management facilities for the urban poor through partnerships with Mission Shakti Groups[v] and transgender groups[45]
- **Welfare & safety:** Commitments include health and life insurance, housing assistance, and mandatory PPE
- **Capacity building:** Training spans safe waste handling, technology use, and broader professional skills (communication, financial/digital literacy, basic enterprise development) for frontline sanitation workers including Swachh Karmis,[vi] Swachh Sathis,[vii] Mission Shakti groups, and transgender groups.
- **Stigma reduction:** Social and behavioural change is framed as a route to reducing socio-cultural bias around sanitation work

Bhubaneswar's 2019 SWM byelaws offer a narrower entry point: they define waste pickers, recognize their role in the operations of Material Recovery Facilities (MRFs), and state that the Corporation shall make efforts to integrate informal workers through occupational safety measures such as PPE and periodic health check-ups. Taken together, Odisha's framing advances a strong inclusion narrative, but it's unclear on how waste pickers are recognized and empowered within SLWM governance beyond job creation and workplace safety provisions.

[v] Mission Shakti is Odisha's state-sponsored women's self-help group initiative, launched on 8 March 2001. It was created to empower women by promoting Women Self Help Groups (WSHGs) to undertake a range of socio-economic activities, with support through credit, bank linkage, market linkages, skills, and livelihood enhancement. The empowerment of women through WSHGs under Mission Shakti is presented by the state as a flagship government programme.

[vi] Swachh Karmis include people who work at the "wealth centers" (micro composting centers and material recovery facilities) and are engaged in the transportation of segregated waste in solid waste management. They include women and transgender self-help group members, rag pickers, and sanitation workers.

[vii] Swachh Sathis are representatives from Mission Shakti's women's self-help groups, who are engaged in behavior change, awareness, and demand-generation among households and communities in both fecal sludge management and solid waste management, and also in collection of user fees for solid waste management. Swachh sathis are paid a monthly incentive of Rs.4,000 for 600 households in a ward. There are also swachh supervisors who monitor four swachh sathis each, who are paid a monthly incentive of Rs.8,000.

HIGH LEVEL CROSS-STATE COMPARATIVE SYNTHESIS

Across the three state contexts, distinct models of worker inclusion emerge. Goa formally recognizes waste pickers but remains oriented toward compliance and efficiency, with welfare provisions more clearly articulated for formal sanitation workers than for informal waste pickers. Karnataka offers an explicit policy framework that focuses on dignity, welfare, safety, and recognition for both formal and informal workers. In practice, its implementation remains largely procedural and economically driven, with limited transformative impact. Odisha advances a broad inclusion and dignity agenda within its SLWM approach and foregrounds vulnerable groups, but waste pickers are not explicitly centred in the 2024 policy. Instead, municipal byelaws provide a narrower entry point for inclusion through safety-related measures and employment in MRFs. A broader pattern can be observed across the policies: inclusion mechanisms tend to concentrate on enumeration, training, provision of safety gear, and linkages to formal systems. Deeper commitments to social and environmental justice and long-term empowerment remain uneven across the state and local governance systems.

GOA FORMALLY RECOGNIZES WASTE PICKERS, ORIENTED TOWARD COMPLIANCE AND EFFICIENCY

KARNATAKA
OFFERS AN EXPLICIT FRAMEWORK FOR DIGNITY, WELFARE, AND RECOGNITION; IMPLEMENTATION IS LARGELY PROCEDURAL AND ECONOMICALLY DRIVEN

ODISHA ADVANCES INCLUSION AND DIGNITY WITHIN ITS SLWM APPROACH, FOREGROUNDING VULNERABLE GROUPS


DANGER

3. METHODOLOGY

RESEARCH DESIGN

This report draws on qualitative, multiple case studies conducted in Bengaluru, Bhubaneswar, and South Goa in India. A qualitative approach enables an in-depth exploration of how recognition, protection, inclusion, and risk are experienced and interpreted by workers and other waste system actors, and how these experiences vary across contexts. We took a multiple case study approach to trace the heterogeneity of institutional arrangements for incorporating informal waste pickers in municipal solid waste management across urban India, and to understand common patterns and context-specific issues across these diverse pathways for worker integration.

CASE SELECTION, DATA, AND PARTICIPANT SAMPLING

We selected Bengaluru, Bhubaneswar, and South Goa as they reflect variations in waste governance models, levels of worker formalization, and engagement of informal waste workers in SWM. Fieldwork was conducted in collaboration with four established organizations embedded within the waste ecosystems of these cities: Hasiru Dala in Bengaluru, Urban Management Centre (UMC) and the Centre for Advocacy and Research (CFAR) in Bhubaneswar, and Saahas Zero Waste in South Goa. Our case studies were organizational models (pathways and archetypes) for including informal waste workers in municipal circular waste systems through diverse intermediaries, varied contracting arrangements, and circular infrastructures, and consisted of the following:

Bengaluru, Karnataka

In Bengaluru, we focused on worker inclusion, primarily through the lens of Hasiru Dala's work in the waste system. Hasiru Dala has been involved in SWM in Bengaluru since 2010–11. It operates as a social and environmental impact organization for the integration of waste workers and, through Hasiru Dala Innovations, as a social enterprise that designs inclusive circular economy business models. Their work spans registration and occupational identity cards, social security facilitation, operation of Dry Waste Collection Centers, integration of waste pickers into municipal systems, and advocacy around SWM Rules and urban policy. The focus is on multi-level integration, from livelihoods and social protection to service delivery, and policy influence, positioning waste pickers as "green-collar" professionals and entrepreneurs within an inclusive circularity framework. This represents a movement-plus-enterprise archetype, where organised worker leadership and institutional partnerships jointly drive inclusion.[46]

Bhubaneswar, Odisha

In Bhubaneswar, we engaged with the waste system and workers through two intermediaries: Urban Management Centre (UMC) and Centre for Advocacy and Research (CFAR). Urban Management Centre (UMC) functions primarily as a technical and institutional partner to H&UDD, Government of Odisha, co-designing policy frameworks and programmatic architectures across the state, including in Bhubaneswar, rather than directly operating facilities. Through initiatives such as the GARIMA scheme for sanitation workers' safety and dignity and DAY-NULM-linked sanitation and waste programs, UMC has focused on strengthening municipal capacity, developing standard operating procedures, and embedding women's SHGs and community-based structures into sanitation and waste livelihoods. This reflects a state-partnership and capacity-building archetype, one where the integration of informal workers is advanced through governance reforms, institutional protocols, and the structured engagement of worker collectives in urban service delivery.[47] This model reflects a state-non-profit partnership and capacity-building archetype, where integration of informal workers is advanced through governance reforms, institutional protocols, and structured engagement of SHGs and worker collectives in urban services.

The Centre for Advocacy and Research (CFAR) is a national not-for-profit organization established in 1998, advancing inclusive governance and equitable access to public services for marginalized communities across India. CFAR's work centres on strengthening community agency and institutional accountability to enable sustainable, systems-level change. In Bhubaneswar, CFAR partners with the Bhubaneswar Municipal Corporation, WATCO, and others to implement a community-led, rights-based urban WASH governance model. Based on the community-system convergence framework, CFAR aims to build inclusive, accountable, and sustainable waste management in underserved urban areas.

It utilizes community platforms like Single Window Forums, Community Management Committees, SHGs, and area-level federations to involve residents, especially women, waste pickers, transgender persons, and persons with disabilities in planning, monitoring, and managing WASH services. CFAR also promotes formal recognition for sanitation and waste workers through RPL certification and links to MRFs and NULM schemes. The program emphasizes service improvements, behaviour change, stigma reduction, and occupational dignity to ensure socially inclusive and operational waste systems.

Goa

In Goa, our fieldwork focused on the Sustainable Approach to Integrated Waste Management (SAIM) model, which was launched in Margao, Goa in 2024 by Saahas Zero Waste in partnership with WWF-India and the Goa state government. Saahas Zero Waste (SZW) is a Bengaluru-headquartered environmental and social enterprise in India that offers end-to-end waste management services for bulk waste generators, brands, institutions, residential communities, and urban local bodies. It branched out of the non-profit Saahas, which was founded by former journalist Wilma Rodrigues. SZW frames its mission around maximum resource recovery, dignified livelihoods, and building a circular economy.[48]

The SAIM model prioritizes formalization through structured contracts, compliant infrastructure and systems, and EPR-aligned material recovery. It is centered around a Material Recovery Facility (MRF) for residential waste that services multiple village local governments across South Goa, with trained workers employed on formal terms, provided with PPE, insurance, and fair wages through bank transfers. This represents a formal enterprise- and infrastructure-led pathway where circularity is achieved through investment in systems and the gradual transition of informal workers into recognized, decent work within a regulated value chain.

Together, these sites and intermediaries illustrate diverse pathways for integrating informal waste workers into circular municipal solid waste systems, ranging from infrastructure- and contract-led formalization to state-led capacity building, community-based governance, and worker-led enterprise. By selecting cities across both governance contexts and organizational archetypes, the study highlights how these approaches shape institutional, economic, social, and spatial inclusion within India's evolving circular waste landscape.

Intermediary organizations played a critical role in enabling ethical access, securing informed consent, and grounding worker narratives in context. As the research team did not have pre-existing relationships with worker communities, engagement was facilitated through these partners. This shaped participant selection, access, and the conditions under which conversations took place, with many interviews and FGDs conducted on partner premises or in their presence. Combined with the limited duration of field visits, this may have influenced how workers articulated experiences of risk, protection, and dissatisfaction. We mitigated this by engaging multiple sector experts, triangulating findings with existing literature, and adopting a reflexive approach to interpreting narratives shaped by organizational mediation.

The study employed a mixed-methods qualitative approach, including site observations, focus group discussions (FGDs), and in-depth semi-structured interviews across stakeholders in waste governance. Field visits to municipal zones and material recovery facilities (MRFs), particularly in areas with formal integration models, provided contextual grounding. FGDs captured shared experiences and collective reflections among informal waste pickers and low-income communities, highlighting how caste, class, and gender shape everyday work. Interviews with civil society leaders, sector experts, and ecosystem actors offered institutional perspectives, policy insights, and reflections on barriers and opportunities for worker integration. These were complemented by a review of program reports, organizational materials, and policy documents.

Participants were identified through a combination of purposive and stratified sampling, where we purposefully engaged with informed stakeholders and individuals who were directly or indirectly connected to circular waste management initiatives. We primarily accessed these through our existing networks and partner organizations. We stratified the sample to ensure representation across key stakeholder groups, such as informal waste workers, civil society actors, municipal officials, and community members, allowing us to capture diverse perspectives and understand variations in experiences, roles, and influence across the waste ecosystem. In total, the study engaged 37 interviewees and 52 informal waste workers through FGDs across the case studies (see Annexure 1 for details).

ANALYTICAL APPROACH

All interviews and discussions were transcribed, translated where required, anonymized, and analyzed using thematic coding, supported by qualitative data analysis software (Dedoose). An initial codebook was developed through a combination of deductive codes derived from the literature and research questions, and inductive codes emerging from the data.[49] We developed deductive codes from the literature to focus on key dimensions of inclusion in urban waste systems, including policy and institutional arrangements, service delivery models, labor conditions and livelihoods, infrastructure and spatial access, and welfare and social protection. We also generated inductive codes to capture themes that emerged across stakeholder groups. These included the evolving roles of the state, civil society, and private actors, different forms of inclusion and exclusion, tensions around formalization, and the fragility of inclusion in practice across worker groups. We then compared coded material across stakeholder categories to identify patterns, as well as points of convergence and divergence in how actors understand barriers, opportunities, and pathways for more inclusive waste systems. Coding remained iterative and was refined through team discussions to maintain consistency and depth.

The study also uses the Causal Layered Analysis (CLA) framework. It looks at findings across different levels. This includes visible practices and institutional arrangements, as well as the deeper structures, assumptions, and power relations that shape waste work.[50] This framework enabled the study to connect everyday experiences of workers to broader governance logics and historical conditions.

FINDINGS OF THE STUDY

The findings that follow are organized as a series of interconnected narratives about how informal waste workers are being recognized, protected, and governed within evolving urban waste systems. This report presents its findings across chapters, each offering a different lens on how worker integration is shaped and contested, instead of organizing results as discrete themes or variables.

Policy and Regulatory Lens
An overview into how laws, schemes, and municipal decisions frame rights, responsibilities, and pathways of inclusion

Institutional Lens
A view on organizations, partnerships, and governance structures shape worker integration

Socio-Economic and Financial Lens
A deep dive into livelihoods, budgets, contracts, and local market arrangements, and how they influence experiences, opportunities, and access to infrastructure and space

These lenses, in practice, overlap, reinforce, and at times contradict one another. Decisions made in policy design or municipal contracting travel into the everyday geographies of waste work. Financial arrangements shape access to infrastructure and space. Institutional partnerships open new pathways of inclusion while also introducing new forms of precarity. The chapters that follow trace these connections, moving between system-level arrangements and workers' lived experiences on the ground.

4. POLICY CHOICES VERSUS WORK, RISK, AND RECOGNITION

Waste policy operates less as a neutral infrastructure and more as a distributional mechanism. Policies determine who gains legitimate access to waste as a resource, who is incorporated into formal systems, and who bears health, economic, and spatial risks without corresponding recognition or protection. Policy is often operationalized by intermediaries who translate procedures into practice. In doing so, they make informal labor legible to the state and render occupational risks more visible. However, these risks are not always fully addressed. At the same time, intermediaries help reframe alternative, hybrid waste management models as governable. Across cities, informal workers carry a disproportionate share of these risks. This occurs because policy reorganizes waste systems around informal workers while excluding them from decision-making.

This chapter explores how policy influences practice, and how it shapes the possibilities and limits of informal waste worker inclusion within urban waste systems.

POLICY CHANGE HAS BEEN LAYERED, CUMULATIVE, AND UNEVEN

Primary interviews underscored that governance reform has unfolded through slow, layered accretion. Conceptual shifts that now appear self-evident, such as segregation, decentralized processing, or the acknowledgement of informal waste workers, took a decade or more to be formally embedded in policy, and even longer to translate, albeit unevenly, into practice.

HISTORY OF WASTE POLICIES AND LABOR IMPACTS

Several participants traced the policy "engine" back to the early 2000s, when court-driven Municipal Solid Waste (Management & Handling) Rules first compelled cities to act. Their core mandate was collection and disposal. Processing, recovery, and worker inclusion were largely absent.[51] For more than a decade, municipalities across India were effectively instructed to collect waste and dump it. Data shows that 59 cities generated 39,031 tonnes per day (TPD) (up from 100,000 TPD in 2000), while more than 70 percent lacked transport capacity and relied on open dumpsites, often in peri-urban areas bearing pollution costs.[52] This framing normalized dumping as governance, and disposal as success.

From around 2012–2013, discussions on processing and segregation began to gain policy traction. Draft rules emerged in 2013, followed by consultations that culminated in the 2016 Solid Waste Management Rules. Yet interviewees clarified that it was too little too late. It took roughly sixteen years for segregation to be formally centered in national policy, by which time the structural damage had already accumulated. Dumpsites had multiplied. Informal systems had adapted around disposal-centric models, with urban land, labor, and infrastructure locked into arrangements that were difficult to undo.

Post-2016, and reinforced by Swachh Bharat Mission (SBM), the paradigm did shift on paper. Policy language expanded to include segregation at source, decentralized management, technological interventions in processing, and limits on disposal.

Many participants acknowledged that this marked a meaningful departure from earlier rules. Collection coverage improved. Budget allocations became somewhat more balanced relative to the earlier disposal-centric model.

This was accompanied by incremental shifts toward funding processing infrastructure, segregation systems, and decentralized waste management. Yet the cumulative nature of reform also means that legacy damage persists. Over 3,000 dumpsites remain across the country. Basic processing infrastructure is still absent in many cities, particularly in heartland states such as Uttar Pradesh and Bihar.[53] Participants were candid that it may take decades to reverse these deficits.

Paralleling these policy shifts has been a transformation in waste composition itself. Despite formal segmentation of waste streams across multiple policies, such as solid waste, plastics, e-waste, batteries, interviews point to a persistent mismatch between rules and reality. Textiles, electronic waste (e-waste), batteries, and even biomedical waste routinely enter municipal waste streams. Household segregation remains weak. The immediate burden of this complexity falls on frontline handlers like contractual workers and informal actors engaged in door-to-door collection and sorting.

Participants also noted that the continued reliance on centralized processing, particularly waste-to-energy (WtE) infrastructures, as in Delhi, has forced municipalities to commit to delivering fixed daily tonnage. As such, recyclables are pulled into incineration streams, diverting valuable materials and sidelining informal actors who specialize in recovery.[54]

"The challenge now is how to make policy change more catalytic rather than merely incremental. The first non-negotiable must be waste minimization—an aspect routinely sidelined in favor of segregation and processing. Many sub-campaigns miss this foundation entirely. Cities focus on managing waste after it is generated, rather than questioning how much is produced in the first place."

Swati Singh Sambyal
GRID-Arendal

POLICY CHANGES REORGANIZE WORK AND REDISTRIBUTE RISK

Primary interviews consistently described how shifts in policy and system design reshaped everyday work realities for waste workers in uneven and often unintended ways. Infrastructure upgrades resulting from policies altered where waste could be accessed. Procurement models changed who could handle it. New operational protocols redefined what counted as authorized work. A central theme emerging from the primary data was the asymmetry in how labor is made visible to the state. Certain forms of work are counted, contracted, and budgeted for. Others remain invisible, despite their material contribution or criticality to waste management. As a result, policy narratives credit infrastructure and technology with system improvements, while the labor that sustains material recovery absorbs the associated risks without institutional recognition.

This tension was articulated starkly by a government representative interviewed for this study, who noted that formalization fundamentally reorganizes labor, by altering how work is structured, monitored, and distributed across the system. When cities tighten systems, close loopholes, standardize processes, and insist on end-to-end accountability, they often require fewer workers to move the same tonne of waste. This, the participant argued, is not merely political but an operational consequence of simplified workflows. This results in the problem that formalization is rarely accompanied by a workforce transition plan. Roles that are at risk of shrinking are not mapped. Roles that grow, such as those in quality control, safe sorting, Material Recovery Facility operations, logistics, repair and reuse, data capture, or outreach, are not systematically identified. Skill gaps are not assessed. Transitions are not designed. Workers encounter formalization as a loss of jobs. The interviewee was explicit that resisting formalization is not a solution. The failure lies in how formalization is designed and implemented, particularly in the absence of intentional transition planning grounded in data, skills pathways, and negotiated protections.

DATA INVISIBILITY AND RECOGNITION WITHOUT POWER

The absence of reliable data on informal waste workers required for inclusion emerged as a foundational policy failure across interviews. There is no valid, city-level enumeration that captures how many informal workers exist, where they operate, what skills they already possess, or the socio-economic conditions under which they live. This absence shapes what policy can imagine and what it can justify.

"They are one of the multitudes that are suffering from not being counted, not being visible, not being heard, maybe even not even being seen, because they do everything in early daybreak. By the time we are up and moving around the city, they are in a different set of work. We are dealing with larger ecosystem challenges that are overwhelming to all of us. In this context, where do you position the informal workers—across genders, intersectionalities, and workplace vulnerabilities? The rag picker, like any other informal worker, is a fusion of all these vulnerabilities—historical, occupational, social... any element you pick, they will reflect all of it."

Akhila Sivadas
Centre for Advocacy and Research

Another participant, that is a government representative, shares: India is a country of scale, yet cities do not know how many informal waste workers they have. Without a dynamic, city-level database on numbers, skills, and socio-economic conditions, policy continues to rely on intuition instead of evidence. In this context, integration stays rhetorical and does not translate into practice. These data gaps also have implications for finance flows. Finance plays a critical role in enabling waste systems to scale and play a critical enabler for socio-economic worker protection. It also determines whether inclusive waste management models can be implemented and sustained, and therefore the absence of worker-level data directly constrains pathways for integration. Several participants highlighted how the absence of worker-level data affects where money goes and how risk is assessed. Commercial financiers, including banks and Non-Banking Financial Companies (NBFCs), move last. Their models require demonstrated impact and quantified evidence, leaving little room for uncertainty. This is why philanthropic capital becomes critical in the waste sector. It is more flexible, patient, and risk-tolerant.

"Global philanthropic data shows that only a small fraction of grants actually reach the grassroots implementers directly. There are typically many operational constraints behind this, which play out starkly with regard to informal workers and entrepreneurs. For instance, funders may need precise data and numbers to approve grants, but informal systems inherently lack such numbers, and intermediaries often lack the capacity to develop systems to track this data. As a result, the workers most central to outcomes remain uncounted and unseen."

Tanushri Shukla
Global Development Indicator

RECOGNITION IS A HARD-WON POLICY ACHIEVEMENT BUT DOES NOT EQUAL INCLUSION

The Solid Waste Management Rules, 2016 marked the first national mandate requiring urban local bodies to recognize and integrate waste pickers through identification, roles in source segregation, and access to waste facilities. Provisions related to occupational safety and dignity emerged largely through sustained advocacy in the lead-up to these rules.[55] However, the foundations for recognition were laid earlier through city-level initiatives. Bengaluru issued municipal ID cards to 220 waste pickers in 2010 following a Lok Adalat order, enabling formal access to waste streams.[56] Pune's SWaCH cooperative—operational since 2007, demonstrated worker-led integration models that received municipal and policy support between 2010 and 2012.[57]

More recent protection-oriented advances include the NAMASTE Scheme, launched in 2024–25 and expanded in June 2024, which explicitly targets the integration and protection of waste pickers nationwide through health insurance, scholarships, e-Shram registration, safer workplaces, and capital subsidies.[58] Despite formal recognition, waste pickers' ability to shape decisions and influence system design within municipal systems remains uneven and contingent. Following the 2016 Rules, urban local bodies were instructed to revise municipal bylaws using a central template, with the expectation that these would be adapted to local contexts.

In practice, many cities replicated the template with little modification and without consulting informal workers. As a result, provisions that could have enabled participation, secured access to waste, or clarified roles were either diluted or left unimplemented.[59] A few jurisdictions, such as Pune and Ambikapur, and states like Kerala, and to a lesser extent Tamil Nadu and Karnataka, demonstrate stronger inclusion mechanisms. In Kerala, decentralized governance across panchayat, city, and state levels has created greater scope for designing systems that recognize and work with informal labor.[60] Workers' agency is selectively exercised, and shaped by local power dynamics, livelihood risk, and exclusion from decision-making.

These dynamics are keenly felt by waste pickers themselves. In focus group discussions with former waste pickers now running MRFs in Bengaluru, participants described recognition as largely symbolic and not something that meaningfully changed their conditions. This is marked by documentation, meetings, and schemes that offer limited authority, dignity, or protection in practice. For instance, they shared that while Identity Cards were issued and workers were formally invited to municipal meetings, they recounted being denied basic courtesies and decision-making power.

> *"We carry official identity cards with the Commissioner's signature, but in meetings with senior officials we are still made to stand while chairs remain empty. Dry waste centers that have run for years are shut overnight. Memoranda of understanding expire without discussion. Once waste streams become financially viable, the system is taken over. Decisions about access to waste, continuity of work, and control are made without consulting us."*
>
> FGD participant
> Former Waste worker now running an MRF

Informal waste workers also described being invited to speak at national and international platforms on climate change, plastic pollution, and just transition. However, they share how this visibility has not shifted their standing within municipal governance. One participant reflected:

> *"We received ID cards under the Namaste Scheme; we were included. We also speak at global spaces, plastic treaty, human rights, climate change, and just transition. But in India, real change is still not happening. It looks like change on paper, but in implementation, there is very little."*
>
> FGD participant
> Former Waste worker now running an MRF

At the same time, participants said that the small but meaningful gains in dignity and visibility did not come from policy recognition on its own, but from workers coming together through collective organization. Forming a registered union opened access to meetings and led to small but meaningful gains in respect. Workers described agency as something built through sustained collective struggle, not something that comes automatically with formal recognition. Even these gains, however, were described as uneven, fragile, and costly to maintain, requiring continuous negotiation and exposure to risk. Recognition, in this sense, has expanded visibility without securing meaningful power.

> *"After forming the union, at least we are invited and given some respect. Earlier we were not even allowed to sit. Now there is a little change—not big, but some."*
>
> FGD participant
> Former Waste picker now running an MRF

Women's accounts from the FGD discussion underline the limits of recognition as dignity. They described being invited on stage, seated in front, and publicly felicitated by the urban local body. They see this as an experience that they value, noting that earlier "people never asked about us." Yet, as a female FGD participant shared: *"Sometimes we don't even get a chance to go on stage and speak about our work."* Visibility, in this sense, has expanded faster than voice. Women are increasingly being tokenized and showcased as models of service delivery, without being consistently recognized as workers with authority or negotiating power.

Interviews with sector experts reinforce this finding. Policy processes, both in India and globally, rarely seat informal workers at the table.[61] While civil society organizations that work with informal workers may be consulted, the workers themselves are largely absent from decision-making spaces. This pattern extends beyond municipal governance. At recent international negotiations on the Global Plastics Treaty, debates around just transition revealed deep resistance to acknowledging informal workers as legitimate stakeholders.[62]

RECOGNITION
HAS EXPANDED
VISIBILITY WITHOUT
SECURING
POWER

INCLUSION IS SOCIALLY DIFFERENTIATED

The absence of reliable data on informal waste workers required for inclusion emerged as a foundational policy failure across interviews. There is no valid, city-level enumeration that captures how many informal workers exist, where they operate, what skills they already possess, or the socio-economic conditions under which they live. This absence shapes what policy can imagine and what it can justify.

Gender responsive approaches in waste governance have grown through programs employing women in collection and segregation. Insights from FGDs with women waste workers in Bhubaneswar reveal that women's participation has expanded through mission-mode, Self Help Group (SHG)-linked employment models that offer stable remuneration and work close to home. These models have created both opportunities and constraints.

Women described entering waste work as an alternative to insecure and often degrading labor such as domestic work, incense stick piecework, or daily-wage construction. They associated this shift with predictable income, structured work routines, and the ability to work alongside community members near their homes. In this sense, programmatic models have opened an entry point for women's economic participation and improved day-to-day stability.

At the same time, women's accounts show that gender responsiveness remains weakly embedded in the institutional design of waste work. The most visible gaps relate to welfare access, workplace conditions, and workload allocation.

1. The FGDs point to a **persistent gap between programmatic recognition and formal welfare entitlements.** Women repeatedly asked for basic occupational protections such as insurance, regular health check-ups, and nutrition support. Women directly compared their conditions with those of male workers at the same Micro Composting Centre's facility. They noted that while they receive a fixed monthly remuneration, they have no Provident Fund (PF), Employees' State Insurance (ESI), or other scheme benefits, despite high workloads and occupational risk. They contrasted this with male workers such as drivers, employed through third-party contracts, who receive provident fund benefits. Women were explicit that they want access to the same protections.

   Discussions with intermediaries helped clarify this difference. Women sorters are engaged through SHGs, with contracts held at the group level. This means they are not formally recognized as individual employees of the ULB, and their payments are classified as incentives instead of wages.

   This classification places them outside the eligibility framework for contributory welfare schemes. By contrast, male workers such as drivers are typically engaged through third-party contractors, with individual employment contracts. This contractual structure enables access to provident funds and related benefits.

   This points to a stratified labor architecture in which women's roles remain less protected, even within municipally linked waste operations. Women constitute over 70 percent of informal waste workers. Yet remain weakly linked to labor law protections such as ESI or PFs. As a result, most women workers continue without pensions, or insurance.[63]

2. Women described **physical and ergonomic barriers that are routinely overlooked in operational planning.** In the MRF sorter group, participants linked task difficulty to the absence of male co-workers or mechanized support for heavy lifting and mixing. They described climbing into large tanks and handling heavy waste without equipment, increasing the risk of injury and infection. Women also flagged the lack of covered facilities and inadequate site security, which creates anxiety when outsiders enter the premises during breaks.

These constraints reflect infrastructure and task design that fail to account for the composition of the workforce. Where sorting work is predominantly done by women, as is the case across most sites, the absence of ergonomic support, safety measures, and basic protections produces outcomes that are gendered in practice, even when they are treated as operationally neutral.

COMMUNITY-BASED GOVERNANCE AND INTERMEDIARIES CAN STRENGTHEN ACCOUNTABILITY

Community-based organizations that act as intermediaries between workers and the state strengthen accountability and service delivery. They connect policies to the communities they are meant to serve. They create platforms for worker voices to be reflected in policy decisions. They support ground-up governance and help build institutional trust.

Primary evidence from the three states covered in this study shows that waste services delivered through community-linked institutions, such as SHGs worker collectives, and locally rooted social enterprises or non-profits, generate higher accountability, service quality, and trust than conventional third-party contracting models. When waste work is rooted in community structures, governance outcomes tend to improve because of the close relationships and social ties that shape how the system functions.

This pattern is reinforced by interviews with intermediary organizations working closely with Urban Local Bodies. As one practitioner explained, community-linked models strengthened accountability because service providers were embedded within the same neighborhoods and social relationships as the people using the services.

> *"Initially, the municipality found these models more demanding than standard contracting. But officials started recognizing the value: SHG members come from the same community they serve. When the person maintaining a toilet or doing door-to-door collection lives in the area, people can monitor the work directly. That kind of accountability is not possible with an external contractor who is unknown locally. Here, the contract sits within the community, and so the worker is answerable to their own people."*
>
> Xerxes Rao
> Urban Management Centre

Over time, this proximity translated into better upkeep and service quality. The same participant noted that municipal officials took several months to recognize these changes and adjust their approach. Continued engagement and sensitization helped SHGs gain recognition as legitimate service providers within municipal systems, moving them beyond their earlier status as informal or temporary labor.

As understood through the interviews, these additional efforts go beyond routine municipal contracting and involve a deliberate restructuring of how service delivery is designed, procured, and supported. This includes:

- **Restructuring procurement systems** to enable SHGs to participate, through preferential contracting, the removal of upfront financial barriers such as earnest money deposits and bid fees, and the development of more robust and clearly defined contracts
- **Making these contracts legible and actionable,** often anchored by intermediary organizations for first-time women service providers, including translating them into local languages and ensuring that roles, responsibilities, and rights are explicitly explained prior to onboarding
- **Building safeguards and reducing asymmetries in power,** particularly in contexts where incumbent contractors resist these shifts, through clearer clauses, institutional backing, and ongoing support to SHGs navigating a male-dominated ecosystem
- **Sensitizing and aligning municipal officials,** shifting perceptions of SHGs from informal groups to legitimate service providers and contractual partners
- **Continuous ecosystem-building,** including facilitating access to identity documents, entitlements, and financial systems, and creating platforms for collective voice through federations and subcommittees

Field evidence also shows how intermediary organizations play a critical role in improving service delivery by enabling learning, trust, and scale across governance levels. Intermediaries often work with local governments to test new delivery models, track what works, and then present these learnings in ways that city, state, and national systems can understand and use.

In several cases, intermediaries supported the design and implementation of pilots in partnership with ULBs. Once these pilots demonstrated results, state governments took them over and scaled them up through state-level program design and implementation mechanisms. Successful models were then showcased at the national level, enabling the issuance of advisories that encouraged adoption by other states.

Pilots emerged as a crucial entry point within systems shaped by multiple checks and risk-averse decision-making. Demonstrating feasibility on the ground helped reduce resistance and build confidence among officials. Hesitation often came from concerns about accountability, risk, and procedural compliance, not opposition. Intermediaries helped work through these constraints by documenting outcomes, aligning pilots with existing mandates, and presenting reforms as extensions of current policies.

WASTE IS STILL GOVERNED AS A SERVICE, NOT A CLIMATE & CIRCULARITY SYSTEM

These policy dynamics reveal why climate and circularity ambitions in waste systems cannot succeed without addressing how labor, incentives, and governance are structured. Across cities, waste is still governed mainly as a service delivery issue. This framing overlooks the role of labor in enabling circular outcomes and treats workers as inputs to be managed, not as agents of change. As climate risks intensify, this gap becomes harder to sustain.

Primary interviews reveal that waste continues to be treated as a narrowly defined municipal service, focused on collection, transport, and disposal.

> *"Waste is still framed in conventional terms—collection, transportation, and disposal. Even where cities recognize its links to flooding, climate risk, and rising consumption, responses remain fragmented. This gap between systemic diagnosis and siloed action keeps circularity, labor integration, and climate resilience at the margins of waste governance. While a few Indian cities are beginning to integrate waste into climate planning and budgeting, most continue to operate within narrow sectoral frames, highlighting the need to more systematically integrate a resilience lens"*
>
> **Shweta Nagarkar**
> Resilient Cities Network

Across cities, the contractor-driven structure of municipal waste systems emerges as a key bottleneck. Most contracts are still volume-based and reward the movement of waste, not its recovery. In this logic, segregation and material recovery reduce tonnage and are disincentivized. Informal workers, whose livelihoods depend on value extraction, are sidelined by design. Waste is rewarded for circulation, not transformation. While this incentive structure is not unique to India, its effects are intensified by the scale of urban growth, rising consumption, and climate stresses such as flooding and drainage failure. These risks are interconnected, yet policy responses remain siloed.

Interviews also point to a missing institutional bridge between labor organization and circular solutions at scale. As one key informant observed, worker collectives and unions have played a critical role in organizing waste workers and securing recognition. At the same time, many commercially scaled waste solutions remain detached from labor conditions and environmental responsibility.

"The phrase waste to wealth is severely flawed. It implies that people working with waste can access revenues through the sale of waste, which in turn brings wealth. This is far from the reality where costs of compliant operations are far more than the revenues accrued from the sale of waste. This phrase today becomes a barrier when waste generators including brands and industry are as yet unwilling to accept accountability, as a polluter, to pay for the service of resource recovery and waste management."

Wilma Rodrigues
Saahas Zero Waste

Few organizations have successfully combined worker organizations with city-adoptable circular systems in a sustained way. This gap limits the ability of cities to transition towards circular models that are both socially grounded and operationally scalable.

Waste governance in India remains caught between recognition and exclusion. Policy has moved enough to make informal workers visible, but not far enough to redistribute power, reduce risk, or secure fair value for the labor that underpins recovery and circularity. Workers are incorporated into waste systems without being fully protected by them. The evidence suggests that inclusion is most meaningful where policy is translated through institutions that are locally rooted, relationally embedded, and able to bridge workers, municipalities, and higher-level policy frameworks. A just and future-ready waste system needs governance that treats informal workers as central actors in building circular, climate-resilient, and accountable urban systems.

5. THE INSTITUTIONAL CONDITIONS MEDIATING INFORMAL WASTE LABOR INTEGRATION

Indian municipal systems are formidable entities, defined by expansive budgets, massive workforces, and complex departments tasked with sustaining millions. However, these institutions often operate through a paradoxical internal logic, where formal systems coexist with and are sustained by informal labor and work amid systemic constraint and occasional chaos. This interdependence is acute in solid waste management.[64] Rapid urbanization and rising consumption put constant pressure on municipal systems. In response, the formal machinery does not operate on its own. It relies on close coordination with informal workers and intermediaries who bridge the gap between policy goals and on-the-ground realities.

This chapter argues that informal waste labor is not external to formal municipal waste systems. It is already built into how these systems function. However, this incorporation is partial, mediated, and often reversible. Workers are included in operations, but not fully recognized.

Formalization, thus, does not eliminate informality; it reorganizes it through contracts, administrative legibility, intermediary repair, and uneven forms of recognition. This creates a form of precarious stability. Municipal systems continue to function by relying on labor that is only selectively institutionalized, without being fully integrated.

DESIGNING THE FORMAL WASTE SYSTEM AND THE CONDITIONS OF INCLUSION

For urban residents, the experience of household waste management has improved over the last few decades. Waste is collected, streets are swept, and bins are emptied each morning. These everyday rhythms create the impression of a system that works and is predictable, routine, and largely uninterrupted. This reflects more than municipal intent or infrastructure investment. It shows how urban waste systems have been stabilized over time by selectively accommodating informal labor. This section examines how formal waste systems are designed and produce the conditions under which inclusion becomes possible, and the narrow terms on which it materializes for workers.

THE ADMINISTRATION OF WASTE MANAGEMENT

In practice, urban waste systems are governed through procedural formalities. Their functioning is organized through standardized procedures that structure how waste is collected, moved, measured, and accounted for across the city. These procedures seek to impose order, predictability, and control through routine administrative action.

Municipal authorities define service boundaries, ward-wise routes, collection schedules, and handling protocols to ensure regularity across the city. Waste is then moved through a chain of standardized activities: collection, transfer, transport, weighing, logging, processing, reporting, and payment. Through these steps, heterogeneous and materially messy waste is translated into a set of legible administrative objects—tonnage figures, attendance records, route maps, facility logs, compliance reports, and invoices. The system thereby renders waste governable by converting material flows into measurable and auditable operations.

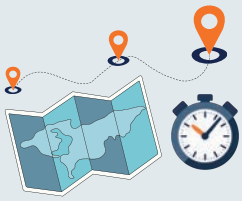
Municipal tenders and service contracts play a central role in holding this system together. They set service boundaries, define what counts as completed work, and link payment to verified performance. In practice, they position waste management as a logistical and service delivery function, focused on continuity, timeliness, and volumes handled within fixed timelines, while sidelining its broader social and ecological dimensions. Collection and transportation are tightly specified, regularly monitored, and financially prioritized because they are the stages most visible to residents and most easily translated into administrative metrics. While labor is essential to system functioning, it is only selectively addressed in the execution of tasks or operations but without any explicit guarantees.

A schematic representation of the formal process chain below (Figure 1) outlines the logic through which urban waste systems are designed and governed. It describes how waste is rendered visible, manageable, and accountable within municipal systems. Its purpose is to clarify how the system is structured, before turning to how inclusion is organized within this process.

FIGURE 1: HOW THE FORMAL URBAN WASTE SYSTEM "WORKS"

Phase A — Planning & Field Execution

Step 1 — System Definition
Routes, Wards, Schedules



Municipal authorities define service boundaries, ward-wise collection routes, and fixed schedules to ensure coverage and predictability across the city.

Step 2 — Collection & Transport
Door-to-Door Pickup

Standardized door-to-door collection and transport are carried out according to prescribed handling rules, timeframes, and waste stream protocols.

Phase B — Measurement & Processing

Step 3 — Data Entry & Quantification
Weighbridges, Registers

Physical waste is converted into administrative records through weighbridges, daily logs, and facility-level registers, enabling monitoring and reporting.

Step 4 — Facility Operations
Segregation, Processing

Processing facilities operate against defined throughput, quality, and output benchmarks, tracking material flows and operational performance.

Phase C — Accountability & Settlement

Step 5 — Reporting & Audit

Operational performance is documented through periodic reports submitted to municipal authorities, regulators, and funders.

Step 6 — Financial Settlement
Payments

Payments are released upon verification of completed work in accordance with contractual terms and reporting requirements.

Source: This is a schematic representation based on field insights.

As our fieldwork shows, formality is strongest at the front end of the system. This includes collection, transport, and reporting. Downstream activities remain weakly governed, such as segregation quality, residual handling, enforcement, and long-term recovery. The system is most effective at moving waste out of everyday sight. Governance thins beyond what is measured, monitored, and paid for.

The apparent smooth functioning of urban waste systems does not reflect comprehensive or inclusive governance. It reflects selective formalization. What the system is designed to see and reward, is not the entirety of waste work or waste circulation, but those aspects that can be standardized, quantified, and settled through administrative routines. Understanding this institutional architecture is essential because it establishes the narrow institutional terrain on which labor later becomes visible and selectively included in formal waste systems.

EFFICIENCY, CIRCULARITY, AND THE TENDERED CITY

The design of urban waste systems is shaped by a governing rationality that privileges efficiency, optimization, and measurable service outcomes. Under this logic, success is defined less by the quality of labor arrangements or social protection as much as it is by visible service regularity, collection coverage, throughput, and the reduction of waste in public space.

This orientation has deep historical roots. Colonial sanitation regimes focused on clearing visible filth from public spaces. They did little to change the social and material conditions that produced it.[65] The specific labor associated with this sector was (and continues to be) inherently and inseparably embedded within caste hierarchies. The most stigmatized and degrading forms of work are often forced onto oppressed castes and marginalized communities. B.R. Ambedkar's entire oeuvre emphasizes this; he argued that under the Hindu caste order, scavenging was not a matter of choice but of force, imposed hereditarily on Untouchable communities and then falsely glorified as noble work.

Postcolonial urban governance inherited these stratifications, relying on informal systems and oppressed castes' labor in service delivery, even when municipal systems expanded in scale and scope. Solid waste management remained, for a long time, a conservancy function oriented toward removal from sight, with limited attention to downstream processing, labor conditions, or ecological recovery. The 74th Constitutional Amendment (1992) framed public health, sanitation, conservancy, and solid waste management are understood as municipal functions. However, procedural clarity emerged.[66] Through the 1990s and early 2000s, public interest litigation, Supreme Court pressure, expert committee recommendations, and draft rules pushed municipalities toward a more end-to-end understanding of municipal solid waste management, culminating in the 2000 national rules. Subsequent policy developments, and especially the growing influence of global environmental and development discourse, further strengthened the idea that waste should be governed through standardized systems of collection, transport, processing, and reporting. The growing recognition of the ecological impact of urbanism, coupled with the logic of waste removal or containment, led to waste being understood as a technical and logistical problem, solvable through infrastructure expansion and service regularisation.

More recently, this logic has been extended through the language of circularity. Circular economy discourse has shifted attention beyond disposal. It now emphasizes recycling, recovery, and resource efficiency. However, in practice, circularity often remains framed in predominantly material and operational terms. It emphasizes flows, throughput, diversion, and processing efficiency, while paying less attention to the labor through which these outcomes are produced.[67]

> *"Despite high-level discussions about circular models, it is ultimately the informal workforce, from recyclers to waste pickers, "who actually have the hands on the waste, and doing the most difficult part of actually recycling, while we speak around that."*
>
> **Debartha Banerjee**
> Sampurn(e)arth Environment Solutions

Circularity, thus, does not unsettle the managerial assumptions of the tendered city; it expands the range of outputs that can be measured and governed. This helps explain why improvements in service regularity and collection coverage over the past decade have not necessarily produced more inclusive systems.

MAKING LABOR LEGIBLE WITHIN FORMAL SYSTEMS

Urban waste systems prioritize the smooth movement of materials, and labor is brought in to keep that flow going. In this setup, inclusion is shaped by how visible and trackable workers are within the system, while secure employment, protections, and real decision-making power remain limited. Identity cards, uniforms, biometric attendance, route maps, and reporting formats make labor visible to the state as authorized, traceable, and measurable within system metrics. In this sense, inclusion takes shape through procedures, not through deeper, substantive change.

This form of recognition and inclusion matters. Administrative visibility can reduce everyday harassment, enable access to waste streams, or improve public acceptance. It can mark a shift from being treated as wholly unauthorized to being tolerated, recognized, or incorporated into the functioning of the system. However, what is made visible through these procedures is the worker's role in ensuring service continuity, not the broader conditions that make such work possible or sustainable. The system recognizes labor as a performed task, not as a rights-bearing social relation.

Legibility does not ensure protection or security. The devices that make labor knowable to the system do not necessarily anchor inclusion in enforceable guarantees. A worker may possess an ID card, appear on a route or attendance register, or operate within an authorized, formal facility and yet remain vulnerable to delayed payments, sudden displacement, bodily risk, and exclusion from welfare schemes. Workers become visible enough to count, monitor, and discipline, without necessarily becoming claimants upon the system.

Formal design therefore produces a distinctive condition of inclusion. Labor visibility is operationally sufficient when systems are functioning smoothly: waste is collected, routes are covered, reports are submitted, and service appears uninterrupted. But it also means that the limits of inclusion become most visible when continuity breaks down. This happens when contracts expire, payments stall, officials are transferred, facilities close, or the value of waste changes. In such moments, it becomes clear that what has been institutionalized is less the worker as a protected subject than labor as a manageable input within a larger administrative design.

Thus, the formal waste system does not eliminate informality. It selectively accommodates it. The following sections examine how this occurs through diverse institutional arrangements for urban waste management, and why inclusion, even when formally recognized, remains partial, mediated, unstable, and constantly negotiated.

IN THIS SYSTEM,
INCLUSION
IS SHAPED BY HOW VISIBLE AND TRACKABLE WORKERS ARE, NOT BY THE **SECURITY** OF THEIR WORK

THE FORMAL WASTE SYSTEM DOES NOT ELIMINATE
INFORMALITY
— IT SELECTIVELY
ACCOMMODATES IT

INSTITUTIONAL ARRANGEMENTS FOR INCLUSION

TABLE 1: HOW WASTE WORKERS ARE INCORPORATED IN THE SYSTEM

Arrangement Type	Primary Inclusion Instruments	Conditions of Access	How Work Is Accounted For	Basis of Payment	Recurrent Points of Strain	Stabilising Actions Observed	Sites / Municipalities
Informal Market-Based Arrangement	None formally recognized; verbal agreements	Willingness to work hazardous or irregular sites; negotiated territorial access; migrant and kinship networks	Visual quality assessment by buyers; physical weight of material	Spot cash; piece-rate per kg; fluctuating market prices	Price crashes; police harassment; eviction; injury without safety nets; exclusion from welfare	Living near worksites; pooling family labor; switching buyers; borrowing from aggregators	Delhi (Bhalswa, Seemapuri); Mumbai (Deonar)
Intermediary /Collective/ Union-Mediated Support (Advocacy & Entitlement Focus)	Union registration; enumeration surveys; official correspondence and petitions	Affiliation with NGO/ union; participation in meetings or collective action	Documentation completed; scheme linkage success; institutional follow-up	Project-based funding for staff; largely underpaid community leadership	Documentation dead-ends; funding gaps; emotional exhaustion; administrative indifference	Accompanying workers to banks and hospitals; translating documents; mediating with police	Jaipur and Bhubaneswar (CFAR); Bengaluru (Samuhika Shakti)
Three-Way Agreement (Operational & Contractual Focus)	Formal agreements between municipality, waste-picker collective, and a support organization; occupational ID cards; RFP-appointed resource organizations; weighbridge logs	Valid ID/ MOU; territorial exclusivity; obligation to accept all waste streams	High-frequency data reporting; recyclable sales records; visual confirmation of service delivery	Residual surplus for operators; output-based payments for sorters performance	Expired contracts and IDs; delayed municipal payments; volatile recyclables market; spatial eviction threats; equipment failure	Pawning assets; informal borrowing; collective petitions; negotiating advances from buyers	Bengaluru (Hasiru Dala + Thayayi Shramika Sangha + BBMP); Mysuru (Hasiru Dala & MMC); Odisha's SHG-led SWM with UMC as Technical Support Unit
Formalised Social Enterprise / Private Contract	Employment contracts; PF/ ESI registration; digital tracking systems; payslips and SMS notifications	Recruitment through referrals; strict route and timing compliance; prohibition on informal recovery	GPS route tracking; biometric attendance; throughput targets; variance reporting	Monthly salary (CTC); cash overtime; viability gap funding tied to performance of MRF	User-fee non-payment; stigma-driven attrition; grant dependence; household resistance to segregation	CSR funding gaps; resident mediation; documenting non-compliance; using labor contractors	South Goa (Saahas Zero Waste / SAIM); Goa & Maharashtra (YIMBY, Sampurnearth)
State Employment of Worker Collectives	Legislative mandates; group & individual bank accounts; occupational titles; uniforms/ PPE; state insurance schemes	Membership in designated collective; residence within service area; compliance with KYC and formalization requirements	Digital attendance; weighbridge records; municipal dashboards; task completion verification	Fixed monthly salary (time-based); direct bank transfer	Income-expenditure mismatch; unclear insurance; internal conflicts; limited collective maturity	Internal savings pools; self-funded healthcare; NGO support for procedures and compliance	Bhubaneswar / Odisha (SHG-led SWM); Pune (SWaCH Cooperative)

Institutional inclusion in urban waste work does not take a single, standardized form. Across the case studies, multiple arrangements coexist, often within the same city, operating in parallel and sometimes in overlap. Workers are engaged through multiple arrangements. Some are part of state-linked livelihood missions or municipal programs. Others work through cooperatives, self-help groups (SHGs), social enterprises, non-profit intermediaries, or private contractors. Many continue to operate independently. Even then, they remain functionally tied to the city's waste flows.

These arrangements vary in their degree of formalization, their contractual basis, and the kinds of recognition they confer. In some cases, inclusion takes the form of predictable and fixed wages, workspaces, uniforms, identity cards, route assignments, or access to segregated material. In others, it can include user-fee collection rights or participation in municipally recognized platforms. This multiplicity is not incidental. It reflects the fact that municipal systems rely on varied organizational forms to maintain service continuity under conditions of fiscal constraint and uneven in-house capacity.

As a participant from Goa explained: *"Two or three models are running at the same time—some workers are salaried under the state program, some are attached to a DWCC, and some are still operating independently. All of them are part of the city's waste flow."* Inclusion, in this sense and as represented in Table 1, is not a uniform status. It is a highly mediated position with different intermediaries facilitating access, where the intermediaries themselves might have varying relationships to the state and authority over waste governance. Workers do not enter the system as fully protected municipal labor; they are attached to it through arrangements that are administratively recognized but unevenly secured. These pathways make labor available to the system in ways that are functionally necessary, but without standardizing the terms of participation or the protections attached to them. In turn, these pathways differentiate workers' experiences of security, visibility, and control. Understanding these multiple pathways is therefore essential not only for describing how inclusion occurs, but for explaining why it remains partial, uneven, and contingent in practice.

The field data also make clear that these pathways do not confer stable or guaranteed membership within urban waste systems. What appears, from the formal design of the system, as orderly incorporation is experienced on the ground as conditional, bounded, and often reversible.

INSTABILITIES WITHIN INSTITUTIONAL INCLUSION

The data show that the conditions required to make waste work legible to the system and authorities have been clearly specified but the conditions required to sustain workers' participation over time remain weakly unarticulated. Partial inclusion manifests in several ways across cities and arrangements. Administrative arrangements may authorize presence, assign work, or certify performance, but they often remain silent on what happens when contracts lapse, wages stagnate, household costs rise, health deteriorates, or workers require welfare protections beyond the immediate terms of service delivery. These are systemic issues, not one-off implementation gaps. They point to deeper limits in how institutional inclusion is designed.

Four issues recur across the cases:

1. Continuity when formal contracts or identification expire
2. Income security under fixed and inadequate remuneration
3. Bodily risk, care, and social reproduction within rigid work schedules
4. Gap between being visible to the system and being protected by it

These domains do not capture the full extent of workers' vulnerability. They are, however, the points where formal inclusion most often begins to fray, even as expectations from workers continue. These are not isolated implementation failures. Rather, they point to structural limits in the design of institutional inclusion itself.

WORK CONTINUITY PAST CONTRACT EXPIRY

Waste workers described inclusion as a condition that can persist even after its formal authorization has lapsed. In several contexts, memoranda of understanding (MoUs), contracts, or official approvals had expired, yet the work continued. Waste workers remained in place, collecting, sorting, or managing waste as before, but without renewed legal backing or assurance of continuity. One FGD participant from Bengaluru noted, "Now the MOUs have expired... earlier, at least the MOUs had their names on them... after they expired, they have no legal backing." Inclusion continues beyond its formal mandate and is sustained through everyday practice, not renewed authority.

What emerges here is a failure of institutional support to hold over time, even where rules exist. Work persists, but the formal guarantees attached to that work do not. Continuity is experienced less as stability and more as exposure. In the same FGD, participants also described being present in the system without being protected against sudden removal: "If they say: 'move out today,' then we have to!" Importantly, though, this is not narrated as an absence of rules. They recall that rules were once clearly written but did not translate into material continuity. Time becomes the terrain where inclusion reveals its limits sharply. Work continues and service continuity is preserved, but institutional commitments do not travel with them. What the system demands is uninterrupted work; what it does not secure is the durability of the worker's place and protection within it.

REGULAR PAYMENT WITHOUT ECONOMIC PROTECTION

The insecurity of income emerged in the form of low wages and a persistent mismatch between fixed remuneration and variable household needs. Even where salaries or monthly payments were standardized, workers described them as inadequate to absorb routine and rising costs of food, education, healthcare, as well as unexpected emergencies or family obligations. During one FGD in Bhubaneshwar, monthly earnings were described by participants as insufficient to absorb routine expenses: "How will five thousand rupees run a house?" The issue went beyond payment delays, though these did occur in some cases. Workers experienced their earnings as a ceiling, not a foundation for economic stability.

What becomes visible is the absence of buffers. Workers described relying on group savings, informal loans, or borrowing within collectives to manage shortfalls and unexpected expenses. In this sense, workers sustained financial continuity through the social infrastructure around the wage, rather than the wage itself, as explained another FGD participant from Bhubaneshwar: "That's why we depend on our group... I've taken loans from them—that's what keeps us going." Formal salaries or payment arrangements made work legible to the institution. However, they did not ensure resilience in the face of rising prices, illness, debt, or future uncertainty. A participant noted these ceilings by sharing: "Nothing extra! No Provident Fund, no Employee State Insurance." In such cases, inclusion through regular payment did not resolve precarity, it reorganized it into a more routinized and administratively manageable form.

WORK WITHOUT BODILY SAFEGUARDS

Bodily risk was one of the most persistent and normalized dimensions of incomplete inclusionIn Bengaluru, an FGD participant, an ex-waste picker and community leader, described burns, cuts, infections, chemical exposure, ergonomic strain, and chronic bodily wear as everyday features of waste work: "If you get a full body scan, you will know what all is inside." Risk accumulated through daily contact with mixed and hazardous materials, prolonged and repetitive manual tasks, and the extension of working hours beyond formal shifts when tasks remained unfinished. In many cases, workers understood the body itself as the site where the costs of system continuity were absorbed. The system, thus, secures work performed, but not the conditions under which bodies can endure that work over a period, through short-term recovery, long-term health, and everyday social reproduction.

BEING COUNTED, NOT COVERED

Workers distinguish between being visible to the system and being protected by it. Many continue to describe themselves as a "zero-system"—being present in the waste economy through identity cards, attendance registers, or inclusion in official lists, but outside rights-bearing frameworks or welfare. This gap between recognition and protection is central to how institutional inclusion operates. Workers may be known to the state, linked to an official arrangement, or even showcased as part of successful service delivery models. However, they lack stability: "House, ration, living, nothing is stable. Even the minimum of human rights is not given to us," exclaimed an FGD participant from Bengaluru. For workers, inclusion in this sense produces legibility and functional participation as they are counted as part of the system, but they lack claim or coverage. What the system secures is their participation in waste management, not their coverage within a wider framework of dignity, welfare, and social citizenship.

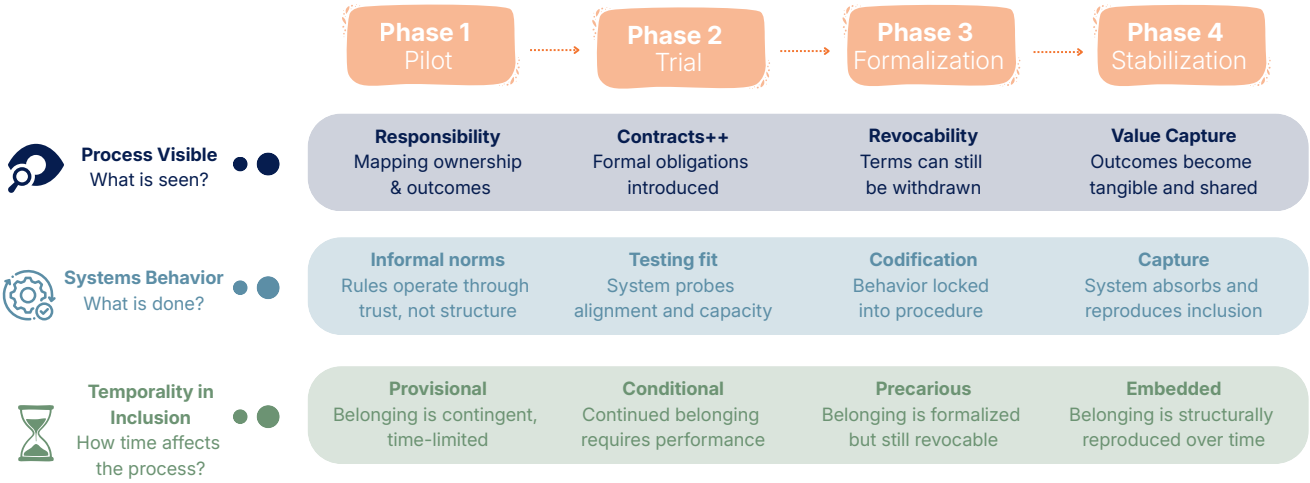
POWER AND TEMPORALITY IN INSTITUTIONAL INCLUSION

The preceding section showed that institutional inclusion in urban waste systems remains incomplete across several core domains: continuity, income security, bodily protection, and welfare coverage. This section asks how those incompletions are governed over time. Across cities and arrangements, inclusion also unfolds through temporal sequences in which responsibility is activated early, while authority, security, and decision-making remain deferred or gradually emerge over time. What begins as provisional inclusion often stabilizes later.

Arrangements often begin under conditions of urgency, uncertainty, or experimentation. They are then formalized step by step through documents, contracts, and procedures. Over time, they can become routine enough to sustain core services. However, they often do so without addressing workers' rights or claims.

As value becomes clear, authority may shift away from the very informal actors and intermediaries who stabilized the arrangement in the first place. Temporality or the maturity phase of an organizational arrangement is, therefore, one of the central mechanisms through which institutional power is exercised and inclusion is (de)stabilized.

FIGURE 2: TEMPORALITY IN INCLUSION



Across all four phases, inclusion is never simply present or absent – it is structured in time. Each phase shifts the terms under which belonging is generated, tested, formalized, or captured by the system. The framework above reads as a process map, with ebb and flow, across systems.

Source: Dasra Analysis

Phase I: Pilot

In moments of urgency, like overflowing waste, service crisis, public pressure, or infrastructural insufficiency, cities allow work to begin without fully committing to supporting workers. Arrangements were framed as pilots, or stopgaps, enabling continuity without triggering long-term obligation. Services had to continue, waste had to move, and workers or intermediary organizations stepped in to make this possible, but without firm guarantees regarding payment, renewal, or institutional status. A project team member from Goa described the dynamics of this exploratory phase: "The arrangement exists primarily on a trial basis allowing _ to explore operational feasibility in the area without formal contractual obligations [with the government] ... however, because _ is not compensated for this work, and cannot charge user fees directly, the service effectively runs at a loss." Capital, in its many forms, enters this sequence early, as substitution, financing action in the absence of institutional commitment, and reappears later as value becomes legible.

Phase II: Trial

As arrangements and work stabilized, some degree of formalization usually followed. Contracts, clauses, MoUs, and reporting procedures entered the system, rendering these arrangements more legible and auditable to the municipal administration. But formalization at this stage often produced documentation more than durable rights. In Bhubaneswar, team members described contracts as narrow, minimal, or filled with bureaucratic language that made it difficult for worker groups to negotiate on equal terms: "Most cities give one-page contracts... contractors had negotiation power... SHGs would not understand." Intermediaries and support organizations often step in to add safeguards. Without them, the terms of engagement tend to follow the priorities of contractors or municipal departments, not the long-term security of workers: "And because everybody was hand-in-glove there, the contractors had the negotiation power. But SHGs, they would not understand. We figured out that you need to safeguard the SHGs... because shocks will come both ways," explained an NGO representative. Formalization, in this sense, did not always resolve asymmetry in power; it often codified it in more administratively recognizable form.

Phase III: Formalization

Once systems became operational, continuity was expected even where formal authorization weakened or expired. Expired contracts, stalled renewals, leadership transfers, and institutional delays did not necessarily halt work. Instead, they normalized endurance as a capability of both workers and the organizations supporting them. In some cities, for example, contracts governing dry waste collection centres lapsed without timely renewal, yet waste collection and associated labor continued because the work itself had become indispensable to the functioning of the urban system.

> *"The contracts with BBMP were of 3 years term. They expired (some in the December before last, some in last December) and haven't been renewed. ... Where our waste pickers still operate, collection continues — but many are giving up... Now with BSWML (Bengaluru Solid Waste Management Limited) restructuring, who will be responsible for the city, there's no clear ground structure yet."*
>
> **Bianca Fernandes**
> Hasiru Dala

Stability was therefore secured less through enforceable guarantees than through routinization: once work became embedded in daily service delivery, it persisted even when the institutional basis for that work remained unclear.

This sequence matters because it reveals how inclusion is produced through time without fully maturing into security. What appears from the outside as gradual formalization is often experienced on the ground as a prolonged condition of pending resolution. Workers and collectives are brought in early to absorb institutional gaps, formalized partially through narrow instruments, and then expected to endure delays, uncertainty, procedural lapses, and lack of authority in the name of continuity. As one FGD participant from Bengaluru reflected: *"Even with the Commissioner's signature on our ID cards... there were 10 empty chairs in the room, and we still had to stand and speak for almost an hour."* Institutional inclusion thus proceeds through time, but not in a linear or cumulative way; it expands operational dependence without proportionately deepening security or power.

Phase IV: Stabilization

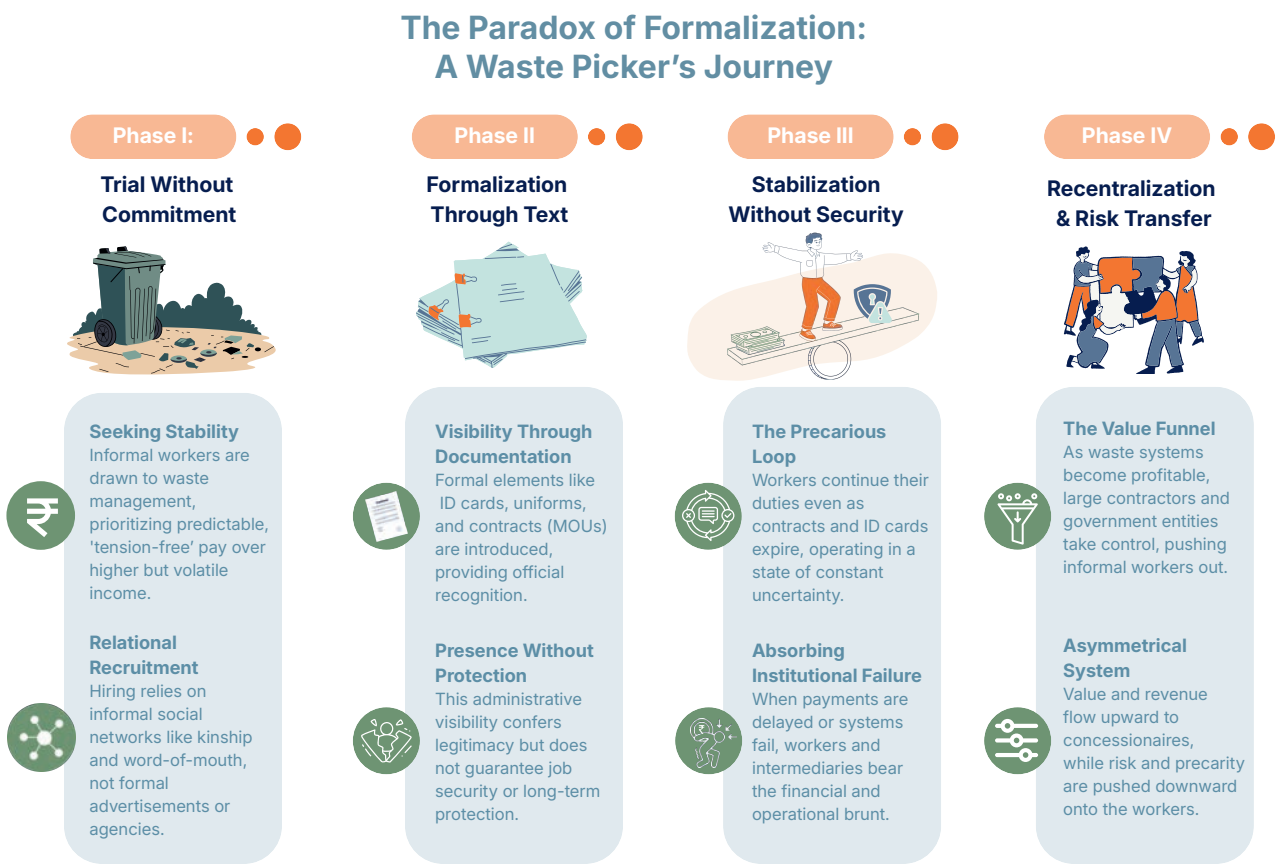
If early phases of inclusion are marked by experimentation, ambiguity, and delegated responsibility, later phases often reveal a different dynamic: as arrangements mature and the value of waste becomes more visible, authority begins to re-centralize. In Bengaluru FGD, participants noted that once waste streams became economically, materially, or reputationally significant, municipalities and larger institutional actors

often showed renewed interest in controlling the terms of access, operation, and revenue, which has also been observed in other contexts: *"Now that there is earning potential, that is why the government is suddenly interested in pushing waste pickers out."* What had initially been tolerated, supported, or left flexible as a provisional arrangement could then be reframed as temporary, transitional, or no longer appropriate to the scale and profitability of the system. These changes that reverse the partial inclusion of informal workers integrated through the "temporary" arrangements.

This shift was described both in relation to waste itself and to the institutional language through which systems were restructured. Procurement categories such as "integrated" systems, concession agreements, and tipping-fee-based models' narrow eligibility at the tender stage well before questions of actual performance arise. By the time value becomes legible enough to justify larger contracts or centralized processing models, the terms of participation have often already been redesigned in ways that exclude smaller collectives, worker-linked organizations, or more decentralized recovery arrangements. In such contexts, inclusion is not simply withdrawn; it is displaced by forms of authority better aligned with large-scale administrative and financial consolidation.

What remains is a downstream risk which does not recentralize with value. Importantly, value does not re-centralize risk. Even where control moves upward, workers and local operators continue to absorb the uncertainties associated with fluctuating recyclables markets, seasonal shifts in material quality, wet waste during monsoons, and interruptions to revenue streams. Contracts rarely underwrite these losses, and municipal systems seldom redistribute such risks in proportion to the value they seek to capture. The result is a patterned asymmetry: as systems mature, authority and control can consolidate at higher institutional levels, while exposure to volatility continues to be distributed downward.

FIGURE 3: THE UNEVENNESS OF FORMALIZATION



This helps clarify the paradox at the heart of institutional labor arrangements in urban waste management. Responsibility is activated early, because workers and intermediaries are needed to make systems function under conditions of insufficiency. Authority arrives late, and often elsewhere, once work has stabilized the system enough for value to become legible. Security, meanwhile, remains provisional throughout. What may appear as instability or informality is, in practice, a patterned way of governing labor through uneven commitments over time. Inclusion is sustained long enough to build continuity and demonstrate viability but rarely deepened in ways that would secure durable worker power over the systems they help create.

REPAIR WORK AS INFORMAL COMPENSATORY INFRASTRUCTURE

The data show that the conditions required to make If institutional inclusion remains partial and provisional, an immediate question follows: what keeps waste systems functioning despite these unresolved gaps? Across the study, continuity was repeatedly made possible through a shadow layer of labor performed by intermediaries, collectives, and worker-support organizations that stepped in when formal authority was absent, delayed, or incomplete. This work was not incidental to the system; it was one of the conditions under which incomplete inclusion could be made operational and durable. We describe this as "repair": the continuous effort required to keep people, documents, payments, permissions, and services moving when institutional arrangements are unable or unwilling to secure them fully.

Repair, in this sense, is more than a temporary fix. It is a compensatory infrastructure that stabilizes participation where formal inclusion remains unresolved, partial, deferred, or interrupted. At one level, this labor appears pragmatic and problem-solving: helping workers obtain documents, navigate welfare offices, manage contract lapses, or maintain service continuity through bureaucratic delays. However, repair allows formal waste systems to function (and their structural exclusions to endure) without fully internalizing responsibility for the fragilities they generate. It makes exclusion more navigable and participation more sustainable, but in doing so, it can also defer structural resolution. The system continues because another layer of labor absorbs the consequences when its obligations are not fully met.

Across the cases, repair surfaced in different forms and at different moments.

Repair first enters as substitution

In early or weakly institutionalized phases, intermediary organizations often step in to keep systems running. They bridge gaps in authority by sustaining services while governments are yet to commit resources or clarify responsibilities. This can include financing initial operations, coordinating actors, piloting service models, and continuing advisory support even after major funders withdraw. For instance, one of the intermediary organizations interviewed shared that a major funder withdrew support from SWM in 2023 and the government took over key responsibilities, ___ shifted into an advisory role and continues to support policymaking on a voluntary basis.

In such moments, repair does not simply supplement the system; it prevents collapse. It allows service continuity to be maintained while institutional decision-makers delay formal resolution, and it does so by temporarily relocating responsibility onto actors whose support is often voluntary, philanthropic (e.g., early-stage capital or Corporate Social Responsibility (CSR) funding), or project-based.

With formalization, repair becomes translation

During formalization through arrangements, repair work shows up first through translation. The issue here is not institutional absence but institutional opacity. Workers may be eligible for schemes, documentation, or participation in official arrangements on paper, but the actual pathway to accessing those benefits is often fragmented, bureaucratically unforgiving, and highly vulnerable to minor documentary omissions. Intermediaries help translate these requirements to workers and help visiblize their eligibility to the system. They described helping workers assemble birth certificates, Aadhaar cards, PAN cards, bank accounts, and other linked documents because even small errors in spelling could block access to welfare, education, or entitlements.

"We start supporting beneficiaries right from pregnancy — by unlocking nutritional and health support to pregnant women, getting the birth certificate with accurate details... Then Aadhaar... PAN card, bank account... we make sure the entire chain of documents is clean, because even a small spelling error can block access to scholarships or welfare schemes"

Ravichandra
Hasiru Dala

Repair involves explaining the system and making workers administratively passable within it, often without changing or challenging the rules themselves. This is especially important where workers have little prior exposure to these bureaucratic processes or where schemes exist without practical mechanisms for awareness, portability, or exception handling even in difficult cases. As one FGD participant, and waste picker shared: *"If we have never heard of it or seen it, then how will we know? ... Until someone comes and explains it to us, how can we even realize that such a scheme exists?"*

Similarly, the intermediaries made systems intelligible to migrants who were ineligible within multi-level administrative systems: *"Migrants from other states cannot access since the state has not opted in... jurisdictional blame games further complicate access,"* explained a project staff from Bengaluru.

In functioning systems, repair becomes holding together and endurance

Once systems are running, repair becomes "holding" work. This is the labor of keeping people inside arrangements that do not reliably activate protection, and that routinely stall at the last mile. Intermediaries follow up with government offices and accompany workers through paperwork, showing how the holding work spills beyond contracts into everyday life. This is important because when welfare schemes are frozen, ration cards delayed, or protections fail to materialize, households and support organizations absorb the consequences through persistence, repeated engagement, and informal adjustment explains an NGO representative: *"Due to issues of duplicity and fake entries for the last 7–8 years, new ration cards haven't been issued."* Additionally, intermediaries maintain continuity through transfers in staff, lapses in memory, or stalled implementation: "Frequent staff transfers and weak institutional memory exacerbate these issues. Officers rotate annually, interrupting continuity." The labor sustains then through intermediaries' repair work, mainly enacted through follow-ups, tolerance, and informal adjustment.

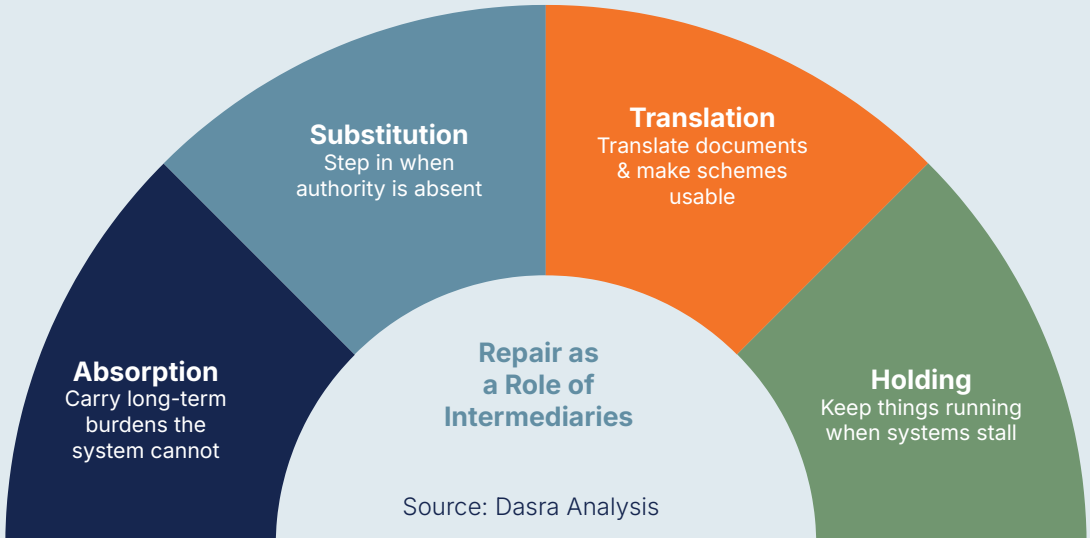
When value becomes legible, repair absorbs absorption

At its most intense, repair becomes absorption. Here, intermediaries take on burdens that are no longer merely coordinative or translational, but quasi-legal and structural. This is because the system has no protocol for including people who don't fit its documentary assumptions. Cases involving missing birth records, home births, disputed documentation, or jurisdictional exclusions can stretch into court processes or long-term administrative follow-up. An NGO representative shared: *"Around 100 home-birth cases have gone to court because children born at home lack birth certificates—no Aadhaar, no ID. Those cases are still under process."* Similarly, when procurement shifts, markets fluctuate, or worker-linked models are displaced by more centralized systems, intermediaries often absorb the losses generated by institutional redesign. Repair labor escalates from routine management to the carrying of risk itself. It is this absorptive capacity that allows systems to continue appearing functional even when the institutional terms of participation remain deeply unsettled.

The analytical importance of repair lies in what it does and in what it allows to continue. Intermediary labor substitutes for absent authority. It translates exclusion into administratively acceptable forms. It holds together arrangements that would otherwise stall. It also absorbs losses that remain unresolved. In doing so, it makes incomplete inclusion livable, and therefore governable. It enables municipal systems to maintain continuity without having to fully settle the obligations that stable inclusion would require. In this sense, repair is profoundly ambivalent. It improves workers' access, reduces friction, and often makes the difference between participation and exclusion. However, it also stabilizes arrangements in which responsibility remains deliberately diffuse, and security perpetually deferred.

This ambivalence was visible across all forms of institutional arrangement examined in the study. Systems continued, but often through conditions repeatedly described by participants as temporary, pending, or requiring constant adjustment and management. Continuity depended less on robust institutional guarantees than on the everyday labor of navigating around their absence or partiality. Repair therefore does not sit outside formal governance; it is one of the key mechanisms through which institutional systems manage fragility while preserving the appearance of functionality. Therefore, what appears as system resilience is produced through careful repair labor. The following section shows how this condition culminates in a broader mode of governance best understood as precarious stability.

FIGURE 4: HOW INTERMEDIARIES SUSTAIN SYSTEMS THROUGH REPAIR



Source: Dasra Analysis

PRECARIOUS STABILITY AS A MODE OF WASTE GOVERNANCE

So far, the chapter shows how inclusion in urban waste systems is better understood as a deliberately incomplete process. When inclusion is designed to be operationally sufficient, yet institutionally non-claimable for the worker, public service systems are able to expand coverage and maintain continuity without internalizing responsibility for risk. It appears as a feature of policy design that prioritizes performance. Indicators such as tonnage collected, routes covered, and workers formally listed highlight operational achievement, while the conditions under which work is sustained remain unclear. What is secured, in other words, is not full inclusion, but service continuity.

This helps explain why urban waste systems can appear orderly, continuous, and increasingly formalized while still resting on labor arrangements marked by insecurity, partial recognition, and uneven protection. Workers are made visible to the system insofar as they keep waste moving, but not necessarily in ways that secure their claims, protections, or long-term place within it. The result is a condition best understood as precarious stability: systems that appear robust at the level of output yet depend on the continuous absorption of risk by intermediaries and workers whose security remains unresolved. In urban waste systems, this stability is produced through routineized endurance.

Media coverage of solid waste reforms in Indian cities consistently foregrounds this kind of governance through system performance – cleanliness rankings, collection efficiency, infrastructure expansion – while rendering labor visible only at moments of disruption.[69] Reports on sanitation worker strikes, delayed payments, or resistance to privatization often present them as temporary disruptions to service delivery. This framing overlooks how they reflect deeper structural choices in how the system is designed.[70] Through this, visibility becomes episodic and conditional, mirroring the administrative inclusion mechanisms traced earlier in this chapter. Workers are visible when their labor can be measured as performance, or when its interruption threatens that performance; much less visible are the conditions under which that work is reproduced day after day.[71]

However, countervailing media narratives point to regulatory non-compliance and local resistance, particularly around air pollution and environmental risk, suggesting that performance claims are far from unproblematic on the ground. Yet even these critiques tend to focus on environmental outcomes, leaving largely unexamined the implications of WtE for existing labor arrangements and recovery practices. This omission is significant because, within the study data, WtE surfaces less as a neutral technological upgrade than as a reordering of system priorities. Participants described how WtE facilities depend on continuous volumes of mixed waste, directly undermining segregation-based practices and labor-intensive recovery work sustained by informal workers and intermediaries.

Narratives around waste-to-energy (WtE) facilities sharpen this policy logic further. They are framed in public and governmental discourse as climate-aligned solutions. These projects are seen as capable of reducing landfill dependence while generating energy. As a result, WtE is increasingly positioned as a cornerstone of urban waste strategy. This is especially evident in cities such as Delhi, which are grappling with acute environmental stress. Official announcements emphasise installed capacity, processing volumes, and energy generation, supported by financial incentives and regulatory frameworks designed to scale such facilities across cities. In these accounts, waste governance appears primarily as a technical and infrastructural challenge, solvable through scale, integration, and contractual certainty.

> ***"Centralized systems lock cities into tunnel approaches," where contracts commit daily tonnage and calorific requirements, "so recyclables get pulled in to meet feedstock needs."***
>
> **Swati Singh Sambyal**
> GRID-Arendal

In these configurations, informal recovery continues but becomes harder to accommodate within the system. Long-term contracts, tipping fees, and guaranteed feedstock requirements shift decision-making upward. The risks that follow, including loss of work, erosion of skills, and exclusion from redesigned systems, are carried by workers downstream.

What the entirety of public narratives, policy directions, and participant accounts align with a broader body of scholarship on managed informality and institutionalised precarity in urban labor regimes.[72] These arrangements reflect a mode of implementation where uncertainty continues to persist. Formalization often reorganizes informality and ties workers more closely to institutional systems. At the same time, it leaves key aspects of their livelihoods ambiguous. Workers are recognized enough to be tracked, authorized, and mobilized, but not always enough to secure continuity, economic resilience, bodily protection, or durable authority. What results is a condition often described as precarious stability: the system is not wholly improvised, nor is it fully secure. It functions through formal procedures, institutional arrangements, and intermediary repair, while leaving significant aspects of worker protection unresolved.[73] In urban waste systems, this stability is produced through routinized endurance. As one participant in this study observed, *"We've built an entire narrative of success around quantifiable metrics... but not around quality of inclusion."*

Evidence from this chapter points to a condition best understood as precarious stability: what appears to outsiders as improvisation or disorder but is a system designed intentionally to function where method and constraint are deliberately calibrated. The following chapter turns to how this design is lived and sustained on the ground, tracing how workers absorb pressure across income, time, bodies, and future expectations to keep urban systems functioning.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6. SOCIO-ECONOMIC ENDURANCE IN WASTE WORK

Across Indian cities, policy narratives and institutional practices increasingly emphasize circularity, efficiency, and technological upgrading instead of worker inclusion.

This chapter examines how waste work is lived and sustained under conditions that unevenly address income instability and inadequacy, bodily risk, social stigma, and future uncertainty.

It traces how workers enter the system out of necessity. It shows how some income stability sits alongside low ceilings and constant liquidity stress. It captures how workers' bodies absorb health and safety risks created elsewhere in the system. It also shows how people plan their futures defensively under contractual and spatial uncertainty. Service delivery stays stable because workers, households, and intermediaries keep adjusting to make it work. Endurance functions as a form of systemic infrastructure, not just an individual trait.

CONSTRAINED ENTRY: HOW WASTE WORK BECOMES VIABLE

Entry into waste work is rarely framed by workers as a choice between occupations. It is more often described as a narrowing of options, shaped by prior exposure to unstable labor markets, immediate financial need, proximity to waste systems, as well as caste-based barriers to labor market entry.

FROM INCOME VOLATILITY TO PREDICTABLE LOW WAGES

Across cities, workers described prior livelihoods as being characterized by irregularity: daily wage construction, domestic work dependent on individual households, agricultural migration, informal recycling linked to fluctuating material prices, or short-term service jobs mediated by contractors. In these settings, income volatility, not low wages alone, emerged as the primary driver for transition into waste work.

What waste work offers is predictability. Fixed shifts (at least on paper), regular payment cycles, and the assurance that work will continue the following day were repeatedly cited as stabilizing, even when wages were modest. Predictable payments allowed workers to plan rent payments, budget household expenses across the month, and maintain access to informal credit precisely because income arrived was more-or-less guaranteed, on a known date. Predictability becomes a form of value in itself, reducing the cognitive and emotional strain of constant uncertainty.

This preference does not necessarily indicate satisfaction with wages. It reflects a survival logic. Many workers noted that although their previous jobs occasionally paid more, irregularity in payments made crises frequent and unavoidable. Entry into waste work represented by a trade-off: accepting lower income ceilings in exchange for temporal certainty. Workers' preferences reflect a need for stability. They are choosing more predictable work conditions, even when wages remain low.

TABLE 2: VOLATILE VS. PREDICTABLE LOW INCOME

Volatile Income (Prior Work)	Predictable Low Income (Waste Work)
Earnings fluctuate daily or weekly	Fixed payment cycle
Higher pay on some days	Lower but assured earnings
Missed or delayed payments common	Known pay date
Work availability uncertain	Work continuity expected

Source: Dasra Analysis

ENTRY VIA PROXIMITY, MIGRATION, AND IMMEDIATE NEED

Entry is also shaped by spatial and social proximity. Waste work opportunities circulate through neighborhoods, kinship networks, self-help groups, and informal referrals. Recruitment is rarely formal: it moves through trust, immediacy, local familiarity, and social networks, not credentials or documented work histories, thus, lowering barriers to entry. For migrant workers, waste work often appears as one of the few options requiring minimal documentation. It presents rapid onboarding and proximity to informal housing.

Sudden expenses such as illness, debt repayment, school fees, family obligations, or abrupt job loss frequently trigger entry. Waste work functions as an absorption mechanism for urban precarity, drawing people in at moments of vulnerability without the promise of stability. At a systemic level, these entry pathways reflect how urban waste

systems remain collection heavy. Despite policy shifts towards segregation and decentralized processing, many cities continue to prioritize collection and transport. Mixed waste streams, limited processing capacity, and contractor-driven timelines create labor-intensive front ends where human work compensates for infrastructural and governance deficits. Entry into waste work is shaped by household needs, as well as how needs are distributed within the system.

CASE STUDY: THE HIDDEN GEOGRAPHIES OF WASTE WORK

Across Indian cities, waste is increasingly hidden from view. It is pushed to landfills, peripheral facilities, and enclosed processing units. The labor that makes this disappearance possible relocates into forests, settlements, and homes, collapsing with the boundaries between work, living, and survival. India has limited statistical data on the locational and distributional patterns of work and residence. This gap is even more pronounced in the context of waste work, where questions of spatial inequality remain poorly documented and under-theorized.

How waste pickers' living spaces, work practices, and economic activities have evolved over time remain under-examined. For many waste pickers, particularly women, the home functions as an extension of the workplace. Sorting, storing, and packaging waste frequently take place within domestic spaces. However, the ways in which policy shifts, infrastructure upgrades, and changes in waste management systems reshape these home-work arrangements remain largely absent from academic and policy discussions.[74]

For many waste workers, the boundary between work and home is porous or collapsed altogether, producing forms of exposure and precarity that are both occupational and domestic.

We examine two spaces that are crucial for workers. The first is the workplace. This includes formal and informal sites of waste collection, segregation, transport, and processing. The second is the settlement. These are the residential spaces in which waste workers live, reproduce their labor, care for families, and sustain social networks. These domains frequently overlap.

The organization of these spaces reflects broader political–economic processes. It reveals informalization of labor, spatial segregation of cities, and differential forms of urban citizenship. From a labor protection and integration perspective, access to safe and recognized workplaces cannot be separated from access to secure housing, water, sanitation, and infrastructure. Livelihoods and living environments together constitute the material conditions through which waste workers experience inclusion, exclusion, or conditional incorporation into the urban mainstream.

The geographies of waste are linked inextricably to labor and inequality.

Waste is not only a material flow to be governed or erased through infrastructural "smoothing," but a contested urban terrain. It is a socio-technical assemblage through which cities organize visibility, labor, and value. The places where waste accumulates, is sorted, or is made to disappear are also the places where risk concentrates, labor is absorbed, and economic value is unevenly extracted.

This case study presents two montages based on field observations and conversations with waste worker communities to illustrate how waste work moves with workers across homes, neighborhoods, and formal and informal work sites. We highlight the socio-spatial conditions and negotiations around these that shape how livelihoods are sustained, constrained, and transformed within the informal waste economy.

HIDDEN BEHIND THE FOREST, BEYOND THE CITY'S EDGE

MYSORE, KARNATAKA

At the edge of a growing southern Indian city, near the forested slopes of Chamundi Hill, a vast landfill rises beyond the planned urban boundary. Adjacent to the landfill is a settlement of waste workers, accessible only by a narrow road flanked by scrub forest. The forest gives little indication that a settlement lies just beyond it. Tucked behind this green buffer is an encampment of waste workers, families who rely on the landfill as their primary workplace.

Ironically, this landfill, which is the final destination for discarded waste that cannot be resold, recycled, or otherwise absorbed into formal waste markets, has become the main site of livelihood for them. Informal segregation is already taking place at scale, with plastics and other recyclables sorted and bundled on site. While such recovery may contribute to reducing legacy waste, it does so by transferring environmental and occupational risks onto workers operating without protection, recognition, or basic services.

Migration, language, and survival

The settlement is home largely to migrant families, predominantly Muslim migrants from Eastern India who identify as Bengalis and speak only *Bangla*. They do not speak the local language (Kannada), and most do not speak Hindi. This linguistic isolation significantly shapes their engagement with institutions and intermediaries, limiting access to services, formal programs, and longer-term support. Interactions with external actors tend to be transactional and short-term, reflecting both mistrust and the immediacy of survival needs.

A waste worker organization has established a community learning space within the settlement. This is undertaken as part of a broader program run by the organization, focused on sanitation waste minimization and safe disposal, particularly of menstrual and diaper waste. These categories are among the hardest to manage in MSW. The program combines behavior change efforts with community outreach, using simple digital tools to build awareness and trust. The learning space is modest. It is a shaded, tin-roofed structure that serves as a crèche and a safe place where children can stay away from the landfill while their parents work. The focus is on basic language exposure, especially Hindi, rather than immediate formal school enrollment.

However, conversations with the teacher and organizational staff highlighted the challenges of such interventions. The community's highly migratory nature means families often move suddenly in search of new waste work opportunities, sometimes overnight. As a result, children may stop attending the crèche without notice, and only a few return once families relocate. Despite sustained efforts at community awareness, such as encouraging parents to keep children away from waste work and break intergenerational cycles of poverty and marginalization, economic pressures remain strong. Children themselves are drawn to the landfill, where small quantities of recoverable waste can translate into quick pocket money, incentivizing early entry into informal waste work.

"Children stop coming without notice when families move in search of new waste work opportunities. Very few return. Each move breaks the routines children have built around learning and care, leading to repeated discontinuities in education. Despite sustained efforts to encourage parents to keep children in learning spaces and away from work, economic realities intervene. Children and families know that waste can be sold for quick money. Given the precarity of household incomes and the need for more hands to increase daily earnings, it becomes difficult to prevent children from accompanying parents to the landfill and entering waste work."

A community educator supporting children of waste workers

Conversations with the waste work community intermediary—who coordinates work arrangements, mediates access to waste, and manages the demand side of recovery for the workers—highlighted how deeply work structures everyday life in the settlement. He shared that in reality, children routinely accompanied parents to the landfill and participated in waste picking. Families often resist sending children to school not out of indifference, but because children are viewed as integral to the household labor unit. Work and movement are organized through village- and family-based networks, with households moving cyclically and labor shared across kin-based shifts.

Living conditions shaped by work, not choice

Living conditions in the settlement are extremely poor. The area resembles a long-term camp, ironically with no access to water or sanitation, and health risks that are visible and unmitigated. Large piles of high-quality plastics were visible. This pointed to the scale at which informal recovery is already taking place. Adults were sorting and packing materials in anticipation of a pickup truck from a recycler. During this time, children remained largely unaccompanied. They played among the waste and handled materials with bare hands. These piles sat immediately outside, and in some cases inside the makeshift homes. The contrast between the value of the materials being recovered and the precarious living conditions of the people extracting them was stark. It showed how value recovery at the city's margins depends on lives lived amid risk, exclusion, and invisibility.

WASTE WORK WITHOUT A WORKSITE: MOBILITY AND MARGINALITY

BENGALURU, KARNATAKA

Siddharth Colony is a long-standing settlement of Dalit waste workers in Bengaluru, including hair pickers who specialize in collecting and trading human hair as a recyclable commodity. They sift through waste or go door to door for hair strands yet earn very little for the value they generate. Unlike landfill encampments, waste picking here is not centered on a proximal disposal site. Rather, members of the colony travel long distances to engage in their work across the city. For many, the settlement functions as a residential base from which daily or multi-day movements unfold in search of waste.

For hair pickers, this work involves going house to house to collect fallen hair in exchange for small items, such as kitchen utensils or hair clips, or for cash. They also forage for hair along footpaths and in public spaces. Once collected, hair is sorted and classified by color and quality before being sold to vendors who process it into wigs and extensions. Prices fetched can range from roughly INR 3,000 -4,500 per kilogram. Still, workers describe a decline in yield over time. Before the pandemic, locating 500 grams of hair might take three days of active collection. Now, traversing the city for a week may not even yield 200 grams. Even though demand for hair wigs and extensions remains high, the scarcity of easily accessible hair and broader changes in urban consumption patterns have made the work harder and less remunerative.[75]

Working without a worksite

Siddharth Colony offers a different spatial configuration of waste work, but it reveals similar dynamics of displacement and negotiation. Here, waste work unfolds through long daily movements across the city, with the settlement functioning as a residential base rather than a worksite. This mobility makes visible another way in which waste workers are pushed out of sight. The work that keeps neighborhoods clean is carried out far from where waste is discarded, and often far from where workers live, stretching the boundaries of work, home, and survival across urban space. These movements also create additional burdens. When waste cannot be carried on public transport, workers often have to walk long distances or incur out-of-pocket transport costs. These constraints are not evenly distributed. They can be more restrictive for women, shaping where they can travel, how much they can carry, and the time they can spend on work.

During the visit, a man interrupted and heckled women participants as they began to speak. This moment made visible how gender norms shape who can speak, and where, especially within settlements. Many women were hesitant to talk about their work, incomes, or aspirations. This reflected pressure from men, fatigue from repeated interactions with outsiders, and long-standing mistrust. Moving the discussion to a more neutral space—a makeshift resting area located behind the local *anganwadi*—created some room for women to speak.

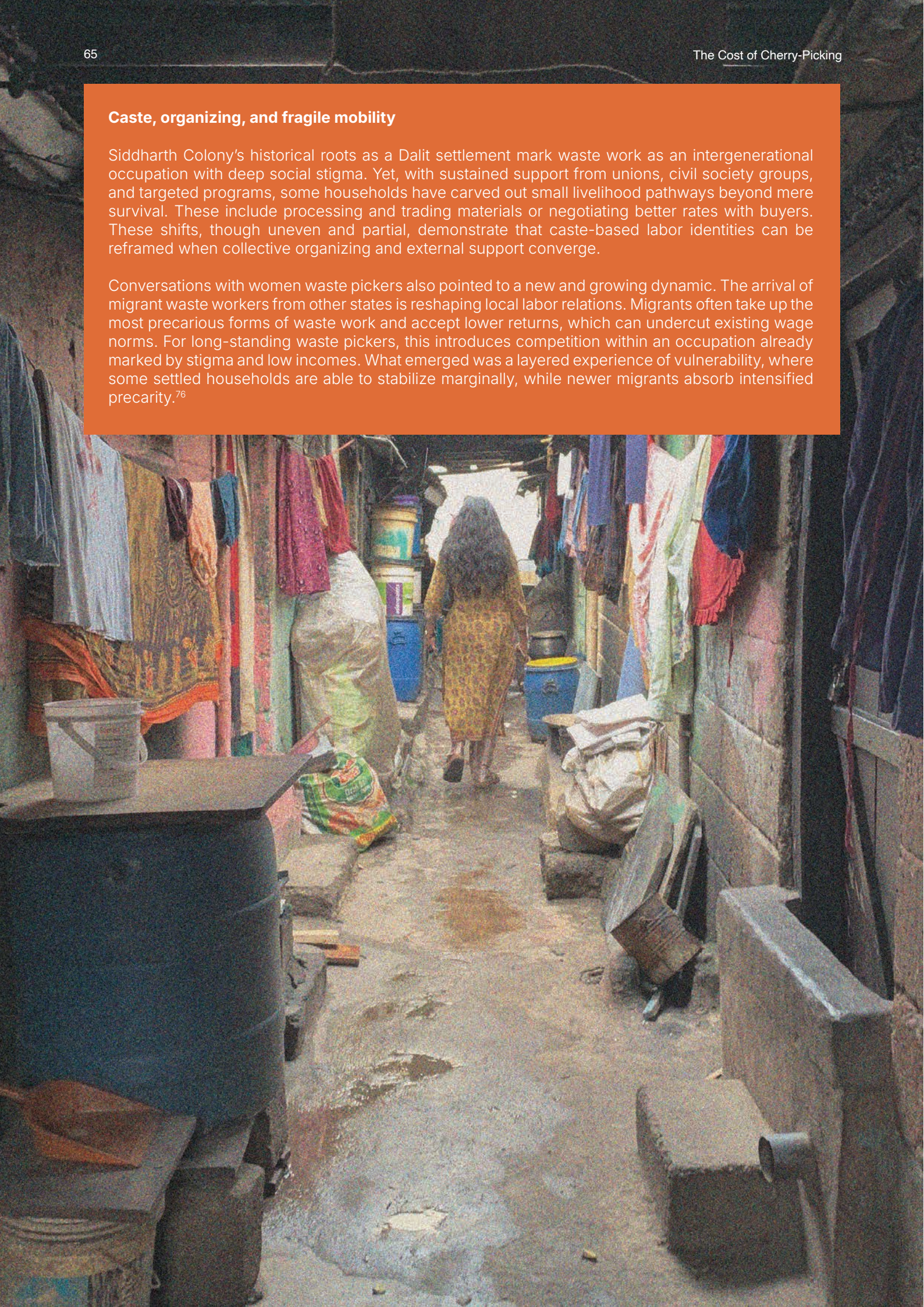
This anganwadi school serves about 35 children from within the settlement. However, formal education often stops at the primary level. Limited access to secondary schooling creates a structural bottleneck and increases the likelihood that workers remain in the same occupations across generations. Without safe, affordable, and continuous schooling options, children are likely to remain tethered to the informal waste economy either directly or indirectly.

Discussions with women waste workers in the colony revealed that integration into formal waste systems has delivered limited everyday benefits. While formal contracts or schemes may be offered, they rarely translate into improved access to infrastructure, safer workplaces, or reliable social protection.

Caste, organizing, and fragile mobility

Siddharth Colony's historical roots as a Dalit settlement mark waste work as an intergenerational occupation with deep social stigma. Yet, with sustained support from unions, civil society groups, and targeted programs, some households have carved out small livelihood pathways beyond mere survival. These include processing and trading materials or negotiating better rates with buyers. These shifts, though uneven and partial, demonstrate that caste-based labor identities can be reframed when collective organizing and external support converge.

Conversations with women waste pickers also pointed to a new and growing dynamic. The arrival of migrant waste workers from other states is reshaping local labor relations. Migrants often take up the most precarious forms of waste work and accept lower returns, which can undercut existing wage norms. For long-standing waste pickers, this introduces competition within an occupation already marked by stigma and low incomes. What emerged was a layered experience of vulnerability, where some settled households are able to stabilize marginally, while newer migrants absorb intensified precarity.[76]



PREDICTABILITY WITHOUT SECURITY: MONEY, TIME, AND LIQUIDITY

Once inside the system, workers encounter a new configuration of pressure. Income becomes predictable, but it also becomes bounded, closely tied to time discipline, and vulnerable to delay. The relative stability that draws many workers into waste work does not eliminate economic insecurity. Rather, it reorganizes it.

Across cities, workers repeatedly described predictable wages as one of the main advantages of waste work. Fixed payment cycles reduce uncertainty and enable households to plan basic expenses. However, the predictability is partial. Wages remain low, leaving little room to absorb shocks, and payment delays often travel downward through municipal and contractor chains before reaching workers. What emerges is not financial security, but a narrower and more regulated form of survival, in which workers trade flexibility for continuity and rely on informal strategies to bridge the gaps that formal arrangements do not cover.

FIXED AND PREDICTABLE PAY, REGULATED TIME

Regular payment schedules are widely valued. Fixed dates reduce uncertainty and enable household planning. Workers describe how predictable income allows them to maintain access to informal credit, negotiate with landlords, and ration food and household expenses across the month. Predictability, in this sense, reduces exposure to immediate financial shock. As several workers emphasized, the value of waste work lies not only in earning an income, but in knowing when that income will arrive. Yet this stability is accompanied by tighter regulation of time. Attendance tracking, fixed routes, biometric systems, and output-linked completion norms structure the working day more rigidly than many forms of earlier informal labor. Workers noted that official working hours rarely defined the end of the workday. Waste volumes, route completion, and segregation requirements routinely extended shifts beyond scheduled time, often without proportional compensation. Time, thus, becomes less negotiable even as income is predictable but insufficient.

Absence due to illness, caregiving, or emergencies frequently results in wage deductions or loss of shifts. Predictability stabilizes income but intensifies dependence on uninterrupted attendance, even during periods of household crisis or personal emergencies. As one worker explained, *"If I don't come, the work stops. If the work stops, the money stops. So even when the body says no, you still go."* What workers gain, then, is not secure livelihood so much as a more regularized wage relation purchased through tighter control over time and availability.

This configuration is important because it shows that predictability is not equivalent to protection. Fixed pay dates and continuity of work reduce one form of uncertainty, but they do so by deepening another: dependence on daily bodily presence. Workers gain the ability to plan rent and food, but give up flexibility over pace, rest, and time away from work. In this sense, stable wages and regulated time operate together. Predictability is made possible through closer discipline of labor.

Predictability stabilizes income by tightening control over time and availability.

TABLE 3: PREDICTABLE PAY, REGULATED TIME

WHAT WORKERS GAIN		WHAT WORKERS GIVE UP
Fixed pay date	⇢	Flexible hours
Income continuity	⇠	Ability to rest when ill
Ability to plan rent & food		Control over pace of work

Source: Dasra Analysis

INCOME CEILINGS AND SURVIVAL STRATEGIES

If predictable wages reduce volatility, they do not remove precarity. Salaries typically cover subsistence, leaving little margin for healthcare, education, housing shocks, or seasonal price inflation. Fixed wages offer continuity, but not security. Workers describe constant negotiations within the household over which expenses can be met, which must be deferred, and what kinds of debt can be managed. The question is rarely whether income is coming, but whether it will stretch far enough.

This experience is reflected in broader sector evidence. A survey by the United Nations Development Programme found that over 70-80 percent of waste workers' households in India earn less than INR 10,000 per month, underscoring the depth of economic precarity across the sector.[77]

Such income levels leave little buffer against every day or episodic shocks and reinforce the fragility of livelihoods even where work appears formalized.

Workers repeatedly described the monthly wage as a floor for survival, but also as a ceiling that constrains mobility. One worker in Bengaluru put it plainly: *"Salary comes, but everything is already due. If it comes late, we borrow. If it comes on time, we repay."* This captures the narrow temporal rhythm of many households: income arrives already claimed by debt, rent, food, school fees, or basic consumption. The wage barely stabilizes survival. To bridge this gap, households reintroduce informality into otherwise formal arrangements. Overtime work, secondary jobs, resale of recyclables, or piece-rate supplementation coexist alongside salaried employment. What emerges is layered access to livelihoods: formal wages anchor survival, while informal supplements restore flexibility and resilience within constrained income systems.

TABLE 4: FORMAL WAGES VS. INFORMAL SUPPLEMENTS

Formal Wage	Informal Supplements
Fixed monthly amount	Variable, effort-based
Predictable but capped	Unpredictable but flexible
Paid through contractors	Earned through overtime, resale, side work
Insufficient for shocks	Used to absorb shocks

Source: Dasra Analysis

Income ceilings are reinforced by how capital enters the waste sector. Investment flows disproportionately toward infrastructure, technology, and large operators, while frontline workers and micro-entrepreneurs remain largely invisible to formal finance. Activities carried out by informal actors are often seen as subsistence work instead of enterprise. This limits access to affordable credit and pushes workers into high-interest borrowing or self-financed survival strategies. Financial risk is individualized even as value is systemically extracted.

> *"The financing initiative revealed that many micro-entrepreneurs in waste are invisible to formal finance... We call it livelihoods when a informal entrepreneur does it, but entrepreneurship when someone builds a tech platform to connect informal entrepreneurs."*
>
> Tanushri Shukla
> Global Development Incubator

PAYMENT DELAYS, DEBT, AND THE COST OF WAITING

Even predictable wages are not always timely. Payment delays, often originating in municipal disbursement cycles, verification processes, or contractor reimbursement chains, cascade downward before reaching workers. These delays are absorbed through staggered wages, informal advances, and household borrowing. Predictability, therefore, is often fragile: workers know payment is supposed to come, but not always whether it will arrive when needed.

Crucially, this financial friction is not evenly distributed. Municipal spending follows annual planning cycles, contractor payments are released intermittently. However, workers face daily and monthly expenses that cannot be deferred. Food, rent, medicine, transport, and school costs operate on a different timeline from institutional finance. The misalignment between institutional finance and household survival timelines produces chronic instability at the base of the system. The system continues to function, but the burden of waiting is transferred downward.

> *"Investment in the lower tiers of waste and circular value chains remains nascent. Transactions are typically small and bespoke, and the space has not yet attracted capital at the scale needed to constitute a distinct asset class."*
>
> Amit Garg
> Impact Lens

TABLE 5: CASH-FLOW ROUTING ACROSS THE URBAN WASTE SYSTEM

Municipal Budgets & Approvals
Delayed, intermittent
↓
Contractors / Operators
Thin margins
↓
Intermediaries
Advances, SHGs, supervisors
↓
Workers & Households
Debt, rationing, unpaid care

Source: Dasra Analysis

Cash-flow instability within waste systems is mediated through workers' access to finance. Formal banking access has expanded in nominal terms—many workers now possess bank accounts linked to wage payments. However, this access rarely translates into usable financial security. Bank accounts function primarily as pass-through mechanisms, not savings instruments. Low and irregular balances, immediate withdrawal of wages for household expenses, and limited access to formal credit mean that accounts rarely buffer shocks. Savings are difficult to accumulate when income is both capped and absorbed by recurring costs.

Field discussions with waste pickers reinforce this pattern. Even where financial literacy interventions encourage saving, workers describe how income volatility limits the amount they can retain in formal accounts. As one participant explained during a financial literacy training discussion with women waste pickers in Bengaluru:

> *"We start morning five o'clock, work till ten at night. One thousand rupees we earn, half goes that day only. It is hard to save."*
>
> **Women waste worker**
> FGD participant

Observations from waste facilities in Goa reflect similar constraints. Workers employed in formalized sorting facilities typically earn between INR 13,600 and INR 15,000 per month in hand, with most of this income absorbed by household expenses and daily consumption needs, leaving little capacity to accumulate meaningful financial reserves.[viii]

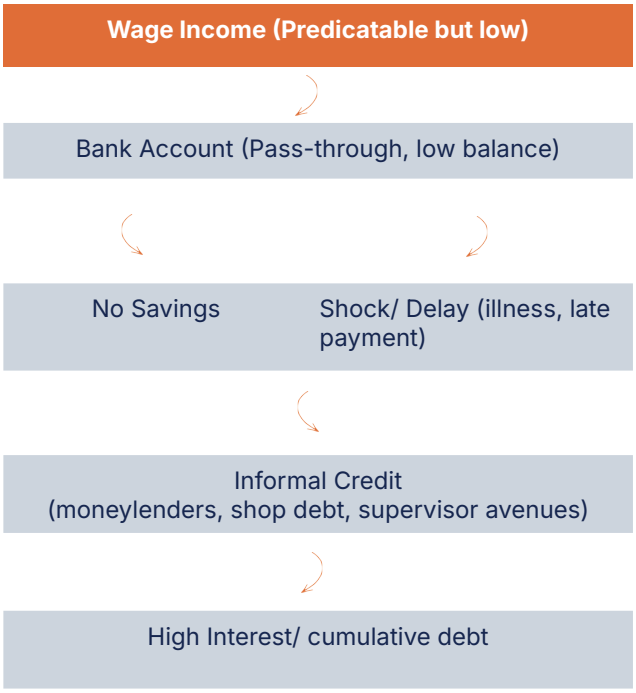
In moments of delay or crisis, workers rely on informal finance. Moneylenders, shop credit, group savings, and advances from supervisors provide immediacy, but at high costs. Interest rates are rarely stated clearly. Workers describe repayment amounts that far exceed the original loan, especially when illness, wage delays, or family emergencies extend the borrowing period. Debt builds over time instead of remaining temporary. It is not simply a bridge through crisis, but an ongoing mechanism through which households manage the mismatch between income timing and survival timing.

This reliance on informal credit is not a sign of financial ignorance. It reflects a deeper misalignment with formal financial systems, which operate on assumptions of stable surplus and repayment capacity that do not hold in low-wage, high-risk livelihoods. In the absence of institutional buffers—such as paid leave, timely wages, or emergency support—debt substitutes for social protection. Formal financial access makes workers legible to the payment system, while informal credit absorbs the volatility that formal systems do not accommodate.

As a result, financial access does not eliminate vulnerability; it reorganizes it. The cost of waiting for wages, recovery, and contract renewal is ultimately borne through interest, indebtedness, and deferred well-being. Predictability remains valuable, but it is predictability without security. Workers know the wage is coming, yet must still spend, borrow, wait, and recover in advance of it. The cost of keeping waste work financially viable is therefore not removed from the system; it is redistributed into the everyday calculations of those least able to bear it.

Formal financial access enables wage delivery but does not buffer risk. In the absence of savings and institutional protection, informal credit absorbs cash-flow shocks, transferring the cost of delay onto workers through debt and interest.

TABLE 6: FINANCIAL ACCESS UNDER CONSTRAINT: HOW WORKERS BRIDGE GAPS



Source: Dasra Analysis

BODIES, IDENTITY, AND UNEVEN RECOGNITION

If money and time structure economic pressure, the body becomes the site where physical, emotional, and social risks accumulate. The physical manifestations of waste work must be contextualized for their repercussions on health outcomes and risk.

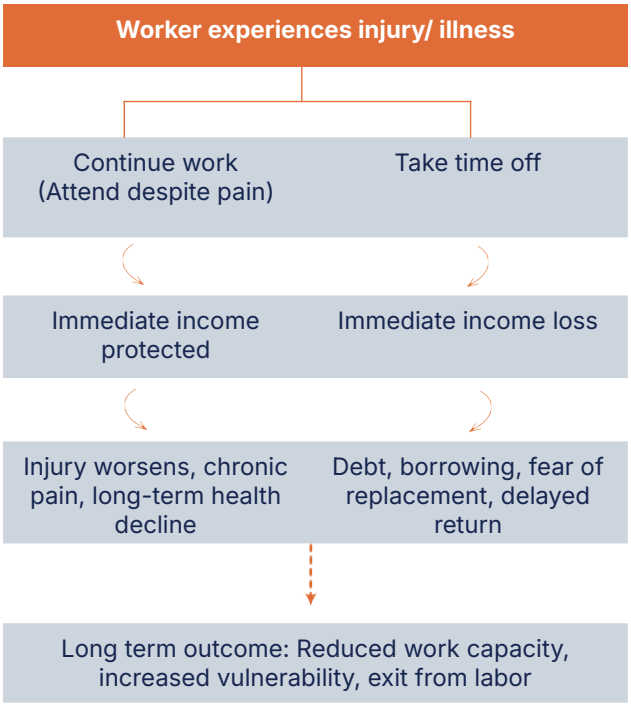
EXPOSURE, INJURY, AND UNCOMPENSATED RECOVERY

Waste work involves routine exposure to sharp objects, biomedical waste, chemical residues, heavy loads, and contaminated environments. Cuts, infections, respiratory problems, and chronic pain are widely normalized. Workers describe injury as an expected occupational condition, never an exception.

Health shocks translate directly into income loss. Paid sick leave is mostly absent, and time spent seeking care often results in wage deductions. Workers frequently delay treatment or return to work before recovery, compounding long-term harm.

The absence of paid leave and job security transforms illness into a cumulative risk. Whether workers attend or rest, costs are deferred and absorbed over time, either through bodily decline or financial precarity.

TABLE 7: HEALTH VS ATTENDANCE: HOW RISK ACCUMULATES OVER TIME



Source: Dasra Analysis

GENDER AND THE SOCIAL ORGANIZATION OF WASTE WORK

Labor within waste systems remains deeply gendered. Women are concentrated in segregation and sorting roles requiring sustained endurance and repetitive motion, while men are more often assigned transport or lifting tasks. These divisions reflect both operational decisions and broader social norms around what kinds of work are considered acceptable or safe for women.

Operational practices within waste facilities often reinforce these distinctions. In one material recovery facility in Goa, managers described deliberately assigning women to sorting roles on the conveyor line while reserving physically intensive tasks such as lifting and transportation for male workers. As one supervisor explained:*"Our female staff do not do heavy lifting — those are men's jobs. Men sometimes help women, but we try to compartmentalize roles sensibly, based on comfort and safety."*

These arrangements are often framed as protective or pragmatic, yet they simultaneously reproduce gendered occupational segmentation. Women's work becomes concentrated in repetitive processing tasks, while men occupy roles involving mobility, machinery, and field operations - functions that are often more highly valued and better paid, reflecting and reinforcing structural wage inequities.

Gendered perceptions of dignity and stigma also shape labor allocation. Facility operators noted that many women workers, in particular, prefer processing roles that resemble factory settings over door-to-door collection, which carries higher stigma. As a result, framing waste work as "processing" instead of "collection" has become a way to attract workers and reduce that stigma.

> *"If you offered two jobs — one in a packaging factory and one in a waste facility with the same pay, most people would choose the factory. Waste work is still seen as dirty work."*
>
> Facility supervisor
> Material Recovery Facility, Goa

Caste continues to shape entry and social perception. Generational waste-working communities face layered stigma that persists even within formalized settings. Institutional inclusion reorganizes caste-based hierarchies. At the same time, workers themselves articulate dignity through livelihood necessity rather than occupational status. In interviews with door-to-door collectors, workers spoke about pragmatism and survival, not shame:

> *"There's no shame in any work. Everyone works for their stomach. No job is big or small."*
>
> Door-to-door waste collector, Goa

VISIBILITY WITHOUT PROTECTION

Recognition within urban waste systems is uneven and conditional. Uniforms, ID cards, and registration provide visibility without socio-economic security. Recognition operates as a situational resource - protective in some encounters, constraining others. IDs can shield workers from harassment. However, IDs also increase surveillance without offering protection against wage delays, injury, or termination. This ambiguity reflects institutional hesitation to formalize recognition due to concerns around employment liability.

Field evidence suggests that while formal systems increase administrative visibility and institutional monitoring, they do not always translate into meaningful social protection for workers. For example, workers in a municipal waste sorting facility described how employment provided fixed wages and improved financial stability, yet long-term employment protections remained limited. During a focus group discussion, workers noted that benefits available to other municipal staff were not always extended to them:

> *"We want PF. Drivers get PF. If we also get PF, it will help us in the future. But if PF is deducted now, with this salary it becomes difficult to manage household expenses."*
>
> Waste sorting worker
> MCC facility, FGD participant

Similarly, although hazard insurance schemes technically exist for sanitation workers, workers described how such protections rarely translate into practical support. When asked whether anyone had used the available coverage for workplace injuries, participants explained that while they were aware of the scheme, it remained largely unused in practice:

> *"There is a place where you can claim if something happens at work, but none of us have used it. We know the cover exists, but no one here has actually claimed it."*
>
> Waste sorting worker
> MCC facility, FGD participant

For migrant workers, recognition remains fragile. It is tied to specific contractors or wards and can disappear when contracts shift. Caste and gender shape how this recognition is experienced, and in some cases, increased visibility deepens stigma instead of easing it. These dynamics become particularly salient during processes of formalization, where increased system discipline often expands monitoring without extending corresponding protections.

ADMINISTRATIVE VISIBILITY DOES NOT ALWAYS TRANSLATE INTO MEANINGFUL SOCIAL PROTECTION

FUTURES UNDER CONSTRAINT

For waste workers, futures are imagined cautiously despite the intergenerational poverty and precarity faced by them. The prudence towards the next generation exists as an intent. However, the accessibility offered by systems around them often fails to provide viable pathways out of these conditions.

EDUCATION AND THE FRAGILE HORIZON OF EXIT

Education emerges as the primary horizon through which workers imagine a different future. Waste work is understood as a holding strategy—stabilizing the present so that children can exit this labor.

Workers actively prioritize schooling despite financial strain, often compensating through longer work hours or deferred healthcare. Yet pathways to intergenerational exit are fragile. Migration, informal housing, documentation gaps, and caregiving responsibilities interrupt schooling, particularly for girls.

Some initiatives attempt to stabilize these pathways by addressing shocks beyond schooling. The Buguri program in Mysuru, implemented by Hasiru Dala, supports waste workers' children through educational assistance alongside housing and documentation support.[78] It illustrates that intergenerational exit depends on reducing everyday instability, not schooling alone.

Aspirations to move out of the sector sit alongside a strong sense of realism. Education alone does not ensure mobility in an economy shaped by informality. For many, the goal becomes creating distance from the occupation rather than moving up within it. Waste work sustains the present while underwriting a hoped-for future, the outcome of which remains uncertain.

CONTRACT CYCLES, FORMALIZATION, AND DISPLACEMENT ANXIETY

Workers are acutely aware that their livelihoods depend on contracts they do not control. Tender renewals, contractor changes, and policy shifts generate persistent anxiety, as employment continuity often depends on decisions taken by municipal authorities, contractors, or implementing organizations.

In many cases, workers emphasize that the stability they experience is tied less to wages themselves and more to the reliability of institutional arrangements behind them. For example, one waste collector contrasted his previous informal work with his current role within an organized system:

> *"Here the payment comes on time, and there's no tension. Everything works through a system here."*
>
> Door-to-door waste collector, Goa

This reliance on "the system" reflects how workers' livelihoods are embedded within administrative structures that they have little influence over. Workers often operate within strict procedural hierarchies. They tend to escalate issues upward instead of resolving them on their own, which reinforces their dependence on supervisory authority. Formalization intensifies this uncertainty. As systems tighten, labor demand often contracts. New roles may emerge, but pathways for transition remain unclear. Formalization reshapes how risk is distributed. It often expands surveillance and discipline, while recognition and protection lag behind.

> *"If waste work becomes aspirational, new claimants will enter the sector and existing workers may be displaced. Displacement also happens within marginalized communities themselves, where some groups gain control over waste value chains while others remain confined to the most precarious and invisible labor."*
>
> Divya Varma
> Work Fair and Free

TABLE 8: FORMALIZATION: EFFICIENCY GAINS VS LABOR DISPLACEMENT

System Gains	Worker Risks
Fixed monthly amount	Fewer labor roles
Predictable but capped	Skill mismatch
Paid through contractors	Contractual precarity
Insufficient for shocks	Loss of informal buffers

Source: Dasra Analysis

THE SOCIAL ORGANIZATION OF ENDURANCE

Pressure within urban waste systems circulates across institutions, intermediaries, and households, moving downward as it encounters constraints. While municipal systems and contractors generate and transmit pressure through delayed payments, rigid contracts, and limited protections, it is at the level of intermediaries and households that this pressure is actively managed, absorbed, distributed, and rendered invisible. This reflects a broader pattern of systemic repair, where intermediaries play a critical role in stabilizing dysfunction without addressing its root causes.

Households function as the final shock absorbers. Wage delays, illness, and income shortfalls are managed through debt, expenditure rationing, asset sales, and the expansion of unpaid care work, most often performed by women. These adjustments stabilize daily survival but accumulate long-term costs, particularly in the form of indebtedness, deferred healthcare, and fatigue. Household resilience, while often celebrated, is in practice a form of forced adaptation to systemic volatility - one that is deeply shaped by gender, caste, and migration status, which determine differential access to social networks, credit, and institutional support. This capacity to absorb shocks is unevenly distributed. Households with greater access to financial or social capital are better able to smooth consumption and mitigate risk, while others are pushed into cycles of precarity with limited avenues for recovery.

Trust is central to this work. In communities marked by historical exclusion, migration, and stigma, intermediaries often represent the only credible interface with formal systems. Long-term presence, shared identity, and demonstrated reliability enable them to mobilize workers, disseminate information, and negotiate compliance. This trust is not abstract; it is built through repeated acts of problem-solving—helping workers navigate delayed wages, accompanying them to hospitals, intervening in cases of harassment, or ensuring children remain enrolled in school during periods of crisis.

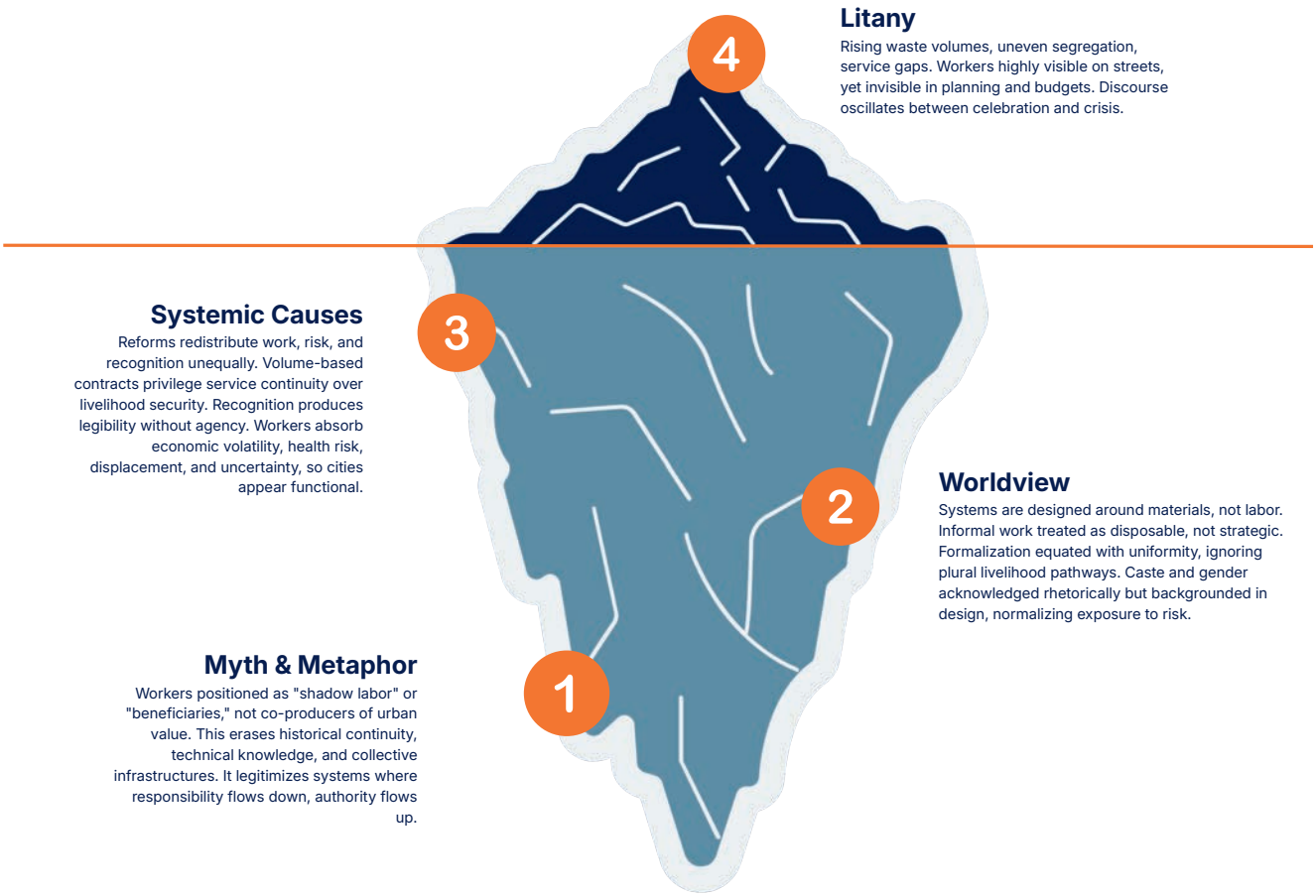
At the same time, intermediary labor is itself precarious. These organizations and individuals operate with limited resources, short-term funding, and informal authority. They absorb institutional risk without corresponding power to alter the structures that generate it. By resolving problems case by case, intermediaries prevent disruption while leaving underlying incentive structures—volume-based contracts, fragmented governance, absence of social protection—largely intact.

Urban waste systems appear stable because instability is continuously managed elsewhere. Predictable service delivery rests on unpredictable lives. Workers stretch income, extend time, absorb bodily harm, manage stigma, and temper aspirations so that waste continues to move. Endurance is the quiet labor that compensates for unresolved structural gaps. Pressure is not eliminated; it is redistributed. What emerges is a system held together by managed fragility.

SYNTHESIS WITH A FUTURES THINKING VIEW

This section synthesizes the findings through a Causal Layered Analysis tool, which is an approach for mapping systems and applying futures thinking.[79]

FIGURE 5: A FOUR-LAYER DIAGNOSIS OF WORKER INCLUSION IN URBAN SYSTEMS



The synthesis below traces how surface-level crises are produced by deeper institutional logics, cultural assumptions, and inherited social hierarchies. In doing so, it reframes inclusion not as a technical endpoint, but as a systemic condition. The synthesis implores that worker inclusion must be actively designed, financed, and governed if circularity is to be both durable and just.

Applying the Causal Layer Analysis to Study Findings

At the litany level, the symptoms are familiar. Cities struggle with rising waste volumes, legacy dumpsites, uneven segregation, and service gaps despite infrastructure expansion. Informal waste workers remain highly visible on streets yet invisible in planning, budgets, and accounting systems. Public discourse oscillates between celebrating cleanliness gains and narrating failure.

At the systemic causes levels – we observe how current waste reforms redistribute work, risk, and recognition unequally. Volume-based contracts, centralized processing, and tender-driven governance privilege service continuity over livelihood continuity. Formal recognition produces legibility without security. Homes function as hazardous workplaces. Predictable wages stabilize time but cap survival. Workers absorb economic volatility, health risk, spatial displacement, and institutional uncertainty—so cities can appear orderly and functional.

At the worldview level, the research shows a persistent gap between how waste systems are designed and how waste work actually functions. Informal labor is often treated as disposable instead of strategic. Circularity is often framed as a material problem, instead of being understood as a labor-intensive socio-technical system Formalization is equated with uniformity, leaving little room for the plural, adaptive livelihood pathways workers seek. Caste and gender are acknowledged rhetorically but backgrounded in system design, normalizing gendered and caste-based exposure to risk.

At myth and metaphor level, waste workers are positioned as "shadow labor," "beneficiaries," or "service providers," not co-producers of urban value. This narrative erases the historical continuity of waste economies, the technical knowledge embedded in sorting and recovery, and the collective infrastructures built over decades. It legitimizes a system where responsibility flows downward while authority recentralizes at moments of value.
Together, these layers explain why inclusion remains partial, reversible, and uneven, even as circular ambitions scale.

This study contributes three interlinked advances to existing research and practice. By applying CLA to urban waste governance, the research offers a **diagnostic framework for inclusive circularity.** It connects everyday operational gaps to deeper governance choices, cultural narratives, and financing logics. It offers a way for policymakers, funders, and practitioners to engage with this complexity instead of working around it.

7. CONCLUSION AND WAY FORWARD

Circular transitions will remain partial if they are designed only around materials and infrastructure. This research shows that durable circularity depends on labor welfare, financial security, and intermediary coordination. The shift required is from managing waste flows to governing systems of labor, care, and value.

The following section distils the study's insights into a set of actionable directions for strengthening inclusive circularity in India's urban waste systems, Organized around two catalytic forces. It highlights where system design and philanthropic capital can be reoriented to create more stable, dignified, and equitable pathways for waste workers, and where targeted investments in institutions, financing mechanisms, and governance can convert fragile inclusion into structural integration. Together, these recommendations offer a roadmap for building circular systems that work for both materials and the people who sustain them.

TOWARDS LABOR-INCLUSIVE SYSTEM DESIGN

Circularity must be understood as a labor-dependent public good, not merely a material-flow challenge. The evidence presented in this report points to a necessary shift in discourse: from technical compliance toward distributive design that embeds safeguards for access to waste, continuity of work, and worker protection as foundational, non-negotiable principles.

Central to this reorientation is the recognition of multiple worker integration pathways: cooperatives, micro-entrepreneurship, self-help groups, contractual roles, and hybrid models. It is important to move past privileges of a single route through municipal employment or private contracting. Equally Informal labor and the role of intermediaries need to be treated as core infrastructure. Worker collectives, SHGs, and civil society intermediaries should be recognized as long-term governance partners, not temporary actors. Community-based models demonstrate that proximity enhances accountability, service quality, and trust; formal systems that overlook these relational capacities of risk fragility and systemic breakdown.

Financing approaches must be correspondingly reoriented. This calls for a shift beyond short project cycles and output-driven metrics. Capital needs to support health and safety, legal recognition, leadership development, and worker-led research. This helps make inclusion durable and spreads risk more evenly across the system.

Within this labor-inclusive system design framework, distinct but interdependent roles fall to different institutional actors.

Urban Local Bodies can strengthen inclusion by integrating explicit labor protections into contract design and incorporating metrics for wage regularity, safety compliance, and grievance redressal alongside traditional volume-based performance indicators. Ring-fencing wages within municipal payment systems would reduce delays arising from contractor-level bottlenecks. At the governance level, ULBs can institutionalize worker voice by including worker representatives or collectives in ward-level planning processes and by ensuring continued access to recyclables within integration models, particularly as mechanization and digitalization expand and alter existing labor–waste relationships.

Civil-society actors (Non-Profits and Social Enterprises) have a complementary role in building resilience through platforms that expand savings groups, cooperative credit mechanisms, and emergency funds, while reducing dependence on high-interest moneylenders. Strengthening collective negotiation capacity is equally essential: this involves supporting unionization and cooperative structures, and equipping worker leaders with skills in policy literacy, contract negotiation, and digital compliance so they can engage more effectively with municipal systems and advocate for fairer terms.

Private-sector operators must embed just transition planning within waste operations, developing redeployment strategies for workers whose roles may be displaced by automation and enforcing ethical subcontracting practices and wage floors. Companies must also co-invest in labor welfare systems by aligning Environmental Social and Governance (ESG) commitments with worker safety, health, and livelihood continuity, and by partnering with worker collectives to strengthen traceability and compliance in ways that also safeguard workers' access to income.

Together, these measures constitute a system design logic in which worker inclusion is not an addendum to circularity but its structural precondition.

IDENTIFYING A DECISIVE ROLE FOR PHILANTHROPY

Philanthropy is uniquely placed to absorb risk, fund coordination, and invest in enabling conditions where municipal or commercial finance cannot. As India's circular agenda accelerates, philanthropic and catalytic capital can determine whether transitions remain narrow and reversible or become durable and inclusive.

1. **Prioritize System Stability in Circular Finance:** Current funding in the sector is heavily skewed toward infrastructure, innovation pilots, or measurable diversion outcomes. While important, these do not address the structural fragilities that make systems unstable.

- **Create wage-buffer or payment guarantee facilities** that can advance 1–2 months of wages during municipal payment delays
- **Fund transition protection pools** to prevent worker displacement during contractor changes or tender cycles
- **Support city-level occupational health systems,** including periodic health camps, safety audits, medical insurance schemes and PPE procurement tied to enforceable compliance standards
- **Finance decentralized infrastructure upgrades** (sorting sheds, rest spaces, storage units) that directly improve working conditions at ward level
- **Co-fund municipal pilots that embed labor safeguards into new contracts,** absorbing initial cost risks

2. **Institutionalize Intermediaries as Governance Infrastructure:** NGOs, unions, and collectives perform wage mediation, documentation support, and conflict resolution but remain financially unstable.

- **Provide multi-year, unrestricted core funding** to intermediary organizations performing labor coordination functions
- **Finance dedicated "labor liaison" positions** within NGOs to coordinate between ULBs, contractors, and worker groups
- **Support the creation of city-level worker facilitation centers** that assist with documentation, grievance filing, scheme enrolment, complemented by funding for "navigator roles" that help workers navigate bureaucratic processes and access these services effectively

- **Fund digital systems that track worker payments and attendance,** improving transparency across contractor chains
- **Underwrite legal advisory support** for collectives negotiating contracts or addressing unfair termination

3. **Strengthen Worker Agency Through Long-Term Investment:** Protection (insurance, PPE, social security) reduces risk but does not shift power. Durable inclusion requires strengthening workers' capacity to negotiate, organize, and shape system design.

- **Support formal registration and governance strengthening of worker collectives,** including accounting systems, audit support, and legal compliance capacity
- **Resource worker-led data systems,** enabling collectives to document wage delays, safety violations, and recovery volumes which leads to generating evidence for negotiation with ULBs
- **Capitalize revolving emergency funds or low-interest credit pools** managed by worker federations to reduce dependence on high-interest moneylenders during payment delays
- **Support representation platforms** (city-level worker forums or advisory councils) that create structured dialogue between worker groups and municipal authorities, and enable workers to do waste-related outreach as experts

4. **Use Patient Capital to Close Structural Breakpoints:** Fragmented municipal finance and short-term CSR cycles prevent structural reform.

- **Establish pooled city-level inclusion funds,** jointly governed by ULBs, civil society, and worker representatives
- **De-risk mechanization pilots by co-financing labor redeployment plans,** ensuring workers are not displaced without alternative income pathways
- **Finance longitudinal labor audits** tracking wage security, injury rates, and income volatility alongside diversion metrics
- **Support convergence pilots** linking waste worker households to housing, education, and social protection schemes
- **Back policy labs at state level** to test inclusive contracting frameworks before scaling

CONCLUSION

India's waste systems are often described as chaotic or informal. This research shows something different. They are highly ordered systems, shaped by fragility, performance, and efficiency, often at the cost of care, protection, and equity. Informal waste workers do not sit outside these systems; they hold them together.

Circularity already exists, produced by decentralized labor that sustains recycling markets and prevents landfill accumulation. The question is whether these systems will continue to depend on worker endurance, or be redesigned around protection, dignity, and shared responsibility. The core proposition is clear: circular systems cannot scale or sustain without social inclusion, protection, and agency.

At its core, this is a question of power: to access waste, shape livelihoods, and influence system design. When workers have power within their collectives and with institutions, circularity shifts from extraction to care. Such a shift will determine whether India's circular future is merely efficient, or truly just.

KEY CONCEPTS SHAPING WORKER INCLUSION

FORMALIZATION VERSUS INTEGRATION

FORMALIZATION

Formalization typically involves the reorganization of waste work into standardized, time-bound employment arrangements, often resembling conventional shift-based or nine-to-five jobs within institutionalized settings. In practice, this can mean reallocating waste pickers to roles such as service provision or vehicle operation, which is frequently accompanied by restricted or removed access to waste materials.[80] While formalization can take multiple forms, it involves some degree of contractual regularity, operational efficiency, and managerial control over the preservation of workers' existing skills, autonomy, and material engagement within the waste value chain.

INTEGRATION

Integration refers to the inclusion of pre-existing informal waste pickers within evolving waste management systems without displacing them or fundamentally altering the nature of their work.[81] Integration builds on existing practices instead of creating entirely new roles or imposing formal employment structures. It allows waste pickers to continue collecting, sorting, and selling recyclable materials within emerging systems.[82] This approach seeks to preserve workers' autonomy over waste, while sustaining the skills and labor practices that underpin informal recycling economies and recognizing their central role in the waste value chain.

Key Distinction

While integration does not automatically guarantee continued access to waste, it differs from formalization in its orientation and intent. Integration works with pre-existing systems of labor and material recovery, embedding them within broader institutional frameworks rather than redesigning them from the ground up. Its significance lies in recognizing the diversity of informal waste pickers' contexts, capacities, and livelihood strategies across regions, and responding to these differences without imposing uniform occupational models.

FIELD INSIGHT: RECOGNITION WITHOUT ASSIMILATION

"Several waste workers are not seeking municipal employment but instead want recognition, access to waste, and the ability to operate as self-sufficient micro-entrepreneurs. Identification, in this view, is meant to enable safe access and legitimacy, rather than automatic assimilation into municipal payrolls."

Government representative

MONITORING, EVALUATION, AND LEARNING

MEL: MONITORING. EVALUATION. AND LEARNING

Within the waste value chain, Monitoring, Evaluation, and Learning (MEL) refers to the data systems, key performance indicators, reporting practices, and evidentiary frameworks through which waste systems and workers are assessed, governed, and legitimized. *MEL* is not treated as a neutral technical function, but as an institutional layer that shapes worker participation. Across waste governance, *MEL* systems are embedded within municipal compliance regimes, nonprofit reporting requirements, and philanthropic funding cycles, each carrying distinct priorities and assumptions.

MEL mediates integration by making measurability and performance a precondition for recognition, funding continuity, and institutional legitimacy. Through dashboards, audits, and reporting formats, *MEL* structures how inclusion is enacted and evidenced.

COMPETING LOGICS OF *MEL*

Compliance metrics prioritize system performance such as route completion, attendance, waste volumes, and reporting frequency. They are most commonly used by municipal and state institutions to enable standardization and scale.

Livelihood metrics, more often tracked by non-profits and civil society organizations, focus on worker wellbeing, income stability, access to social protection, safety, and continuity of work.

These two metric regimes reflect different accountability orientations: compliance metrics answer upward to regulators and citizens, while livelihood metrics answer relationally to workers and communities.

This divergence shapes how waste systems function. When compliance metrics dominate, inclusion can become procedural and controlling, with less focus on protection. This can emphasize hitting targets over security, dignity, and voice.

FIELD INSIGHT

"...first thing [that] gets tracked is the collection network and how the vehicle is moving and all that. Once that is settled, then we know that which lanes are not segregating...where then we will take a deeper dive and our segregation activities like the awareness activities can also be centered and more focused around it...instead of doing [awareness for] the whole city, we know which lane to actually focus [on] more."

Social Enterprise Leader

INNOVATION AND TECHNOLOGY

INNOVATION & TECHNOLOGY

Innovation and technology refer to the introduction of digital systems, automation, data platforms, and other new technologies that reshape how work, oversight, and coordination occur across the waste value chain. These interventions reorient labor roles and institutional control. Innovations and mechanized processing alter what is monitored, optimized, and valued within waste systems. Often framed as improving efficiency and environmental outcomes, technological change embeds new assumptions about skill, compliance, and legitimacy. Therefore, it can impact waste workers.

LABOR IMPACTS

Technological interventions in waste systems shape labor in varied ways, leading to a mix of outcomes across different parts of the system. Labor-enhancing innovations can improve safety, reduce physical strain, and stabilize incomes. Apps such as Kabadiwalla Connect and ScrapUncle link waste pickers directly to recyclers, offering real-time pricing, traceability, and route optimization. This can increase earnings by reducing reliance on middlemen and formalizing transactions.[83] At sorting hubs, AI-enabled cameras used by companies like Bintix and SUKA(R) support workers by identifying materials, flagging hazards, and suggesting higher-value recovery pathways, helping speed up sorting while building skills.[84] Labor-restructuring technologies, on the other hand, shift where work occurs and who retains control over materials, data, and value. Digital systems may increase traceability and payment transparency, yet simultaneously exclude workers lacking documentation, literacy, or device access. Understanding where innovations fall on this spectrum is critical to assessing whether technological change supports inclusive waste systems or deepens stratification and displacement.

FIELD INSIGHT

"There is no machine to lift and place the waste. If there were a machine, it would be much easier to mix the segregated material. When they [waste workers] have to climb into the big tanks, if the waste becomes too much, they end up getting infections. One person got an infection and left. They could not work for two years. They kept getting infections and eventually quit the work… So if a machine could do the mixing, they would not get so many infections and would face fewer difficulties."

FGD Participant, (Translator interpretation)

URBANIZATION AND GENTRIFICATION

URBANIZATION & GENTRIFICATION

Urbanization and Gentrification are broad but interlinked processes, defined here, specifically through their impacts on waste workers, waste infrastructure, and the spatial organization of cities.

Urbanization refers to the expansion and densification of cities. In the context of this study, this leads to increasing consumption, waste generation, service demand, and institutional complexity. Additionally, it correlates to climate stresses such as flooding and the urban heat island effect.

Gentrification describes the spatial reordering that accompanies this growth, where land, labor, social hierarchies, and infrastructure are revalued in ways that privilege, among many other things, cleanliness, visibility, and aesthetics, which has implications for waste management.

Although gentrification is often associated with processes of urbanization, urban growth does not uniformly result in gentrification across contexts. Both processes reshape where waste is produced, processed, and displaced, and where workers are permitted to live and work within the city.

SPATIAL REORDERING OF WASTE WORK

As urban land values rise, informal settlements, sorting sites, recycling clusters, and landfill-adjacent communities are dispossessed and pushed to the city's edges, often without corresponding relocation of livelihoods, services, or protections. Waste workers experience cities as spaces of expanding ambition alongside shrinking physical and social space, where access to waste, housing, and safety becomes increasingly constrained and controlled.

FIELD INSIGHT

"Wherever waste workers settle they get into conflict with others. Their work pattern, where they store things, their whole culture, their whole inner dynamics - they come into conflict with others... There is a sense of alienation over there. There's a sense of disrespect. There is a sense of being demeaned."

Social Enterprise Leader

INTERSECTIONALITY AND INCLUSION

INCLUSION

Inclusion refers to the institutional, social, and operational conditions through which waste workers are recognized, protected, and able to sustain livelihoods within the system. It encompasses not only formal recognition through contracts, IDs, and welfare access, but also everyday forms of safety, spatial legitimacy, and the ability to negotiate with authorities and residents. Inclusion is therefore experienced as variable and contingent, improving coordination in some contexts while leaving workers exposed to ongoing risk and uncertainty in others.

INTERSECTIONALITY

Intersectionality describes how multiple social identities and structural positions (such as caste, gender, migration status, language, kinship, education, age, and geography) interact to shape workers' experiences within the waste economy. These factors influence who enters which roles, who controls assets and technology, and who can navigate institutional systems and claim protection. As a result, the same inclusion mechanisms can produce unequal outcomes across the workforce, reinforcing hierarchy even within formally recognized arrangements. Often, intersectionality affects intergenerational access and opportunity for individuals and communities.

FEEDBACK LOOP

Inclusion is intersectional, reshaping workers' positions within social and institutional hierarchies. Inclusion can improve visibility and negotiating power, while exclusion can deepen stigma and dependence on informal systems. It influences who remains at the margins of the waste value chain and whose labor is recognized within the system, as well as how social hierarchies get reorganized with new work arrangements and technologies.

FIELD INSIGHT

"We are poor, uneducated, lower caste people. Still, for our children, we want good education. Our families should live better. We live in very small houses. Madam, the rent is high. For the next generation, we want education. The system says education is free. But is there access? Is there environment? Is there peace? Our children struggle for everything. This is human rights. For waste pickers, human rights have no meaning. We want dignity and credit. Whether from society or government. We are doing climate-friendly work. "How to save the climate?" — that is the question. Who will support waste pickers? Who will help them move ahead?"

— FGD Participant, (translated transcript)

FIELD INSIGHT

"We face discrimination on many levels—gender discrimination as trans people, discrimination as sanitation workers, discrimination as people living with HIV, as sex workers, as beggars, even within families. There is discrimination in how we dress, how we speak, in every aspect of life."

— FGD Participant, (translated transcript)

ANNEXURES

ANNEXURE 1: METHODOLOGY DETAILS

Total Sample Size

The research team conducted 37 semi-structured interviews with institutional and ecosystem stakeholders in the selected cities, but more broadly across India, including:

Profile of Key Informants Interviewed

- **Civil society leaders and NGO practitioners and representatives** (n = 22): With deep, on-ground experience in waste management across the selected cities
- **Municipal and state officials** (n = 4): Engaged in urban waste governance and infrastructure planning
- **Social enterprises** (n = 6): Working on circular waste solutions and service delivery models
- **Ecosystem enablers** (n = 5): Including academics, grant-making organizations, collective impact backbone organizations, and think tanks with expertise in the waste sector

Focus Group Discussions (FGDs)

- **Number of FGDs** (n = 5): Conducted across all study sites
- **Participant profile**: Informal waste workers, including those working in Material Recovery Facilities (MRFs) and those affiliated with waste worker unions
- **Group composition**: 3 all-women groups and 2 mixed groups
- **Group size**: Ranged from 6 to 12 participants per FGD, in total the team engaged with 52 waste workers

ANNEXURE 2: ACKNOWLEDGEMENTS

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The research and report were led by the Dasra team, in collaboration with University of Toronto. The University of Toronto team includes Dr. Nidhi Subramanyam, as the principal investigator, and Devam Sheth, as the research assistant. The Dasra team includes Ami Misra, Mahima Sharda, Rukmini Banerjee, and Rupsha Mitra as researchers and co-authors on this project. The report has been designed by Vikram Buragohain.

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Designed by Vikram Buragohain
vikrambgohain@gmail.com