

**Problems & Challenges Of Solid Waste Management In India**

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**Abstract**

India has a rapidly growing population, leading to increased waste generation. This puts a strain on existing waste management infrastructure and resources. Many cities and towns in India lack proper waste management infrastructure, including waste collection systems, treatment facilities, and landfill sites. This results in inefficient waste management practices and improper disposal of waste. One of the major challenges is the lack of proper waste segregation at the source. Due to inadequate awareness and infrastructure, households and commercial establishments often mix different types of waste together, making it difficult to recycle or treat them properly. Open dumping and burning of waste are common practices in many parts of India. This not only contributes to environmental pollution but also poses health risks to nearby communities. India has a relatively low recycling rate compared to other countries. Lack of awareness, infrastructure, and formalized recycling systems make it challenging to recover valuable resources from waste. The informal sector, including waste pickers and scrap dealers, plays a significant role in waste management in India. While they contribute to waste recycling and recovery, their operations are often unregulated and lack proper safety measures. Insufficient funding and budgetary allocations for waste management hinder the development and implementation of efficient waste management systems. This results in inadequate waste collection, treatment, and disposal infrastructure. There is a need for increased public awareness and behavior change regarding waste management practices. Encouraging waste reduction, segregation, and recycling requires extensive education and community engagement. Waste management in India involves multiple stakeholders, including municipal bodies, state governments, and various agencies. The lack of coordination and effective governance among these entities often leads to inefficiencies and delays in decision-making and implementation. Effective management of industrial and hazardous waste is another challenge in India. Many industries do not comply with proper waste disposal regulations, leading to pollution of water bodies and soil contamination. Addressing these challenges requires a comprehensive approach, including investment in infrastructure, policy reforms, public participation and capacity building at various levels of government and public policy.

**Keywords:** Waste Management, Waste Segregation, Pollution, Waste Management Infrastructure

## **Introduction**

Solid waste management is currently a very difficult task. The issue of solid waste management has been further exacerbated by rising population and urbanization, altered economic practices, and a consumerist society. The expansion of landfills, potential for leachate issues, soil degradation, and gas leaks are all signs of an increase in solid waste. All industries are negatively impacted by ineffective solid waste management, both directly and indirectly. Poor waste management ranging from non-existing collection systems to ineffective disposal causes air pollution, water and soil contamination. Open and unsanitary landfills contribute to contamination of drinking water and can cause infection and transmit diseases(*United Nations Environment Programme*). 'What a waste 2.0: A Global overview of solid waste management through 2050' from the World Bank confirms this. Around the world, waste generation rates are rising. In 2020, the world was estimated to generate 2.24billion of solid waste, amounting to a footprint of 0.79 kg per person per day(*World Bank Report, 2022*). When it comes to producing solid trash, India comes in third. The total quantity of Solid waste generated in the country is 160038.9 TPD of which 152749.5 TPD of waste is collected at a collection efficiency of 95.4%. 79956.3 TPD (50 %) of waste is treated and 29427.2 (18.4%) TPD is landfilled. 50655.4 TPD which is 31.7 % of the total waste generated remains un-accounted(*MSW, Annual Report 2020-21*). Although provisions for managing solid trash in an ecologically friendly manner have been created in India's solid waste management guidelines of 2016, they are not really followed. Due to the growing volume of solid waste and incorrect management, India is seeing an increase in river pollution, the release of hazardous gases from landfills, harm to the health of humans and other animals, and negative impacts on agriculture.

The following table represents solid waste management in some states of India in 2020-21. It is clear that only a small part of the solid waste generated is treated and the rest is dumped in the landfill area or left in the open environment.

### **Selected Indian States Solid Waste Management Status(2020-21)**

**Note: TPD-Ton Per Day**

**Source-Annual Report 2020-21 on Implementation of Solid Waste Management Rules, 2016**

**[www.cpcb.nic.in](http://www.cpcb.nic.in)**

<b>S. No.</b>	<b>State</b>	<b>Solid waste generated (TPD)</b>	<b>Collected (TPD)</b>	<b>Treated (TPD)</b>	<b>Landfill (TPD)</b>
<b>1.</b>	Uttar Pradesh	14710	14292	5520	0
<b>2.</b>	Bihar	4281.27	4013.55	Not provided	No

3.	Delhi	10990	10990	5193.57	5533
4.	Maharashtra	22632.71	22584.4	15056.1	1355.36 (Unscientifically disposed= 6221.5)
5.	Gujarat	10373.79	10332	6946	3385.82
6.	Madhya Pradesh	8022.5	7235.5	6472	763.5
7.	Tamil Nadu	13422	12844	9430.35	2301.04
8.	West Bengal	13709	13356	667.6	202.23
9.	Andhra Pradesh	6898	6829	1133	205
10.	Assam	1199	1091	41.4	0

### **What Solid Waste Means And How it is Managed**

Solid waste is the unwanted or useless solid materials generated from human activities in residential, industrial or commercial areas (*India Water Portal*). Solid waste consists of items that have been rendered worthless and no longer have any economic value. Food trash, glass, metals, woody debris, non-recyclable paper and plastic, as well as garbage from building and demolition, make up the complicated mixture known as solid waste. It is important to note that the definition of solid waste is not limited to wastes that are physically solid. Many solid waste are liquid, semi-solid or contained gaseous material (*US, Environmental Protection Agency*). With rapid population growth and urbanisation, annual waste generation is expected to increase by 73% from 2020 levels to 3.88 billion tonnes in 2050 (*World Bank, 2022*).

The collection and treatment of solid waste is known as solid waste management. The process for effectively managing solid waste comprises the collection, segregation, recycling, treatment, and disposal of trash as well as institutional structures and regulations. Effective waste management is expensive, often comprising 20% to 50% of municipal budgets. Operating this essential municipal service requires integrated systems that are efficient, sustainable and socially supported (*World Bank, 2022*). Solid waste management reduces or eliminates the adverse impact on the environment and human health (*India Water Portal*). In order to implement the Zero waste policy, the three R's are used in solid waste management. Waste management is all about how solid waste can be changed and used as a valuable resource (*Conserve Energy Future*).

### **Complex Waste Management Problems In India**

Since India lacks a scientific approach to solid waste management, all waste kinds are mixed together in the places where garbage is generated, leading to a variety of issues with solid waste disposal. Certain other challenges related to solid waste management in India is given below-

- The ineffective management of solid waste in India is caused by a lack of modern technology, a failure to comply with waste management regulations, and a lack of public awareness.
- Due to lack of funding, India's solid waste management procedure is not adequately finished. Solid waste collection and transportation are exceedingly expensive, leaving very little money for processing and disposal.
- Inefficient handling of solid waste is hampered by a lack of infrastructure and the use of antiquated methods.
- Effective solid waste management is severely impacted by a lack of competent labour and apathy on the part of the local government.

### **Suggestions For Effective Management Of Solid Waste In India**

Solid waste management entails the development of a wholesome and resource-rich environment where trash is rejected, reused, reduced, recycled, and the idea of Zero waste is adopted. The general public's engagement in solid waste management is crucial since the residential sector of trash creation is connected to the general public. To achieve full and effective engagement of regular citizens, sincere efforts should be undertaken. Making individuals aware of the environmentally appropriate disposal of solid waste is one way to accomplish the objective of effective solid waste management. Few more suggestions are given below:

- Increasing public understanding of environmentally responsible solid waste management and ensuring citizen engagement in trash management.
- Building the necessary infrastructure for the effective handling of solid waste, and educating staff members.
- To give the solid waste management industry with sufficient funding so that more money may be spent on the treatment of the trash.
- To implement a thorough solid waste management strategy that motivates private investment in management.
- To stimulate R&D to enhance solid waste management and to advance technical innovation in the field of solid waste management.

To conclude it can be said that solid waste management has become a dire need for any economy. The Indian economy is also facing challenges related to the efficient management of solid waste. Not only the framing of policy but the implementation plans are required for collecting solid waste, separation from the waste source, and transportation of the garbage.

Besides this, for transforming the open dump site into a scientifically controlled landfill area that is ecologically pleasant, with the goal of achieving Zero waste by addressing the leachate issue. Instead of viewing solid trash as a waste, the idea of utilizing it as a resource may be created. For example, solid waste can be used to create electricity and compost manure from biodegradable waste. Additionally, Employment can be widened by providing livelihood opportunities in the field of solid waste management thus it is suggested that solid waste management be developed as a new field of employment by implementing the Waste to Wealth idea.

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