

# Management of Solid Waste: A Growing Concern of Indian Cities

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## ABSTRACT

*The persistently mounting population growth in urban areas of developing countries is creating a pressure on the ability of Municipal authorities to provide even basic services. Due to lack of inadequate, services the process of urbanization has contributed in the generation of various problems related to water supply, sewage disposal, municipal waste, lack of open spaces, air and water pollution and public transport. Among the above problem management of solid waste has been one of the key problem in most of the cities around the world. According to United Nations Development Programme Survey of 151 Mayor of cities from around the world, the second most serious problem that city dwellers face (after employment) is insufficient solid waste disposal (UNDP, 1997). After the new economic reforms, India has improved its economic growth which directed increase in urbanization, changing lifestyles and increase in consumption. Urban India generates 188500 tonnes per day (TPD) of waste at an average rate of 0.5 kg of waste per person per day (Samant, 2013). This indicates that there is a direct link between the increasing GDP and waste generation because as per capita income increases spending power also increases resulting waste generation. Central Public Health and Environmental Engineering Organization (CPHEEO) estimated per capita waste generation in Indian cities and towns in the range of 0.2 to 0.6 kilograms per day. A World Bank publication, 2008 estimated that in 2000 urban India produces approximately 100, 000 metric tons of MSW daily or approximately 35 million metric tons of MSW annually, of that amount; around 4 million metric tons are retrieved for recycling. Another 4 million metric tons are disposed of in uncontrolled dumps. Now the time has come to prevent this ever increasing problem i.e waste generation through adoption of important measures like reduce, reuse and recycle generated waste.*

**Keywords:** *Urbanization, Spontaneous development, Gross Domestic Product, Municipal Waste, Recycling*

## 1. INTRODUCTION

Solid waste is the term generally used to describe non-liquid waste material arising from domestic, trade, commercial, industrial, agriculture and other activities. Based on the source of generation,

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the amount produced and its composition varies. It mainly constitutes of materials like dust, paper, vegetable matter, packaging materials like plastic, glass, metal, garden waste and even hazardous and radioactive waste. The management of solid waste is responsive for the disposal of waste in such a manner that in accordance with health, economics, engineering, conservation, aesthetics, and other environmental considerations. Now a day this problem becomes more severe especially in poor, inaccessible and marginal urban areas. The process of waste collection in slum and squatter settlement doesn't exist due to inappropriate service provision in settlements with narrow and unpaved streets.

## **2. SOLID WASTE GENERATION IN INDIA**

With increasing pressure of development and urbanization, the need for efficient municipal service delivery is also growing rapidly, which the municipal bodies are very often unable to cope with. This is true in case of solid waste disposal and management as well. While the urban population of India may double between 1991 and 2011, the quantity of waste generated may triple (Darshini, 2007: 34). According to Census of India, the percentage share of urban population to the total population has increased from 1951(17.3%) to 2011(31.2%). Thus, this process of urbanization has contributed in the generation of various problems related to water supply, sewage disposal, municipal waste, lack of open spaces, air and water pollution and public transport. Among the above problem management of solid waste has been one of the key problem in most of the cities around the world. The failure is evident from the heaps of garbage and overflowing bins, irregularity in collection etc. According to a study conducted by NIUA, an average 30-40 percent of the urban waste remains uncollected. In 1947 cities and towns in India generated an estimated 6 million tonnes of solid waste; in 1997 it was about 48 million tonnes.

More than 25% of the municipal solid waste is not collected at all; 70% of the Indian cities lack adequate capacity to transport it and there are no sanitary landfills to dispose of the waste. This uncollected waste has huge adverse impacts on the health of people, affecting both the environmental and social aspects resulting in an overall poor quality of life for the citizens of urban areas. It reduces the aesthetics appearance of the city due to poor handling of waste. But even after a decade, at present less than 5% of the MSW in our country is being disposed in a proper scientific manner.

Similarly some significant studies demonstrate that quantum of waste generation varies between 0.2 – 0.4 kg/capita/day in the urban centers and it goes up to 0.5kg/capita/day in metropolitan cities. Such a huge generation and its ineffective solid waste disposal & management is an important cause of severe floods in cities and its dreadful consequences. The increasing use of plastics, especially plastic bags, is the major contributor to choked drains.

Although, management of solid waste considered as an essential service but fall under low priority work in practice due to lack of financial resources, institutional weakness, and improper choice of technology. Even though Indian government put some measure in order to minimize waste and have banned the use of plastics and achieved success. For instance, in the district of Ladakh local authorities imposed a ban for the use of plastics item that cause harm to the environment in 1998.

Each municipality is responsible for arranging its own waste management in the following areas:

- Waste Segregation and storage at the source
- Primary collection
- Street Sweeping
- Secondary Waste Storage
- Transport of Waste
- Treatment and recycling options for solid waste
- Final Disposal

### **3. PRESENT SYSTEM OF WASTE MANAGEMENT**

There are three major ways to prevent pollution and waste generation. These are as follows-

- Primary Pollution and Waste Prevention- This method provide aid to eliminate use of harmful chemicals by changing industrial process, ensure less use of harmful product and insist products which are recyclable, reusable and easy to repair.
- Secondary Pollution and waste Prevention- This method enforce three Rs (Reuse, Repairs and Recycle) for minimization of solid waste.
- Waste Management- In this process waste used to be treated to reduce its toxicity, burining of waste at disposal sites, incineration of waste and release waste into environment for dispersal and dilution.

### **4. CONCLUSION AND RECOMMENDATIONS**

In India, most of the cities are under prepared for the rapid growth due to lack of infrastructure services resulting dumping of waste in open areas causes biggest health, environment and land use challenge in the urban areas. Therefore this menance of solid waste in the urban sector is growing abruptly and nothing considerable initiatives have been taken in most of the towns and cities of the country. Despite, India has a Comprehensive Municipal Solid Waste Rules, 2000 but it has not been implemented yet, it's just a directive on paper. The 'MSW (Management and Handling) Rules, 2000' emphasize principle of 3Rs - to Reduce, Reuse and Recycle the waste as much as possible and then to manage the remaining waste effectively by municipalities. In spite of such comprehensive rules and system of waste management there are certain issues have been raised

regarding proper disposal of waste. One of the major drawbacks in the present system of waste management is improper storage system at source. In most of the Indian cities scientific and systematic storage of waste at source is not in practices having serious environmental implications.

In addition, there is no proper system of keeping the Bio degradable and non Bio degradable waste separately. Similarly, lack of coordination and cooperation has been clearly visible among government authorities and not doing their job properly. Urban Local Bodies spend around Rs.500 to Rs.1500 per ton on solid waste management of which, 60-70% of the amount is on collection alone, 20% - 30% on transportation, but hardly any fund is spent on treatment and disposal of waste. It has been observed that there is negligible people's participation in the process of operation and monitoring.

## **5. RECOMMENDATIONS**

In order to resolve the above mentioned issues some suggestion has been given. These are as follows:

### ***Solid Waste Management of Cities through Privatisation:***

In USA 10, 000 private firms are engaged in solid waste services and collecting about 80 percent waste through private contractors. Similarly, in India also major cities like Delhi, Mumbai, Chennai, Bengluru, Hyderabad and Ahmedabad the task of garbage disposal is done by public Private Partners. For instance, in city of Baroda, Resident Welfare Association are playing significant role regarding solid waste management of the city. In Faridabad(Haryana) and Chennai the respective Municipalities have given contracts to private companies for producing marketable compost from the solid waste being generated in their area.

### ***Involvement of all Stakeholders:***

The scale of the problem of solid waste generation is growing rapidly as the per capita income of the rises. So there is a need of participation of all stakeholders for the successful solid waste management. Delhi Government has initiated a scheme named overnment. A new step was taken regarding compulsory segregation of waste at the household level in 2004 with the help of court order. Similarly in some of the rural areas of Maharashtra in order to manage solid waste individual efforts has been done. A thirty nine year Old bank cashier Asha Shivajirao Bhise left her job and took up vermicomposting in a big way. She set up a vermi-composting projec and harvested 20 tonnes of compost in 40 days which was picked up by farmers within days. This example shows total commitment and tapping commercial opportunities in solid waste management by an individual.

### ***Segregation of Biodegradable and Non Biodegradable waste:***

In order to overcome the menace of solid waste it is necessary to segregate waste at disposal site. This process of segregation doesn't take anytime for an individual to put biodegradable and non-biodegradable waste in two separate containers. This practice saves a lot of effort at the end of the chain. In Bangalore due to the absence of segregation of waste residents still continue and aggregate a huge proportion of waste at the composting sites. But in a city like Delhi this practice doesn't exist. A drastic attitudinal change is required among people and each and every individual should understand their responsibility regarding segregation of waste otherwise there is no point to blame municipal authorities and putting responsibility directly on them with the excuses that we pay municipal tax and it is their duty to remove garbage whether segregated or not.

### ***Role of NGOs in Solid Waste Management:***

NGOs play an important role in the segregation and management of solid waste. In Deoghar city, Jharkhand a scheme on solid waste management has been implemented. This scheme aims to mobilize entire community on the issue of waste with a simple solution how to turn waste into wealth with the help of vermicomposting and recycling. This scheme also ensures local community participation for door to door solid waste management in the city wards. Thus this type of environment friendly community based programmes run by NGOs effectively assist in facilitating regulatory provisions of waste management and environment conservation at different levels.

### ***Effort by Municipal Corporations:***

All the efforts done by NGOs, CBOs and individuals are ineffective without the involvement of municipal agencies and authorities. Municipal authorities help in providing a coordinated plan involving all stakeholders will lead to efficient segregation, removal and utilisation of waste and also reduce the work load of the agency and the amount of garbage to be sent to landfill sites. One another major responsibility of municipal authorities is to create awareness with the aid of media such as advertisements in local dailies, audio-visual publicity through radio and TV. This attempt will help in bringing attitudinal changes among residents. The members of the agencies or the person involved in the process can inform the citizens about their role, provide guidance to them and implement programmes and schemes for flourishing results.

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