

policybrief

New thinking, practice and policy recommendations for sustainable urban waste management informed by robust research, addressing both environmental and social justice concerns.

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Rethinking urban waste management in India



Key Concerns

- We argue there is an urgent need to rethink urban waste management strategies through a sustainability lens addressing environmental, health and social justice concerns together.
- We believe a number of alternative waste management scenarios, institutional and regulatory arrangements are possible.
- The Preamble of the Constitution of India states that constant efforts should be made to secure economic, political and social justice to every citizen of the country.
- The Environmental Protection Act (EPA) of 1986 defines 'environment' as including water, air and land, along with the inter-relationship these elements have with human beings and other living organisms. It states that human beings, other living creatures, plants, micro-organisms, property or the environment should be protected from any substance or preparation which by reason of its chemical or physio-chemical properties or handling is liable to cause harm (MOEF, 1986).
- On the basis of these documents, it is crucial to recognize the inter-relationship between dimensions of the 'environment' and human wellbeing in policy development and planning.
- However the official understanding of urban waste management is based on an incomplete picture of the complex existing flows of wastes. This has led to rules, policies, projects and guidelines which do not fulfill the basic objectives with the Preamble of the Constitution or the EPA 1986.

Changing patterns require a new approach

Patterns of urban consumption, and the waste generated, have changed rapidly. We now require sustainable urban waste management solutions which will simultaneously address environmental and social challenges, embrace opportunities to reuse and recycle, engage with citizens and be responsive to changing circumstances.

Current waste management plans are created on the basis of a standardized model of flows of waste in Indian cities. This model fails to accurately reflect the situation on the ground in a number of important ways. As a result, attempts to address threats to the environment, health and livelihoods of local residents are being threatened, and opportunities

for innovative solutions are being overlooked. Our analysis is based on many years of engagement with waste management stakeholders by Toxics Link and on exhaustive research carried out from 2011-2015 with the University of Sussex based STEPS centre and the Centre for Studies in Science Policy, Jawaharlal Nehru University. Fieldwork was carried out in Delhi, Ahmedabad and Pune.

We propose a number of basic guiding principles for the establishment of an alternative approach to urban solid waste management, forming the basis of sustainable waste management solutions.

Eight Principles for Recasting Urban Waste through a Sustainability Lens

1 Waste is not just an environmental policy and regulation issue as dealt with by government agencies. The dynamic processes of urbanisation and planning need to be considered as well.

2 Waste flows are far more complex than the official recognition of the formal system.

3 Environmental health and social justice challenges are distributed throughout the waste chain. Some centralised technologies may exacerbate these.

4 Privatisation does not replace the informal sector - new conflicts between formal and informal are created and opportunities for cooperation overlooked.

5 Multiple options for decentralisation are possible alongside centralised approaches. (e.g. waste collection/ decentralized processing such as bio-methanation)

6 Incentive structures could support more sustainable and wider ranging, multi-scale options – they currently support private sector stakeholders & large technological ‘solutions’.

7 Many schemes for people’s participation in urban development decision making have failed. But possibilities for constructive engagements in policymaking, planning, implementation exist.

8 Environmental and social justice movements offer key insights into alternative waste management pathways – but are not supported to work together in constructive ways to develop sustainable waste management strategies.

1 Waste is not only an environmental policy issue.

Current policies and rules on urban waste suggest waste is seen solely as an environmental policy issue.¹ Policies focus on specific aspects of the management of urban waste (collection, segregation, storage, treatment, and its disposal by different agencies), prescribing standards for treatment and its disposal, regulation of these standards.

This limited focus, emphasizing certain environmental aspects of the waste management challenge is reflected in the different policy actors formally involved in the process of formulating and implementing policies/rules. For instance, the Municipal Solid Waste (MSW) Rules are formulated and reviewed by the Ministry of Environment, Forest and Climate Change (MoEFCC),² while implemented by the local urban bodies and State level urban development departments.

The Ministry of Urban Development (MoUD), has suggested guidelines for rules framed by the MoEFCC, but the incorporation of these guidelines into urban planning and urban infrastructure creating leaves much to be desired.³ This disconnect between urban development and the environmental management aspects of waste leads to a partial understanding of the urban waste management system and a lack of accountability and ownership in its implementation.

There is a need for formal and deeper interactions between MoEFCC, MoUD, State level urban development bodies, municipal bodies and other environment, livelihood and health stakeholders to shift waste management from an environment-only policy issue to a mix of policy concerning urban planning, environmental health and social justice.

2 Waste flows are far more complex than the “official” recognition of the system.

The official understanding of flows of waste and its management is quite simplistic (depicted in the figure [below] through black rectangular boxes): waste is generated at source, collected through primary (e.g.

1 Municipal Solid Waste Management Rules 2000, Draft Municipal Solid Waste Management Rules 2013, Manual on Solid Waste Management 2014, Planning Commission Report of the Taskforce on Waste to Energy 2014, Plastic Waste Management and Handling Rules 2009, Bio-Medical Waste Management and Handling Rules 2011.

2 Until recently the Ministry was named as Ministry of Environment and Forest (MoEF). Hence, in this brief the documents published before the changed name in 2014 are still referred with MoEF.

3 Jawaharlal Nehru Urban Renewal Mission of MoUD is the most popular urban infrastructure scheme of the recent time which has a substantial amount of component of urban waste management.

door to door collection) and secondary systems (municipal collection at dumpsite (Khatta)), and transported to waste treatment facilities or disposal sites such as landfills.

However, in reality, wastes flow and associated risks are far more complex. The figure [below] shows that the environmental health risks and social justice concerns exist throughout the waste chain. For instance, the environmental health issues do not just exist at the end of the waste chain at waste treatment facilities and disposal site but they can be found at dump sites, at waste pickers houses where all the recyclables are stored, and also while transporting the waste in open vehicles.

The figure also illustrates the informal waste management system which works alongside the formal. Whilst waste pickers contribute significantly in primary collection and segregation of waste, there are some concerns remain largely unaddressed in mainstream interventions, such as lack of compensation to waste pickers for primary collection and segregation of waste, occupational hazards and police harassment.

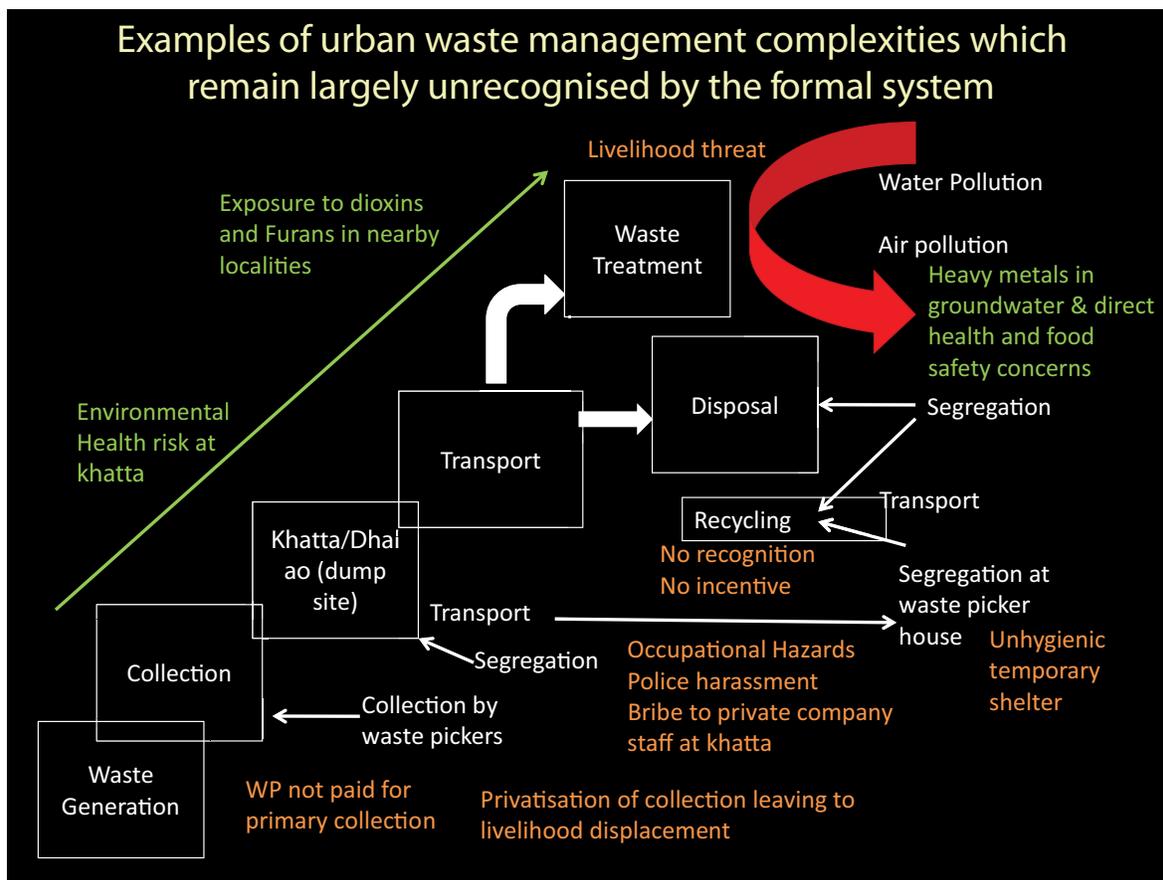
The key issue here is that established formal waste management understandings only address a limited number of recognized risks associated with waste. For example the removal of waste to other parts of the city (to landfills), or its incineration, is seen to address the problem. A deeper examination of waste flows and associated risks reveals the adverse effects of waste are simply being moved around the city and between social groups. In terms of environmental hazards, incineration merely moves toxic pollutants from the ground to the air and ash, but many adverse health impacts remain, while new ones appear (discussed in section below).

Simultaneously, deeper engagement with flows of waste reveal opportunities to address both environmental health and social justice concerns in an integrated manner.

3 Environmental health and social justice challenges are distributed throughout the waste chain. There is a need to recognise that some centralised technologies may exacerbate these.

Environmental health and social justice challenges are distributed throughout the waste chain, as discussed above. We believe centralised technology waste management solutions could intensify these risks instead of minimising them.

Evidence from the existing Okhla waste to energy plant,



in Delhi, reveals that instead of resolving the crisis of solid waste management in the city, it is exacerbating environmental health and social justice problems. The plant has had a vexed history since its inception, when locals challenged its technology as polluting. In response an evaluation committee constituted by the Central Pollution Control Board (CPCB) found there was a deviation from the technology outlined in the Detailed Project Report (on the basis of which the project is proposed) and Environmental Impact Assessment (a mandatory procedure under the EPA 1986 to facilitate environmental impact of the proposed project and prepare a management plan accordingly) reports submitted by the project proponent (CPCB, 2011).⁴

The report suggested the modified technology had a risk of producing emissions such as dioxins and furans, which have severe environmental health implications⁵ (CPCB, 2011). The report of another committee headed by CPCB on the direction of National Green Tribunal (NGT) regarding the case no. W.P.(C)No.9901 between Sukhdev Vihar Resident Welfare Association & ORS Versus The State of NCT Delhi & ORS states that

the levels of dioxins and furans in the vicinity of the plant were several times higher than the permissible limits, which would have environmental health impact on the population of 1.5 million inhabiting nearby.⁶ Other potential emissions include mercury and heavy metals.

These two reports clearly illustrate no proper evaluation mechanism was followed to assess the viability of the technology, there was no adequate regulatory mechanisms to deal with various aspects of the technology, or stringent mechanisms to evaluate what harms they are producing and no way to regulate them.

Such emissions are released because of the combustion technologies used. Given their very toxic nature, it is imperative such technologies should only even be considered once there is a capacity to regulate them. Furthermore there is the issue of ash disposal from such combustion, as well as liquid effluents.

However emissions are not the problem. Even if they are controlled, studies have shown the displacement of waste pickers after the installation of the plant and that the siting provisions of the plant have been vociferously opposed by the local residents (Chintan, 2009). Similarly, despite mandatory standards, the unscientific landfills lead to emissions of methane and leachate.

4 Initially proposed WTE plant was based on MSW > MSW segregation > RDF plant + Bio-methanation plant > RDF Boiler + Electricity. This has been modified/simplified to; MSW > MSW segregation > Direct feed of MSW in WTE Boiler > Electricity.

5 Most dioxins and furans are not man-made or produced intentionally, but are created when other chemicals or products are made.

6 Interview with one of the members of the Committee, President of Sukhdev Vihar Resident Welfare Association, Date: 13 June 2013.

Whilst attempting to reduce the environmental and health hazards associated with urban waste, new centralised technologies are associated with a) new types of toxic emissions being produced b) a lack of proper regulatory mechanisms for controlling them c) some adverse livelihood impacts.

4 Privatisation does not replace the informal sector – new conflicts between formal and informal are created and opportunities overlooked.

By employing private sector companies it is often assumed management efficiency issues (arguably a challenge in the informal sector) will be addressed and accountability improved. This is not always the case. Despite the private sector being introduced in urban waste management in India ten years ago, the informal sector continues to be deeply involved. This reveals a need to formally include this sector in the waste system rather than ignore it.

Our fieldwork in Delhi shows despite private companies having primary collection contracts, more than 50 per cent of the primary collection is still done by the informal sector. There are many areas in which, either owing to space or manpower constraints, the private sector mechanisms for waste collection and segregation do not work and are entirely dependent on the informal sector.

Public-private partnerships are often ineffective for primary collection and segregation. We argue that contracts for primary collection and segregation could be given directly to the informal sector by the municipalities through Resident Welfare Associations (RWAs) or NGOs. As a part of this process waste pickers should be provided with space to segregate waste and protection from the associated health hazards. Municipal corporations and other urban local bodies should work out a direct contract between them and the informal sector without involving the private agencies. These contracts need to recognise informal organizations such as NGOs or workers' associations, but also individual waste workers and Kabadis. This mechanism could be facilitated by providing identity cards to individuals and organizations.

Some private companies have started realising these challenges. New systems between private companies and the informal sector have been emerging. The private companies are now formally contracting waste pickers' for local functions. For example, in Delhi, a company has entered into a contract with an NGO working with a waste picker organization in Rohini and

Civil Lines zones for the segregation of waste and maintenance of community bins.

5 Multiple options for decentralisation are possible alongside centralised approaches. (e.g. waste collection/ decentralised bio-methanation)

Multiple options for the treatment of urban waste, small and large scale need consideration. Some waste streams – such as bio medical waste, e-waste, plastic waste, construction and demolition waste - need technical interventions which work best at larger scale because of the kind of technologies needed and the regulation required to keep their operations within discharge and emission limits.

However degradable urban waste - generated in households, institutions and markets places – can be processed using technologies such as composting and bio-methanation, which can be applied both centrally and at local levels.

Such mixes also allow for household waste, for example, to be collected at colony level and locally segregated and treated using compost pits and small scale bioreactors. Not only does this reduce the load of waste going to landfills, but the compost can find immediate local markets or uses. Composting needs proper segregation of waste to ensure it is of the required standard and non-toxic. The local collection and processing operations also create green jobs as well as institutional mechanisms for operating the system of collection and disposal.

Several initiatives like this have been undertaken by community groups, resident welfare associations and NGOs, but have faced serious challenges, such as pressure to send all waste to centralized facilities, because of their large installed capacity and linked project finances; and lack of availability of urban land, even if very small areas are needed. This emphasises the need for greater integration between waste and urban planning.

One reason for the failure of larger scale compost plants has been the unavailability of adequate markets for compost. In situations where large-scale composting plants are used, they usually run at a loss because of inadequate demand from buyers. This raises the important issue of incentives for sustainable urban waste management. Whilst cheap inorganic fertilisers are available, compost could be supplied on subsidy for urban/peri-urban agriculture which, we argue, should be explored. For example the Urban Vegetable and Horti-

culture Initiative by the Ministry of Urban Development could also be connected to urban waste management where supplies of compost can be directly linked to urban agriculture.

Several options of decentralised waste management incorporating local processing exist. The SWaCH initiative, in Pune (since 2007) involves an alliance of the Pune Municipal Corporation, citizen and the waste pickers. The citizens are required to do a mandatory at-source segregation of dry and wet waste, while the waste pickers are responsible for door-to-door collection, segregation and decentralized processing (composting) and recycling of waste.

The programme initiated by the Stree Mukti Sanghata (SMS) in Mumbai with the cooperation of the Municipal Corporation of Greater Mumbai (MCGM) in 1998 is another example. Under this programme decentralised composting and bio-methanation are being run successfully at many places in 13 wards of Mumbai, including Tata Institute of Social Sciences (TISS), Tata Institute of Fundamental Research (TIFR), various housing societies etc.

These diverse approaches address the challenge of scale and long-term sustainability. Lessons need to be drawn out from these decentralized approaches to look at the alternative definitions of sustainability which encompass environmental health and social justice issues, integrating the formal and the informal sector.

6 Incentive structures could support more sustainable options – they currently only support private sector stakeholders and sole technological ‘solutions’.

Most of the urban waste incentive schemes mainly support private sector stakeholders and centralised technological ‘solutions’. For example, in the case of waste-to-energy there are broadly four different kinds of incentives available: a) carbon credits, b) free land, c) funds for bridging price difference between cost of energy production and its buy back price per unit of energy, and d) subsidies for tipping fees (DPCC, 2006, 2008, 2010).⁷ As most of the incentive schemes focus on large companies, they potentially kill decentralised approaches.

There is a need to incentivise small-decentralised projects supporting other local technologies as well as other ‘solutions’ for different stages of waste manage-

ment. These can include community-led initiatives for implementation of waste management practices, economic incentives such as subsidizing compost and an incentive structure around the land needed.

Social incentives, such as encouraging people to separate their dry and wet waste at the source and buying compost and organic manures rather than inorganic fertilizers for kitchen garden, can help. There are several examples in India where local municipal bodies and NGOs at the individual level, as well as in collaboration with some Residence Welfare Associations, have tried to raise awareness among local people about various aspects of MSW Management. Government schemes should support such efforts, and help develop platforms for people to interact, engage and establish feedback mechanisms in the waste management system.

7 Multiple schemes for people’s participation in urban development decision-making have failed. But possibilities for constructive engagements in policymaking, planning, implementation and review exist.

There are multiple schemes of people’s participation in the process of policy formulation, project development and implementation. On the basis of 74th Amendment of the Constitution, the elected representative of the people (in the case of Delhi, the Municipal Councilor) is entitled to represent people’s voice in the process of policy formulation and implementation. However it has been observed that often the elected Municipal Councilor after getting elected enjoys the power by overlooking its responsibilities. There should be a mechanism of making the elected representative accountable of its duties.

There is also provision of public consultation before the planning and implementation of any large-scale waste management project but these consultations are reportedly conducted in a manner, which merely ensures minimal rather than maximum participation. For instance, residents complained that the manner in which the public hearing for siting was conducted before the construction of the Okhla plant only ensures a token participation since they had not been informed, and the meeting was not held at the project site, but somewhere far.

The other kind of people’s participation comes through the voluntary efforts of people. These efforts are through resident welfare association’s (RWA and their collaborations with or through voluntary organisations. Hence, where there are existing mechanisms of people’s par-

⁷ Interview with Senior Environmental Engineer, Delhi Pollution Control Committee, 26 December 2012; Interview with Chief Engineer, East Delhi Municipal Corporation, 21 December 2012; Interview with Director, Ministry of New and Renewable Energy, 8 January 2013

ticipation in the planning and implementation process they are utilised in a token manner, not with any substantive engagement. If these mechanisms were to be more democratised then they could be utilized in a more constructive manner.

8 Environmental and social justice movements offer key insights into alternative waste management pathways – but are not supported to work together in constructive ways to develop sustainable waste management strategies.

There are several parallels where urban environment and social movements have attempted to bring together seemingly contradictory issues of health, hygiene and livelihoods. Some examples include the movement for street hawkers to sell safe food by providing them with clean water and washing stations, instead of banning them as those who sell unhygienic food. Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 is an outcome of this movement led by National Association of Street Vendors of India (NASVI).⁸ Another example is of interventions in slums to improve hygiene and the education opportunities in them through creating schools and parks, instead of demolishing them. In the area of waste management, waste pickers have come together as unions or as cooperatives to offer coordinated solutions.

The key is to examine the problem from the ground up. Coordinating between such movements, at an idea sharing event, or on an operational level can help to strengthen the call for more socially just solutions. This would also lead to approaches which create capacity and facilitate inclusive solutions rather than treating waste management as solely an environmental or technical issue.

⁸ NASVI, based in Delhi, is a federation of 715 street vendor organizations, trade unions and non-governmental organizations (NGO's)



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Contributing Authors: Ravi Agarwal, Fiona Marshall, Poonam Pandey, Pritpal Randhawa

About this project

The ESRC STEPS Centre project **Pathways for Environmental Health in Transitional Spaces** works with partners in Delhi, Pune and Ahmedabad to study the environmental health implications of current and alternative initiatives to manage solid waste in cities.

www.steps-centre.org/project/environmental_health

About us

Toxics Link

We are a group of people working together for environmental justice and freedom from toxics. We have taken it upon ourselves to collect and share information about the sources and dangers of poisons in our environment and bodies, as well as about clean and sustainable alternatives for India and the rest of the world. www.toxicslink.org

For Further information please contact: Ravi Agarwal, Director, Toxics Link

Email: ravig64@gmail.com

Centre for Studies in Science Policy, Jawaharlal Nehru University

The Centre for Studies in Science Policy (CSSP) explores various dimensions of the science-technology-society interface. Principally an academic programme, the CSSP is also committed to engaging with contemporary policy challenges. Research themes include: science, technology and innovation policies; university – industry relations; intellectual property rights; gender relations in science and technology; globalisation of innovation; internationalisation of R&D; technology and environment; scientists in organisations and technology futures studies.

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The STEPS Centre (Social, Technological and Environmental Pathways to Sustainability) is an interdisciplinary global research and policy engagement hub uniting development studies with science and technology studies. Based at the Institute of Development Studies and SPRU Science and Technology Policy Research, at the UK's University of Sussex, we work with partners around the world and are funded by the Economic and Social Research Council.

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Our work on sustainable urbanisation

For many years the ESRC STEPS Centre has worked with colleagues in leading Indian academic institutions, NGOs, policy makers and practitioners to research mainstream development interventions aiming to address environmental and resource management challenges in India's rapidly urbanising transitional spaces. We are now formally joining with colleagues across, initially, four schools at Jawaharlal Nehru University, New Delhi, to create a 'Sustainability Hub' for collaborative, interdisciplinary work between the STEPS Centre and JNU as part of the broader STEPS Pathways to Sustainability Global Consortium. This exciting initiative will engender cutting-edge, academically rigorous research across the social and natural sciences, policy-oriented engagement, joint events, cross-learning and innovative communications.

Future work in our sustainable urbanisation theme aims to reveal and debate the possibilities for development trajectories which will lead to more sustainable cities. The researchers aim to rethink urban development through a sustainability lens, in order to break down disciplinary silos and integrate social justice and environmental perspectives. Learning from local innovations, and lived experiences of diverse groups of people, the research will challenge the assumptions in mainstream policies and plans and identify opportunities for debate and intervention.

For more information please contact Professor Fiona Marshall, SPRU & STEPS Centre University of Sussex.

Email: F.Marshall@sussex.ac.uk