Present Status and Issues of Solid Waste Management in India

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***Abstract*—Solid waste management in India is the issue of concern as it impacts environment and public health. The challenge is increasing because of rapid urbanization, population growth, and use and throw goods. This article reviews the present status of SWM in India. It highlights the existing infrastructure, policies, and practices, and identifies key issues slow downing the effective waste management and recommendations for sustainable SWM practices are also discussed.**

I. INTRODUCTION

In India approximately 150,000 tons of solid waste per day is generated, the major share in this is of urban areas. The management of this waste is important for maintaining public health, environmental quality, and urban planning intact. Though there are regulatory frameworks, policy and technological advancement, SWM in India still faces challenges in collection, segregation, transportation, treatment, and disposal. The issue or SWM is multifaceted because it is beyond the cleanliness of the city, Mumbai in monsoon is flooded just because of savage and draining systems are blocked by plastic wastes and that is just because peoples and system fail in collecting 100 % wastes. The implementation of the SWM (2016), which was updated in 2020, is continuously progressing and the effects can be visible but still there is need to do strict policy implementations and adoption of technology.

The issue of solid waste management is not limited to the urban or metro cities only, it is also beyond urban cleanliness and beautification. Every year Mumbai witnesses the floods in monsoon which is because of clogging stormwater drains and sewage systems (Bhide & Sundaresan, 2019). Such incidents highlight systemic failures in waste collection, segregation, and disposal.

II. CURRENT STATUS OF SOLID WASTE MANAGEMENT IN INDIA

2.1 Waste Generation and Composition

Urban India specially cities with large populations, industrial plants, produces a mix of waste which includes organic and non-organic, recyclable, hazardous materials containing heavy metals etc. The most of the solid waste is consist of organic waste and most of the time it is segregated by citizens.

2.2 Institutional Framework and Policies

Solid waste management in India is implemented as per the Solid Waste Management Rules, 2016, notified under the Environment (Protection) Act, 1986. These rules replaced the Municipal Solid Waste (Management and Handling) Rules, 2000 and introduced progressive measures such as source segregation, door-to-door collection, decentralized processing, scientific disposal, and inclusion of informal waste workers (MoEFCC, 2016).), other government schemes supported the efforts of solid waste management these schemes includes swacha Bharat Mission, AMRUT Yojana, PM -NULM, PM -NRLM etc, these schemes indirectly in align with the objectives of Solid waste Management

2.3 Collection and Transportation

Door-to-door waste collection is the common practice adopted in most of the Indian cities, using handcarts, tricycles, auto-rickshaws, and small trucks. Daily waste collection is common in high-density areas, peri-urban regions (Annepu, 2012).

Transportation systems often suffer from inefficiencies due to long haul distances, uncovered vehicles, and lack of transfer stations. These issues contribute to secondary pollution, odor, and waste spillage during transit (CPCB, 2020).

2.4 Treatment and Disposal Practices

The ideal Waste treatment methods include composting, recycling, and waste-to-energy initiatives but the reality is different in many cities waste is just dumped in the outskirt of the cities , or on dumping ground and most of the time it is et on fire which pollutes the air , the Kalyan city has dumping ground near the Khadi and continuous smoke can be seen Landfilling is the most common way to dispose used by municipal corporations which is not well managed it pollutes and contaminate the land and water sources nearby.

III. KEY ISSUES IN SOLID WASTE MANAGEMENT

3.1 Inadequate Infrastructure and Resources

Limited financial and technical resources constrain the development of modern waste processing facilities. Many municipalities lack proper landfill sites and treatment plants; there is need of proper for developing

3.2 Poor Segregation and Public Awareness

Low levels of waste segregation at the source hinder recycling and composting efforts. Public awareness campaigns are insufficient to change waste handling behaviours.

3.3 Regulatory and Institutional Challenges

Fragmented responsibilities, lack of coordination among agencies, and weak enforcement of regulations impede effective SWM.

3.4 Environmental and Health Concerns

Open dumping and burning of waste release greenhouse gases and toxic pollutants, affecting air and water quality and public health.

3.5 Rapid Urbanization and Population Pressure

Increasing urban populations generate more waste, outpacing the capacity of existing management systems.

IV. RECOMMENDATIONS FOR SUSTAINABLE SOLID WASTE MANAGEMENT

There are many recommendations which includes Strengthening Infrastructure, Promoting Source Segregation and Public Participation, Institutional Reforms and Capacity Building, Encouraging Waste Minimization and Circular Economy, Integrating Technology and Innovation but the most important is to create awareness among citizens it is observed that peoples do not segregate the waste though municipal corporations have provided them buckets for organic and non-organic wastes , some times people just throw the waste in open place or gutter as per their convenience though garbage collection is available .

V. CONCLUSION

Solid waste management in India remains a complex challenge due to infrastructural, institutional, and behavioural constraints. Addressing these issues through integrated policy implementation, infrastructure development, and public engagement is critical for achieving sustainable urban environments. Future efforts must focus on holistic approaches that balance environmental protection with social and economic realities.

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