Silos to systems for solid waste management*

The main objectives of the discussion on 'Urban solid waste management in India' were to formulate a systemic and systematic approach to the urban solid waste management (USWM) challenges; to move from experience-, and expertise-based USWM policies to evidence-based policies; and to find pathways to move from solutions based on functional silos and anecdotal stories to those based on sustainable systems.

The roundtable brought together representatives from private, public and non-government organizations, concerned citizens actively working on USWM, academic researchers, policymakers and practitioners. A total of 34 participants attended the event. The discussion was confined primarily to Bengaluru, Karnataka, and India.

The discussion highlighted the present siloed approaches to USWM, and the challenges of transforming them to a sustainable systemic approach. It was dominantly driven by the experience of participants and their expertise by virtue of their experience. It was only lightly based on systematic evidence and expertise based on evidence. The participants described the reasons for this gap. There are resource limitations on formalizing the evidence and systematizing it for policy making – there is not enough time for formal analysis amidst the daily pressures of activism and advocacy. The existing waste management legislation is not being implemented. The following is a summary of the insights and suggestions from the discussion.

The policy instruments were given significant attention. The dominant focus of the discussion was on the legislative and regulatory instruments. It was less on the fiscal and contractual instruments, and least on the information, economic and social instruments. The participants viewed USWM dominantly as a legislative and regulatory problem, less as a contractual and fiscal problem, and least as an informational, economic and social problem.

Among the functions of USWM, the dominant focus of the discussion was on the collection, processing and segregation. It was less on generation, disposal and transportation, and least on recycling and storage. The participants viewed USWM dominantly as a collection, processing and segregation problem, less as a generation, disposal and transportation problem, and least as a recycling and storage problem.

The type of solid waste was given relatively less attention. The dominant focus of the discussion was almost equally on biodegradable and non-biodegradable waste; inert waste was not discussed. The participants viewed USWM primarily as a biodegradable and non-biodegradable waste problem.

The source of solid waste was given significant attention. The dominant focus was on residential solid waste. It was much less on non-residential-commercial waste, and least on non-residential-institutional, non-residential-industrial processes, non-residential-construction and demolition, and non-residential-municipal services. The participants viewed USWM as primarily a residential solid waste and non-residential commercial waste problem.

The stakeholders were given significant attention. The dominant focus was on waste generators, service providers, businesses and governments – local/municipal. It was much less on governments resident welfare associations and NGOs; and least on waste pickers, academia and urban planners. The participants viewed USWM primarily as a problem-focused on waste generators, service providers, businesses, and governments – local/municipal.

The outcomes were given relatively less attention. The focus was on economic and aesthetic outcomes. There was little emphasis on environmental, social and health outcomes. The participants viewed USWM primarily as an economic and aesthetic problem.

Based on the above, the five themes, in order of emphasis, were:

- Primary: Implementation of legislative and regulatory instruments for (on) generation of solid waste by businesses. It is agnostic to the type of solid waste, its source, and the desired outcomes.
- Secondary: Implementation of contractual instruments for segregation, collection and processing of solid residential waste by waste generators, service providers, and local/municipal governments. It is agnostic to the type of solid waste and desired outcomes.
- Tertiary: Implementation of fiscal instruments for transportation and disposal of biodegradable and non-biodegradable non-residential commercial waste by resident welfare associations, NGOs, and state/central governments for economic outcomes to the community.
- Quaternary: Implementation of information instruments for recycling for environment of the community. It is agnostic to the type of solid waste, its source and stakeholders.
- Quinary: Implementation of economic instruments for storage of solid inert non-residential (institutional, construction and demolition, industrial processes, municipal services) waste by/for urban planners, waste pickers, and academia for health, aesthetics, and social wellbeing of the community.

The primary theme was dominant in the discussion; the quinary theme was absent.

The participants suggested several potential pathways to move from solutions based on functional silos and anecdotal stories to those based on sustainable systems. They were based on: (a) enrichment of data on USWM, (b) enforcement of rules, (c) changing of incentives to aid privatization, and (d) the need to integrate the efforts of many government and non-government institutions.

Waste generation data is limited and there is limited legislative authority to collect the data. Micro-level USWM data are unavailable for many reasons, and where available a lot of it is missing. Further, a lot of the available data are estimates and not accurate measurements. Participants suggested ensuring waste generation data which is current

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and relevant. Thus, while the waste composition has changed with time due to the widespread use of plastics, there is no method to keep track of it. Even the plastic industry does not know its contribution to the USWM problem. The enforcement of extended manufacturers responsibilities of industries using reliable data can help the government to project the industry's share of responsibility. Comprehensive data set capturing the ground reality will help architect an effective plan for USWM.

Despite the Solid Waste Management Rules, 2016, e-waste, construction waste, plastic waste and bio-medical waste guidelines, there is no requirement for the accountability of municipal bodies. The absence of policies to reduce the quantity of waste compounds the problem over time.

Transferring waste from the point of generation to another place will not solve the problem. We need to create a system where source segregation is enforced. All the religious places (temples, mosques, etc.), and schools should compost their own waste and not transport it to another location.

It was suggested that USWM should be a utility service like electricity and water supply and that there should be standard operating procedures (SOP) for solid waste management. The consumer bill for managing the solid waste should be based on the quantity of waste generated. There must be an accounting of USWM monetarily, and in terms of the quantity and type of waste that is collected and processed. Such an accounting would be possible only if there is a dedicated staff for USWM.

It was suggested that the availability of landfills for the disposal of waste is diminishing. Instead, bio-mining should be an option. In this context, it was suggested that waste should not be sent outside, but that citizens must take part in managing waste locally. While people realize that we need to manage our own waste, it is not being implemented.

The participants supported the decentralization of waste management. It can reduce the distance of transportation of waste. SWM Rule, 2016 promotes decentralized waste management, but it neither mandates the same nor provides incentives for it.

There are many startups with new technologies for wet waste treatment that need to be evaluated. There is a need to have a policy to encourage new startups, and identifying those areas where a startup can move a concept to market. Further, there is a need to create awareness among students and the civic society to comprehend these technologies and foster social entrepreneurship.

Overall, a point of concern raised was the variations between the expectations and reality of waste management systems, and the limitations of urban local bodies to handle the current solid waste of the city. Despite the increasing gravity of the problem, the approach continues to be fragmented. There is need for a comprehensive approach based on: (a) enforcement of rules, (b) changing of incentives to aid privatization, and (c) the need to integrate the efforts of many government and non-government institutions. Underlying all this, there is a need to synthesize all the available data to identify novel pathways to USWM and implementing them.

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