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E-Waste Management And Economic Opportunities

Dr. Sangeeta S. Shinde Associate Professor & Vice Principal, Sarhad College of Arts Commerce and Science Katraj, Pune, India drsangeetashinde@gmail.com

ABSTRACT:

E-Waste management is very crucial thing in current situations. Mismanagement of E-waste is causing huge health and environmental hazards but at the same time if it is managed well through recycle , reuse and proper government policy, we can create hugeemployment opportunity and we will be able to recover precious metal's and other resources from it. Systematic E-waste management will help us to reduce and avoid its hazardous impact on human health and environment.

The profoundly positive impact of e-waste recycling makes it an essential component of the recycling industry, but the benefits of recycling e-waste extend far beyond environmental benefits. It will provide employment opportunities, it will help in optimum utilization of scare resources and the same time it will protect human health and environmental balance.

Through this paper researcher will shed some light on e-waste issue and economic opportunity in e waste management.

Keywords: E-waste, recycle, opportunities.

INTRODUCTION:

Using electronics devices is inseparable part of modern lifestyle, we cannot imagine our life without electronics goods. Electronics or electronic components are used in every small instruments, machines and tools from cooking to music.

Electronic devices have become an indispensable part of our daily lives. It is becoming increasingly impossible for us to work without the aid of an electronic device.We live in a technologically advanced generation when robots and artificial intelligence can perform human tasks with greater ease and efficiency.

The COVID-19 pandemic followed by lockdowns has drastically altered modern life. Increased use of telecommuting for work, education, and leisure has led to a surge in demand for electronic products, which has strained both global manufacturing supply chains and upstream mineral stocks and resources and it created lot of e waste as for work from home employee need better version of laptop,rather than buying textbook and notebook parents are forced to shop for smart phone for online classes and exam. It helps to extend e waste. E-waste has harmful impact on human's life and environment so needto manage e waste properly through this paper researcher will throw some light on E-waste its harmful effect and business opportunity in E waste. E-waste companies like Protec create jobs and generate revenue, which helps the economy. And, thankfully, e-waste recycling is not going away. In fact, revenue produced by the industry will have a crucial share in total economy.

Objectives:

1. Understanding the e waste issues
2. Effects of e waste of health and environment
3. Opportunities in e-waste management.

Meaning of E-Waste:

Electronic waste, also known as e-waste, is a type of waste that Discarded computers, office electronic equipment, entertainment device electronics, mobile phones, television sets, and refrigerators are examples of waste. The rapid advancement of technology, combined with a consumer-driven society, results in a massive amount of e-waste.

E-Waste Composition:

E-waste can be classified according to its various parts, materials, and composition.

Broadly into six categories such as

• Iron and steel, which are used for casings and frames; • Nonferrous metals, particularly copper, which is used in cables; and • Aluminum

• Screens and windows are made of glass.

• Plastic is used in casings, cables, and circuit boards.

• Electronic elements

• Other people (rubber, wood, ceramic etc.).

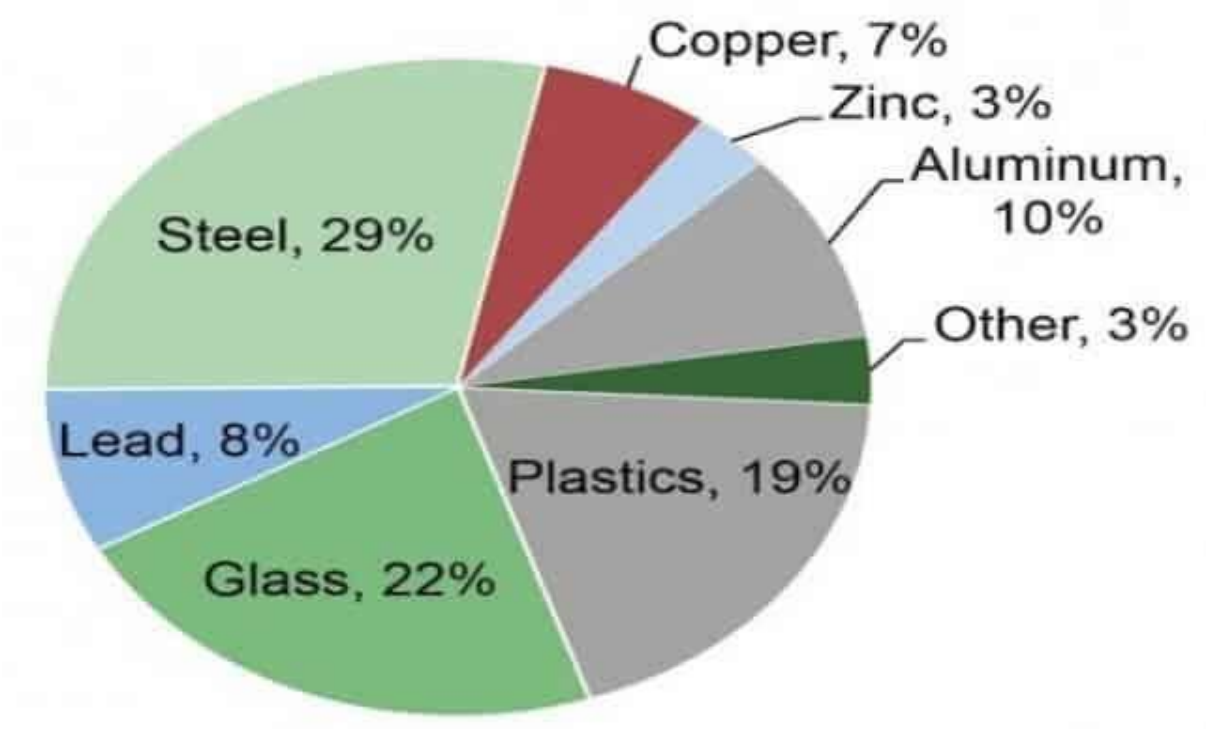

Figure 1: Graphical representation of components of E-Waste

Source: https://electricalfundablog.com/e-waste-electronic-waste-sources-composition/

History of E-Waste:
Technology and the evolution of technology began in the mid-1970s. Prior to the 1970s, every new technology or electronic product was revolutionary. It was used everywhere, but in the mid-1970s, with the evolution of technology and the introduction of advanced engineering, many electronic products were developed, rendering all older products obsolete and E-Waste disposal generally.

E-waste disposal has been illegal in the United States since 1976, thanks to the RCRA. Following that, E-waste disposal was made illegal in every single developed or developing country. In India, the dumping and disposal of E-Waste has been made illegal. Since many states now prohibit the disposal of E-waste, a new industry known as Electronic Waste Safe has emerged.

INDIA'S CONTRIBUTION TO E-WASTE
In India, electronic waste is becoming a major public health and environmental concern. India is the world's "fifth largest producer of electronic waste", approximately 2 million tonnes of e-waste are generated annually, and an unspecified amount of e-waste is imported from other countries around the world, with only 27 percent of it recycled.

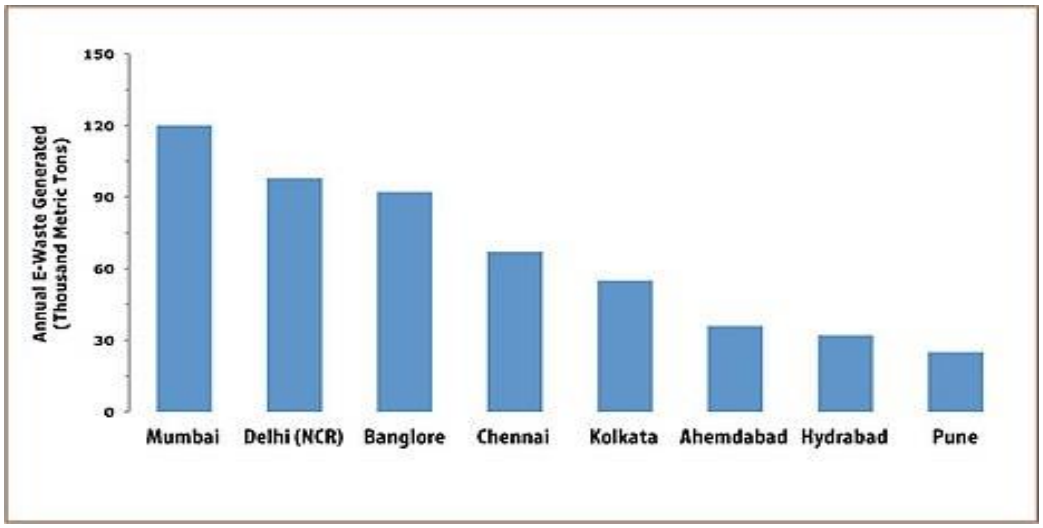

Figure 1: Graphical representation of Annual E-Waste generated.

Source
https://en.wikipedia.org/wiki/Electronic_waste_in_India#/media/File:E_waste_cities.jpg

Scary Effects of E-Waste

1. E-Waste Negatively Impacts the Soil
For starters, e-waste can have a negative impact on a region's soil. Toxic heavy metals are released as e-waste degrades. Lead, arsenic, and cadmium are examples of heavy metals.

When these toxins leach into the soil, they affect the plants and trees that grow there. As a result, these toxins can enter the human food supply, causing birth defects and a variety of other health issues.2. E-Waste Negatively Impacts the Water

Toxins enter groundwater when e-waste is improperly disposed of by residents or businesses. Many surface streams, ponds, and lakes are fed by groundwater. Many animals rely on these waterways for survival. As a result, these toxins can make these animals sick and disrupt the global ecosystem.

3. E-Waste Negatively Impacts the Air

When e-waste is disposed of at a landfill, it is typically burned on-site by incinerators. This process can cause hydrocarbons to be released into the atmosphere, polluting the air that many animals and humans rely on.

Furthermore, these hydrocarbons can contribute to the greenhouse gas effect, which many scientists believe is a major cause of global warming.

Health hazards due to improper e-waste disposal

Harmful substances found in e-waste can cause serious health problems, and death has occurred in some cases. Toxins enter our bodies by inhalation, ingestion, or skin absorption. Humans are then at danger of getting any of the disorders listed above**.**

As previously stated, electronic trash contains hazardous materials such as mercury, lead, cadmium, poly brominated flame retardants, barium, and lithium, all of which are harmful to human health.

The effects of these poisons on humans include harm to the brain, heart, liver, kidneys, and skeletal system.

It can also have a significant impact on the nervous and reproductive systems of humans, resulting in sickness and birth abnormalities.

Improper e-waste disposal is extremely hazardous to the global ecosystem, which makes it even more critical of an issue to raise awareness about this rising problem and its potentially disastrous consequences. It is critical to effectively collect e-waste and prevent from getting into landfill's so that they can be recycled, refurbished, resold, or repurposed in order to reduce the hazardous impacts of e-waste.

E-WASTE GENERATION – THE CAUSES AND THE CONSEQUENCES

E-waste is produced as a result of any of the following factors: -

- Technological advancement and innovation
- Changes in lifestyle
- The intended usage has come to an end.

A lack of stringent e-waste management policies in India exacerbates the problem. The informal sector continues to rely on primitive waste disposal and recycling methods. They openly burn waste, heat circuit boards, subject them to acid baths, and dispose of waste in landfills, among other things. Workers in the unorganised e-waste management space put themselves at risk by not wearing protective equipment.

Hazardous metals from e-waste end up in the soil or water, or they are converted into harmful emissions that are released into the air we breathe. The consequences of these practices are disastrous.

Solution's for E- Waste:

1. **Ban**: As it is a very easy and popular solution widely used in India is to ban the things to solve the problem but in case of electronic product banning is highly impossible in the current situation
2. **Repair:**Although companies now claim their products to be "rugged and tough," ensuring their durability, some wear and tear is unavoidable in everyday use, and it is our moral responsibility as responsible consumers to choose repair over replacement. Repairing is not only good for the environment, but it is also good for your wallet. This is how it is done.

Sr.No	Product	Price(approx)	Repairing cost(approx)
1	I Phone	42000Rs	7000-1000Rs
2	LED TV	18000-100000Rs	15000-17000Rs
3	Washing Machine	15000-30000Rs	200-6000Rs

The right to repair electronics refers to government legislation that allows consumers to repair and modify their own consumer electronic devices when the manufacturer otherwise requires the Consumer to use only their offered services. Despite the fact that this is a global issue, the primary debate has been centered on the United States and the European Union.

Reduce:

1. Be a good consumer. Do some research when you're ready to buy a new product? Make sure it's one that won't break easily or become damaged shortly after you purchase it. In other words, look for products likely to have a much longer lifespan so you won't need to replace it within a few years, or even months. It's known that this is a common practice in the electronics industry; to make products with shorter life spans so more money can be earned in the long run when they break or malfunction.

2. Use as many times as possible. If you have working parts and equipment, try repairing the electronic device before purchasing a new one. If the device can no longer be repaired, it should be recycled.
3. Become knowledgeable about what goes into your electronics. Knowledge is a form of power. Doing some research on the raw materials used to make your phone or laptop can help you understand how harmful those materials and toxins can be if they are discarded in a landfill. The more you educate yourself, the more you will be able to purchase items that are not harmful to the environment..
4. Look for a label that says "environmentally friendly." Check to see if the products you buy have the Energy Star label or have been certified by the Electronic Product Environmental Assessment Tool, for example
5. Consider reducing the number of electronic devices you own. If you don't need another gadget, look for devices with multiple functions.
6. Guide children about e-waste. Children are our future, and it is beneficial if we can instil in them a commitment to e-waste recycling at a young age.
7. Recycle, recycle, and recycle. Whatever you have, it is critical to always properly dispose of your e-waste. That means recycling all of your old electronics, with the understanding that improperly disposing of e-waste is becoming increasingly dangerous, especially as the volume of e-waste has increased.
8. Be aware of security concerns. Even if you delete your personal information, it remains on your electronic devices, which is another reason not to throw it away. A recycling company, such as Great Lakes Electronics Corporation, can scrub your device clean before recycling it, ensuring that cyber thieves do not gain access to that information.
9. Keep what you have. Small changes help to extend the life of what you have. Clean your computer frequently and avoid overcharging your battery to extend the life of your battery.

RECYCLE:

E-waste recycling is the process of reprocessing and reusing electronic waste. It is straightforward. It is a method of recovering material from electronic waste. This allows you to incorporate them into new electronic products.

These electronic wastes can take the form of household appliances such as air conditioners, televisions, electric cookers, air conditioners, heaters, DVDs, fans, microwaves, and radio. They can also take the form of information technology equipment such as computers, laptops, mobile phones, batteries, hard discs, circuit boards, and monitors.

E-waste recycling is a growing trend that was started to protect human and environmental health, primarily due to the widespread environmental pollution impacts of e-waste. Moreover, millions of electronic devices are used on a daily basis. When they reach the end of their lives, they mostly end up in landfills. Surprisingly, only 12.5 percent of e-waste is recycled.

Components of E-waste That Can be Recycled

Plastic: Plastic materials can be collected and recycled. The recycled plastic materials can then be used to make items such as plastic sleepers and vineyard stakes. Fence posts, plastic trays, insulators, equipment holders, and other items are also available.

Metal: Metals can also be recovered and recycled to create newer steel and metal products.

Glass : Glass can be extracted from computer monitor and television CRTs (Cathode Ray Tubes).

Mercury: Devices containing mercury can be recycled at facilities that use specialised technology to remove the mercury. Metric instruments, dental amalgams, and fluorescent lighting are among the byproducts of this process.

Circuit Boards: There are accredited and specialized companies that smelt and recover resources such as tin, gold, silver, copper, palladium, and precious metals**.**

Hard Disk: Aluminum ingots can be recovered from shredded and processed hard discs. These are especially beneficial for automobiles.

Toner and Ink Cartridges: These toners and ink cartridges are recycled by recyclers in various manufacturing industries that remanufacture them. The retrieved plastic and metals are then used as raw materials for other products.

Batteries: Scrap batteries can be taken to specialised recyclers to recover cadmium, steel, nickel, and cobalt for reuse in new batteries. They can also be used to make stainless steel.

SMART CONSUMERISM

The concept of planned obsolescence is not new in marketing. Manufacturers purposefully design and create products in such a way and form that they limit their lives. The goal is to get customers to buy new versions of these products on a regular basis. As a result, these companies can extract profits that are disproportionate to the marginal improvements or changes that the newer versions of the same product have would otherwise have commanded in the market.

The “planned obsolescence” bug

Planned obsolescence can be accomplished in a variety of ways. Last year, Apple Inc. was fined 25 million Euros by France's competition commission for failing to inform consumers that it was using software updates to slow down older iPhone models. A company can ensure that people cannot continue to use old devices even if nothing is wrong with the earlier versions by slowing down. Printers frequently include chips that prevent ink cartridges from being used after a certain amount of use. On its iPhones, Apple employs a screw that cannot be unscrewed with standard screwdrivers. An egregious example is mobile phone or earphone batteries that cannot be replaced, requiring consumers to purchase a new device entirely if there is a problem with the battery.

Government Policy:

Although the government is taking steps to address the growing issue of e-waste, particularly after the E-Waste Management (EWM) Rules, 2016, which attempted to divert e-waste from unauthorized recyclers and ensure the safe disposal of hazardous residue through the Extended Producer Responsibility (EPR) model, there is still room for improvement. The government can implement policies such as:

1) Expanding recycling centers and promoting recycling-related businesses and startups.

2) Creating easily accessible authorised collection centers for the general public.

3) Forcing tech companies to abandon their policy of planned obsolescence.

4) Enacting legislation to prohibit the use of toxic materials in electronics and focusing on non-toxic alternatives.

5) Consumer support must be made mandatory throughout the electronic device's lifecycle.

6) Implement a policy of proportional production to avoid excess production.

7) Pass the “Right to Repair” law in parliament as soon as possible.

8) Raise consumer awareness about e-waste and the problems it causes.

Thus, if we are successful in implementing the solutions, we will be able to successfully combat the growing issue of e waste management, protect our environment, and lead ourselves to a better future.

CONCLUSION

Thus from the above given data we have thoroughly understood the extent of the dangers posed by e-waste and how it is growing to be a modern day evil. We took a brief overview on the number of devastating effect ranging from environmental damage, exhausting of the resources, health hazard’s etc.

This research paper has also shared number of solutions to combat the current scenario. These solutions include reduce, reuse, recycle, smart consumerism etc. If we are able to successfully incorporate these solution we can surely deal with this scenario of e-waste and not only manage it but we can alsowork towards eradicating it completely. Managing e-waste not only works wonders for the nature but it also gives a boost to the economy as e- waste management generates a lot of employment opportunities. It promotes effective utilisation of resources and minimalism.

When it comes to this issue the government authorities and legislation cannot do much unless and until they get the support of the general public. Thus it becomes more of our responsibility to reduce, reuse, recycle and choose wisely. a smart consumer can make a lot of difference and your contribution matters so it time for us to join hands and come together to solve this problem and make world a better place.

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