Electronic Waste management policy

Jalpaiguri Government Engineering College
Jalpaiguri, West Bengal, 735102
India

E-WASTE POLICY OF JGEC

Advances in electronics, communication, information technologies, and increased consumers' affordability have made EEE indispensable in modern societies. The waste arising from end-of-life electronic and electric products, referred to as WEEE or simply e-waste, is one of the fastest-growing waste streams in the world today. Electronic waste or e-waste describes discarded electrical or electronic devices. Informal processing of e-waste in developing countries can lead to adverse human health hazards and environmental pollution. E-waste is considered the "fastest-growing waste stream in the world"

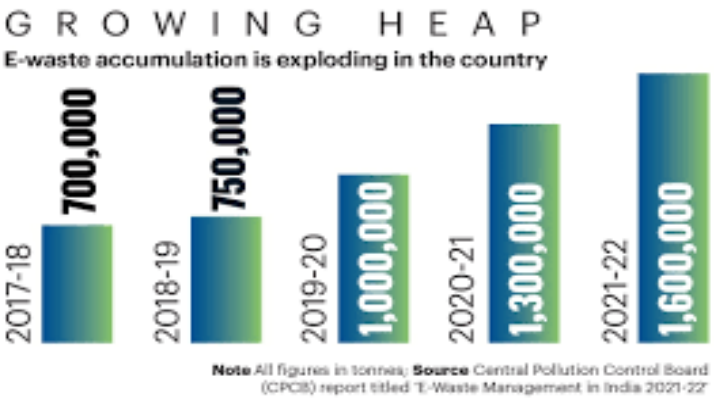
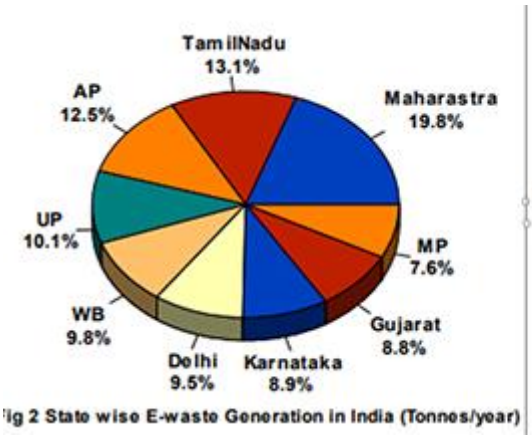


fig 1- e-waste growing strategy

In 2021, an estimated 57.4 million tonnes of e-waste were reported - equivalent to 5700 Eiffel towers, thus the name 'tsunami of e-waste' given by the UN. Alarmingly, only less than 15% of e-waste is recycled globally in proper way and in case of India, it is even less than 10%.



ig 2 State wise E-waste Generation in India (Tonnes/year)

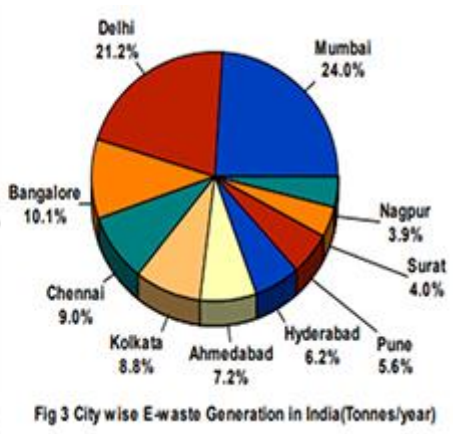


Fig 3 City wise E-waste Generation in India(Tonnes/year)

The Government notified the E-Waste (Management) Rules, 2022, on November 2, 2022. These rules will replace the E-waste (Management) Rules, 2016, and will be effective from

April 1, 2023. These rules will launch a new Extended Producer Responsibility (EPR) regime for e-waste recycling. The EPR is an environment protection strategy that makes the producers responsible for the entire life cycle of the product, especially for take back, recycle and final disposal of the product. The India e-waste management market is estimated to project a CAGR of 8.24% in terms of volume and 14.25% in terms of revenue, during the forecast period, 2021-2026. E-waste has become a grave concern in India, lacking effective e-waste disposal mechanisms.

Elements of E-waste

E-waste is mainly used old, end of life discarded electrical & electronics appliances. Sources of E-waste can be categorized into following types:

- Domestic E-waste
- Government Sector E-waste
- Industry E-waste
- Hospital E-waste

E-waste in our campus broadly covers various electronic products such as, computers, printers, hard disk, mobile phones, digital music recorders/players, televisions (TVs), fan, FAX, XEROX machine, FL bulbs, different electrical and electronic laboratory instrument etc. Some of them containing toxic substances/chemical like lead, zinc, barium, cadmium, mercury, beryllium, BFR, polyvinyl chloride and phosphor compounds that release in the atmosphere can have an adverse impact on human health and the environment if not handled properly. Serious repercussions may arise for those in proximity to places where E-waste is recycled or burnt due to improper recycling and disposal procedure.

Element	Effect on environment
Lead	Damage to central nervous systems, blood system, Kidney damage Effect brain development on children
Chromium	Asthmatic bronchitis.
Cadmium	Toxic irreversible effects on human on health. Accumulates in kidney and liver.
Mercury	Chronic damage to the brain.
Plastics including PVC	Burning produces dioxin. It causes Reproductive and developmental problems; Immune systems damage; Interfere with regulatory hormones

E-WASTE POLICY OF JGEC

List of E-Waste in our Institution:

The following listed items are considered as E-waste that are collected from various sections of the College:

- Centralized data processing instruments, Central Processing Units (CPUs), Input and output devices, Desktop.
- DSO, Signal Generator, Trainer Kit, Oscillators, Digital Multimeter, and different indicating instruments.
- Printers, Printer cartridges, Copying Equipment, Xerox & Fax Machines.
- Hubs, Switches, Routers and different networking devices.
- Display sets based on Liquid Crystal Display (LCD) and Light Emitting Diode (LED) technology.
- Air-conditioners (excluding centralized air conditioning plants)
- Fluorescent lamps, lamps which contain mercury, and other Consumer electrical and electronic items.

Reusing the E-Waste

E-Waste directly fulfils some academic purpose in JGEC.

- E-Waste is generally used for familiarization of components, related to hardware used as Laboratory equipment.
- They are also used by students for their project purposes in order to showcase their innovative skills in their respective fields resulting.

Disposal policy

Sound method for disposing of products that are potentially hazardous to the environment. All the stakeholders will embrace the e-waste management and properly dispose of their used computers in the designated areas of e-waste collection room. JGEC Campus is willing to comply with the guidelines specified by the Central Pollution Control Board (CPCB) relating to the generation of E-waste. Sometime e-wase is finally disposed through land filling.

The disposal of such items is treated on priority basis and necessary action is taken by the College accordingly. The policy proposes the following solutions for E-waste management:

- Providing the information about e-waste prices in market.
- Promoting electronic E-waste recycling.
- Upskilling informal E-waste recycling workforce.
- Deploying easily applicable and successful recycling technologies.
- Developing effective methods and schemes to process various forms of E-waste.

Action Plan

- Students advocate for e-waste recycling programs in campus and participate in organizing e-waste collection drives and recycling events. For organizing of these events, a dedicated committee has been already allotted in our institution.
- The local committee has purchase containers or e-waste bin for small electronic equipment collecting in our campus.
- Specifically, the council should roll out a comprehensive campaign on the need to dump the e-wastes in these bins. The campaign can be in the form of posters, the creation of a website.
- A 14x12 sq. feet room allotted for e-waste collecting & stacking purpose. A total amount of 500 kg of on campus e-waste has been collected
- A successful recycling program is being conducted with an infrastructure for on-site collection that is free and accessible.
- JGEC is developing an online platform called e-Source to tackle e-waste by linking various stakeholders in the formal and informal sectors.
- We are planning some e-waste awareness program in January 2024.

Future Proposal-

- There are very few governments approved e-waste recycling centres in the country, as well as west Bengal. Further JGEC want to collaborate with WBEIDC Ltd for recycling e waste
- In future we are planning for installation of E-Waste ATMs in campus, where individuals can deposit old electronic devices, and in return, receive small financial incentives or vouchers at Jalpaiguri campus with the help of funding agency.
- We will plan some training program for stakeholders of JGEC for produces hazardous waste needs under the coordination of the e-waste management committee formed at a higher level.
- JGEC campus will try` to develop an online platform called e-Source to tackle e-waste by linking various stakeholders in the formal and informal sectors in accordance Gov. guideline.

Conclusively, e-waste management involves recycling and awareness campaigns. Waste management strategies should be visible and easy to interpret. There is a need to concentrate on behavioural orientation among the stakeholders to ensure that the positive and negative impact of technological advancements functions within sustainable environmental management policy frameworks. The balance is achievable through the involvement of the locals to ignite a sense of self-responsibility and ownership of each initiative. The environmental laws should then be incorporated to restore disciple among the stakeholders.

Committee Members-

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