Failing The Grade

How Cities Across India are Breaking the Rules, Ignoring the Informal Recycling Sector and Unable to Make the Grade

CHINTAN
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Executive Summary

Indian policies and rules, while not perfect, have some important safeguards and recognition for informal sector recyclers, particularly wastepickers. However, municipalities, urban policy makers, and private companies ignore them while conducting business in solid waste management. In so doing, they bypass the environment and the poor. They disrupt a chain that so importantly contributes to reducing greenhouse gases in our increasingly consumptive cities and towns. They in fact, impose climate in-justice. They are additionally not implementing the laws of the land. In this context, most formal players, both state actors and non-state actors, fail the grade. Even some of the best municipalities set up excellent inclusion projects in one part but are unable to extend such inclusion elsewhere. For these reasons, no single city has fully and comprehensively implemented all the rules and followed the spirit of the policies laid out for wastepickers and other informal sector actors in India.

Acronyms and Abbreviations

A2Z	A2Z Infrastructure Limited
Avg.	Average
BMC	Bhopal Municipal Corporation
CAG	Comptroller and Auditor General of India
CAGR	Compound Annual Growth Rate
CBO	Community Based Organization
CDM	Clean Development Mechanism
CDM DNA	Clean Development Mechanism Designated National Authority
CDP	City Development Plan
CEPT	Center for Environmental Planning and Technology
CER	Certified Emission Reduction
CO2	Carbon Dioxide
CPCB	Central Pollution Control Board
DPR	Development Plan review
e-waste	Electrical and electronic waste
FMS	Facility Management Services
GHG	Greenhouse Gas
GMC	Ghaziabad Municipal Corporation
gms	Grams
GTZ	German Technical Cooperation
IMC	Indore Municipal Corporation
INR	Indian Rupee
IT	Information Technology
JNNURM	Jawahar Lal Nehru Urban Renewal Mission
kg	Kilo Gram
KKPKP	Kagad Kach Kashtakari Panchayat
KMC	Kochi Municipal Corporation
M	Meter
MCD	Municipal Corporation of Delhi
MCF	Municipal Corporation of Faridabad
MCH	Municipal Corporation of Hyderabad
MOEF	Ministry of Environment and Forests
MSW	Municipal Solid Waste
MT	Metric Ton
N/A	Not Available
NCR	National Capital Region
NDMC	New Delhi Municipal Corporation
NGO	Non Governmental Organization
NPPM	Nagar Palika Parishad Mathura
Pg	Page
PMC	Pune Municipal Corporation
PPP	Public Private Partnership
PUA	Urban Agglomeration
RDF	Refuse Derived Fuel
Rs.	Rupees
RWA	Resident Welfare Association
SPML	SPML Urban Environ Limited
Swach	Swach Seva Sahakari Sanstha, Pune
SWM	Solid Waste Management
TCO2e	Tonnes of CO2 equivalent
TDP	Tonnes Per Day
TERI	The Energy Resource Institute
TOWMCL	The Timarpur-Okhla Waste Management Company Pvt.
UAE	United Arab Emirates
UNFCCC	United Nations Framework Convention on Climate Change
US	United States of America
USEPA	United States Environmental Protection Agency
VNN	Varanasi Nagar Nigam
Vs	Versus
WOW	Wealth out of waste
WTE	Waste-to-Energy

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Chapter 1: Views around Waste

"Koora Humara Aapka, Nahin kisee ke baapka"
(Waste belongs to us; it is not the private entitlement of any one individual)

Popular slogan from Safai Sena, a wastepickers' and small dealers' association.

Summary: This chapter sets the context for the rest of the report. It outlines the shifting perspectives around solid waste and its management across India and the landmark CAG performance audit.

In March 2007, the Comptroller and Auditor General of India (CAG) released a Performance Audit of Management of Waste in India. Amongst his observations, one was related to the lack of recognition of the informal sector. The report stated, "Only 17 percent of the sampled states had recognized the role of the wastepickers." He additionally noted that in general, solid waste was not only poorly handled due to non-compliance (by State Pollution Control Boards and Municipalities of Rules and Regulations), but also, due to the lack of monitoring.

Five years on, there are new rules and new policies in place that refer to the informal sector, but their implementation remains, as the CAG noted then, unmonitored. This report examines the new rules and understands their operational status, as well as offers a means of implementing them.

India must dwell on the CAG's recommendations as we become a rapidly urbanizing country. By the year 2030, approximately 50 percent of India's population will be living in cities. With this, several existing urban concerns will be exacerbated. Solid waste management is one of them.

According to Government statistics, about 0.1 million ton of municipal solid waste is generated in India every day. That is approximately 36.5 million tonnes annually. The per capita waste generation in major Indian cities ranges from 0.2 Kg to 0.6 Kg with the difference in per capita waste generation between lower and higher income groups range between 180 to 800 gms per day. The amount of MSW generated per capita is estimated to increase at a rate of 1 to 1.33 percent annually.[1] Waste collection efficiency in Indian cities ranges from 50 to 90 percent, according to existing data. Out of the total municipal waste collected, on an average, 94 percent is dumped on land and five percent is

[1] CPCB. "Assessment of Status of Municipal Solid Wastes Management in Metro Cities and State Capitals," CPCB.

composted. Urban local bodies spend approximately Rs.500 to Rs.1500 per tonne on solid waste for collection, transportation, treatment and disposal. About 60-70 percent of this is spent on collection, 20-30 percent on transportation and less than five percent on final disposal.[2]

Thinking around solid waste in India has been more technical than managerial. It has rarely been seen as a tool to alleviate poverty for the thousands of informal sector workers who live off such detritus by trading in it and recycling it. This is clearly reflected in the numbers above. For example, collection figures do not take into account the fact the nearly 9 to 20 percent of the waste is collected for recycling and removed from the waste stream by a range of informal sector actors - wastepickers, small and large waste dealers, itinerant buyers etc.

Some key trends around the idea of Solid Waste Management (SWM) also exclude the sector due to the way in which they ignore the role of the sector as important actors in SWM in collection, segregation, transportation, reuse and recycling. These trends are as follows:

Centralization: This is considered to be key in solid waste handling. Given the large quantities, several municipalities believe that only a large facility, at a centralized level, can handle waste. There is little decentralization or trust in this approach despite several well documented pilot projects that took place in Bangalore, Mumbai, Delhi etc. in the 1990s and into the 2000s. Only a few decentralized plans that have continued to be robust-these are those that have scaled up.

Privatization at multiple levels of SWM: Leading from the understanding of centralization is privatization, where large companies are entrusted with running several processes related to collection and processing of solid waste. Hence, starting from the mid-2000s, several cities have out sourced to the private companies the services of doorstep collection, transportation to the landfill, and processing waste into energy and other products.

Profits from waste based products: Several companies see profits in a business model where they own the waste and can either sell it directly or through processing. Examples of processing include composting, briquettes etc. An example of direct sales includes paper and cartons for sale to the recycling industry. A direct impact of pursuing such models is that the companies are able to procure contracts that allow them ownership over waste, and therefore illegalize any prior, existing enterprise. Such contracts are often granted because these companies are seen as key players in cleaning the city.

Lack of understanding of the informal recycling sector: Most often, policy makers are unable to understand the critical role of various chains of informal sector, or the quantum of their work. Most of them instead see the constituency of informal sector as a small number of urban poor with a small contribution to make, and therefore, not germane to SWM planning. This is despite several global studies that exist on the issue. One reason is because of poor dissemination of these materials within India, and the lack of knowledge networks that policy makers are a part of in this context. An outcome of this is the formal marginalization of the sector.

[2] *Status of Municipal Solid Waste: Generation Collection Treatment and Disposal in Class I cities, CPCB April 2000*

De-Prioritization of Pollution: While there are several concerns about pollution from poor waste handling, existing plans do not see these as priority. Waste-to-Energy plants, for example, do not have any mechanism to monitor for dioxin, but it is likely that they will emit this highly toxic compound, endangering public health. The priority has always been to handle waste; pollution is frequently seen as an acceptable cost to pay.

This study was undertaken with such an understanding in mind. The objective was to understand the key barriers to the livelihoods of the informal sector in recycling, and examine these barriers along with the informal sector to identify solutions.

The approach participative, in dialogue with the informal sector involved in recycling, particularly wastepickers, in various Indian cities. While we visited some of these cities – such as Nagpur, Kanpur and Bhopal-we spoke to representatives of wastepickers' groups or activists to understand the perspectives of the wastepickers and other actors. The study is intended to reflect the gap between policy and reality as the informal recycling sector experiences it.

This report looks at 14 cities across India and examines this reality in their context. The approach is to examine the issue of inclusion through three prisms-international regimes, local private companies and the state. In each case, a short summary of the existing scenario is presented.

Chapter 2: What the Law and Policy Says

"We pick waste, we clean cities. The government should guarantee our work and our food."

Dhitu Lal, small level kabari,[3] Kanpur

Summary: There are laws and policies in India that include the informal recycling sector, particularly wastepickers. This chapter details these.

In the last decade or so, since 2000, there have been several policies and rules that been inclusive of the informal sector. Paradoxically, there have been several practices that have converted the sector from informal to illegal. These include the Solid Waste (Management and Handling) Rules 2000, various masterplans and municipal decisions that flow out of the policies. As cities themselves change to become investment sites and nodes of business, commerce, tourism and events, cleanliness becomes a key concern in urban India. Several municipalities have also turned to private players for managing wastes at multiple levels:

- Doorstep collection
- Collection and transportation of waste
- Landfill development
- Treatment of waste

This often transfers the rights over waste to the companies, and forces the informal sector into illegality, with severe implications on livelihood and the looming threat of greater gratification. This is being done in an effort to clean up the cities. The overall understanding of municipalities is that private companies are more efficient and there is significant reduction in costs if contracts are offered to them.

But the repercussions of this decision have been forgotten – wastepickers have lost access to the waste, and recyclables, which is their source of income. Thus, approximately 50 percent of wastepickers in the National Capital Region (NCR) have lost their means of livelihood due to this privatization of solid waste management.

[3] Waste dealer at the lowest level of the recycling trade

With urbanization, there is a new policy that is also subsidizing urban infrastructure in waste, with social implications. This is the JawaharLal Nehru Urban Renewal Mission (JNNURM).

Such policies, which aim to improve overall waste management also create new barriers for the waste pickers and recyclers. Additionally, some of the outcomes from these have greater greenhouse gas emissions than recycling by the informal sector.

It is in this context that there is an urgency to examine various relevant policies, rules etc in order to understand the key barriers to livelihood as well as to climate justice in this context.

Indian Policy

Policy is the path along which the government is thinking, and reflects its priorities. Indian Policy clearly recognizes the informal recycling sector as follows:

The National Action Plan for Climate Change, 2009, *aims at finding ways to handle climate change within India*. It states, "….while the informal sector is the backbone of India's highly successful recycling system, unfortunately a number of municipal regulations impede the operation of the recyclers, owing to which they remain at a tiny scale without access to finance or improved recycling technologies". This is part of the Mission on Urban Sustainability.

The National Environment Policy, 2006, states "…Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials. In particular enhance their access to institutional finance and relevant technologies."(Section 5.2.8, point (e), Pg. 36)

Rules

India has many rules on various kinds of waste. The most important ones are these:

Plastic Waste (Management and Handling) Rules, 2011, in Section 6 (c) states that the Municipality is responsible for, amongst others, the following :

> Engaging agencies or groups working in waste management including waste pickers and ensuring that open burning of plastic waste is not permitted.

Electronic Waste (Management and Handling) Rules, 2011

> The electronic waste rules include the informal sector by emphasizing that associations can also act as collection centres, with the understanding that associations are an important form of informal sector organization that must be recognized.

Other Important Reports

> Sometimes, there are reports and court judgments that persuade the government to implement laws, or follow the spirit of policy and suggest ways to improve the situation. These reports are important, especially when they are government reports or even, reports given to courts. Here are two important examples:

- The CAG Audit on Municipal Solid Waste in India (December 2008) recommends (Chapter 3, Section 3.5) that "MOEF/states should consider providing legal recognition to rag pickers so that recycling work becomes more organized and also ensures better working conditions for them."

- The Supreme Court accepted recommendations of the Report of the Committee constituted by the Supreme Court in 1999 (Solid Waste Management in Class 1 Cities in India). According to this report, at points 3.4.7 (Pg. 34) and Pgs. 3.4.8, ragpickers must be converted into doorstep waste collectors as a means of up-gradation.

National Committees

There have been several committees in the last 16 years that have recognized the importance of including waste recycling sector into mainstream activities.

Asim Burman Committee, 1999:

The Supreme Court as part of the Public Interest Litigation, Almitra Patel Vs The Union of India, constituted this committee. Mr. Asim Burman, Municipal Commissioner, Calcutta Municipal Corporation headed the committee from March 1999.This important committee clearly underscored the work of the recycling sector and its rights over waste. It made certain far reaching recommendations with regard to recycling and the informal sector. These included:

- Organizing wastepickers to collect recyclable waste from shops and establishments. It also acknowledged that these wastepickers help reduce the burden of Urban Local Bodies body by several million rupees annually in collection, transport and disposal cost and saving of landfill space.

- Recycling or Reusing ten per cent of waste produced in India. Part of it to be collected by wastepickers and the rest goes to the landfills.

- Encouraging recycling by promoting recycling industry through incentives like land allotment, power, water on priority, tax holiday, preferential purchase of recycled products by government and semi- government bodies.

Bajaj Committee:

The Planning Commission, the highest policy-making body of the Indian Government, created this 1995 High Power Committee on Urban Solid Waste Management in India soon after the 1994 plague outbreak. Prof. B.S Bajaj, who was a member of the Planning Commission, headed it. The Bajaj Committee made specific room for the informal sector in the waste management framework. This was in sharp contrast to the Municipal Corporation of Delhi's ban on the work of waste pickers during and after the plague. Some of the recommendations included:

- Replacing the informal sector scavenging from roadside dumps and disposal grounds by organized ward-level recycling and recovery centres that could be managed by NGOs working with waste pickers. Municipal authorities could also employ wastepickers for this.

Regional Legislation

There have been many instances of progressive legislation from different states.

Madhya Pradesh

The order of the Bhopal Municipal Corporation (BMC), in the state of Madhya Pradesh, dated January 4th, 2011; (433/G.O/2011) also involves waste pickers for door to door collection:

- Organize and involve rag pickers and individuals or groups in door to door collection and management of garbage in the target localities.
- Support BMC in establishing garbage processing units and their operation and maintenance.
- Collect user fee from each establishment on monthly basis through the members who are involved in garbage collection, with BMC playing a facilitating role.
- Manage funds towards expenses such as monthly salary of the staff engaged in door to door collection, vehicle maintenance and other operational expenses etc. with the support and advice from BMC.
- Engage rag pickers, individuals, Resident Welfare Associations (RWAs), Community Based Organisations (CBOs) actively working in the city in solid waste management such as plastic collection, management, awareness generation and related activities.
- These Non Governmental Organisations (NGOs) shall be made responsible for overall SWM issues in the zone and shall function under the direct supervision of BMC.
- Ensure that health safety is provided to all workers engaged in the task and consolidate livelihood options and opportunities of the workers by available various benefits to them from BMC.

Maharashtra

The order of the Government of Maharashtra; Water Supply and Sanitation Department. Government Circular No: Ghakavya 1001/ Pra. Kra 546/ Papu-22 Mantralaya Mumbai: 5 January, 2002 states that:

- The unorganized rag pickers collecting waste in different parts of the city should be organized with the help of the non-government organizations and register a cooperative. The local self-government should take an initiative to get these cooperatives registered. Registered rag pickers organization should be allotted the work of collecting waste in the city parts/wards with the help of non-government organizations.
- While allotting work to these cooperatives to collect waste from various places in the city, the citizens should be informed of this method. Also discussions should be held with non-government organizations, eminent citizens, Mahila Mandals and people's representatives.
- Those rag pickers who have not registered in the cooperative can also be, under exceptional circumstances, allowed to collect waste on an individual basis after registering themselves.
- The civic authority should give preference to the cooperatives formed by the rag pickers to collect dry waste.

- If the city has a waste processing unit, the waste collected by the rag pickers should be used for the units or the rag pickers should have the freedom to sell it in the market. This will provide income to the rag pickers and help improve their living standard.
- Civic authorities/ NGOs should issue identification cards to the registered rag pickers. This will enable the citizens to recognize the registered rag pickers.
- The civic authority/ NGO should allot a specific place, as per the situation, and give the task to the registered rag pickers or their organizations to collect waste from 250-300 homes.
- The task of collecting bio-medical waste and polluted/ toxic waste should not be allotted to the rag pickers. Civic authorities should make provisions for collecting general waste and bio medical waste separately. This should be then properly stored and disposed. Effective monitoring is a necessity.

The most common story we hear about wastepickers across India is about how they lose their work, or how they do not get access to waste. With so many rules, policies and orders supporting wastepickers and kabaris, the question is, why are these not being implemented?

Chapter 3: How Policies and Rules Can Build a Green Economy

"We earn our livelihood through waste; the Government shouldn't take away our daily bread"

Sita Bai, wastepicker, Bhopal

"However, a green economy cannot be focused exclusively on eliminating environmental problems and scarcity. It must also address the concerns of sustainable development with intergenerational equity and eradicating poverty. A pro-poor orientation must be superimposed on any green economy initiative".

Towards a Green Economy: Pathways for Sustainable Development and Poverty Eradication, UNEP. 2011

Summary: The implementation of the policies and rules detailed previously offer us one strand of many towards an inclusive green economy in India. While this idea cannot be applied across the board, it is desirable in the context of the solid waste regime, which is facing new challenges as consumption levels rise in India. Moreover, India must learn from global experience that the predominant growth paradigm is not able to meet the needs for the poor or the planet. Rather, it worsens the situation. A green economy offers one way of looking at the solid waste challenge, where both the environment and the urban poor, particularly the informal recycling sector, stand marginalized. Ironically, Waste pickers, itinerant buyers, waste dealers and reprocessors pick up and reuse or reprocess paper, cardboard, metals, plastics and glass, comprising nearly 20 percent of the municipal waste in bigger cities. By removing paper and cardboard, wastepickers reduce the emission of GHGs, and prevent a rise in temperature - they act as Cooling Agents. Also, by recycling metals such as aluminum, the sector prevents mining, processing and transportation, that they themselves are very high GHG emitting activities. A win-win is possible where concepts identified within the Green Economy are applied to this sector.

In the case of the informal recycling sector, there were no rules or policies till the mid 2000s, when they were created as a result of advocacy by the sector and its supporters. The absence of rules had

disenfranchised and de-legitimized the sector and from their point of view, the absence of rules was disadvantageous. The creation of these rules and policies offer an opportunity for the informal sector to be recognized, improve their working conditions, securitize their livelihoods and become a part of the solid waste and electronic waste regime in India. This could result in enabling many actors at the bottom of the pyramid, such as wastepickers and itinerant buyers, to break out of poverty. Implementing these rules is also good for urban sustainability, particularly in the face of scarce resources and the tensions and terror associated with procuring these.

An important discussion globally discussed and contested in the last year has been that of the green economy. Development practitioners, activists and communities in the developing world have contested the idea and supported it with diverse arguments.

The UNEP (United Nations Environmental Programme) defines a green economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities." An important report by the UNEP, "Towards a Green Economy: Pathways for Sustainable Development and Poverty Eradication", 2011, describes it thus, "in its simplest expression, a green economy is low-carbon, resource efficient, and socially inclusive. But at the same time, there is increasing evidence of a way forward, a new economic paradigm – one in which material wealth is not delivered perforce at the expense of growing environmental risks, ecological scarcities and social disparities".

Unfortunately, the green economy is not always practiced in this spirit. Critics have pointed out that the green economy is often used by large co-operations to continue a business as usual paradigm and further deepen their hold over natural resources, while excluding communities.

This need not be the case in India, particularly in the solid waste sector. To become part of a green economy, the new solid waste paradigm has to benefit the environment and be inclusive of the informal recycling sector. The implementation of these inclusive rules can result in shifting waste management from a conventional business for private firms to the building bricks of a green economy.

Poor solid waste handling in India has already impacted the environment in a number of ways. Approximately 3% of India's greenhouse gas emissions are on account of poor waste handling. Given that most waste is removed to open dumps, the leachate formed contaminates ground water, pumped out for drinking, washing and cleaning purposes, particularly by those with no access to clean piped water. It is common practice to burn waste in many parts of India. Depending on the composition of the waste, this practice can most commonly emit dioxins, furans, particulate matter, heavy metals and acids. Specific components, such as plastic bags, block drains and worsen already poor sanitation and drainage conditions. Waste, when disposed on land, makes the soil unsuitable for any other purpose. It can also flow into the sea, endangering the lives of wildlife and contaminating the waterways. It is clear therefore, that waste must be reduced, reused and recycled.

On the other hand, the informal recycling sector has been shown not only to recycle very efficiently, but also, to prevent significant emissions of green house gases. Recycling is one of the cheapest and

fastest ways to reduce greenhouse gas emissions. Avoiding one ton of CO2 emissions through recycling cost 30 percent less than doing so through energy efficiency, and 90 percent less than wind power.[4]

Recycling provides productive work for an estimated one percent of the population in developing countries, in processes such as collection, recovery, sorting, grading, cleaning, baling, processing and manufacturing into new products.[5] Even in developed countries, recycling provides 10 times as many jobs per ton of waste as do incinerators and landfills.[6]

Incineration and landfill gas schemes conflict directly with recycling and composting, competing for similar materials: paper, cardboard, plastics and organics. Yet recycling reduces emissions 25 times more than incineration does.[7] And incinerators emit more CO2 per unit of electricity than coal-fired power plants.[8]

Chintan worked to create a tool that could estimate the savings by the informal recycling sector in Delhi. Using the material-specific emissions factors for four categories of waste (mixed paper, mixed plastic, mixed metals, and glass), we found the informal sector in Delhi reduces emissions by an

4 Lisa Skumatz, "Recycling and climate change," Resource Recycling, October 2008, pp. 14-20.

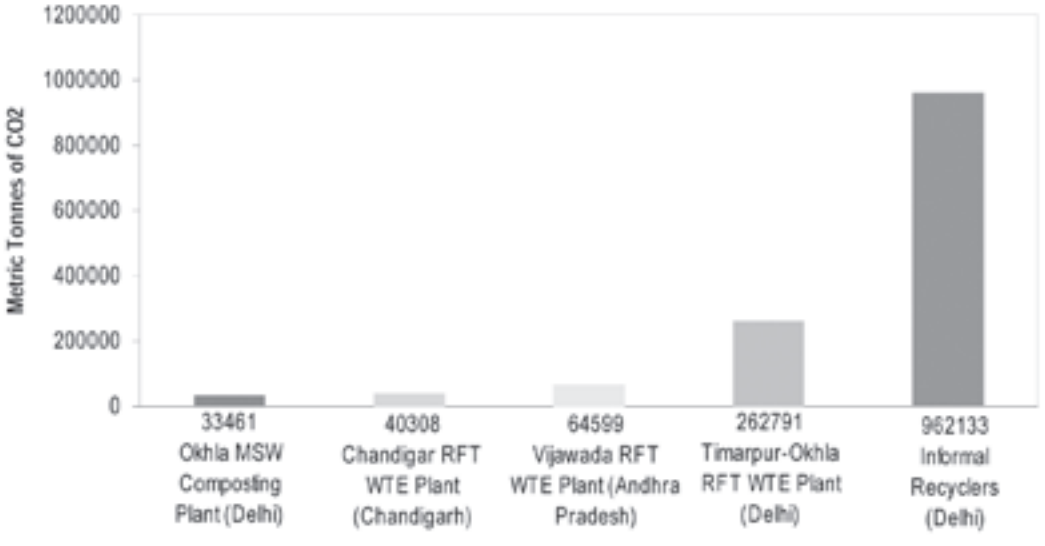
5 Carl Bartone, "The Value in Wastes," Decade Watch, September 1988.

6 www.ilsr.org/recycling*: Institute for Local Self-Reliance, Washington, DC,* 1997.

7 Tellus Institute *"Assessment of Materials Management Options for the Massachusetts Solid Waste Master Plan Review,"* December 2008, p.2.

8 *USEPA's Emissions & Generation Resource Integrated Database,* 2000

Figure 1: Average Annual GHG Emission Reductions



Source for all but Informal Recyclers, CDM project Design Documents, UNFCCC .Source for informal recyclers: Data from MCD and NDMC, various Chintan studies.

BOX 1: Green Versus Black

However, waste pickers still work under dismal conditions. They face logistical barriers to their daily working lives, including limited access to space for segregating waste and the threat of confiscation of their vehicles by the police under the pretext of regulating traffic. So while the work done by waste pickers is green, their jobs are not.

All activities in solid waste management involve risk to the worker directly involved. Risks occur at every step in the process, from the point where waste pickers handle wastes in the home for collection or recycling, to the point of ultimate disposal. All activities in solid waste management involve risk, either to the worker directly involved, or to the nearby resident. Health risks from waste are caused by many factors such as the nature of raw waste, (e.g., toxic, allergenic and infectious substances), and its components (e.g., gases, dusts, leachates, sharps).

The nature of waste as it decomposes and their change in ability to cause a toxic, allergenic or infectious health response; commonly reported occupational health and injury issues in solid waste management include the following:

- Back and joint injuries from lifting heavy waste-filled containers and driving heavy landfill and loading equipment.
- Respiratory illness from ingesting particulates, bio-aerosols, and volatile organics during waste collection and from working in smoky and dusty conditions at open dumps.
- Infections from direct contact with contaminated material, dog and rodent bites, or eating of waste-fed animals.
- Puncture wounds leading to tetanus, hepatitis, and HIV infection.
- Injuries at dumps due to surface subsidence, underground fires, and slides.
- Headaches and nausea from anoxic conditions where disposal sites have high methane, carbon dioxide, and carbon monoxide concentrations.
- Lead poisoning from burning of materials with lead-containing batteries, paints, and solders.

Hence, their work cannot be said to be part of a green economic system without successful interventions to eliminate these risks through Extended Producer Responsibility, increased awareness around issues of segregation of waste at the household level and creating micro-infrastructure locally for the sector to segregate, store etc.

estimated 962,133 TCO2e each year. This is roughly equivalent to removing 176,215 passenger vehicles from the roads annually or providing electricity to about 133,444 homes for one year (US estimates). These reductions come at no cost to the government.

The reductions from the informal recycling sector also compare favorably to the emissions reductions of other projects. For example, the annual contribution of the informal recycling sector to emissions reductions is more than three times greater than the estimated annual emissions reductions from the (Timarpur)-Okhla Integrated Waste-to-Energy Project.[9]

This plant has originally proposed including an RDF power plant, a bio-methanation plant, and wastewater treatment system in one facility. This project would reduce emissions by an average of 262,791 TCO2e per year, far less than the current GHG mitigation efforts of the informal recycling sector.

Figure 1 compares the contribution of the informal sector with this and several other Waste-To-Energy plants and composting initiatives in India that are currently registered with the CDM Executive Board.

It is clear that not only does the informal sector require support for its work but also, for the up-gradation of this work, so it can be part of the green economy. According to the UNEP Report mentioned previously, "the key aim for a transition to a green economy is to enable economic growth and investment while increasing environmental quality and social inclusiveness". What does this mean in the context of the existing rules and policies and their inclusion? Based on principles outlined in this report, Chintan has identified the following key concepts and their application:

Inclusion: A green economy must be inclusive of the poor, which means recognizing both their services and rewarding these but also, ensuring they are benefitted by a new economic system.

Combatting poverty: The MDGs have been at the heart of the discussion around development. A green economy must positively impact the MDGs and enable their fulfillment. Key to the MDGs are combatting poverty and environmental sustainability

Correcting market mechanisms, which distort environmental protection: In the case of the solid waste sector, it is clear that the informal sector is able to offer substantially higher greenhouse gas emission gains compared to other technological and managerial options. Hence, the decision-making system must be retrofitted to privilege these over other options, and to ensure that wastepickers and other actors are able to carry out their work, upgraded and safer.

Supporting communities: The green economic paradigm understands communities as both beneficiaries of the system and acknowledges and rewards their contributions rather than ignoring and crushing them.

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9 US EPA, "Greenhouse Gas Equivalencies Calculator." India CDM Designated National Authority (CDM DNA). The Timarpur-Okhla Waste Management Company Pvt. Ltd's (TOWMCL) Integrated Waste to Energy Project at Delhi

Leveling the playing field: The informal sector is often unable to compete with large companies due to the nature and scale of the contracts for waste handling in India. In order to level the playing field, the terms of work and the assistance in its implementation must be re-worked. Formalized informal sector cannot be expected to compete with the formal sector-it simply does not have the access to credit or the capacity to invest financially. However, the sweat equity and knowledge capital it brings to the table is not available with other players.

Regulation Changes: Regulatory changes have been identified as a means of transitioning to a greener economy. In the case of the solid waste, the existence of inclusive rules itself is an important shift. While other regulation and legal shifts are required, particularly at within Master-plans and decision making at the municipal level, this is an important first step. The challenge, as the next section will show, is implementation.

The existing economic regime cannot be entirely supplanted by a green economic regime, at least in the developing world, where poverty is widespread and there are a host of urgencies at work. However, certain sectors, such as solid waste, offer an opportunity to make this shift as a win-win. A sector-by-sector approach, where one sector after another is "retrofitted" or even, substantially overhauled, is desirable if the twin objectives of environmental protection and equity and inclusion of the marginalized are met. It is clear that in the waste sector, implementing the existing inclusive rules and policies is a primary and non-negotiable means of making this shift. Other means exist, no doubt, but they do not precede these.

What the Green Economy is Not

The Green Economy is a term that can be misinterpreted easily. In the context of inclusive waste handling in India, two of these scenarios are described below.

Scenario 1:

A private company not made of wastepickers as a significant majority sets up a state of the art recycling plant for plastics. It's business model is to purchase plastic waste both directly from factories and through big dealers, who have, in turn, bought it from small dealers and wastepickers. Subsequently, it applies for and earns carbon credits for its role in reducing greenhouse gas emissions. There is no sharing of the revenue with the informal sector.

We must exclude this case from being an authentic example of the green economy because:

- It fails to share the financial benefits of carbon credits with the full spectrum of informal recycling sector, from the wastepicker to the trader. It must encourage the wastepickers and even small dealers to organize so they can formally and transparently share financial benefits with members.
- Carbon Credits themselves are not an example of sustainable environmental protection because they do not reduce greenhouse gas pollution by polluters directly. Hence, any business built on these is not really green. Carbon credits, or even clean recycling does not further the critical issue of social inclusion and social inequity.

What the company can do instead is to set aside some profits to share with organized wastepickers and other formalized informal sector groups for a mutually determined agenda, such as social security, education for their children, or improved work infrastructure. Although carbon credits are not be a solution to climate change, but sharing the funds from these similarly would also be a step in the right direction. The sharing must be transparent and in the public domain.

Scenario 2:

A waste services company is contracted to undertake doorstep collection and transportation in a city. It claims to have hired wastepickers to pick up the waste and hand it over to them. It does not show how they could have identified such persons as wastepickers. It wishes to label itself as part of the green economy in its public relations materials.

We must be skeptical about this claim because:

- There is no evidence that the people hired were locally working wastepickers
- The waste-especially the recyclables-should belong to the wastepickers as they are lucrative and enable them to reduce their vulnerability stemming from a new, salary based income which cannot allow them to earn more when waste prices peak, or have money at the month-end.
- Simply hiring wastepickers is not enough. Most of them are not pre-trained in service delivery, are likely to make errors and will then be removed from the work. Hence, genuine inclusion should include training and close monitoring. It must pro-actively work towards enabling inclusion directly or in partnership with other organizations. Hiring itself is problematic, but if they are organized, they can be contracted as a group.

Privatization to large companies is not the only way to handle waste, as examples across India and globally show. However, if this is fait-accompli, the company should have rigorously identified existing players and networks, worked with them to train them and sign a contract for undertaking doorstep collection, as well as keeping the dry waste. They should have also encouraged them to organize so that the contract could be signed and payments made to bank accounts. The municipality should have offered a tangible incentive for doing this and must also monitor this. All data etc. should be available in the public domain. And the next time, the municipality should give the organized informal sector an opportunity to work as independent players.

PART 2: WHO HAS DONE WHAT

Chapter 4: State Actors

Whose Government is this? It is our government. Who should it be working for? For us. If it is not working for us, then it has failed. All of us working in waste are victims of a failed government. We have to wake it up, shout into its ears. We can't let this carry on.

Santu, small junk dealer and Safai Sena leader, Delhi.

Figure 2: Cities Discussed in this Report

Summary: The JNNURM based Detailed Project Reports for solid waste management does mention wastepickers in some cases, but these are rare. In general, SWM under the JNNURM is not inclusive of key actors from the informal recycling sector. Where they are mentioned, they are limited to wastepickers as collectors. However, these do not have detailed information or a specific strategy. Moreover, there is very little provision for the informal sector in Master plans, thus making any plans hard difficult to implement. Hence, the state is itself violating the policies and rules as described in Chapter 2, in its schemes.

In the last few years, the JNNURM has become one of the most critical push factors determining the nature of infrastructure, and hence, influences planning, in cities. This chapter is summarized in Table 1, below, which examines the JNNURM and master plan based inclusion of the informal sector in 14 cities. It then also details the various plan in the cities, to show how few of them are actually able to be inclusive, despite the vast resources in the JNNURM. In that sense, these plans remain blind to the reality.

Table 1: City Snapshots

SNo	Cities	Waste generated per day	Date & amount sanctioned	If wastepickers are mentioned in JNNURM	If wastepickers/ decentralized planning for SWM	Displacement by corporatization	Inclusion
1.	Patna	680.0 MT	26th March 2007 and 29th December 2008, Rs. 3695.4 lakhs and Rs. 1155.81 lakhs.	No	No	Yes	No
2.	Ahmedabad	2100 MT	22nd January 2009, Rs 11885.84 lakhs was sanctioned	Yes	No	Yes	No
3.	Faridabad	600 MT	Rs. 7654 lakhs was sanctioned on 20th July 2007	Yes	Yes	Private Company and waste picker organization negotiating	Possible, but not by Municipality, but by private negotiations
4.	Varanasi	600 MT	On 26th October 2007, Rs. 4867.73 lakhs was sanctioned for the SWM of Varanasi.	Yes	No	Wastepickers not organized, private company exists	Unclear, none observed
5.	Mathura	140 MT	Rs. 991.6 Lakhs was sanctioned on 8th December 2006	No	No	No	No
6.	Allahabad	680 MT	As of 22nd February 2008, Rs. 3041.49 Lakhs	Yes	Yes	Wastepickers not organized, private company exists	None observed, but municipal states it plans to do so
7.	Hyderabad	3379 Tons	N/A	No	No	WOW Model dislocating informal Sector	No
8.	Indore	46.479MT/ Year	On 28th December 2007 and Rs. 4324 Lakhs	Yes	Yes	Private company contracted to work but wastepickers also organized. Impact unclear	Unclear
9.	Bangalore	N/A	N/A	N/A	N/A	No	Yes
10.	Nagpur	N/A	N/A	N/A	N/A	Yes, with private company displacing wastepickers at the landfill	None observed at landfill, no NGO aware of inclusion at doorstep collection, but claims made
11.	Rajkot	N/A	N/A	N/A	N/A		Unclear
12.	Cochin	420 MT	On 5th March 2007, Rs. 8812.00 lakhs	Yes	Yes		Urban Poor included in collection

13	Pune			Yes	No	PMC has a large doorstep collection system serviced via wastepickers. However, privatization of the landfill is displacing wastepickers at one site.	Yes, large scale inclusion in collection, but displace-ment at landfill
14	Delhi	8000TPD	N/A	N/A	Allows some shops but bans junk shops dealing with plastics	Yes, in MCD areas. NDMC includes wastepickers for doorstep collection	Yes, in the NDMC area but not in the MCD area

Source : Compiled from JNNURM Detailed Project Reports, Chintan Observation and inputs from Safai Sena, as well as interviews with wastepickers.

Patna

Patna was serviced by a private company whose shareholders were wastepickers initiated by Nidan, an organization working with informal sector workers. They were replaced by a private company, A2Z, which, Nidan explains, did not assimilate the workers.

According to the Development Plan Review (DPR), around 60 percent of total waste generated per day is left on streets mostly due to lack of suitable infrastructure. The key priorities identified by the DPR are:

- Identification of the dumping ground to a legal and scientific MSW disposal landfill to restrict any further damage to the ground and surface water. It has been proposed to acquire landfill site of 50 acre each on West and East of Patna city in Bihar for scientific waste disposal.
- Procurement of mechanical equipments for cleaning, collection and transportation of wastes has been proposed.
- Encouraging segregation of wastes at source to the common mass.
- Involving private sector participation in collection, transportation and treatment of MSW facilities. Pilot project for primary collection of waste will be undertaken covering 50,000 households in PUA area.

The total capital cost of the project is Rs 92.58 crores.

Ahmedabad

Ahmedabad Municipal Corporation, under its Development Plan (2006 to 2012)[10] plans to have more effective door-to-door waste collection, including better collection and disposal of biomedical waste. It will maintain proper dumping of construction debris and introduce scientific disposal techniques. It also plans to increase waste processing up to 50 percent from current 38 percent. They have plans of building land fill of Size 120 m x 120 m x 10 m depth and capacity of 1, 45,000 Metric Tonnes of MSW at a Cost of Rs. 200 Lakhs. They would also build a first Compost Plant with the capacity of 150 Metric Tonnes/day solid waste capacity and various infrastructure facilities at the landfill site.

Faridabad

Till August 2011, the MCF organized the collection and transportation of the waste through a team of its own conservancy workers and a fleet of vehicles and dumper-placers; there are five dumping sites. However, in the month of September 2011,Ramky Enviro Engineers Ltd. has been contracted by the Municipal Corporation of Faridabad for door-to-door collection, transportation and dumping at the landfill facility. Currently, they are trying to work out how to include wastepickers in the system through negotiations with Safai Sena, an association of waste pickers and other waste recyclers.[11] Solid Waste is being dumped also at Bhandewari, on the order of Municipal Corporation of Gurgaon, at a plant run by Hanjer Biotech Energies Pvt Ltd which has been found to be operating below standards.

Bio-medical waste is being managed by private contractors who were awarded the contract by the Indian Medical Association, Faridabad. The private agency carries the bio-medical waste to Gurgaon where a centralized incinerator has been installed.

Varanasi

Of the total quantity of waste generated in Varanasi of 600MT per day, approximately 450MT per day of waste is collected. It is estimated that 25 percent of waste generated in the city is remains without being collected. With the increase in population the waste generation was projected to reach 735 MT/day by 2011.[12]

That infrastructure is poor could be gauged from the fact that only 20 masonry “dhalaos”, 27 open waste storage sites and 65 containers have been provided for secondary storage. Varanasi Nagar Nigam (VNN) intends to provide collection bins and ensure segregation of recyclable and biodegradable waste at source. It has already started implementation of door-to-door collection on a daily basis, through a contract with A2Z, a private company. Two transfer stations will be set up to economize the cost of transportation using hauling vehicles. The VNN also aims to construct an engineered landfill site in a phased manner for the scientific disposal of waste keeping in mind the provision for composting of waste through wind rows, vermi-composting and covered trucks for waste collection that are durable for the next 20 years. Nagar Nigam Varanasi also plans to pelletize waste for use as industrial fuel.

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[10] Ahmedabad Municipal Corporation, Ahmedabad Urban Development Authority CEPT University, CITY DEVELOPMENT PLAN AHMEDABAD 2006-2012

[11] *Interview with members of Safai Sena and field workers at Chintan as well as informal discussions with officials at Ramkey.* 2011

[12] Varanasi, Planning of a Heritage city (JNNURM) 2007

While there are wastepickers and waste dealers in Varanasi, they are not yet organized. Individuals claim they are not included in the new plans as they are currently implemented.

Mathura

District Mathura is in Agra Division, Uttar Pradesh. Only 54 MT of the total 140 MT of garbage generated daily is collected.[13] Although Rs. 991.6 Lakhs was sanctioned on 8th December 2006 to Mathura Nagar Palika Parishad (NPPM) for the formulation of Integrated Management System for Municipal SWM in Mathura, there is no reflection of the rules or of inclusion of the informal sector in the plans. There is a lack of awareness among citizens and municipal staff about the segregation of waste at source and at landfill site. Transportation of the waste is carried in open dumper placers. Significant amount of industrial wastes from small industrial units within the city contributes to the polluted river. The Mathura NPP has plans for Door to door waste collection, a sanitary landfill with a capacity of 150-200 MT waste per day, near Radhapuram on Mathura - Vrindavan Road. The SWM Master Plan included provision of various sizes of bins, collection, conveyance, separation, disposal and Public Awareness Campaigns but not a plan for the informal sector to continue its work, despite existing NGOs and their work. Hospital and industrial waste will be treated separately. Provision of appropriate infrastructure for municipal solid waste management (cycle rickshaws, wheel barrows, garbage bins, street cleaning equipments etc) will be provided.[14] Clearly, none of this takes into account the existing rules or policies for including the informal sector.

Allahabad

In Allahabad, a total of 680.0 MT of waste is generated every day, out of which 43.46 percent (251.02 tonnes/day) is organic, 17.26 percent (99.69 tonnes/day) is recyclable, 17.8 percent (102.81 tonnes/day) is drain silt and street sweeping waste, 17.38 percent (100.38 tonnes/day) is construction waste and remaining 4.1 percent (23.68 tonnes/day) is mixed waste.[15] The segregation of waste is not done at source but, waste pickers are informally involved in picking the recyclable waste in soiled condition.

Plans for the future include source segregation and Door-to-Door waste collection in select residential localities and commercial areas. Installation of composting unit and identify and develop landfill site will be set up. The Municipal Corporation of Allahabad (MCA) intends to initiate public - private participation and train waste pickers for segregation of recyclable waste. While this is not yet underway, it is a positive sign and one of the few in the country.

Hyderabad

The Detailed Project Report for Hyderabad was not available. However, it has both a private doorstep collection and a private dry waste collection system, WOW, which purchases waste from households. The WOW model clearly displaces the informal sector (See Chapter 5). At the disposable site, run by a private company, many waste pickers are involved in the segregation of recyclable waste but there is no plan to include them in the DPR. Under the principle of users pay, beneficiaries' pay, and polluters'

13 Nagar Palika Parishad, Mathura, JNNURM, CDP 2006

14 Total project cost proposed 76.57 crores

15 City Development Plan for Allahabad 2006 -2012

pay, Municipal Corporation of Hyderabad (MCH) has introduced the scheme of collection user charges from bulk garbage generators in the city. A waste to energy plant with the capacity of 700 MT/day is in progress, which may further marginalize the informal sector.

In its plans the MCH will phase implementation of door to door waste collection system with the support of NGOs, but these do not have to include waste pickers. MCH aims to achieve 100 percent solid waste management by 2025. The plan also aims to involve local governments in system planning and development and also encourage private sector participation in waste management as well as involve effective public participation in segregation of recyclable waste and storage of waste at source. While Hyderabad intends to meet the rules, it ignores the rules related to waste recyclers.

Indore

In total, the Indore Municipal Corporation (IMC) only removes about 70 percent of generated SW from the city.[16] The waste is crudely dumped at Devguradia trenching ground, about 7 KM away from the city, which has an inadequate approach road. Indore generates 839 KG/Day of Bio-medical waste and 100 percent is collected and incinerated. There are about 13 industries in the city of Indore which generates hazardous Waste. The private company, A2Z, has been contracted for waste collection from doorstep to handling the facility. This has resulted in further outrage by citizens, as organized wastepickers' groups were excluded from the new system.

Indore Municipal Corporation plans to increase the door-to-door waste collection and create waste transfer centers at appropriate locations. Introduction of scientific methods of disposal has been proposed. It also plans to create rag pickers' societies in slums to facilitate corporation assisted rehabilitation and employment generation programme.

Box 2 : Some Good Practices

Bhopal : Doorstep collection by self-help groups of wastepickers, along with *Samman*.

Bangalore : The Municipality has started distribution of Identity Cards for 5000 wastepickers so far, it will also set up dry waste collection centres in wards, to be operated by wastepickers. Informal sector will also collect e-waste.

Delhi : Doorstep collection by wastepickers in New Delhi Municipal Council and waste recycling programmes with the Railways, along with Chintan. Formalized and authorized informal sector also collecting e-waste.

Pune : Over 300,000 households serviced for doorstep collection by a co-operative of wastepickers, SWACH.

These are the mechanisms by which the existing rules and policies can be implemented.

Cochin

Kochi Municipal Corporation (KMC) plans to set up 'Awareness cum live model demonstration'. This would be done by way of community contributions or user charges, development of partnerships, privatization, etc. The idea is to ensure sustainability of the SWM program. KMC plans to improve the city's main solid waste processing at Brahmapuram. They also aim to install Bio – methane plants and secure

[16] Indore City Development Plan under JNNURM, 2006-2012

land filling facility for the effluent treatment plant for the wastes. Kochi's CDP proposes to achieve 92-95 percent efficiency in SWM[17]; the strategies including action plan, development of partnerships, financing details and means to create employment opportunities for wastepickers are yet to be discussed.

Nevertheless, Kerala has a successful example in the Kudumashree model, where women are organized to provide services in waste collection. The model is able to train and deploy women to deliver collection services at the household level, thus reducing littering, streamlining collection and being able to manage waste better. This precedence can be a useful model for wastepicker integration, even though it is likely that there are few waste pickers when compared to other cities.

In conclusion, it is clear that while the 14 cities discussed are making detailed plans for solid waste management, less than 50 percent of them have any plans to include the informal sector, as per the policies and rules of the country. Moreover, even fewer, only two-Pune and the New Delhi Municipal Council part of Delhi, have actually demonstrated this inclusion, while most have relied on private companies to handle waste without any accountability. Of these two, private companies have also resulted in loss of livelihoods in specific areas. Hence, there is not even one city that has implemented the policies and rules in entirety. This is despite four years since the CAG of India reported the condition of waste handling and suggested inclusion of wastepickers across cities.

17 Structure Plan Area Kochi 2001

Chapter 5: Non-State Actors

"Everything is gone. We can't get in, and there is nothing that we can get. Now the women go picking up mud for construction, whenever that work is available. Firstly, it is hard to work for a contractor, our freedom is gone. We can't come home if we need to. And I feel so bad-we can't buy anything really beautiful for our home. If something may look good, we have to see it and forget it. You just have to try to feed yourselves."

Kavita Tande, Landfill based wastepicker, Nagpur

Figure 3 : CDM Projects and Waste in India

Source: Compiled from data on the UNFCC website

Summary: This chapter looks at the role of agencies other than the government and organizations of waste pickers and other informal sector recyclers. It particularly focuses on corporate private players on one hand, and the global carbon market, particularly CDM (Clean Development Mechanism) on the other.

The Clean Development Mechanism

The Clean Development Mechanism (CDM) is one of three mechanisms to reduce Greenhouse Gas Emissions (GHG) through creating a global carbon market where carbon can be traded under the Kyoto Protocol. The others are Joint Implementation and Emissions Trading.

According to the UNFCCC (United Nations Framework Convention on Climate Change), "The CDM allows emission-reduction projects in developing countries to earn Certified Emission Reduction

(CER) credits, each equivalent to one ton of CO2. These CERs can be traded and sold, and used by industrialized countries to a meet a part of their emission reduction targets under the Kyoto Protocol.

In India, a total of 1561 projects stand approved as of March 31st, 2011. Of these, 907 have reached the validation stage or have even crossed this stage. In all, 630 projects have been registered with the CDM board (iges.org.jp)

CDM Projects in India

CDM and Waste

Typically, the kinds of waste projects funded under CDM are related to landfill gas recovery, waste-to-energy and composting. Some new methodologies are related to plastic recycling.
In the case of landfill gas projects, the host (i.e. the party which implements the project) shows GHG reduction by projecting that instead of letting methane (a GHG gas 21 times more potent than carbon dioxide) out into the atmosphere, it is trapped and used for energy production. Waste-to-energy projects demonstrate energy from sources that emit less greenhouse gases than other conventional sources, particularly fossil fuels. In the case of compost, CDM projects show that without composting, biomass or biodegradable waste would have been left to decay and emit GHGs.

Where they are present, wastepickers contribute to the success of the project in many ways. For composting, the plant receives partially segregated waste, on account of the wastepickers' work. For waste-to-energy, the plants save less greenhouse gases than recycling. Where they work, these plants require metals, glass and chlorinated plastic removed from the waste feed, a function the wastepickers typically undertake. However, CDM fundamentally fails to bring in benefits to the poorest in the waste handling chain who are essentially the 'bottom of the pyramid' recyclers, such as wastepickers. People like these are also amongst the most vulnerable to the impacts of climate change.

The Paradox of CDM in SWM Projects in India

In India, the CDM projects often result in the following:

- They enclose spaces, such as landfills, and thus render waste pickers without any access to waste that is the basis of their livelihood.
- They divert recyclable waste such as paper and plastics to 'waste-to- energy' plants.

Cities such as Nagpur, Pune, Mumbai, Rajkot and Delhi are experiencing a number of environmental and social fallouts of these projects. Many of these are not yet registered for CDM, but are in the process. Other projects under CDM are likely to be similar. These are as follows:

Unemployment: The fencing off of a landfill or the diversion of a waste-to-energy plant disallows wastepickers from accessing the waste available, and selling it to earn a livelihood. This results in unemployment, as access to waste is a key pre-requisite for this work. In Delhi, in one of the biggest landfills slated to become a site for a waste-to-energy plant, it was found that almost all the community was dependent on waste.

BOX 3: Social and Economic Impact Assessment on Timarpur - Okhla Waste-to-Energy Project on Wastepickers

Most of the research on waste-to-energy projects has assessed their environmental risks and potential adverse health impacts, but the social and economic impacts that these projects could have on communities have not been thoroughly assessed. The Timarpur-Okhla plant has engendered fierce resistance from nearby residents. Their key argument is that having already been victimized by a medical waste incineration plant that was built in the vicinity; they cannot accept the waste-to-energy plant in their neighborhood, as it will further compromise their health, quality of life and the immediate environment. Residents in nearby colonies have challenged the legality of the plant on the grounds that it was approved without adequate public discussion and that it violates a Supreme Court order restricting waste-to-energy plants to pilot projects.

However, the impact on wastepickers is much deeper. Chintan's assessment of the community nearby shows that many of the children in the area, who have been able to go to school, are likely to return to the work force either full time or part time, to supplement the reduced earnings of their parents. They may also work at home as parents go further away to find waste and are unable to care for infants and young children. Hence, waste to energy plants in both Okhla and Ghazipur, both of which have applied for CDM, are likely to engulf more children working in waste. Such outcomes result in climate injustice and create victims of CDM.

Underemployment: In Nagpur, the wastepicking women at the largest dump site claim that after losing their livelihoods, they have been forced to work randomly as manual labour, contracted on a 'need basis arrangement' few times a week to pick up heavy goods. They are unable to find other work and remain underemployed. While the project is not yet registered for CDM, one of the proprietors informed the author of this paper that the company is working to apply for CDM.

Child Labour: In Delhi, a social impact assessment shows that it is quite likely that children who are out of the workforce and in schools may slide back fully or partially to work to supplement a reduced family income.

Subtractionality: This implies the opposite of additionality. We have made it up to express our concerns and reality. In case of waste-to-energy, some calculations indicate that it saves less (not more) greenhouse gases than what is achieved through recycling. Besides, it displaces a sustainable practice by an unsustainable one in the case of waste to energy plants. There is greater unemployment and increased poverty when the value of waste lower in the waste hierarchy chain is shifted. Hence, CDM in this context is based not on additionality but subtrationality.

Other Private Actors

Cases in Pune, Patna, Delhi and other cities demonstrate that the successful integration of wastepickers is possible with overall benefits for the city and the environment. Yet, across India, there are several new challenges as the landscape of waste handling in India changes. What are these landscape changes?

- Private agencies involved in waste collection, handling and transportation, and typically, owning all the waste.
- Fencing of landfills for waste to energy and other treatment plants

All these have been undertaken to tackle the growing amount of solid waste in India. However, they have had various detrimental impacts on wastepickers as well as recycling rates. This implies that some of the benefits from recycling are lost. The following cases illustrate the ground reality:

Pune

Problem: Despite a highly successful doorstep collection system supported by the Pune Municipal Corporation, some wastepickers on the landfill were unable to earn a living as the company Hanjer began operations. Of the approximately 350 wastepickers who earlier sourced recyclables at the landfill, at the point of writing this report, around 50 persons are allowed informally into the Hanjer plant facility, where they are required to buy the waste at the rate of approximately Rs. 7 per kilogram from Hanjer and its representatives, at the point of this study. The company was then found to sell it to local scrap dealers there. Given the average collection figures as approximately 60 kilos per day, this fee can be as high as 420 rupees, significantly reducing their net earnings. By doing this, Hanjer also additionally sets up disincentives to pick waste.

Lost Opportunity: Hanjer could have enabled each truck of waste to be emptied at a site and allowed wastepickers to pick out the materials. It could then have bought these from them at Rs. 7 per kilo or any other mutually agreed upon rate.

Nagpur

Problem: The case of Nagpur involves the poor implementation of wastepicker inclusion by Hanjer, a private company involved in RDF. Prior to the company's arrival, about 300-400 wastepickers sorted through approximately 700-800 tons of waste to eke out a living. The company was asked by the Nagpur Municipal Corporation to identify and rehabilitate the wastepickers. It began identification but stopped at 171 persons. The rest are therefore not on the records. Some 400 persons are able to access only the waste not used by Hanjer.

Lost Opportunity: Hanjer could integrate wastepickers for segregation and other related activities like handling, which would also fulfill its contractual obligation.

Ghaziabad

Problem: In Ghaziabad, the Gaziabad Municipal Corporation (GMC) has given out the contract of ownership of all recyclable materials to a contractor. The agreement reads that he must provide benefits to any wastepicker that he hires to collect the waste. He is not required to undertake any value addition, processing or handle other kinds of waste that are a public health concern. There is no clear benefit to the city or improvement in solid waste management per se. The contractor now charges all wastepickers (approximately 5600 of the total approximately 7000 working in the area pay him) a monthly sum (between Rs. 400-500) for picking waste as not paying it amounts to stealing, despite the services that the wastepickers are providing to the city through segregation and recycling. Lost Opportunity: The GMC could have contracted organized wastepickers to collect, segregate and recycle the waste with performance standards so that the entire city was further benefitted.

Ahmedabad

Problem: There are two problems that come to light in Ahmedabad.

The first is a new landfill site being created under JNNURM. An earlier old landfill site has also been restricted for the wastepickers, resulting in about 250 persons losing their livelihood at this point. In addition, those who pick waste from municipal dhalaos are also facing a unique challenge because of privatization, where private contractors also take bribes based on locality affluence. Rs. 10 per day per person is considered a reasonable fee for this in a middle class locality.

The second is corporate privatization of doorstep collection. Earlier, the Ahmedabad Municipal Corporation contracted SEWA to undertake doorstep collection, providing funds etc. Later, once the model was seen to be viable, it contracted out doorstep collection to three private companies, who did not assimilate the wastepickers into their system. In all, 392 women lost their livelihoods.

Lost Opportunity: Why mend something that's not broken? The doorstep collection using wastepickers could have been expanded and strengthened, instead of removed.

Who are These Private Companies?

Details of some companies in solid waste management.

1. **A2Z Group :** The Company was acquired by Mr. Amit Mittal from its existing shareholders in December 2003. The Group began its operations in Facility Management Services (FMS). The A2Z Group[18] now has 30000 employees across India. The turnover for the financial year of 2011 was estimated to be Rs. 1345 Crores. The group's five year CAGR for the financial year 2006 to 2011 was up to 64.5 percent. Apart from solid waste, the company also works in seven other segments, such as e-waste, renewable power generation, power IT application etc.

Has displaced over 2000 wastepickers in Kanpur alone. Many were poor and Dalit.

2. **Ramky Enviro Engineers Ltd :** The Ramky Group,[19] with its headquarters in Hyderabad, was founded in the year 1994, and has 50 percent of the market share in solid waste management projects in India, a total of 60 projects in solid waste, bio-medical waste, e-waste etc. It has a turnover of over 4,500 crores, focused in the areas of Civil, Environmental and Waste Management infrastructure with specific emphasis on Public Private Partnership (PPP) projects. The Group has over 6,000 employees across India, South East Asia, Africa and UAE. The Group has enjoyed strong profitable growth at a CAGR above 30 percent.

Supports the WOW Model, which creates displacement in Hyderabad. However, is working with Safai Sena, an association of wastepickers and small dealers, in Faridabad Municipal Corporation, through formal contracting.

[18] http://www.a2zgroup.co.in/

[19] http://ramkyenviroengineers.com/

3. **Delhi Waste Management – SMPL :** Delhi Waste Management Limited is engaged in collection, segregation and disposal of waste from south, central and city zones of Delhi. A sister concern, SPML Urban Environ Limited at present is into collection, segregation and disposal of waste from airports of Delhi and Hyderabad while Madurai Municipal Waste Processing Company Private Limited is into processing and disposal of solid waste for Madurai Municipal Corporation. Other business interests are around water utilities and infrastructure.

Has rendered over 200 wastepickers jobless in South and Central Delhi.

4. **Hanjer Biotech Energies Pvt Ltd :** Hanjer Biotech Energies[20] is an India based organisation dealing with solid waste processing. Hanjer has 16 operating plants in India with total installed annual processing capacity of 2.95 million tonnes. Besides, nine more projects with an additional 1.05 million ton processing capacity are in implementation stage. The facilities of Hanjer in the Gurgaon-Faridabad border were found to be significantly below par during an assessment by Chintan and the Gurgaon Municipal Corporation.

Has displaced at least 300 wastepickers in Nagpur, and an unknown number in Pune. Also allegedly indulged in unethical practices while forcing wastepicking women to pay for taking waste from their landfill in Pune [21].

In all these cases, the companies were given these contracts by the Municipality. Hence, while the companies themselves could be held accountable for not following the Rules, the Municipalities are also guilty of violating these rules and creating contracts that ensure policies and rules are not adhered to.

20 http://www.hanjer.com/

21 Interview with members of KKPKP, Pune, November 2011.

PART 3: CONCLUSIONS

Conclusions

Wastepickers are amongst the poorest inhabitants of an Indian city. They are therefore the most vulnerable to any disturbances, and impacts of climate change in cities, such as reduced water availability, harsher summers and heavier monsoons and floods, and new vector borne diseases. As poor, marginal persons living in sub-standard housing, they will be impacted by all of these, as well as other impacts, such as rising food prices.

They require access to waste in order to continue to work. Ideally, this should be legal and under safe and non-hazardous circumstances. While the quality of work and up-gradation of work is a slow process, it is imperative to enable wastepickers, itinerant buyers and small junk dealers to earn a livelihood by accessing waste, being able to store it and trade in it and finally, being licensed to do this work.

Indian policies and rules, while not adequate, have some important safeguards and recognition for such recyclers. However, they are ignored by municipalities, urban policy makers, and private companies in the business of solid waste management. By doing this, they are bypassing the environment and the poor. They are stopping a chain that so importantly contributes to reducing greenhouse gases in our increasingly consumptive cities and towns. They are in fact, imposing climate in-justice. In this context, most formal players fail the grade. Even some of the best municipalities set up excellent inclusion projects in one part but break the rules in the other. It is therefore, not incorrect to say that no single city has implemented all the rules and followed the spirit of the policies laid out for wastepickers and other informal sector actors in India.

The way forward offers India both economic and environmental benefits, as well as an opportunity to find win-win solutions for cleaner cities. Some key tools to ensure inclusion of wastepickers are:

- All PPP projects must ensure there is a component of including the sector as per the legal and policy mandates. This must be part of the plan and essential to receiving final clearances.
- Many municipal and urban local body authorities require further capacity building to understand how these rules can be implemented in practical terms. This capacity building must be provided freely and frequently so the municipalities and ULBs can learn from each other's experience and remain updated.

- **In cases of any processing technology**, with or without CDM funds, **wastepickers must be assimilated** at least in waste segregation, bailing handling activities through a process of identification, training and working. The identification and training as well as letters of offer must be made available prior to the start of the plant. All wastepickers and small buyers must be included. It is not good enough to include only some. All technological options must be made in a transparent, legal manner and with the waste hierarchy in mind, which puts recycling ahead of incineration and landfilling.
- **In case of upgradation of landfills**, a model as in Quezon city, Philippines, is a good model. It allows wastepickers access to waste under improved conditions. This is being followed also in Gyor, Hungary, and in Heredia, Costa Rica, Dhaka, Bangladesh, as well as Lima, Peru.This requires a space for trucks to unload their waste and a Material Recovery Facility that allows wastepickers to carry on their work without injury.
- **Doorstep collection is mandatory. However, it must be carried out only by wastepickers or organizations working with them**. Reading this with the Burman Committee Report, doorstep collection services must be provided across cities. Wastepickers as defined above must be used for this.
- Dry/Recyclable waste from any source must be allowed to the wastepickers or their organizations.
- Some basic infrastructure and **support is required from municipalities** for the success of these operations: cycle carts, fiscal help, space etc. As wastepickers and their support organizations do not have the deep pockets of corporate houses, they cannot provide themselves with these.
- **Documentation is key to change**. Documentation of wastepickers, small dealers, itinerant buyers is essential to ensure complete and adequate inclusion.
- **Monitoring is essential, to ensure no one fails the grade again**. This must be carried out by a range of persons, including wastepickers themselves, city wise

These are some means by which rules can be implemented. It is important to hold municipalities and other urban local bodies accountable for this. We must not let anyone fail the grade again.

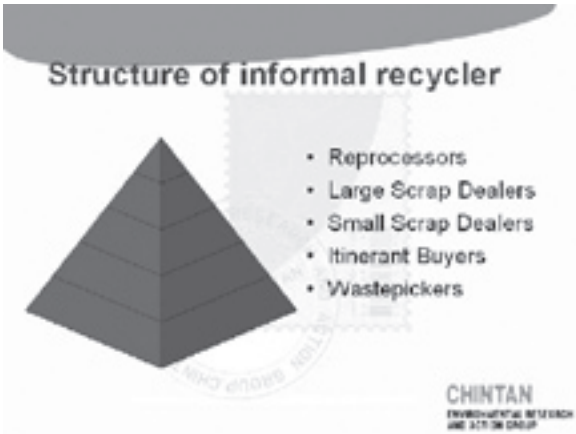
Appendix I

A. About the Informal Recycling System

The informal recycling system is an everyday phenomenon in most Indian cities and towns. Yet, we understand very little about it.

i) A ragpicker/wastepicker is a person engaged, in activities related to resource recovery and recycling of waste at the waste generating level itself. She/he may work directly or through any agency, and may or may not be receiving any wages for the work.

Figure 4: An Approximate Structure of the Sector in India



ii) Resource recovery and recycling of waste activities and allied work includes but is not limited to activities such as waste collection from the doorstep, waste dumps, institutions, offices or any other waste generators, waste segregation, handling, cleaning, and composting and biogas plant maintenance.

iii) Currently, in the Indian context, although some wastepickers are organized into various organizations, a majority of them remain individuals working in the informal sector. They are primarily illiterate and belong to either minority communities, Dalits or other Backward Castes.

iv) In India, there are approx. 15 lakh persons engaged in the job of waste picking, amounting to 10 percent of the total wastepickers globally. They pick up between 9 to 20 percent of the waste generated, and are the only recycling system we have in India. The most common materials they pick are plastics (most kinds, but not all), paper, cardboard, metals and glass. They also add value to the materials. From the time the material is picked up and before it is recycled, an average unit of plastic increases in value by 750 percent, through segregation, washing and trading alone.

Figure 6: Countries where Wastepickers Currently Work

Map generated on existing data and information

Amongst these are wastepickers, itinerant buyers and several other waste workers. Their works includes picking out even the smallest scrap of recyclable waste, such as paper, cardboard, plastics and metals from the trash, and sell them to waste dealers who in turn sell them to big traders. Finally, they are sold to recycling factories.

B. The Spread

Wastepickers are not an unique Indian phenomenon. They are present in most developing as well as mid-income countries. The following map marks the countries where wastepickers and informal sector recycling is currently active.

In addition to these, there are persons picking specific trash, such as cartons, aluminum cans and metals. Wastepickers in some cities of the United States, such as New York and San Francisco, are able to pick such wastes because there is a buy-back deposit for them.

It is estimated that there are about 15 million wastepickers present globally.

Table 2: Informal sector presence in 6 global cities from middle and low-middle income countries

Cities	Number of informal sector workers	Number of city inhabitants per informal sector worker	Number informal sector workers per km2
Cairo	33000	441	6
Cluj	3226	118	18
Lima	11183	694	4
Lusaka	480	2.58	1.3
Pune	8850	339	64
Quezon City	10105	246	63
Total 6 cities	66844	422	26

Source: Scheinberg, Anne, Michael H. Simpson, et al (2010): "Economic Aspects of the Informal Sector in Solid Waste." GTZ (German Technical Cooperation), Eschborn, Germany.

Additionally, the total percentage of people working in cities of the developing world in this sector is 1 percent of the city's population. The table above illustrates the widespread nature of the informal sector in 6 global cities from middle and low-middle income countries, including India.

C. Benefits from the informal recycling sector

This section will briefly examine international data on benefits of the informal sector, and then detail Indian examples. There are three benefits: Environmental Benefits, Economic Benefits and Livelihood Benefits.

I. Environmental Benefits

Environmental benefits from the work of wastepickers are primarily understood as efficient recycling of materials (and therefore, conservation of resources) and additionally, saving green house gas emissions via this process.

While recycling can be undertaken in a number of ways by different actors, some international studies show that wastepickers/the informal recycling sector is able to recycle most efficiently.

The UN Habitat's State of the World's Waste, 2010, has studied 20 countries for understanding key issues related to waste and global trends. The table below summarizes some of their findings in 14 out of 20 cities globally.

In some cities, data was not available. Table 3 clearly shows that on an average, across the world the informal sector is able to recycle 15 percent of the waste.

This figure is also close to the amount recycled average by the formal sector. Please note that the table is limited to recycling, not overall handling.

In the specific Indian context, the environmental contribution of wastepickers has been seen as keeping up a culture of reuse and safeguarding materials in the modern age.

Some benefits include:

i) **Green House Gas emissions reductions:** About 6 percent of India's greenhouse gas emissions are on account of solid waste. This is double that of the rest of Asia and is a poor record. Recycling is a well known way to reduce such emissions. A study showed that in Delhi, wastepickers have saved over 900,000 CO2 tons per annum, which is nearly 3.6 times higher than any waste project approved for CDM.

ii) In general, such a trend is likely to be reflected in other Indian cities. This assumes importance given that 6 percent of India's Greenhouse gases originate from inadequate waste management. Without the informal sector, this number would likely have been higher.

iii) There is considerable **value addition to discarded materials**. For example, a single unit of plastic rises in value by 75 percent. Prior to even being sold as a new recycled product in the market.

Table 3: Global city-wise waste recovery (in tonnes and percent).

City	Tonnes recovered, all sectors	Percent materials prevented or recovered	Percent recovered by formal sector	Percent recovered by informal sector	Total percent recycled as materials	Total percent to agricultural value chain
Adelaide	2,611,214	54%	54%	0%	28%	26%
Bamako	392,893	85%	0%	85%	25%	31%
Bengaluru	524,688	25%	10%	15%	15%	10%
Belo Horizonte	145,134	7%	0.1%	6.9%	6.9%	0.1%
Canete	1,412	12%	1%	11%	12%	0%
Curepipe	NA	NA	NA	NA	NA	NA
Delhi	841,070	33%	7%	27%	27%	7%
Dhaka	210,240	18%	0%	18%	16%	2%
Ghorahi	365	11%	2%	9%	11%	NA
Kunming	600,000	38%	38%	NA	38%	0.05%
Lusaka	17,446	6%	4%	2%	6%	NA
Managua	78,840	19%	3%	15%	17%	2%
Moshi	11,169	18%	0%	18%	NA	18%
Nairobi	210,240	24%	NA	NA	20%	4%
Quezon City	287,972	39%	8%	31%	37%	2%
Rotterdam	90,897	30%	30%	0%	28%	1%
San Francisco	366,762	72%	72%	0%	46%	26%
Sousse	4,168	6%	0%	6%	2%	4%
Tompkins County	36,495	61%	61%	0%	61%	NA
Varna	37,414	27%	2%	26%	27%	NA
Average		30%	16%	15%	23%	9%
Median		25%	4%	11%	22%	4%

Source: Solid Waste Management in the World's Cities, Water and Sanitation in the World's Cities 2010. UNHABITAT

II. Economic Benefits

The economic benefits are seen as the savings that the city or citizens privately have accrued on account of the work of the sector. It is important to note that there are several ways by which this can be viewed, but the most accepted indicator is that of avoided costs. Table 4 below is summarized from a global study of six cities and reflects a universal trend of positive avoided costs on account of the work of the informal sector.

Table 4. Annual savings and avoided costs on account of informal sector activities (Cost in INR.)

City	Avoided costs for collection	Avoided costs for disposal	Total avoided costs for disposal	Value created per informal livelihood
Cairo	752,916,900	129,911,700	882,828,600	26,779
Cluj	3,586,800	244,000	3,830,800	1,159
Lima	883,109,200	78,147,100	961,262,400	85,949
Lusaka	89,163,700	591,700	89,761,500	187,026
Pune	**116,217,200**	**19,099,100**	**135,316,300**	**15,311**
Quezon City	204,691,600	52,100,100	256,785,600	25,437
Total/Avg.	2,049,685,400	280,093,700	2,329,785,200	34,831

Source: Scheinberg, Anne, Michael H. Simpson, et al (2010): "Economic Aspects of the Informal Sector in Solid Waste." GTZ (German Technical Cooperation), Eschborn, Germany.

Looking at the system in this way, it appears that the informal sector in Lusaka creates a benefit of more than Rs. 1, 87,000 per person, but in Cluj that value is only Rs. 1,159. However, on average, the 66,000 informal livelihoods in the six cities provide a collective benefit of Rs. 2 billion per year, or about Rs. 34,770 per person. In some cities this benefit is more than the informal sector persons actually earn, meaning that they create as much value for their cities as they do for themselves.

In India, we often discount the economic benefits from the informal sector as this is not officially computed. However, savings to municipalities as wastepickers are able to segregate and divert the waste to up to 20 percent saves expenditure on both transportation and on paying for waste collection, where there are private contractors. It also saves the cost of segregation. While there are no reliable statistics on the benefits of recycling, it is reasonable to assume that reducing extraction; transportation etc also has a positive economic impact.

D. Livelihoods

Another area to consider is that of self-employment. While wastepickers's contributions are not reflected in the GDP, they are an important contributor to generating incomes, wealth and jobs. By being self employed, as against unemployed, they are able to invest in the well being of the next generation and productively contribute through environmental services to the city. In India, the issue of livelihoods becomes particularly important as over 93 percent of jobs in the country are located in the informal sector and provide the poor with a means of livelihoods and therefore, survival.

Table 5: City wise livelihood and employment in informal sector.

City	Total no. of livelihoods in informal waste sector (persons)	Total employment in the formal waste sector (persons)	Ratio of persons working in the informal waste sector to those employed in the formal waste sector	Informal sector households depending fully on income from informal waste and recycling activities
Cairo	33,000	6,750	4.9	91%
Cluj	3,226	330	9.8	n/a
Lima [(1)]	17,643	13,777	1.3	88%
Lusaka	480	800	0.6	69%
Pune	**8,850**	**4,545**	**1.9**	**63%**
Quezon	10,105	5,591	1.8	82%
Total/Avg	73,304	31,793	2.3	79%

Source: Scheinberg, Anne, Michael H. Simpson, et al (2010): "Economic Aspects of the Informal Sector in Solid Waste." GTZ (German Technical Cooperation), Eschborn, Germany.

Given that approximately 15 lakh people depend on wastepicking as a livelihood, this form of self-employment has direct implications for eradication of child labour, health and nutrition, education of children, particularly girls and smaller families as secure adult livelihoods are seen to reduce child labour and foster education.

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