

Executive Summary

Open dump landfills with improper waste segregation in India is greatly contributing to the climate crisis and negatively affecting people's health. This disproportionately affects lower income individuals that happen to live near these dump sites and waste pickers that are not properly equipped and trained to segregate waste. Lack of professionals and funding prevents the proper development and regulation of the waste management rules in India. India needs to better the waste management system to mitigate the damaging effects to the environment and people's health.

Introduction

Waste management is a large issue in India. Out of 43 million tonnes of municipal solid waste, 31 goes to landfill and 12 undergoes treatment. 60% of Indian landfills comprise of organic waste due to the lack of segregation of organic material (Raychaudhuri, 2022). In some places, the aim is for solid waste to be segregated, but usually they end up in landfills piling up to resemble mountains. This waste eventually starts releasing poisonous gases and leachate into the air and soil respectively (Dandapani, 2017).

India is the second highest methane emitter in the world. In the first 6 months of 2022, 78 out of 82 units of methane released in India was primarily from landfills, livestock, agriculture, and sewage. Toxic emissions from open-air landfills not only worsen global warming but are also hazardous to people's health living near the dumps (Raychaudhuri, 2022).

The effects of poorly managed waste greatly damage the environment and people's health. The Deonar landfill in Mumbai, containing more than 16 million tonnes of trash, is said to be India's largest and oldest dumping ground releasing noxious gases such as methane, hydrogen sulfide and carbon monoxide. In 2016 it erupted in fires that burned for months and caused smoke in much of Mumbai. Rubbish fires at landfills contributed to 11% of particulate matter, a major cause of air pollution in the city (Roy, 2021). Similar situations are seen in other landfills such as the Ghazipur landfill that has burned multiple times causing toxic haze are the area where people reported difficulty breathing and itching in the eyes (HT Correspondent, 2022).



Source: Wikimedia commons

Key Insights

- Solid waste is usually not segregated and ends up in open landfills that release poisonous gases and leachate into the air and soil.
- Landfills release noxious gases and landfill fires harm the health of people living close by.



Source: Ted Mathys, 2009 AP Fellow (Cropped)

Research overview

To solve this perilous situation, it is vital for the Indian government to enforce better policies. The analysis presented in this policy brief was conducted using various news sources, research papers, and informative websites that explain the problem and ways to properly manage waste in an efficient and sustainable way.

Research findings

There is a lack of publicly available bins, and the available ones are not covered properly. Similarly, garbage transporting vehicles are not covered in many cases, and widespread littering by citizens also contributes to the problem. Due to this a lot of waste ends up not being segregated and ends up being recklessly dumped on the streets and landfills which ends up polluting the air and soil (Agarwal, 2020).

Additionally, the informal waste sector of India plays a crucial role in segregating and recycling waste. Most waste pickers come from marginalised communities in urban spaces and the value of their work lack recognition in society (Dandapani, 2017). The waste is collected by waste or rag pickers that are not properly or informatively trained. They often do not receive proper instructions on how to segregate the trash into different categories (Raychaudhuri, 2022). At times they burn wastes at landfills to keep themselves warm at night accidentally causing landfill fires that further contribute to harming the climate and health of people nearby (Agarwal, 2020).

Furthermore, workers face all sorts of injuries and cuts while sorting through garbage. This poses an even greater health risk especially with a lot of biological waste being disposed into general waste (Dandapani, 2017).

Additionally, a 2017 study on the health hazards of 200 waste pickers in Mumbai near the Deonar dumping site reported the prevalence of morbidity was significantly higher among the waste pickers shown below (Chokhandre et al, 2017).

75%	25%	29%
for injuries	for respiratory illnesses	for eye infections

However, waste pickers' union seen in Pune seem to show practical benefits where they get contracts from the Pune municipal Corporation (PMC) for door-to-door waste collection, established right to dry waste and an increase in income. Nevertheless, this is still not seen in other cities where getting even basic things such as a decent pair of gloves is hard to come by from the municipal corporation (Dandapani, 2017).

More than 90% of waste in India is believed to be dumped in an unsatisfactory manner as open dumps (Kumar et al, 2017). An open dump is defined as a method of disposal of solid wastes indiscriminately without planning or control mechanisms. Since these dumpsites are not regulated, they are hazardous to the environment and people's health (Ozbay et al, 2021).

Additionally, waste to energy development in India can reduce disposal to land and generate clean, reliable energy from a renewable fuel source, reducing dependence on fossil fuels and GHG emissions (Kumar et al, 2017). Waste to energy plants can reduce the volume of waste by about 87% (How waste-to-energy, 2022). However, poor waste segregation, seasonal variations in waste composition and properties, inappropriate technology selection and operational and maintenance issues cause some difficulties (Kumar et al, 2017).

The government introduced solid waste management (SWM) rules in 2016 focusing on recovery, reuse and recycling, but did not enforce the guidelines properly (Raychaudhuri, 2022). There is a lack of availability of qualified waste management professionals and accountability in the current SWM systems throughout India. The budget given to municipal authorities responsible for managing municipal solid waste (MSW) is insufficient to cover the costs of developing proper waste collection, storage, treatment and disposal (Kumar et al, 2017).

Conclusion and recommendations

The mismanagement of waste in India causes intolerable environmental and health damage residents near the dump sites. If India continues to manage its waste the way it currently does, it will be detrimental to the planet. To work towards a solution, it is important to better the waste management system and recognise the value of the role of waste pickers in India. This implies the need for urgent policy reform and actions by the national Indian government, individual municipalities and regular citizens.

Recognising the value of waste pickers and empowering their role in society

Proper training for waste pickers needs to be mandatory to ensure the segregation of waste is handled in a safe and suitable manner. Additionally, the municipalities should encourage and recognise waste unions as they offer practical benefits to waste pickers. For instance, the PMC gave contracts to waste unions that established their right pick dry waste and increased their income. This can be implemented in other cities to protect the rights of workers and incorporate the informal sector. Furthermore, due to the hazardous nature of waste it is vital that waste pickers are given protective gear for their hands, any wounds, eyes, and respiratory body parts.

Invest in research and development on the best waste disposal techniques

Due to the negative impacts of open dump landfills, other alternatives such as engineered or sustainable landfills can be a more environmentally friendly solution. In engineered landfills, techniques that ensure control of waste and avoidance of surface water through the installation of well-designed and well-constructed surface drainage is adopted. Sustainable landfills go a few steps further to collect, purify, and sell the methane gas produced by landfills and are more sustainable with regards to airspace, processes, control and product utilization with minimal negative effects on the environment and human health (Ozbay et al, 2021). Furthermore, waste to energy development in India had some problems due to inappropriate technology selection and operational and maintenance issues. Thus, the government should invest in research and development to develop new technologies that minimize the environmental and health damage done by waste. This could also attract more qualified engineer and environmental professionals.

Install more garbage bins on streets to make throwing trash more accessible in public

Moreover, the lack of publicly available bins makes it difficult for individual citizens to throw their waste in a responsible way. These bins should also already be separated into different categories such as general, plastic, and organic waste which can nudge people into segregating their waste as they throw it. Nevertheless, waste pickers will still ensure that the trash is segregated properly when they collect it. Therefore, to increase public participation in reducing littering on the streets, adding more trash cans for specific items around the cities is vital.

Increase the budget for waste management and enforce guidelines

As mentioned before, the government introduced the SWM rules in 2016 that have a detailed plan on managing waste in India in a responsible way. Nevertheless, there is a lack of accountability in current SWM systems. Due to an insufficient budget proper waste segregation is not achieved. Thus, the government needs to increase their budget. This can possibly be done through a waste tax imposed on firms responsible for producing this waste. Nevertheless, firms could translate the tax into higher prices for consumers. It would also negatively impact smaller firms more that will not be able to bear the increase in costs and could potentially reduce competition in the affected industries.

The Indian government has a lot to do to improve its waste management system. However, these steps are necessary if India wants to see a positive change in mitigating climate change and ensuring a healthy population.

Bibliography

- Agarwal, R. (2020, June 5). *Waste management crisis in India*. Recycling magazine. <https://www.recycling-magazine.com/2020/05/06/waste-management-crisis-in-india/>
- Chokhandre, P., Singh, S.K., & Kashyap, G.C. (2017). Prevalence, predictors and economic burden of morbidities among waste-pickers of Mumbai, India: A Cross-sectional study. *Journal of Occupational Medicine and Toxicology*. <https://occup-med.biomedcentral.com/articles/10.1186/s12995-017-0176-3>
- Dandapani, S. (2017, November 30). *Unpaid and undervalued, how India's waste pickers fight apathy to keep our cities clean*. The News Minute. <https://www.thenewsminute.com/article/oppressed-and-unrecognised-life-waste-pickers-crucial-india-s-sanitation-72426>
- How waste-to-energy plants work*. (2022, December 28). EIA. <https://www.eia.gov/energyexplained/biomass/waste-to-energy-in-depth.php>
- HT Correspondent. (2022). *Ghazipur landfill burns for 3rd time in a month*. Hindustan Times. <https://www.hindustantimes.com/cities/delhi-news/ghazipur-landfill-burns-for-3rd-time-in-a-month-101650492209448.html>
- Kumar, S., Smith, S.R., Fowler, G. Velis, C., Kumar, S.J., Arya, S. Rena, Kumar, R., & Cheeseman, C. (2017). Challenges and opportunities associated with waste management in India. *The Royal Society*. <https://doi.org/10.1098/rsos.160764>
- Ozbay, G., Jones, M., Gadde, M., Isah, S., & Attarwala, T. (2021). Design and Operation of Effective Landfills with Minimal Effects on the Environment and Human health. *Journal of Environmental and Public Health, 2021*. <https://www.hindawi.com/journals/jep/2021/6921607/>
- Raychaudhuri, A. (2022, September 10). *How India's waste management system is causing health issues*. The Borgen Project. <https://borgenproject.org/indias-waste-management/>
- Roy, S. (2021, October 18). *The nightmare of India's tallest rubbish mountain*. BBC. <https://www.bbc.com/news/world-asia-india-58866834>