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# Effective Municipal Solid Waste Management in India

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## 1. Introduction

Indian urban dwellers generate 0.2- 0.6 kg per person per day resulting into a national total generation of nearly 105,000 metric tons of solid wastes per day. The country's largest cities collect between 70-90% of total wastes generated, while smaller cities and towns usually collect less than 50% (Kumar, 2009). Uncollected wastes accumulate on the streets, public spaces, and vacant lots, sometimes creating illegal open dumps. Residents can also simply throw their wastes at the nearest stream or burn them. Uncollected wastes, and residents' actions to deal with them, create pollution problems and pose risks to human health and the environment.

Cities spend US \$11.60 - 34.90 per metric ton in waste collection, transportation, treatment, and final disposal. Most of this cost is spent on collection (60-70 %), while transportation requires 20-30 %, and final disposal less than 5 %. New Delhi, the national capital, for instance, spends 71% in collection, 26 % in transportation, and 3 % in final disposal (Kumar, 2009). Virtually all the country's collected wastes are disposed of at open dumps, which are the cheapest option available. Despite their low cost, open dumps is a source of land, water, and air pollution, as well as public health hazards.

Waste collection methods vary from city to city, and even within each city. Door-to-door collection is not widely practiced. This collection method exists where residential associations hire private scavengers to perform it. Wastes from narrow residential and commercial lanes, and areas with high traffic are often not collected. Even though India's Supreme Court ruled that municipalities should offer door-to-door collection (the Indian Supreme Court is quite powerful and plays a slightly different role than the US Supreme Court), progress to comply with this ruling has been slow (Kumar, 2009).

Slums and squatter areas often suffer from sporadic or no waste collection at all. Many low-income individuals lack toilets, and urinate and defecate on the streets or open spaces. Open defecation and disposal of sewage and garbage from such settlements needs proper attention. A large number of cows roam the streets in Indian cities, and the dung they generate is not properly managed (Kumar 2009; <http://www.waste-management->

Source: Waste Management, Book edited by: Er Sunil Kumar,  
ISBN 978-953-7619-84-8, pp. 232, March 2010, INTECH, Croatia, downloaded from SCIYO.COM

world.com/index/display/article-display.368989.articles.waste-management-world.markets-policy-finance.2009.09.waste-market-potential-in-india.html).

In most cities, waste collection is inefficient. Residents usually leave wastes in front of their homes for pick up by the sweepers. Wastes are often scattered by human scavengers searching for recyclables, as well as by cows searching for food. When garbage is scattered, it must be swept by the sweepers, picked up, and loaded onto their collection vehicles (wheelbarrows, carts, and various types of vehicles) and taken to the community waste storage sites. Each neighborhood has at least one masonry unit where residents and/or street sweepers bring the wastes for storage. Most often, street sweepers simply dump the wastes on the floor of these structures. At the structures, human scavengers salvage materials, and cows and goats look for food to eat. Even though human and animal scavenging reduces the amount of wastes that need to be transported and disposed of, these activities present health risks to the animals and to human health. The cows feeding from garbage sometimes eat plastic items, eventually killing them. And the waste picker's daily contact with garbage increases their risks of suffering injuries and illness. The residues of human and animal scavenging activities are picked up from the floor and then loaded onto the vehicles that transport the wastes to the final disposal sites. Sweeping scattered wastes and picking them from the floor twice during the collection process requires considerable effort and time by municipal collection crews, ultimately lowering their productivity.

Cities usually lack recycling programs, but a large number of waste pickers recover recyclables from wastes. It has been estimated that up to 1 million individuals make a living from scavenging activities throughout India. Scavengers recover any materials and items that can be reused and recycled: paper, plastics, metals, and so on. Several cities have composting programs, but they often process mixed wastes, which produce low-quality compost. Thus, the situation has aggravated in many cities. However, a few municipalities initiated activities to improve the situation in the light of MSW (Management and Handling) Rules, 2000

## 2. Effective MSW Management in India

Surat was transformed in 18 months from one of India's filthiest cities to one of its cleanest. Any strategic action plan for a city should be based and try to replicate Indian success stories.

Surat followed the following strategies:

- Developed a vision. Morale was built from the bottom up. Sweepers colonies were the first to be cleaned. It aimed to have an administration with a human face;
- The Health Officer's workplaces were cleaned;
- They started to clean the dirtiest areas;
- One task or topic at a time was tackled, and successful practices and work routines and reporting systems were put in place before starting on reform of another problem area;
- The worst problems and worst areas were decided collectively by all the senior staff and inspectors;
- Field work was a must all morning for all staff. The slogan "From AC to DC" From Air-Conditioned to Daily Chores was used;

- There were daily review meetings by the top city officer every afternoon from 3- 4 PM, with all departments present so that problems could be aired, discussed and solved on the spot;
- Both responsibility and financial authority were fully delegated to each of the zonal chiefs, who were able to take prompt decisions and solve problems immediately using their best judgment.

After a period of internal reform and only after they reached a high level of city cleaning services, Surat and Calcutta began a system of “additional cleaning charges” for residents that did not comply with the new system. These charges are higher than the former “fines” and can be collected on the spot. However, cities should not punish residents for throwing wastes on the roads if cities cannot regularly and properly clean all garbage points themselves. Firmness and fairness are also important. In Surat, when persistent defaulters such as large commercial establishments refused to pay heavy administrative charges, their shutters were downed until they did. There cannot be one rule for petty traders and another for the rich and powerful.

#### *Learning from Others Best Practices*

The Bangalore City Corporation benefited immensely from a Best Practices Workshop for Solid Waste Management, organized in May 2000 by the CM-appointed Bangalore Agenda Task Force ([www.batf.org](http://www.batf.org) or [www.blrforward.org](http://www.blrforward.org)). Nine top performers (“navaratnas”) from all over India were invited to present their success stories in 9 fields, including primary collection, recycling, secondary collection and monitoring, and innovative slum clean up ([www.blrforward.org](http://www.blrforward.org)).

Some of the “navaratnas” were invited to start demonstration projects in Bangalore. The city managers of Gujarat have created a forum for sharing information between themselves in order to learn from each other. Their publication on Best Practices is worth studying carefully for successful ideas in several areas.

Similarly, other cities like Pune have also initiated a lot of activities for improvement in the existing MSW management system. In the light of existing MSW (Management and handling) Rules, 2000, the Pune city has converted its open dumped site into partially sanitary landfill. Other initiatives on recycling of recyclables and improvement in the existing collection system have also been implemented.

### **3. Conclusions**

Keeping in view of the judicial intervention, the municipalities have started a lot of activities now to improve the existing MSW management system. However, still a long way has to go to achieve sustainable waste management in India. The existing MSW rules are being modified and the Union Government has provided lot of funds in this sector and a paradigm shift is expected under 11<sup>th</sup> plan.

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## **Waste Management**

Edited by Er Sunil Kumar

ISBN 978-953-7619-84-8

Hard cover, 232 pages

**Publisher** InTech

**Published online** 01, March, 2010

**Published in print edition** March, 2010

Solid Waste Management is one of the essential obligatory functions of the Urban Local Bodies/Municipal Corporation. This service is falling too short of the desired level of efficiency and satisfaction resulting in problems of health, sanitation and environmental degradation. Due to lack of serious efforts by town/city authorities, garbage and its management has become a tenacious problem. Moreover, unsafe disposal of garbage and wastewater, coupled with poor hygiene, is creating opportunities for transmission of diseases. Solutions to problems of waste management are available. However, a general lack of awareness of the impact of unattended waste on people's health and lives, and the widespread perception that the solutions are not affordable have made communities and local authorities apathetic towards the problems. The aim of this Book is to bring together experiences reported from different geographical regions and local contexts. It consolidates the experiences of the experts from different geographical locations viz., Japan, Portugal, Columbia, Greece, India, Brazil, Chile, Australia and others.

### **How to reference**

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Sunil Kumar and Tapan Chakrabarti (2010). Effective Municipal Solid Waste Management in India, Waste Management, Er Sunil Kumar (Ed.), ISBN: 978-953-7619-84-8, InTech, Available from:  
<http://www.intechopen.com/books/waste-management/effective-municipal-solid-waste-management-in-india>

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