

The cost of plastic waste

Sea of Plastic Waste and Non-implementation of Guidelines:

1. India, with its growing population and rapid development, has a waste management industry estimated at \$1.3 billion (Rs. 9656 crores). Of the 54 million tons of solid waste produced this year (2019), 3.3 million tons was plastic.



2. As per the Central Pollution Control Board (CPCB) plastic waste management guidelines, all plastic waste must be segregated with non-recyclable plastics to be used in road laying, waste-to-energy projects, or conversion into refuse-derived fuels; and only a small fraction of non-recyclables should be disposed of in sanitary landfills.



3. However, this rarely occurs. In 2019-2020, only 60% of India's plastic waste was handled according to the CPCB's guidelines. The remaining was likely burnt, lost in nearby water bodies, or dumped as mixed waste into landfills, which are usually nothing more than vast, poorly maintained, overflowing dumpsites.



What is the cost of dumping plastic waste into landfills and open dumpsites?

1. In India, landfills — synonymous with open dumping in many countries around the world, including India — are undoubtedly the cheapest, short-term option for managing solid waste, which usually contains about 6% plastic.
2. Today, only 20% of collected waste is sorted and processed, while 80% is dumped as mixed waste into the 1,684 landfills that India currently has.

Adverse environmental impacts of Landfills:

1. Landfills are not sustainable as mixed waste has severe ecological effects due to substantial emission of greenhouse gas such as methane and production of leachates.
2. Leachate is a form of 'liquid pollution' containing many toxins and pathogens that are formed when water seeps through waste piles.
3. The costs of dumping mixed waste have been building up over several decades, ranging from large-scale fires due to methane generated by biodegradable waste to leachates poisoning local water sources.
4. Toxic chemicals and microplastics leaching out of untreated waste piles are lowering the life expectancies of locals.
5. Waste segregation does not stop the majority of plastic waste from entering landfills or being dumped, as only high-value plastics like PET (polyethene terephthalate) and HDPE (high-density polyethene) are recovered for recycling.
6. The vast majority of single-use plastics, multilayer packaging, and polystyrene end up in open dumps, eventually leaking into the environment.
7. The latest UN Environment Programme (UNEP) report on marine plastics estimates that land-based sources contribute 80% to the 11 million tons of plastic entering the oceans annually.

What is the cost of burning plastic waste?

1. Incineration has been a strategy for handling plastic waste in many countries. Japan and Singapore have been incinerating 37% and 78% of their municipal solid waste since 2017 and 2015, respectively.
2. However, waste-to-energy in India has had a stormy past and will likely have a rocky future.

3. India has installed 14 more waste-to-energy plants of 130 MW capacity, of which half have been shut down while the operational ones are under scrutiny for environmental safety violations.

4. Waste-to-energy plants have been unsuccessful in India due to several reasons.

- Firstly, most waste-to-energy projects rely on fuel from municipal solid waste, which in India, is of low calorific value.
- Secondly, waste-to-energy plants are expensive; despite several financial subsidies and incentives, electricity

produced by these plants costs more (Rs. 7/kWh) than electricity from coal/solar plants (Rs. 3-4 /kWh).

- Lastly, these plants often burn mixed waste unsuited for incineration and manage emissions and fly ash so poorly that they are extremely polluting.

Therefore, if burying plastic waste and burning are both expensive, recycling plastic may prove to be a better solution than either. A 2005 US case study seems to support this by showing that recycling consumes lesser energy and creates fewer environmental burdens than either landfills or incineration.

