

Cooling Agents

An Analysis of Greenhouse Gas Mitigation
by the Informal Recycling Sector in India



[2009]

Acknowledgements

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This report is the result of a partnership between Chintan Environmental Research and Action Group, Safai Sena and the Advocacy Project.

Chintan is a non-profit in India that works in partnership with grassroots communities for environmental and economic justice.

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The Advocacy Project helps marginalized communities to tell their story, claim their rights and produce social change. For more information visit <http://www.advocacynet.org>.

Safai Sena, is a registered association of recyclers working in North India. They can be contacted via Chintan currently, as they shift their premises.

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Preface

Intuition and common sense suggest that recycling waste mitigates greenhouse gases. Now, data from all over the developed world shows this to be true.

But what about the developing world? Almost 1% of the population in cities of the developing world is made up of recyclers, mostly informal and largely poor. Most of them are scarcely acknowledged legally. If, as common sense suggests, they save greenhouse gases by recycling, then it is unfair to ignore their mitigation work in cities. It is also unwise to ignore this work because it is a valuable resource in the fight against climate change. Thus, the aim of this report is twofold: to establish the relationship between municipal solid waste and greenhouse gases, and to undertake a first attempt at quantifying the emissions reductions attributable to the informal recycling sector through the case study of Delhi, India.

Arriving at numbers for recycling rates, waste composition, and other key determinants of greenhouse gas mitigation from waste management is a tall order in many areas of the developing world, mostly because of data gaps. Recycling in countries like India, the Philippines, Brazil, Columbia and Thailand is based on the efforts and innovation of millions of informal sector workers. The challenge here is to be able to quantify the many tasks that such workers undertake, and to tease out the wide array of implications for climate change data. For example, informal sector innovation frequently results in a change in travel distances, the mode of transport, and even in what type of recyclable waste is picked up. In much of India, wastepickers use non-motorized transportation for picking up and transporting waste. Sometimes, they travel as far as 20 kilometres from their home on a simple cycle-rickshaw in search for valuable waste. The energy savings implications are obvious. But if a slum demolition drives them to live outside the city, their efforts are often supplemented by motorized transport. Accounting for these shifts is not easy, if at all possible.

The fundamental question Chintan faced was this: how to put numbers to the greenhouse gas savings the informal recycling sector brings to the table? We decided to look only at the materials that were most frequently recycled – leaving out several other additional savings, such as use of non-mechanized transport and informal sector contributions to composting. Despite such narrowing, we realized there were no currently available methodologies for calculating emissions reductions from recycling specifically developed for the Indian context. Therefore, we used material-specific emissions factors developed by the United States Environmental Protection Agency. Though we are ultimately unable to overcome the non-transferability of those emissions factors outside of the U.S. context, close scrutiny reveals that they likely *underestimate* the greenhouse gas savings achieved by recycling in India. In fact, the original calculations of informal sector emissions reductions presented in this report are only conservative illustrative estimates.

Why did we pick on Delhi alone? Our methodology required a bounded area, with exact numbers. Had we clumped together several cities, the differences within each in waste generated and recycled would have resulted in greater margins of error. In many cities, the data cannot be verified, leading to even greater inaccuracies. Delhi then serves as a case study of the savings available to a city thanks to the sector. We are happy to help any other city generating similar estimates.

This report has two eye-opening conclusions.

First, the sheer savings the sector brings to a city by recycling materials alone. For example, the informal sector in Delhi reduces emissions by an estimated 962,133 TCO₂e each year, which is over 3 times more than other waste projects slated to receive carbon credits in the city.

And second, that the structural inadequacies of the CDM are creating climate injustice by forcing the institutional sidetracking of wastepickers and other smaller recyclers. We don't see it because they are informal and under our radar screens. The bigger truth is that there are likely millions of informal poor, apart from recyclers, whose work contributes to emissions reduction, but who remain unaccounted for, and unrewarded for protecting our commons. They are cooling agents in a warming world.

As beneficiaries of their services, the onus to advocate for a shift in this paradigm lies on all of us.

Bharati Chaturvedi
Director

Executive Summary

This study critically examines the role that the informal recycling sector plays in climate change mitigation in developing countries, with a particular focus on India.

Emissions of some key greenhouse gases (GHGs), such as carbon dioxide (CO₂) and methane (CH₄), can be traced directly to municipal solid waste. Emissions result from virtually every step in the life cycle of materials that end up as waste, from energy-intensive resource extraction, product manufacture, and distribution, to landfill maintenance and solid waste management. Recycling and waste prevention are thus crucial to the battle against climate change.

In many areas of the developing world, the urban poor form the backbone of recycling programs. Wastepickers, waste recyclers, and small junk dealers, collectively known as the “informal recycling sector,” make up as much as 2% of the urban population in Asia. These are men, women, and children who forage through trash heaps and depend on the revenues derived from selling recovered materials for their livelihoods. They provide valuable environmental services to the cities in which they live and their work results in real and measurable reductions in GHGs.

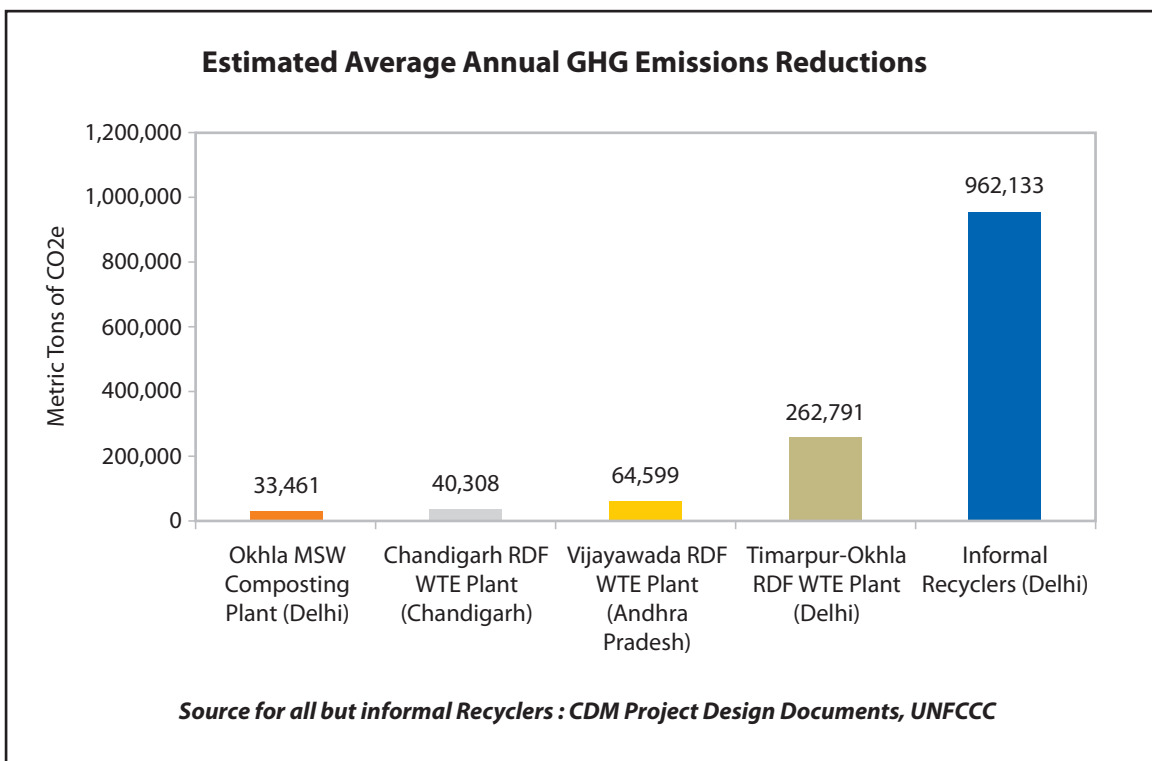
In India's 2008 National Action Plan on Climate Change, the Indian government lauded the informal sector as the backbone of India's recycling system and affirmed its role in emissions abatement.

To quantify informal sector emissions reductions, the study used material-specific emissions factors for several categories of recyclables developed by the United States Environmental Protection Agency (EPA). These factors allow for comparing the emissions generated by landfilling one ton of a material vs. recycling that same ton. While this study was unable to overcome the fundamental non-transferability of those emissions factors outside the US context, it is very likely that their use in the Indian case provides *a low estimate of informal sector GHG reductions*. The emissions factors use U.S. national averages for key inputs such as percentage of methane captured at landfills and the average U.S. energy mix for manufacturing processes. Since Delhi's dumps have no methane capture technologies and India's Northern Grid is more carbon intensive than the US national average, in both cases using a U.S. emissions factor is likely to *underestimate* GHG savings from recycling in India.

Key Findings of the Report:

- Rapid growth in population, urbanization, the economy in India in the previous decade has resulted in an intensifying waste burden in urban areas and **rising emissions from waste**. Emissions from the waste sector in India have **grown more than 30% since 1995**. During this same period, emissions from waste in many countries with advanced waste management systems tapered off or even declined. Emissions from waste now account for 6.7% of total Indian emissions. This proportion is **twice the average for other countries in Asia and also higher than the global average**.
- There is an **unequivocal emissions hierarchy** among waste management practices. Non-disposal technologies and practices such as source reduction and recycling (including re-use and composting) offer superior climate benefits to disposal technologies such as landfilling and many forms of waste combustion. Non-disposal processes save energy, divert materials away from landfills and incinerators, and increase upstream carbon stocks.
- Formal waste management systems in Indian municipalities perform poorly and are almost universally in **non-compliance with national waste management laws**. Since formal recycling programs are rare, nearly **all emissions reductions from recycling in India are attributable to the informal sector**.
- The informal sector in Delhi alone accounts for **estimated net GHG reductions of 962,133 tones of carbon dioxide equivalent (TCO₂e) each year**. These savings are the same as **removing roughly 175,000 passenger vehicles from the roads** annually or **providing electricity to about 130,000 homes** for one year (US estimates).
- Informal sector GHG reductions in Delhi also **exceed the proposed annual emissions reductions from the Timapur-Okhla RDF Waste-to-Energy Plant** and the current annual GHG reductions from the Okhla MSW composting unit, both of which have been registered with the Clean Development Mechanism of the Kyoto Protocol to earn carbon credits.

- If built, the **Timarpur-Okhla RDF WTE** plant will compete directly with informal recyclers for access to burnable waste and thus would be an **effective increase in emissions**.
- The structural deficiencies of the CDM are creating climate injustice by forcing the institutional sidetracking of wastepickers and other smaller recyclers who are contributing to climate change mitigation. Instead, they provide **perverse economic incentives** for waste emissions reductions from end-of-pipe technologies.
- The **lack of approved CDM methodologies** for calculating baselines and emissions reductions from recycling programs on a life cycle basis has also served as a barrier for the informal recycling sector. These trends have contributed to a situation whereby some of India's poorest citizens, despite the fact that their work is environmentally beneficial, are in competition with projects that are supposed to contribute sustainable development.



Recommendations

Our recommendations seek compensation for the eco-services provided by the informal recycling sector. We look at various avenues for this—monetary and non-monetary, at national and international levels.

Internationally:

For the CDM Executive Board:

- **Approve recycling methodologies.** The Executive Board should entertain and approve both large-scale and simplified small-scale methodologies for calculating baselines and emissions reductions from local recycling programs. Such methodologies might range from simple quantification of increased rates of material sorted at a recycling facility that will replace virgin manufacturing inputs, to more complex life cycle models at the community level.

Nationally:

For the Government of India

- India does not have to wait for the sector to be recognized in any global treaty or document. Our own national policy has already stressed the importance of the sector. This makes it imperative for India to act at multiple levels, as described below.
- Guided by its own policies which recognize the work of the informal sector and the vital mitigation services provided by them, and in the context of the country's rapid urbanization, India should declare a Unilateral Declaration of Intent to provide monetary and non-monetary compensation to informal sector recyclers through various mechanisms, with the intent of making their work legally recognized, safe and sustainable.

For India's CDM Designated National Authority (DNA) and the MoEF:

- **Reject WTE projects that compete with the informal sector.** Because the Indian DNA is tasked with harnessing carbon finance only for projects that will provide economic, social, and environmental benefits to its Indian constituents, it should neither approve nor support CDM projects that compete directly with informal recyclers for dry waste. By doing so, it also allows increased mitigation by the informal sector.
- **Press for methodologies.** The DNA and MoEF should further use their leverage with UNFCCC actors to press for new recycling methodologies in the CDM and should actively work to expand its CDM projects to include recycling efforts.
- **Expand portfolio for composting.** The DNA should focus greater attention on composting opportunities at the municipal level and include composting in its public campaigns to attract international investment in India's CDM projects.

For the Central Pollution Control Board (CPCB):

- **Develop emissions factors.** The CPCB should collaborate with the Climate Change and Waste program of the U.S. Environmental Protection Agency to develop material-specific emissions factors tailored to the Indian context for individual waste items and categories of mixed waste. In addition to improving the availability of aggregate data on the climate benefits of recycling, composting, and source reduction, this measure would enable individual Indian municipalities to compare the GHG emissions that result from various combinations of waste management practices.
- **Improve data.** CPCB should also improve the specificity and public availability of data on the material composition of recyclables (% by weight, for each type of recyclable) in the MSW of Metros and Class I and II cities urgently.
- **Undertake a formal study on recycling in India.** There are few comprehensive sources of information on recycling rates and materials recycled in India. Because the informal sector accounts for most recycling, such a study might be best carried out in collaboration with local NGOs that work directly with the sector.

For Municipalities and Urban Local Bodies:

- **Provide informal sector with in-kind compensation for emissions reductions.** Earning monetary compensation for GHG emissions reductions is highly dependent on the ability to calculate such reductions with a high degree of accuracy. While there are currently structural impediments to arriving at razor sharp calculations for the informal sector, it is certain that their contribution to fighting climate change is real and substantial in magnitude.

In the absence of financial compensation, municipalities and urban local bodies (ULBs). The NDMC has already taken steps by including them in doorstep collection.

Some of the vital steps include *licensing small junk dealers* so that they can operate legally, *contracting exclusively with the informal sector for door-to-door collection of waste*, and *providing the informal sector with space* for segregation, handling, and storage of waste.

- **Subsidize community composting.** While subsidies for WTE projects are available from the Ministry of New and Renewable Energy, there are currently no subsidies for composting efforts. This is not a technology that produces electricity, but it is a technology that saves emissions. The National Action Plan on Climate Change identifies composting as the “dominant technology choice” for the waste sector and notes that it will require “net fiscal expenditures” on the part of concerned local bodies to deal with the waste and climate problem.

In addition to financing, local bodies with a horticulture department must be mandated to buy compost from waste from a range of producers-residents, markets etc-in order to *create markets for this product*.

Climate justice means more than accurately allocating responsibility for global climate change or sharing equally the environmental, economic, and social burdens that it presents. It also means identifying those who are doing the most to fight climate change and rewarding and harnessing their work. Informal waste recyclers in India and cities around the globe are climate entrepreneurs who contribute real and measurable reductions in GHG emissions with no compensation and against widespread resistance. Engaging seriously with this sector will provide atmospheric benefits in the battle against climate change as well as contribute to dignified livelihoods for some of the world's poorest citizens.

15,000,000 : The approximate number of waste recyclers worldwide

1 : The percentage of people working as recyclers in cities of the developing world

15 : The minimum percentage of waste they recycle every day in Indian cities alone

0 : The payment they typically receive for their eco-services

41 : The percentage of wastepicker families in Delhi who stopped buying milk completely for their children, on account of the economic downturn.

? : The tons of carbon dioxide that waste recyclers in Delhi avert each year on account of their work.

This report fills in the question mark about the role of informal sector waste recyclers as greenhouse gas mitigators in the developing world. Using the case study of Delhi, it builds a powerful case for global climate justice for one of the world's least recognized but vital urban occupations.