**Study of Policies and Law for E Waste**

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**Abstract**

The e-waste is new form of the waste, dealing with which is now an international issue as there was already a problem in dealing with the huge production of the of other forms of waste, and now the collection of e-waste which is produced from the electronic devices is a new challenge for the environmental authorities in ways of dealing with it and decomposition of the same, the production of e-waste from the 2014 to the end of 2022 will be 420.3 Million Metric Tons in India, which is a huge figure and it will keep on increasing as this generation is generation of electronics and technology so there is no stoppage in the production, selling and buying of electronic gadgets. E-waste in landfills pollutes soil and groundwater. The informal and unregulated management of e-waste poses a serious risk to the health and well-being of both workers and communities as a whole, due to the substantial amount of harmful components such as mercury, lead, bromine, and arsenic that our devices contain. The United Nations, other international organization and the government have taken several steps for dealing and managing the increasing e-waste, this paper focuses on knowing the laws and policies made globally as well in India for the e- waste management and providing some suggestions for better implementation of these policies and laws, ways to eradicate the loopholes and providing some more policies suggestions which can be made in future for the same purpose.

**Keywords**

E-waste, Management, Disposal, Reuse, Electronic equipment

**Introduction**

E-waste denotes waste electrical and electronic equipment, whole or in part or rejects from their manufacturing and repair process which are intended to be discarded and broadly comprises of discarded computer monitors, motherboards, mobile phones and chargers, compact discs, headphones, Cathode Ray Tubes (CRT), Printed Circuit Boards (PCB), televisions and so on. It is highly imperative that e-waste gets recycled in a safe, appropriate, and efficient manner. However, due to poor infrastructure and ineffective implementation of legislation, a very small percentage of the total e-waste generated gets recycled. Currently, a majority of e-waste in India is being managed by the informal sector which does not have the adequate means or awareness to deal with E-Waste appropriately. This in turn leads to ineffective e-waste management which causes huge damage to the environment. It also poses great health risks to the e-waste workers as various components of electrical and electronic equipment  (EEEs) contain toxic substances like cadmium, lead, arsenic, mercury, etc., which if not dealt with properly, are detrimental to human health. In India, solid waste management, with the emergence of e-waste, has become a complicated task. India is one of the fastest growing economies of the world and the domestic demand for consumer durables has been skyrocketing.

In India most of the waste electronic items are stored at households as people do not know how to discard them. This ever-increasing waste is very complex in nature and is also a rich source of metals such as gold, silver, and copper, which can be recovered and brought back into the production cycle. So e-waste trade and recycling alliances provide employment to many groups of people in India. For the recycling of e-waste, India heavily depends on the unorganized sector as only a handful of organized e-waste recycling facilities are available. Over 95% of the e-waste is treated and processed in the majority of urban slums of the country, where untrained workers carry out the dangerous procedures without personal protective equipment, which are detrimental not only to their health but also to the environment.

**What Is E-Waste?**

E-waste means the discarded electronic devices which are of no use, Electronic waste, or e-waste, refers to all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without the intent of re-use. E-waste is also referred to as WEEE (Waste Electrical and Electronic Equipment), electronic waste or e-scrap in different regions and under different circumstances in the world. It includes a wide range of products – almost any household or business item with circuitry or electrical components with power or battery supply.

Waste Electrical and Electronic Equipment (WEEE) is defined under the Basel Convention as electrical or electronic equipment that is waste, including all components, sub-assemblies and consumables that are part of the equipment at the time the equipment becomes waste. E-waste is one of the fastest growing waste streams in the world.

The UN defines e-waste as any discarded products with a battery or plug, and features toxic and hazardous substances such as mercury, that can pose severe risk to human and environmental health. According to the UN, in 2021 each person on the planet will produce on average 7.6 kg of e-waste, meaning that a massive 57.4 million tons will be generated worldwide. Only 17.4% of this electronic waste, containing a mixture of harmful substances and precious materials, will be recorded as being properly collected, treated and recycled. Many initiatives are undertaken to tackle this growing concern, but none of them can be fully effective without the active role and correct education of consumers. The International Telecommunication Union (ITU) also indicates that e-waste is one of the largest and most complex waste streams in the world. According to the [Global E-waste Monitor 2020](https://www.itu.int/en/ITU-D/Environment/Documents/Toolbox/GEM_2020_def.pdf)[[1]](#footnote-1), the world generated 53.6 Mt of e-waste in 2019, only 9.3 Mt (17%) of which was recorded as being collected and recycled. E-waste contains valuable materials, as well as hazardous toxins, which make the efficient material recovery and safe recycling of e-waste extremely important for economic value as well as environmental and human health. The discrepancy in the amount of e-waste produced and the amount of e-waste that is properly recycled reflects an urgent need for all stakeholders including the youth to address this issue.

**Category Of E-Waste**

E-waste can be categorized as hazardous or non-hazardous waste under the Basel Convention.

HAZARDOUS WASTE: When in e-waste there is presence of toxic materials such as mercury, lead or brominated flame retardants e-waste is classified as hazardous waste according to the Basel Convention. E-waste may also contain precious metals such as gold, copper and nickel and rare materials of strategic value such asindium and palladium[[2]](#footnote-2). These precious and heavy metals could be recovered, recycled and used as valuable source of secondary raw materials. Hazardous e-wastes are listed under a new code in Annex VIII: A1181[[3]](#footnote-3).

NON-HAZARDOUS WASTE: When e-waste does not have any contamination of hazardous substance and can directly be recycled, this waste does not affect the living creatures to larger extent than the hazardous waste affects. Non-hazardous e-wastes are listed in Annex II with the code Y49 (Y46 Wastes collected from households)[[4]](#footnote-4).

**International Conventions**

**BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL(5 MAY 1992)**

The Basel Convention is an international agreement aimed at reducing the transport of hazardous wastes between countries and specifically preventing the transport of hazardous wastes from developed countries to developing countries. We handle the transportation of radioactive waste. The Convention also minimizes the rate and toxicity of waste generated, ensures environmentally sound disposal close to the source, and ensures environmentally sound disposal of hazardous and other wastes generated by LDCs. It is also intended to assist in administration. E-waste is classified into hazardous waste and non-hazardous waste.

Cross-border movements of hazardous waste and other wastes, including e-waste, end up in landfills and are considered illegal movements within the meaning of Article 9 of the Basel Convention.

The Partnership for Action on Computing Equipment (PACE) was established at the 9th session of the Basel Convention Conference of the Parties. PACE is a multi-stakeholder partnership for governments, industry leaders, non-governmental organizations and academia committed to the environmentally sound management, refurbishment, recycling and disposal of used and end-of-life computing equipment.

The Mobile Phone Partnership Initiative (MPPI) was launched in 2002 to ensure the environmentally responsible use of used mobile phones.

**Letter Of Intent**

In March 2018, seven UN system entities signed a non-binding Letter of Intent. This was the basis for establishing the United Nations Coalition on E-Waste and for better coordinating global e-waste efforts. Her three main goals for the E-Waste Coalition are advocacy, exchange of knowledge and best practices, and development of a common intervention model for the implementation of her E-waste guidelines at the state level[[5]](#footnote-5).

**International Environmental Technology Centre**

IETC also implements in-country demonstration projects using innovative waste prevention and waste management methods and technologies to reduce the impact of climate change, increase resilience, create jobs and improve human well-being. IETC has undertaken various efforts to assist national and local governments and stakeholders to develop strategies and policies toward the sound management of wastes including waste electrical and electronic equipment (E-waste).

UNEP (UNITED NATIONS ENVIRONMENT POLICY) - E-Waste vol. 2: e-waste management manual

This manual aims to build the capacity of practitioners and policy makers for preparing and developing WEEE/E-waste management systems. It summarizes current practices in developed and developing countries on WEEE/E-waste management, the technologies for E-waste management (collection, transportation, treatment and disposal) and the important pre-requisites for effective and sustainable WEEE/E-waste management[[6]](#footnote-6).

Every year, October 14th is International E-Waste Day, an opportunity to think about the impact of e-waste and the actions needed to improve the circularity of electronic products. International E-Waste Day was launched in 2018 by the WEEE Forum.

I**NTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)**

Founded in 1906, the international electrochemical commission (IEC) is the world’s leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies, known collectively as “electro technology.”

**INTERNATIONAL TELECOMMUNICATION UNION (ITU)**

ITU’s Development Bureau (ITU-D) has been given a mandate to “assist developing countries in undertaking proper assessment of the size of e-waste and in initiating pilot projects to achieve environmentally sound management of e-waste through e-waste collection, dismantling, refurbishing and recycling.”

**INTERNATIONAL TRADE CENTRE (ITC)**

The transition to a digital world offers unprecedented opportunities for innovation, entrepreneurship and growth, and shows how the global consumption of electrical and electronic devices generates large amounts of e-waste increase. The generated e-waste is creating massive landfills all over the world.

**National Policies And Laws**

SCHEDULE 1, 2, AND 3 OF “THE HAZARDOUS WASTES (MANAGEMENT AND HANDLING) RULES, 2003

E-waste is defined as “Waste Electrical and Electronic Equipment including all components, sub-assemblies and their fractions except batteries falling under these rules”.

Each manufacturer of a computer, music system, mobile phone, or any other electronic gadget will be “personally” responsible for the final safe disposal of the product when it becomes a piece of e-waste.

**Guidelines For Environmentally Sound Management Of E-Waste, 2008**

This guideline was a Government of India initiative and was approved by Ministry of Environment and Forest and Central Pollution Control Board. It classified the E-waste according to its various components and compositions and mainly emphasizes on the management and treatment practices of E-waste. The guideline incorporated concepts such as “Extended Producer Responsibility”

**The E-Waste (Management And Handling) Rules, 2011**

The only attempt in India meant solely for addressing the issues related to E-waste. According to this regulation, Electrical and electronic equipment means equipment which is dependent on electric currents or electro-magnetic fields to be fully functional and ‘e-waste’ means waste electrical and electronic equipment, whole or in part or rejects from their manufacturing and repair process, which are intended to be discarded.

These rules are meant to be applied to every producer, consumer or bulk consumer involved in manufacturing, sale purchase and processing of electrical and electronic equipment, collection centers, dismantlers and recyclers of e-waste. Responsibilities of producers, collection centers, consumers, dismantlers, recyclers etc. are defined and incorporated in these rules.

**E-Waste (Management) Rules, 2016**

E-Waste (Management) Rules, 2016 were enacted in supersession of the 2011 Rules, A manufacturer, dealer;refurbishes’ and Producer Responsibility Organization (PRO) were also brought under the ambit of these Rules. PRO is a professional organization authorized or financed collectively or individually by producers, which can take the responsibility for collection and channelization of e-waste generated from their products to ensure environmentally sound management.

A system of Extended Producer Responsibility (EPR), compelling makers of electronic goods to ensure a proportion of the goods they sold every year was recycled. They are expected to maintain records annually demonstrating this.

**5. Amendment To The E-Waste Management Rules, 2018**

These amendments have been made with the objective of channelizing the e-waste generated in the country towards authorized dismantlers and recyclers in order to further formalize the e-waste recycling sector. As per the revised targets of e-waste collection, 10% of the quantity of waste generated shall be collected during 2017-2018. Further, there shall be a 10% increase every year until the year 2023. After 2023, the E-Waste collection target has been fixed at 70% of the quantity of waste generation[[7]](#footnote-7).

6. **E-Waste (Management) Rules, 2022**

Main Provisions:

Restricted the use of hazardous substances (such as lead, mercury, and cadmium) in manufacturing electrical and electronic equipment that have an adverse impact on human health and the environment.

Increased the range of electronic goods covered e.g., laptops, mobile, cameras etc.

Producers of electronic goods have to ensure at least 60% of their electronic waste is collected and recycled by 2023 with targets to increase them to 70% and 80% in 2024 and 2025, respectively, Companies will report these on an online portal.

Environmental compensation to be provided by the companies that don’t meet their target.

The State Governments will provide industrial space for e-waste dismantling and recycling facilities, also ensuring industrial skill development and establishing measures for protecting the health and safety of workers engaged in the dismantling and recycling facilities for e-waste.

Role of Central Pollution Control Board shall conduct random sampling of electrical and electronic equipment placed on the market to monitor and verify the compliance of reduction of hazardous substances provisions.

**Right To Repair Framework, 2022**

To emphasize the LiFE (Lifestyle for the Environment) movement through sustainable consumption, the Consumer Affairs Office has taken an important step towards developing a holistic framework for the right to repair[[8]](#footnote-8).

The purpose of developing a repair rights framework in India is to empower local market consumers and product purchasers, harmonizing transactions between original equipment manufacturers and third party purchasers and sellers. Emphasize on developing sustainable consumption of products and reduction in e-waste.

For this purpose, the department has set up a committee. Among the related issues highlighted at the conference is that companies avoid issuing manuals to help users make repairs easily. Manufacturers have their own control over spare parts (as to what type of design they use for screws etc.).

A monopoly on the repair process violates your "right of choice". Digital warranty cards, for example, ensure that customers lose their warranty if they receive a product from an "unrecognized" company. Digital Rights Management (DRM) and Technology Protection Means (TPM) Controversy, DRM is a great relief for copyright owners. Manufacturers encourage a culture of "planned obsolescence". This is a system in which each piece of equipment is designed to last for a certain amount of time and must be replaced after that period of time[[9]](#footnote-9). If the contract does not give the buyer complete control, the legal rights of the owner are violated.

LiFE movements require careful and conscious handling of the product. The rationale behind "right to repair" is that when you buy a product, you must own it entirely. Consumers should therefore be able to easily repair and modify their products at a reasonable cost without being bound by the whims of the manufacturer. However, over time, the right to repair became severely restricted, resulting not only in significant delays in repairs, but sometimes in products being repaired at exorbitant costs, and consumers who purchased the products. It has been observed that there is little choice left. Spare parts are often not available, causing great concern and annoyance to consumers.

**Judiciary’s Vigilance Regarding Waste Management**

The Judiciary, as usual has been keeping check on the implementation of the laws and rules made by the legislature, time to time passes order that have values for the society, the needs arises with changing time and the welfare of the citizens. Judiciary has been strict towards implementation of e waste rules, and has passed the order when the requirement has arrived for the proper implementation of rules and laws.

 In *Almrita Patel and Anr. V. Union of India and Ors*.[[10]](#footnote-10)– Under Article 32 of the Constitution in which the petitioner sought the urgent improvement in the practices followed for the treatment of solid waste or garbage in India. The National Green tribunal issued over 25 directions. The tribunal asked all the states and UTs to strictly follow and implement the [Solid Management Rules, 2016](http://pib.nic.in/newsite/PrintRelease.aspx?relid=138591). Problems and challenges in implementation.

The National Green tribunal said that in the solid waste management rules, 2016- the solid waste includes E-Waste as well (in definition); the aim of the rule is urban settlement to govern and facilitate responsible and scientific waste disposal practice. And the solid wastes include E- waste in the definition.

*Shailesh Singh V. State of Uttar Pradesh*[[11]](#footnote-11)- The application filed in the court raised the issue of pollution and contamination of water/ groundwater caused by a slaughter house, in Ghazipur, Delhi. The NCT held that the Central pollution control board have the responsibility of implementation on environment protection act and the solid waste management rule, 2016 and review the implementation as well.

*Mahendra pandey v. Union of India*[[12]](#footnote-12)- regarding disposal of e-waste and black powder along the banks of Ramganga River, Moradabad, and Uttar Pradesh. Illegal and unscientific disposal of e-waste was taking place in violation of the Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016 according to a report submitted by the CPCB to the NGT. Level of mercury was found to be above screening level at Ramganga River.

The Tribunal directs that steps for disposal of e-waste and black powder generated be processed in accordance with law and there should be no illegal dismantling of e-waste. All the dismantling and recycling has to done in accordance with law. The CPCB has been asked to ensure that all recyclers of e-waste/hazardous or other waste throughout the country" follow the Hazardous Waste Management Rules 2016.

**Problem In Implementation Of Laws And Policies**

The attempt to impose financial penalties on non-compliance or violation of e-waste handling and processing rules is ineffective.

Broader public knowledge regarding market prices and health safety costs of e-waste recycling is less because less paid workers who do this work do not have proper training.

Despite the massive increase in the volume of e-waste generated every year, there is very little investment by large-scale industrial infrastructure for recovery and recycling.

Poor Infrastructure for the Recycling of E-waste.

Lack of Awareness and Financial Incentives.

**Ways For Effective Implimentation Of Laws And Policies**

Deploying Readily Available and Mature Recycling Technologies.

Developing Innovative Methods & Technologies for Processing New Forms of E-waste.

Training and Up skilling Informal Sector- The majority of an informal e-waste recycling workforce needs up skilling, particularly for handling and dismantling hazardous materials. It must ensure the work’s environmental and occupational health and safety and link supply to formal sector processors.

Public Awareness for E-waste Management.

Increasing efforts are urgently required on the improvement of the current practices like collection schemes and management practices to reduce any illegal trade of e-waste. Reducing the number of hazardous substances in e-products will also positively affect the specific e-waste streams since it will support the prevention process.

Forming and incentivizing Formal E-waste Recycling.

**Conclusion**

E- Waste management is one of the greatest challenges in front of the world. This is becoming a huge public health issue and is exponentially increasing by the day. In order to separately collect, effectively treat, and dispose of e-waste, as well as divert it from conventional landfills and open burning, it is essential to integrate the informal sector with the formal sector. The competent authorities in developing and transition countries need to establish mechanisms for handling and treatment of e-waste in a safe and sustainable manner.

Increasing information campaigns, dumping and recycling capacity building, and spreading awareness is critical to promote environment friendly e-waste management programmes. Increasing efforts are urgently required on improvement of the current practices such as collection and management practices to reduce the illegal trade of e-waste. Reducing the amount of hazardous substances in e-products will also have a positive effect in dealing with the specific e-waste streams since it will support the prevention process.

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