



E-WASTE MANAGEMENT POLICY IN INDIA: CHALLENGES AND SOLUTIONS

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ABSTRACT

E-waste is a popular term used for electronic products nearing the end of their useful life. E-waste are considered dangerous as certain components of some electronic products contains materials that are hazardous for the environment and human health. Development in the Information and technology sectors has raised the use of the electronic devices exponentially. New upgrades and development in devices has lead to discard of old devices which leads to increase in garbage of electronic waste. In developing country like India, proper E-waste management policy is required to prevent the environment from its hazardous effects. E-waste management policy is need to be strictly implemented so that we can keep the environment safe and recycle the electronic waste

Keywords- E-waste, E-waste management policy, Recycle.

1.E-waste

Industrial revolution followed by the advances in information technology during the last century has drastically changed the peoples lifestyle. Although this development lead to new problem of garbage related to electronic products , which can cause hazardous effect on environment and human health..

2. Effects on environment and human health.

Disposal of E-Waste is a problem faced in many regions across the globe. Electrical and electronic items contain many different toxic substances When these items become waste, these toxicants can be released into the environment if the devices are disposed using environmentally-unsound practices. Some unsound practice and their effects are :

- Dumping on land or in water bodies can pollute the ground water.
- Burning in open environment, toxic fumes pollute the air.
- Acids and sludge from melting computer causes acidification of soil.
- Manual disassembly of equipment can cause skin diseases.

3. E-waste Management Policy in India

The Government of India applied the E-Waste Management Rules in 2016. The rules are applied to industries that are generating electronic waste items. The rules specify that industries should make arrangements for the safe disposal of scrapped electronic items. The rules are monitored and administered by the Ministry of Environment, Forest and Climate Change.

E-Waste (Management) Rules, 2022 in force since 1st April, 2023 to manage e-waste in an environmentally sound manner with an improved Extended Producer Responsibility (EPR) regime in place for e-waste recycling

- The company should ensure that the concentration of the chemicals should be within limits.
- To provide a platform for interaction with customers who wish to return old electronic items to the company
- To collect the items and preserve them in a way that does not cause damage to the environment
- To forward the items to the dismantler or recycler.
- To ensure that a dedicated address, e-mail address, and the toll-free helpline number is available for customers to contact when they want to return the old electronic items
- To ensure that any deposit made by a customer at the time of purchase is refunded when the product is returned
- The company should ensure that products which contain mercury are suitably immobilized before forwarding to the dismantler or recycler.
- The maximum time allowed for storage of e-waste is 180 days [3]

S.No.	Financial Year	Percentage of e-waste generated that should be forwarded to the recycling or dismantling centre
1	2019-2020	At least 30%
2	2020-2021	At least 40%
3	2021-2022	At least 50%
4	2022-2023	At least 60%
5	2023 onwards	At least 70%

Fig 1 Targets for e-waste collection as per the E-Waste (Management) Amendment Rules, 2018 [3].

But India witnessed a surge in electronic waste (e-waste) generation over the past five years, rising from 1.01 million metric tonnes (MT) in 2019-20 to 1.751 million MT in 2023-24, [4]

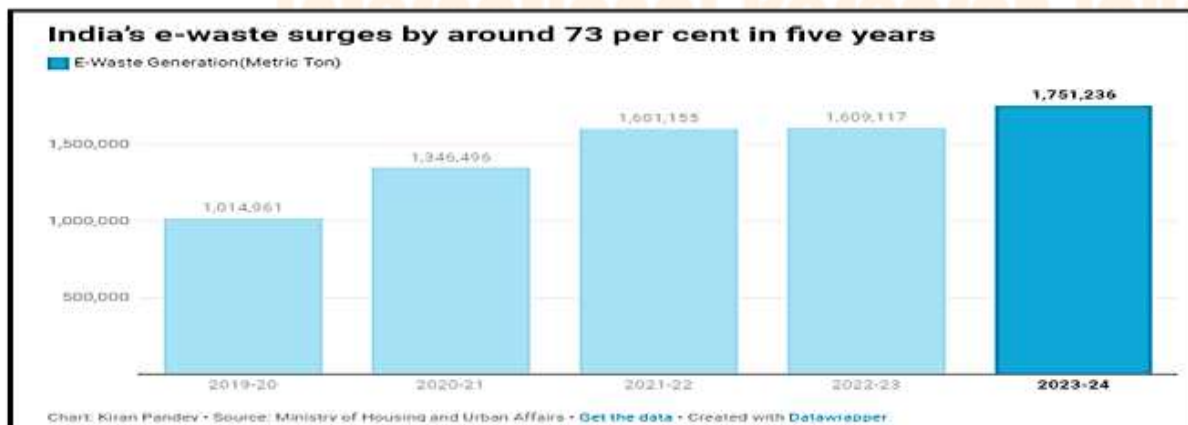


Fig 2 E-waste generation in India [Source: Ministry of Housing and Urban Affairs] [4]

4. Challenges for E-waste Management in India

In India it is estimated that most of the electronic items are stored due to uncertainty of how to manage the electronic waste. Such electronic junks remain unattended in houses, offices, storehouses etc and sometimes mixed with household wastes, which are finally disposed at landfills. Therefore we need to work from the bottom to top to conduct E-waste management effectively. Factors that effect the E-waste management activity are:

➤ Lack of proper Infrastructure for Recycling

In India there is requirement for proper infrastructure for collection and recycling of E-Waste materials. As of December 2024, India has a total of 295 authorized e-waste recycling units across various states. But still we need more E-waste recycle centres among the whole country to dispose

large amount of E-waste.

➤ **Lack of Awareness about hazardous effect**

In India collection of E-waste is mostly done by untrained people or more often 'kabadiwalas', they do not follow proper disposal and recycling practices. Costumers don't follow the practices to drop unused E-waste material at proper E-waste collection center. Therefore awareness among people about proper handling and disposal of such toxic materials is required to keep people safe from hazardous effects.

➤ **Environmentally unsustainable practices.**

Due to unawareness about hazardous effects people follows practices which are not safe for the environment such as dumping in the landfill or burning the E-Waste that leads to acidification in the soil due to melting of these materials and toxic fumes from these materials causes air pollution.

5. Solution for Robust E-waste Management in India

➤ **Proper training for e-waste collectors**

Proper training should be provided to the E-waste collectors, they must be provided with proper tools, hand gloves and masks for disposal and handling of such material.

➤ **Generation of awareness among customers**

Customers related to electrical and electronic items must be aware about the hazardous effect due to improper handling and disposal. They must be encouraged to dispose such E-waste at proper E-waste Recycle centre rather than to sell them to any local buyers like 'kabadiwalas'.

➤ **Sustainable product design**

Proper control over the material used in the manufacturing process is an effective way to reduce waste generation. Minimization of hazardous wastes at product design stage can have big impact in reduction of E-waste.

➤ **Reuse**

Reutilization is the best way to reduce the E-waste. This could reduce the disposal cost and provide income from a salable waste.

➤ **E-waste Collection Centers**

E-waste collection centers are need to be established within reach of customers and they must be aware about the proper disposal technique.

➤ **Effective Enforcement of rules**

Government should monitor that E-waste management rules are properly followed by the manufacturing industries

6. Conclusion

E-waste management is an emerging problem for many developing countries. It is leading to hazardous effect on human health and environment. Government must take strict action on the industries on the violation of E-waste management rules. Collective efforts from government and responsible citizens are required to reduce the E-waste disposal.

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