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The problems of E-waste management in India

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With the rapid advancement in technology, the need for superior technological devices is also booming out large. The technological advances are growing at such a dizzying, alarming rate that even those devices that seem to be working slightly fine are directly being discarded without even getting it rectified or getting it repaired once. In this era of technology, the possession of more and more sophisticated and unique electronic goods or devices are seen as and are associated with a subject of higher class and status. An example of this can be a mobile phone. Apple launches a new version of its super-popular mobile brand called 'iPhone' every single year. Each newer model of 'iPhone' has almost very little upgradation than the previous one, yet the buyers tend to get attracted towards the newer version, discarding its recently bought model in the blink of an eye. A similar is the case with many electronic products, starting with home appliances to communication and information technology devices to home entertainment devices and even to the organisational, industrial, and institutional devices and machines. In this article we will focus on the problems of e-waste management that India faces and how can it resolve this issue logically. We will also explore the many environmental laws India has formulated and amended over the years. We will also see some major International Environmental Treaties and conventions dealing with e-waste management that India has signed and ratified. Every problem that is created comes with many opportunities to explore. Thus, by the end of this article, we will conclude looking upon the opportunities the problem of e-waste management in India offers to its people.

Keywords: *e-waste, management, generation, hazardous, amendment, electronics.*

INTRODUCTION

E-waste[1] is any electrical or electronic equipment or tool that is repudiated and trashed. It includes electric devices or gadgets that are broken or even working items, with very little damage, that are scrapped. E-waste is electronic products that are not wanted, not working as per the need of its user, and nearing or are at the end of their smooth functioning life. The scrapped e-waste is significantly dangerous for the environment because of the toxic and harmful chemicals it ejects during the discarding procedure. When these wastes are opening burnt and buried into the soil, in the absence of appropriate methods of treating and recycling, they release deleterious chemicals into the soil which leads to soil pollution and resultantly makes the ground unfit for agricultural purposes. When these wastes are openly burnt, they create air pollution as again there is a release of harmful substances in gaseous form from the e- materials. The discharge of e-wastes into water bodies like river streams and the sea will again contribute to water pollution and even marine, aquatic pollution, for the water bodies and the creatures living in them will again be exposed to the harmful ingredients released from the improperly discarded e-waste. There is no limited explanation or definition of the term e-waste as with improving times, it stands to cover a lot within its ambit. E-waste includes all types of electronic goods like **Home Appliances** that include microwaves, water heaters, and purifiers, induction cookers, ceiling fans, and air conditioners, washing machines and refrigerator et cetera; **Communication and IT Sector** devices that include mobile phones, desktop computers, Wi-Fi setups, laptops, circuit boards, hard-drive et cetera; **Entertainment Devices** like television, DVDs, stereos, home theatres et cetera; electronic utilities like massage chairs (recliners), heating pads, treadmills, lamps, smartwatches, et cetera; and **Office and Medical Equipment** like printers, IT servers, power strips, and power supplies, MRI machines, et cetera.

[1] 'What is E-waste? Definition and Why It's Important' (*Great Lakes Electronic Corporation*) <https://www.ewaste1.com/what-is-e-waste/> accessed 06 November 2021

E-waste[2] creation is the most rapidly growing waste problem in the world. According to reports, the global population generates around 50 million tons of it every year on an estimate.[3]The Global E-waste Monitor 2020 report found that the world dumped a record **53.6 million tonnes** of e-waste. That's an increase of 21 percent in the last five years, the report cited. We have to take notice of these statistics and realize the frightening rate of e-waste the human population around the globe is creating. The year 2020 was a year solely dedicated to the covid-19 imposed restrictions and lockdown around the world as the pandemic was seeping through every sector of the economy, resulting in the closure of major factories and industries and leading to mass unemployment for almost a year, it comes as a very big surprise as to how the world was still able to create this heightened load of e-waste.

Electronic waste is growing to be seen as a consequential and acute human health, sanitation, and habitation issue in India. It is also being credited for posing a threat to mother nature in India. India is the fifth largest electronic waste producer in the world; [4]approximately, 2 million tons of e-waste are generated annually in India. On top of this, many western countries dump their e-waste in India in order to surpass their own burden of treating those wastes themselves. Since India is a labor surplus country, a lot many rich countries consider India to be a safe and cheaper (in terms of labor availability and price) option available to employ in the treatment and management of its own e-waste production.

In India, there are some states that are not very high on the parameter of e-waste generation whereas, there are a few states that contribute to about 50% generation of the same. According to reports, three states top the list and those are Maharashtra, Tamil Nadu, and Andhra Pradesh. These names come up as no surprise since the maximum development in any sector of the economy is happening in these states, be it the metros or telecommunication or IT or

[2] 'Electronic Revolution=E Waste'(*The World Count*) <https://www.theworldcounts.com/stories/electronic-waste-facts> accessed 06 November 2021
[3] 'Wednesday: E-Waste'(*Waste Reduction Week in Canada*) <https://wrwcanada.com/en/2020-theme-days/wednesday-e-waste> accessed 10 November 2021
[4] Esha Roy, '31.6% rise in e-waste generation last year: Ashwini Choubey to Rajya Sabha'(*The Indian Express,* 27 July 2021) <https://indianexpress.com/article/india/31-6-rise-in-e-waste-generation-last-year-ashwini-choubey-to-rajya-sabha-7424095/> accessed 10 November 2021

artificial intelligence or medicine. These states are performing better and better each year in the mentioned sectors and so obviously they contribute majorly to the e-waste production in the country. Other states that follow these three main states are Uttar Pradesh, West Bengal, Delhi, Karnataka, and so on.

According[5] to ASSOCHAM (The Associated Chambers of Commerce and Industry of India), an industrial body in India, the yearly growth rate of electronic waste is 30%. As per evolving purchaser behavior and expeditious remunerative thrive, ASSOCHAM had estimated that our nation will give rise to 5.2 million tonnes of e-waste by the year 2020, and guess what, we will be nearing this estimated figure very soon if there's no stoppage to the rapid increase in e-waste generation. [6]India ranks 155th amongst 180countries on the Environmental Performance Index 2021, as per a report released by the World Economic Forum. Such a disappointing performance was linked to lenient environmental policies maintained by the Indian Government. In addition to this, India is ranked fifth in the world amongst top e-waste producing countries after the USA, China, Japan, and Germany, but sadly India recycles less than 2 percent of the total e-waste it produces around a year. The Scandinavian country of Norway, from the year 1999, when it had first initiated the concept of e-waste management has been the most consistent nation in handling its e-waste issues and has also been performing extremely well on various parameters of the environment performance index. On the other hand, since 2018, India has been continuously adding up to its e-waste generation problems that are giving rise to issues such as unhygienic living conditions and causing more and more discomfort to everyone impacted by it.

Even though e-waste recycling offers an opportunity and is an origin of revenue for many groups of downtrodden people in India, however, it also constitutes a diverse range of health

[5] Jaideep Shenoy, 'India's e-waste to touch 5.2 MMT by 2020: ASSOCHAM-EY study'(*The Times of India,* 03 March 2019) < https://timesofindia.indiatimes.com/business/india-business/indias-e-waste-to-touch-5-2-mmt-by-2020-assocham-ey-study/articleshow/68240340.cms> accessed 10 November 2021

[6] Ms Akanksha Manish & Dr Paromita Chakraborty, 'E-Waste Management in India: Challenges and Opportunities'(*The Energy and Resources Institute,* 06 November 2019) <https://www.teriin.org/article/e-waste-management-india-challenges-and-opportunities> accessed 10 Decenber 2021

and environmental menace. A very seemingly high percentage of the e-waste in India is being treated and recycled in the non-formal sector and a minuscule level of percentage is being taken care of by the formal division. Even those recyclers who own proper functioning machines and high professional skilled equipment and tools to recycle the waste material, often resolve to rudimentary recycling techniques just to save money and their resources. This improperly recycled e-waste is then discharged into various rivers and canals and even into various water streams. The e-waste materials release deadly substances into the adjacent areas through the sources they are released into. The release of toxic pollutants like lead and cadmium, beryllium, mercury, bromine, and many more, can have deadly and irrevocable repercussions on the environment and on human health. These pernicious chemicals can have a direct impact on the human nervous system and damage it permanently, causing death or leaving the affected person in a vegetative state for the rest of his life. At present, India recycles only 12.5% of the e-wastes it creates. This figure of proportion is highly contrasting in comparison with the amount of e-waste it generates every year. Sooner or later, there will come a time when this extreme amount of e-waste production will become an inescapable form of environmental hazard and improper management of the same will lead to an inevitable milieu.

LAWS RELATED TO E-WASTE MANAGEMENT IN INDIA

India has formulated laws and amended them with regard to curbing the growing problem of e-waste management. Even though these laws lack appropriate and conventional applicability, however, with proper legislation and strict judicial sight, these laws if properly implemented can surely help the government resolve a major part of its issue of mismanagement and maladministration with regard to e-waste generation throughout the country. The most important law that straight-away deals with the management of e-waste in India are **the Environment (Protection) Act, 1986**[7]**.** This piece of legislation offers three penal provisions with respect to environmental safety and these are sections 15, 16, and 17. The Environment (Protection) Act, 1986 is the roof of the E-waste rules in India and these rules have been

[7] Environment (Protection) Act, 1986

propounded within its purview. These e-waste rules have gone under three amendments since their inception. Let us go through this one by one.

E-Waste Management and Handling Rules, 2011: This particular legislation identifies the manufacturer's or promoter's liability for curbing and reprocessing the e-waste they create. It includes those companies that produce electrical goods with the possibility of becoming e-waste in the near future. Manufacturers of such devices in who's manufacturing hazardous materials were used should make their purchaser and user aware of the packaging. The producers of such materials that will ultimately lead to being e-waste also need to keep a record of the wastes they generate throughout the process of manufacturing till the process of delivering the packaged product to its customer and this specific documentation is also needed to be kept at the disposal of the State Pollution Control Boards or the Pollution Control Committees in-charge.

E-Waste Management Rules, 2016: The notification of the E-Waste Management Rules, 2016 was an extension of the e-waste (Management & Handling) Rules, 2011. The norms of the previously made legislation have been modified and made more stringent with this amendment and this reflects the government's commitment to good and efficient environmental governance. Under this upgraded version of the rules, the producers have been made responsible for the assemblage of E-waste they create and for its legal trading and recycling. These rules ensured the timely disposal of wastes in an environmentally sound and friendly manner. The State Governments had been involved in this entire process for the first time to ensure the safety, well-being, and skill enhancement of the workers involved in dismantling and recycling functions and operations. This shows that the government is trying its best by increasing the effectiveness of the previously made rules through this amendment.

E-Waste Management Rules, 2018: This is overall the third amendment to the originally made rules of 2011 and the second after the 2016 amendment. This third amendment alleviates

certain provisions of the stringent E-Waste (Management Rules of 2016). [8]The amendment concentrates on gathering the e-waste by the companies and makes them liable for earmarking the collection targets by 10% year by year. This amendment also gives the Central Pollution Control Board power and competence to erratically select any electronic equipment available in the market to test its compliance with the newly amended rules. The financial cost associated with the entire procedure of testing the chosen product is incurred by the government, whereas previously, this responsibility was of the producer and manufacturer of the chosen product.

INTERNATIONAL CONVENTION ON E-WASTE MANAGEMENT:- BASEL CONVENTION

The[9] Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was signed on March 22nd, 1989 and it came into force on 5th May 1992. It is the widest and extensive global environmental protocol on hazardous waste including e-waste. At present, there are 189 countries that are party to this convention, including 53 signatories. The Basel Convention modulates and synchronizes the transboundary activity of hazardous wastes and compels its member nations to ensure that such wastes are managed and disposed of in an environmentally sound and friendly manner. Member countries have the duty to reduce the quantity expanse and size of the waste that is transported and to intercept or minimize the generation of wastes at the source of its creation in the very first place. India was one of the first countries in south-Asia to voice its opinion and agenda on the ban on exports to the developing countries from the developed ones. India signed the convention in 1989 itself and became a member of the same in the year 1992.

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[8] Auroshree, 'E- Waste Management Rules amended [Key Highlights]'(*SCC Online,* 27 March 2018) <https://www.scconline.com/blog/post/2018/03/27/e-waste-management-amendment-rules-2018-notified/> accessed 10 November 2021

[9] 'Basel Convention on the Control of Transboundary Movements of Hazardous Wastes'(*UNO Environment Programme*) <https://www.unep.org/resources/report/basel-convention-control-transboundary-movements-hazardous-wastes> accessed 10 November 2021

CONCLUSION

E-waste management is not only a challenge for India but for many developing countries. Due to being in a dilemmatic state, countries like India are left with no choice but to indulge in an extensive amount of upgradation in all the sectors of its economy, by replacing the manual working force with artificially capable and automated machinery working force. India is also forced to collaborate with western technology in order to boost its own sectors of IT and communication Industries. Even agriculture is being modified to meet international standards of grain production. Therefore, a nation's global might and richness increase by its increase in automated production. So, we can postulate that India is forced to some extent for contributing to its own problem of e-waste generation and management. But as explained above, it is left with very little choice. It does not have an escape route to avoid the problem of e-waste entirely. E-waste is transforming its dynamics and is fetching itself as an issue that is gradually enlarging itself to become a source of a very severe future health crisis and is mutating exorbitantly day by day. There is a need for a proper, orderly assemblage, efficient treatment, and effective disposal of the wastes rather than continuing with the older rudimentary methods of discharge and discard of e-waste. It is imperative, convenient and the need of the hour to amalgamate the informal sector of e-waste management with the formal sector of e-waste disposal and recycling. The very abled, highly regarded, and responsible government authorities of the third world nations, especially the developing ones, are in need of the setting up of an apparatus system that can coherently handle and look after the orderly treatment of e-waste in a viable mode of conduct. The workers engaged in the disposal and in the recycling of the e-waste must be well trained, well informed, and well-skilled at their task. They should be made aware of the problem that the improper management of e-waste can create throughout the country if proper actions are not taken within time. There is a need for them to feel responsible enough to take charge of this growing problem at the ground level so that they do not falter at their assigned duties. The government can play a very important role by making the citizens aware of the critical effects of improper e-waste management has on the environment as a whole, thereby promoting environment-friendly e-waste management programs. Instant attempts are needed for the refinement of corrupt practices such as the

illegal trading of e-waste. The authorities should encourage the organizations to minimize the number of hazardous substances used in the making of the e-products. For example, [10]Mobile phone manufacturer Nokia is one of the very few companies that has taken genuine steps in the direction of proper handling and disposable of the waste is created. If measures like these are implied by every company, big or small, even at a minuscule level, it will give rise to an overall great positive impact on the effective implementation of e-waste management rules in India. Along with this, the e-waste assemblage targets need to be perpetually reviewed and renewed whenever required to ensure compliance with the EPR, 2018 rules across all electronic industries operating in India with regard to its generation, collection, disposal, and recycling of the e-waste produced throughout the country.

[10] Ms Akanksha Manish & Dr Paromita Chakraborty (n 6)