



SOLID WASTE CRISIS AND MANAGEMENT - GS III MAINS

Q. Solid Waste Management in India remains an achilles heel for India. Discuss the impacts of poor waste management and enumerate the measures taken by the government to sort it out. (15 marks, 250 words)

News: *On Delhi's mounting waste crisis*

What's in the news?

- Solid Waste Management in India remains an Achilles heel for India.
- The Supreme Court of India recently criticised the solid waste management in New Delhi.

Key takeaways:

- There are more than 3,800 tonnes of untreated solid waste in Delhi alone.
- This waste reaches landfills and threatens public health and the environment.
- Proper steps need to be undertaken for safe disposal and treatment of solid waste in India.

Solid Waste:

- Solid waste refers to any unwanted or discarded material that is not in a liquid or gaseous state.
- The solid waste includes a wide range of materials generated from various sources such as households, industries, commercial establishments, construction sites, and institutions.
- Examples of Solid Waste - Common examples of solid waste include paper, plastics, glass, metal, textiles, food scraps, yard waste, and electronic waste.

Status of Solid Waste Generation in India:

- According to the CPCB report, only ~50% of total solid waste generated in the country is treated.
- The processing of solid waste in India has improved significantly, from 19% in 2015-16 to ~50% in 2020-21.
- In the corresponding period, the proportion of solid waste landfilled has fallen from 54% to 18.4%.
- About 50-55% of the waste generated in Indian cities is biodegradable wet waste, about 35% is non-biodegradable wet waste and 10% is an inert component.

Challenges with Solid Waste Management in India:

1. Rising Waste Generation:

- Rapid economic growth has raised the consumption levels in the economy, which has in turn increased the waste generation.
- Further, the expansion of the digital economy is leading to a multifold increase in e-waste generation.
- For example - A Planning Commission Report had estimated that India will generate 165 million tonnes by 2030.



2. Lack of Proper Waste Management:

India lacks proper waste management and disposal techniques.

- **Poor Processing** - Only 50% of the waste produced is actually processed in India. ~30% of waste is not accounted for and ~20% ends up in landfills, reflecting poor waste disposal methods.
- **Incorrect and Inadequate Segregation Techniques** - There is poor segregation of waste at source. Hazardous waste and e-waste is not sealed and labelled leading to improper disposal. For example - Valuable materials like aluminium and plastics end up in landfills instead of being recycled.
- **Reuse/recycling of Waste** - Reuse and recycling of waste is predominantly an informal economy, lacking access to advanced technology.

3. Littering and Illegal Dumping:

- Due to poor disposal methods, almost half of waste is placed in uncontrolled dumps and landfills.
- These landfills are the source of generation of methane gases, leachates, and landfill fires, adversely affecting the surrounding environment

4. Lack of Land Resources:

- The urban areas in India lack adequate land resources to set up waste processing plants.
- For example - Waste processing plants in Delhi need large land parcels, of about 30-40 acres each for treatment.

5. Lack of Public Awareness:

- Lack of public awareness regarding proper waste management practices, contributes to littering and improper disposal habits.

6. Lack of Regular Waste Collection Services:

- The lack of regular waste collection services adds up to the building up of waste as well as littering.
- Illegal dumping in open areas and water bodies increases the pressure on the municipal body, warranting more resources for clean-up.

Impacts of Poor Waste Management:

1. Health Issues:

The improper waste management leads to several health issues such as

- Open burning of waste leads to formation of harmful particles which can cause lung diseases.
- Poor collection leads to garbage dumps which act as breeding ground for rats and mosquitoes etc. Mosquitoes act as carriers of diseases like malaria and dengue.



2. Environmental Issues:

Improper waste management techniques lead to various environmental problems which are mentioned below.

- **Unscientific dumping in landfill** leads to formation of harmful chemicals which permeate into soil and groundwater. This renders groundwater unfit for drinking and cause multiple diseases
- Waste in landfills leads to **formation of harmful gases** leading to air pollution. For example - Around 90-98% of landfill gases are made up of methane and carbon dioxide, remaining 2-10% includes nitrogen, oxygen, ammonia, sulphides, hydrogen and various other gases.
- A lot of land-based waste eventually ends up in the sea leading to **marine pollution**.

3. Economic Impacts:

Improper waste management usually has grave economic impacts.

- **Expansion of landfills** occupy useful land, leading to wasteful utilization of an economic resource
- **Poor waste management** leads to general filth in cities, which impacts tourism potential.
- **Poor waste collection** leads to clogging of drains, which has become a factor in urban flooding, leading to economic losses.

Government Interventions for Solid Waste Management:

1. Policy and Legal Framework for Waste Management in India:

The Government of India (GOI) has formulated various Rules and Regulations. These rules are updated periodically and have been formulated under the Environment Protection Act, 1986. These include

- Solid Waste Management Rules
- e-Waste Management Rules
- Plastic Waste Management Rules

2. Extended Producer Responsibility (EPR) Mechanism:

- EPR is a policy approach in waste management that makes producers responsible for the entire lifecycle of their products, including their collection, recycling, and disposal.
- In 2022, EPR initiatives utilizing market mechanisms were implemented for plastic packaging, E-waste, battery waste, and used oil.

3. Swachh Bharat Mission for Solid Waste Management:

- Central assistance is provided under Swachh Bharat Mission for solid waste management, including plastic waste management in urban and rural areas.

4. Compost Banao, Compost Apnao Campaign:

- It is a multi-media campaign launched by MoHUA on waste-to-compost under SBM-(U).
- The aim is to encourage people to convert their kitchen waste into compost to be used as fertilizer and to reduce the amount of waste getting to landfill sites.



5. Promotion of Waste to Energy:

- The Ministry of New and Renewable Energy (MNRE) launched a Program on Energy from Urban, Industrial, Agricultural waste/residues and Municipal Solid Waste to promote setting up of Waste-to-Energy projects and to provide central financial assistance.

Way Forward:

1. Scientific Waste Management:

- The waste management planning should be based on sound scientific and engineering studies.
- They should consider waste composition, capital and long-term operating costs, transport distances, and the geographical location of waste processing and disposal facilities.

2. Smart Waste Management System:

- In the long term, technology like (Internet of Things) can be integrated into waste management.
- For example - RFID-Enabled Door-to-door waste collection monitoring can enhance collection efficiency and GPS based vehicle tracking can help in real time monitoring.

3. Emphasis on Recycling and Processing:

- Policies supporting recycling and processing of waste must be implemented stringently.
- Waste processing methods like composting, vermicomposting and bio-methanation should be adopted for treating organic waste.

4. Scaling up Waste-to-energy:

- Bio-methanation (anaerobic digestion) which uses microorganisms to convert the organic waste into methane, can be used as fuel.
- Bio-methanation plants should be scaled up.
- Refuse-derived fuel (RDF) which consists of plastics, paper, and textile waste, having good calorific value and can also be used to generate power in waste-to-energy projects.

5. Strict Implementation of Rules:

- Waste Management Rules which have incorporated the 'Polluter Pays Principle', need to be strictly implemented to penalize non-compliance.

6. Increasing Public Awareness:

- Self-help groups, residents welfare associations, and community-based organizations should be encouraged to educate and acquaint people with beneficial waste management strategies, including separation, recycling modes, and drop off centers for recyclables, as well as composting.