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RESEARCH ARTICLE

TRANSFORMING WASTE MANAGEMENT IN INDIA- CURRENT TRENDS AND INNOVATIONS

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Abstract

The worldwide phenomenon is waste. All people produce waste. Solid waste generation was less common in the past, and people were more concerned with protecting the environment, the resources it provides, and the livelihoods associated with working in it. However, inappropriate solid waste management is currently causing environmental deterioration due to growing urbanisation, the rise of globalization economic development, migration, overpopulation, the industrial revolution, marketing, and lifestyle transformation. Governments, legislators, non-governmental organizations, social activists, and researchers take action to raise public awareness, restrict illegal solid waste disposal, and provide women with the tools they need to convert waste into riches. This essay describes the policies and programs that have been successfully implemented by stakeholders to avoid, regulate, and safeguard the environment from solid waste. The information was gathered from official government sources, books, research papers, and creative and effective solid waste management techniques.

Keywords: Solid Waste Management, Recycling, Composting, Sustainable solution

Introduction

India covers 65% of the world's population. India placed 176th in the Environment Performance Index out of 186 countries (UNEP 2024). It indicates Solid Waste is a problem in our country. Overpopulation, financial constraints, and lack of infrastructure facilities lead the improper solid waste management. Improper solid waste creates health problems, economic loss, social and cultural degradation, and environmental degradation.

According to What a Waste 2.0 published by the World Bank and UNEP, South Asia Countries generated more solid waste and disposed of the waste improperly. Developed countries generate high levels of solid waste even though a large number of waste is recycled and used properly compared to developing countries.

In the olden days, People practiced reusing products, composting, animal feeding, donating to others, and using quality and eco-friendly

items. However, the challenges are limited technology and limited resources. However, it was not a big deal in the olden days. After 1980 plastic production and consumption increased exponentially. Waste can be defined as an object or substance that is disposed of or mandatory to dispose of or anticipated to dispose of (UNEP). Waste is categorized into different types based on matter, feature, and environmental impact, based on sources. Factors influencing solid waste generation are the Socio-demographic condition of people, economic factors, knowledge attitude, and practice of the people. Govt., NGOs, Social activists, environmentalists, Policy Makers, and Researchers are continuous. Make an effort to protect the environment from solid waste generation, to create awareness about solid waste management, and to build capacity for people to utilize the waste into resources.

Objective of the study:

1. To analyze the reviews related to Solid Waste Management to understand the policies and programs framed by govt.
2. To find out the solution and research gap related to Solid Waste Management.
3. To explore the best practices taken by the Govt., NGOs, Social Activist, Self-Help Group Members, and so on.

Methodology

This study employed a secondary data collection approach to analyze recent trends in solid waste management in India.

Data Sources

The study utilized existing literature and data from various secondary sources, including:

1. Government reports and policies: Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Urban Development (MoUD), Central Pollution Control Board Annual Report, and State Government reports.
2. Academic journals and research papers: Peer-reviewed articles from journals such as Journal of

Waste Management, Waste Management and Research, and Environmental Science and Pollution Research.

3. International organization reports: World Bank, United Nations Environment Programme (UNEP), and World Health Organization (WHO).
4. Online databases: ScienceDirect, JSTOR, and Google Scholar.
5. News articles and media reports: The Hindu, Times of India, and Down To Earth.

Special Programs and Policies for household waste management in India

India has implemented several special programs and policies to address household waste management. Some of the notable programs and policies include:

1. Swachh Bharat Abhiyan (Clean India Mission): Launched in 2014, this nationwide campaign aims to achieve universal sanitation coverage, promote cleanliness, and ensure effective waste management. It focuses on constructing household toilets, solid waste management infrastructure and behavior change toward proper waste disposal.
2. Solid Waste Management Rules, 2016: These rules provide a comprehensive framework for the management of solid waste in India. They emphasize waste segregation at source, decentralized waste processing and treatment, and the promotion of recycling and composting. The rules also mandate the phasing out of open dumping and the establishment of sanitary landfills.
3. Extended Producer Responsibility (EPR): The EPR concept has been introduced in India to hold producers responsible for managing the waste generated by their products. Producers are required to take measures for recycling and safe disposal of their products at the end of their life cycle, encouraging more sustainable product design and reducing waste generation.
4. Waste-to-Energy Initiatives: The government has promoted waste-to-energy projects, which involve the conversion of organic waste into biogas or electricity. These initiatives help

manage organic waste and contribute to renewable energy generation.

5. **Source Segregation of Waste:** Source segregation of waste is a key component of waste management programs in India. The government encourages households to segregate waste at the source into different categories such as dry waste (recyclables), wet waste (organic), and hazardous waste. This enables effective recycling, composting, and appropriate disposal of different waste streams.
6. **Swachh Survekshan:** Swachh Survekshan is an annual cleanliness survey conducted by the Ministry of Housing and Urban Affairs to assess the cleanliness and waste management practices of cities and towns in India. This program encourages healthy competition among cities and promotes effective waste management practices.
7. **Municipal Solid Waste Management (MSWM) Projects:** The government has supported the implementation of MSWM projects across various cities and towns in India. These projects focus on improving waste collection, segregation, processing, and disposal infrastructure. They often involve public-private partnerships and community participation. These programs and policies aim to promote sustainable waste management practices, improve infrastructure, raise awareness, and involve stakeholders at various levels to effectively address household waste management challenges in India.

Special handling and disposal procedures are required for these materials to prevent environmental contamination and protect human health. Proper management of household waste is essential to minimize its negative impacts on the environment and public health. It involves waste reduction, reuse, recycling, and safe disposal practices. Waste management strategies include waste segregation, where different types of waste are separated at the source, and the promotion of sustainable behaviors like composting, recycling, and responsible disposal of hazardous waste. Efficient household waste management not only helps conserve natural resources and reduce pollution but also contributes to sustainable development and a cleaner, healthier living environment for communities.

Best Practices

1. Madhya Pradesh which is one of the Highest population Cities in India was awarded to Cleanest City by Swachh Survekshan. It has an integrated solid waste processing unit.
2. In Ahamedhabad, Gujarath, Ahamedhabad Municipality and Nepra Resource Management Pvt. Ltd collaborating are collecting waste from markets and segregating the waste change into fertilizers. An especially flower from markets is reused as an incense stick, rose essences by Brook and Blooms which is working for Solid Waste Management.

Social work intervention for preventing household waste management

Social work interventions can play a significant role in preventing household waste and promoting sustainable waste management practices. Here are some potential social work interventions:

- **Education and Awareness:** Social workers can design and implement educational programs to raise awareness about the environmental impact of household waste and the importance of sustainable waste management practices. These programs can target individuals, households, schools, and communities, providing information on waste reduction, recycling, composting, and responsible disposal methods.
- **Community Engagement:** Social workers can facilitate community engagement initiatives to mobilize community members in waste management efforts. This can involve organizing community clean-up drives, establishing community composting initiatives, and promoting waste segregation practices. Engaging community leaders, local organizations, and residents can foster a sense of collective responsibility and encourage sustainable waste management practices.
- **Behavior Change Campaigns:** Social workers can develop behavior change campaigns to promote waste reduction and sustainable consumption patterns. These campaigns can utilize persuasive

messaging, social norms, and positive reinforcement techniques to encourage individuals and households to adopt eco-friendly practices such as reducing single-use items, practicing mindful purchasing, and minimizing food waste.

- **Advocacy and Policy Support:** Social workers can engage in advocacy efforts to influence waste management policies and promote legislation that encourages sustainable waste management practices. They can collaborate with policymakers, government agencies, and NGOs to advocate for improved waste management infrastructure, extended producer responsibility, and effective waste management policies.
- **Capacity Building and Training:** Social workers can provide training and capacity-building sessions to individuals, community groups, and waste management stakeholders. These sessions can focus on building skills in waste segregation, composting, recycling, and proper waste disposal. Training programs can also target waste management workers to enhance their knowledge and skills in waste handling and processing.
- **Partnerships and Collaboration:** Social workers can foster partnerships and collaborations with local authorities, NGOs, waste management agencies, and other stakeholders to develop comprehensive waste management strategies. By working together, social workers can leverage resources, share best practices, and implement sustainable waste management initiatives that benefit the community.

Overall, social work interventions in preventing household waste management focus on education, community engagement, behavior change, policy advocacy, capacity building, and fostering partnerships. By addressing the underlying social, cultural, and behavioral factors, social workers can contribute to sustainable waste management practices and create a positive impact on the environment and community well-being.

Future recommendation

2. *Economy and Space*, 33(11), 2025-2048. <https://doi.org/10.1068/a33225>

Research to identify effective waste reduction strategies at the household level. Explore innovative approaches such as circular economy concepts, zero waste initiatives, and product design interventions that minimize waste generation. Encourage continuous evaluation and knowledge sharing in the field of household waste management. Share best practices, success stories, and lessons learned among policymakers, researchers, practitioners, and communities to foster learning and replication of effective waste management strategies. Research and policy efforts can contribute to the development of holistic, evidence-based, and sustainable household waste management practices that address environmental concerns, promote public health, and contribute to a circular economy.

Conclusion

Household waste management is a crucial aspect of sustainable development and environmental protection. Effective management of household waste is essential to minimize environmental pollution, conserve resources, and promote public health and well-being. Addressing household waste management requires a multi-faceted approach that involves individuals, communities, governments, and various stakeholders working together to implement sustainable waste management practices. By adopting a circular economy mindset, encouraging waste reduction, promoting recycling, and investing in infrastructure and technology, we can pave the way for a more sustainable future. Ultimately, effective household waste management is not only a responsibility but also an opportunity to create healthier, cleaner, and more sustainable communities for present and future generations.

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