



Documentary: Highest Integrated Solid Waste Management Project

For prelims: [Waste to Energy](#), [Plastic Waste Management \(PWM\) Rules, 2016](#), [Project REPLAN](#), [Plastic Waste Management \(Amendment\) Rules, 2022](#) [circular economy](#), [Extended Producer Responsibility](#), [E-waste](#), [Swachh Bharat Mission](#), [Investment](#), [Environmental sustainability](#), [Inclusive growth](#), [Productivity](#),

For mains: Discuss the Issues and Challenges associated with Solid waste management in India.

Why in News?

Recently, the **Ladakh Municipal Committee** has started one of its **Highest Integrated Solid Waste Management Project (ISWMP)**, the Ladakh has become a popular tourist destination, resulting in a rise in waste generation.

What are Key Highlights?

- The project aims **to manage the increasing waste problem in the region.**
- The lack of a proper waste management plan in the past led to garbage piles and accidents.
- The municipal committee is now making efforts to keep the city clean and manage waste effectively.
- The solid waste management project is a commendable initiative to address the waste challenge in Ladakh.
- Waste generation in urban areas of India will be **0.7 kg per person per day** in 2025, approximately four to six times higher than in 1999.
- According to the [Ministry of Environment, Forest and Climate Change](#), India currently generates **62 million tons of waste** (both recyclable and non-recyclable) every year, with an average annual growth rate of **4%**.
- The generation of municipal solid waste is expected to rise to **165 million tonnes** by 2030 due to changing consumption patterns and rapid economic growth.

What is Highest Integrated Solid Waste Management Project (ISWMP)?

- An ISWM Plan is a package consisting of a **Management System including Policies** (regulatory, fiscal, etc.), **Technologies** (basic equipment and operational aspects) **Voluntary measures** (awareness raising, self-regulations).
- A Management System covers all aspects of waste management from waste generation through **collection, transfer, transportation, sorting, treatment and disposal.**
- Data and information on waste characterization and quantification (including future trends), and assessment of current solid waste management systems for operational stages provide the basis for developing a concrete and locality-specific management system.

How is Waste Treatment Done?

- **Landfills:**
 - Non-recyclable and non-biodegradable waste is disposed of in landfills.
 - Modern landfills incorporate liners and other measures to minimize environmental contamination.
- **Incineration:**
 - Some areas use incineration to burn waste, reducing its volume and generating energy.
 - However, this method raises environmental and air quality concerns.
- **Composting:**
 - Organic waste, such as kitchen scraps and yard waste, can be composted to produce nutrient-rich soil.

What are the Initiatives Related to Waste Management?

- **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, as per scheme guidelines.
 - The Central Government launched [Swachh Bharat Mission Urban 2.0 \(SBM-U 2.0\)](#) in 2021 with the overall vision of creating "[Garbage Free Cities](#)", which would involve achieving the target that all Urban Local **Bodies will become at least 3-star certified (as per Star Rating Protocol for Garbage Free Cities)** covering door to door collection, source segregation, and scientific processing of municipal solid waste.
 - The mission focuses on source **segregation, reducing single-use plastic, managing waste from construction and demolition activities**, and bio-remediation of legacy waste dump sites.
 - Under [Swachh Bharat Mission - Grameen Phase II](#), the **Department of Drinking Water and Sanitation** has issued operational guidelines to the States and Union Territories which include **solid waste management activities at the village level**.
- **Solid Waste Management Rules 2016:**
 - **Solid Waste Management Rules 2016** replaced the Municipal Solid Wastes (Management and Handling) Rules, 2000 and **focus on segregation of waste at source, responsibility on the manufacturer to dispose of sanitary and packaging wastes**, user fees for collection, disposal and processing from the bulk generator.
- **Waste to Wealth Portal:**
 - It aims to identify, develop, and deploy technologies to treat waste to generate energy, recycle materials, and extract resources of value.
- **Waste to Energy:**
 - A [Waste to Energy](#) is energy from waste treatment plant that converts municipal and industrial solid waste into electricity and/or heat for industrial processing.
- **Plastic Waste Management (PWM) Rules, 2016:**
 - [Plastic Waste Management \(PWM\) Rules, 2016](#) mandates the generators of plastic waste to take steps to minimize the generation of plastic waste, prevent littering of plastic waste, and ensure segregated storage of waste at source among other measures.
- **Project REPLAN:**
 - [Project REPLAN](#) aims to make carry bags by mixing processed and treated plastic waste with cotton fibre rags in the ratio of 20:80.
- **Plastic Waste Management (Amendment) Rules, 2022:**
 - [Plastic Waste Management \(Amendment\) Rules, 2022](#) specify the responsibilities of various stakeholders such as manufacturers, importers, retailers, and consumers.
 - Each of these stakeholders has a responsibility to ensure that plastic waste is effectively managed and prevented from polluting the environment.

What are the Challenges for Solid Waste Management?

- **Rapid Urbanization:**
 - The **unprecedented growth of urban areas** leads to increased waste generation, putting immense pressure on existing waste management systems.

- **Unplanned urbanization** often results in inadequate infrastructure and services for waste collection and disposal.
- **Diverse Waste Streams:**
 - Solid waste comprises various materials, including plastics, paper, glass, metals, and organic waste. Each type requires specific treatment methods, making waste management a complex task.
 - **Improper disposal of hazardous** waste poses environmental and health risks.
- **Limited Recycling and Reuse:**
 - Despite the potential for recycling and reuse, many regions struggle to establish efficient systems.
 - **Lack of awareness, infrastructure, and incentives** hinder recycling efforts.
 - Valuable resources are lost when materials that could be recycled end up in landfills.
- **Waste-to-Energy Challenges:**
 - While [waste-to-energy \(WTE\)](#) technologies offer energy recovery from waste, **concerns about air emissions and the environmental impact of incineration persist.**
 - Balancing the energy benefits with **environmental considerations** is crucial for sustainable waste management.

Way forward

- **Integrated Waste Management Systems:**
 - Developing **comprehensive and [Integrated Waste Management Systems](#)** that take into account the **entire lifecycle of waste.**
 - Combining source reduction, recycling, composting, and responsible disposal to minimize environmental impact.
- **Extended Producer Responsibility (EPR):**
 - Implementing [EPR](#) policies to hold manufacturers accountable for the end-of-life management of their products.
 - Encouraging **eco-friendly product design and packaging to reduce waste generation.**
- **Waste-to-Energy with Environmental Safeguards:**
 - Developing **waste-to-energy facilities** with advanced emission control technologies to **minimize air pollutants.**
 - Ensuring **stringent environmental regulations and monitoring to safeguard** public health and the ecosystem.
- **Circular Economy Practices:**
 - Promoting the **principles of a [circular economy](#)**, which emphasizes **minimizing waste, maximizing resource use, and closing material loops.**
 - Encouraging product design that considers the **entire lifecycle, from production to disposal.**

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. As per the Solid Waste Management Rules, 2016 in India, which one of the following statements is correct? (2019)

- (a) Waste generator has to segregate waste into five categories.
- (b) The Rules are applicable to notified urban local bodies, notified towns and all industrial townships only.
- (c) The Rules provide for exact and elaborate criteria for the identification of sites for landfills and waste processing facilities.
- (d) It is mandatory on the part of the waste generator that the waste generated in one district cannot be moved to another district.

Ans: (c)

Mains:

Q. What are the impediments in disposing of the huge quantities of discarded solid waste which are continuously being generated? How do we safely remove the toxic wastes that have been accumulating in our habitable environment? **(2018)**

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