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E-Waste Management in India with Special Reference to District Bijnor

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ABSTRACT

E Waste is growing at very fast rate, all over the world. As per some studies, it has such elememts which may be harmful to environment and human health. For development purpose electronic technologies may not be reversed. Some studies say that in India, e waste is increasing at 15% rate. Some methods are requred to reduce this e waste. Aquring circular economy may be extremly helpful in reducing e waste. This article tries to find out different dimensions including regulations and legislations over e waste management.

KEY words: e waste, dimensions, health issues, economy, government efforts

Introduction

Electronic waste, or e-waste, refers to any discarded electronic device, such as computers, mobile phones, televisions, and other electronics. This can include devices that are no longer working, outdated, or no longer wanted by their owners.

E-waste can be hazardous to both human health and the environment. Many electronic devices contain harmful substances such as lead, mercury, and cadmium, which can leak into the soil and water and cause environmental damage. When e-waste is not disposed of properly, it can lead to pollution and health hazards for those who handle it, as well as those who live near e-waste disposal sites.

The problem of e-waste has become increasingly significant in recent years due to the rapid growth of the electronics industry, as well as the shorter lifespan of many electronic devices. This has led to a significant increase in the amount of e-waste generated around the world.

To address this issue, many countries have implemented regulations and guidelines for the proper disposal of e-waste. This can include requirements for manufacturers to take responsibility for the proper disposal of their products, as well as guidelines for the collection and recycling of e-waste. Properly disposing of e-waste is important not only for the environment but also for human health and safety.

Dimensions

There are several dimensions of e-waste in India, including:

Health and Environmental: E-waste contains hazardous substances such as lead, mercury, and cadmium which can be harmful to human health and the environment. When e-waste is not disposed of properly, it can lead to pollution and health hazards for those who handle it, as well as those who live near e-waste disposal sites.

Informal sector: The vast majority of e-waste in India is handled by the informal sector, which consists of small-scale businesses and individuals who collect, dismantle, and recycle electronic devices. These workers often have little to no protective gear and work in unsafe and unsanitary conditions, leading to significant health and environmental risks.

Electronic consumption: With the increasing affordability and accessibility of electronic devices, India has become a major consumer of electronic products. This has led to a significant increase in the amount of e-waste generated in the country.

Policy and Governance: While the Indian government has implemented policies and guidelines for the proper disposal of e-waste, there have been challenges in enforcing these regulations. The lack of adequate infrastructure and resources has also hindered effective e-waste management in the country.

Technological advancements: Rapid technological advancements have resulted in the constant upgrading and replacement of electronic devices, leading to an increase in the rate of obsolescence and e-waste generation.

Addressing these dimensions of e-waste in India requires a multi-faceted approach that involves proper regulation, enforcement, and infrastructure development. It also requires raising awareness among consumers and businesses about the importance of responsible e-waste disposal and the benefits of e-waste recycling.

HISTORY

Electronic waste, or e-waste, refers to discarded electronic devices, such as computers, cellphones, and televisions. India has become a major consumer of electronic devices in recent years, and as a result, has seen a significant increase in e-waste.

The first instances of e-waste in India can be traced back to the early 2000s, when the country began to import electronic waste from developed countries such as the United States and Europe. The electronic waste was often shipped to India under the guise of being "second-hand" goods, but in reality, much of it was unusable and ended up being discarded in landfills.

By 2005, it was estimated that India was generating around 1.47 lakh tonnes of electronic waste every year, and the amount was growing at a rate of 10% to 15% annually. The vast majority of this waste was being handled by the informal sector, which consisted of small-scale businesses and individuals who collected, dismantled, and recycled electronic devices. These workers often had little to no protective gear and worked in unsafe and unsanitary conditions, leading to significant health and environmental risks.

In 2011, the Indian government introduced the e-waste management and handling rules, which aimed to regulate the handling and disposal of electronic waste. The rules required manufacturers to take responsibility for the proper disposal of their products, and established guidelines for the collection and recycling of e-waste. However, the rules were not enforced effectively, and much of the e-waste continued to be handled by the informal sector.

In 2016, the Indian government launched the Swachh Bharat Abhiyan (Clean India Mission), which included a focus on improving the management of e-waste. The mission aimed to increase awareness among the public about the importance of proper disposal of electronic waste, and to encourage the formal sector to become more involved in e-waste recycling. The government also established a certification process for e-waste recycling facilities, and began to crack down on illegal imports of electronic waste.

Despite these efforts, e-waste remains a significant problem in India. The country is now the world's third-largest producer of electronic waste, generating around 2 million tonnes of e-waste every year. Much of this waste continues to be handled by the informal sector, which remains largely unregulated and poses significant health and environmental risks. However, the government's efforts have helped to raise awareness of the issue, and there are now a growing number of formal e-waste recycling facilities in the country.

Health issues

E-waste can have various adverse effects on human health, particularly for those who handle it or live near e-waste disposal sites in India. Here are some of the potential effects:

Respiratory problems: Workers who handle e-waste can inhale toxic fumes from burning electronic components, which can lead to respiratory problems, such as coughing, wheezing, and asthma.

Skin irritation: Exposure to e-waste can cause skin irritation and other dermatological problems, such as rashes and burns.

Neurological disorders: Lead and other toxic substances in e-waste can affect the nervous system and cause neurological disorders such as headaches, dizziness, and tremors.

Birth defects: Pregnant women who are exposed to e-waste can be at risk of giving birth to babies with birth defects, including developmental delays, neurological problems, and physical deformities.

Cancer: E-waste contains carcinogenic substances such as lead, mercury, and cadmium, which can increase the risk of cancer among workers and those living near e-waste disposal sites.

Mental health problems: Workers who handle e-waste can also experience mental health problems such as depression, anxiety, and stress due to the dangerous and stressful nature of their work.

To reduce these adverse health effects of e-waste, it is important to ensure that e-waste is properly disposed of and that workers handling e-waste are provided with adequate protective gear and training. It is also essential to raise awareness among the general public about the dangers of e-waste and the importance of responsible e-waste disposal.

Impact on economy of India

E-waste can have a significant impact on the economy of India in both positive and negative ways. Here are some ways in which e-waste affects the economy of India:

Economic benefits from e-waste recycling: E-waste contains valuable materials such as gold, silver, copper, and platinum, which can be extracted and sold for reuse. E-waste recycling can provide economic benefits by recovering these valuable materials, generating income and creating job opportunities.

Health and environmental costs: The improper disposal of e-waste can have negative impacts on human health and the environment, leading to additional costs related to healthcare and environmental remediation.

Costs of importing electronic products: India is a major importer of electronic products, which can result in significant economic costs. The import of electronic products increases India's trade deficit, which can negatively impact the country's economy.

Lack of proper e-waste management infrastructure: The lack of adequate infrastructure for e-waste management in India can lead to additional costs related to the transport and disposal of e-waste.

Lost revenue from unrecycled e-waste: E-waste that is not recycled can result in lost revenue from valuable materials that could have been recovered through proper e-waste management.

Overall, the impact of e-waste on the economy of India is complex and depends on a variety of factors, including the level of e-waste recycling and the development of proper e-waste management infrastructure. Proper e-waste management can provide economic benefits while also reducing the negative impacts of e-waste on human health and the environment.

E waste in Uttar pradesh

Uttar Pradesh is one of the most populous states in India and generates a significant amount of e-waste every year. Here are some key facts about e-waste in Uttar Pradesh:

Quantity of e-waste generated: According to a study by the Central Pollution Control Board (CPCB) in 2016, Uttar Pradesh generates approximately 143,000 metric tonnes of e-waste per year, making it one of the top e-waste generating states in India.

Sources of e-waste: The majority of e-waste in Uttar Pradesh is generated from discarded televisions, computers, mobile phones, and other electronic devices.

Informal sector: The informal sector is the primary collector and recycler of e-waste in Uttar Pradesh. However, workers in the informal sector often work in hazardous conditions and without proper safety equipment.

E-waste management infrastructure: Uttar Pradesh has implemented several e-waste management initiatives, including the establishment of e-waste collection centers, recycling facilities, and e-waste awareness programs. However, the infrastructure for e-waste management is still inadequate, and there is a lack of proper enforcement of e-waste regulations.

Health and environmental impacts: Improper disposal and recycling of e-waste can lead to health and environmental impacts in Uttar Pradesh, including air and water pollution, soil contamination, and health risks for workers and nearby communities.

To address the issue of e-waste in Uttar Pradesh, there is a need for increased awareness and education about the proper disposal and recycling of electronic devices. There is also a need for the development of proper e-waste management infrastructure and the enforcement of regulations to ensure that e-waste is safely and responsibly handled.

In Bijnor

Bijnor is a district in the Indian state of Uttar Pradesh and like other parts of the state, it also generates a significant amount of e-waste. Here are some key facts about e-waste in Bijnor:

Quantity of e-waste generated: The exact quantity of e-waste generated in Bijnor is not available, but it is estimated to be a significant amount due to the large population and increasing use of electronic devices.

Sources of e-waste: The majority of e-waste in Bijnor is generated from discarded televisions, computers, mobile phones, and other electronic devices.

Informal sector: The informal sector is the primary collector and recycler of e-waste in Bijnor. However, workers in the informal sector often work in hazardous conditions and without proper safety equipment.

E-waste management infrastructure: Bijnor has implemented several e-waste management initiatives, including the establishment of e-waste collection centers and awareness programs. However, the infrastructure for e-waste management is still inadequate, and there is a lack of proper enforcement of e-waste regulations.

Health and environmental impacts: Improper disposal and recycling of e-waste can lead to health and environmental impacts in Bijnor, including air and water pollution, soil contamination, and health risks for workers and nearby communities.

To address the issue of e-waste in Bijnor, there is a need for increased awareness and education about the proper disposal and recycling of electronic devices. There is also a need for the development of proper e-waste management infrastructure and the enforcement of regulations to ensure that e-waste

is safely and responsibly handled. The local authorities and community members can work together to create e-waste management policies and practices that prioritize environmental protection and public health.

Literary Review

E wast management contains such material which are harmful to health as well as environment. (Pooja Singh & Shanu Thomas).

The impact of movement of different hazardous e- waste during transboundary in the weaker developing countries (Dejo Olowu, 2012). E- waste and the legislations related to it is the problem of modern world as we have become the slave of technology (Nivedita Chaudhary 2018). It is the consumer-citizens who lastly finance the recycling of e-waste in each and every jurisdiction (Josh Lepawsky, 2012). Due to the weakness in legal structure like in police and custom leads to Violation of the law in e-waste (FX. Joko Priyono 2017). It has been discussed that EcoPark E Waste Management: An Empirical Study on Retiring and Disposal of Retiring Gadgets http://iaeme.com/Home/journal/IJM 2904 editor@iaeme.com is the first and foremost recycling business park which has been established in Hong Kong (Natalie W. M. Wong 2018). The fast growth of e-waste can be employed as source and so many professionals can have opportunities via recycling and recovering e-waste (Mahesh C. Vats & Santosh K. Singh, 2014). There is a need to formalize the informal sector and inspection of recycling sites are mandatory with the stringent policies related to e-waste menace (Harveen Kaur & Dr. Sushma Goel, 2016).

There have been several studies conducted on e-waste, which have shed light on the extent of the problem and its impact on the environment and human health. Here are some of the key findings from these studies:

The volume of e-waste is increasing rapidly: According to a study by the Global E-waste Monitor, the world generated 53.6 million metric tonnes of e-waste in 2019, and this is projected to increase to 74.7 million metric tonnes by 2030.Improper e-waste disposal has significant environmental and health impacts: A study by the United Nations University found that improper e-waste disposal leads to environmental pollution and can cause health problems for those living near e-waste sites. Toxic substances in e-waste can leach into soil and water, contaminating the environment and posing a risk to human health.E-waste contains valuable materials: E-waste contains valuable materials such as gold, copper, and silver, which can be recovered through recycling. According to a study by the International Resource Panel, the recovery of these materials could reduce the need for mining and lower greenhouse gas emissions.Informal recycling practices are prevalent in many countries: A study by the United Nations Environment Programme found that informal recycling practices, such as open burning and acid stripping, are common in many low- and middle-income countries. These practices can release hazardous chemicals into the air and pose a risk to human health.

Extended Producer Responsibility (EPR) can help reduce e-waste: EPR policies, which make manufacturers responsible for the disposal of their products, have been effective in reducing e-waste in many countries. A study by the European Environment Agency found that EPR policies have led to increased recycling rates and reduced e-waste in the European Union.Overall, these studies show that e-waste is a growing problem with significant environmental and health impacts. However, there are also opportunities to reduce e-waste and promote sustainable e-waste management practices through policies such as EPR and improved recycling technologies.

Objectives of the study

To analyze the problems and solutions of E-waste in India.

ANALYSIS

Government efforts

The Indian government has taken several initiatives to reduce e-waste and promote responsible e-waste management in the country. Here are some key efforts made by the government to reduce e-waste in India:

E-waste (Management) Rules: The Indian government has formulated e-waste (Management) Rules to regulate the management of e-waste in the country. These rules set guidelines for e-waste collection, transportation, storage, and disposal, and encourage the recycling of e-waste.

Extended Producer Responsibility (EPR): Under the E-waste (Management) Rules, producers of electronic devices are required to take responsibility for their products' end-of-life management. This means that producers are responsible for collecting and recycling their products and managing the e-waste generated by their products.

E-waste collection centers: The government has established e-waste collection centers in several cities across the country, where individuals can drop off their e-waste for proper disposal and recycling.

Awareness programs: The government has also launched several awareness programs to educate the public about the hazards of e-waste and the importance of responsible e-waste management.

Financial incentives: The government has introduced financial incentives for companies that invest in e-waste management infrastructure and for individuals who participate in e-waste recycling programs.

Import restrictions: The Indian government has implemented restrictions on the import of e-waste, which has helped to reduce the amount of e-waste generated in the country.

Overall, the Indian government has made significant efforts to reduce e-waste and promote responsible e-waste management. However, there is still a need for increased awareness and education among the public about the importance of proper e-waste management. The government and private sector can continue to work together to improve e-waste management infrastructure and enforce regulations to ensure that e-waste is safely and responsibly handled.

The Indian government has launched several schemes to promote responsible e-waste management and reduce e-waste in the country. Here are some of the key government schemes in India to reduce e-waste:

Digital India: The Digital India initiative aims to promote the use of digital technologies in the country, which can help to reduce the use of physical devices and, therefore, the amount of e-waste generated.

Swachh Bharat Abhiyan: The Swachh Bharat Abhiyan, or Clean India Mission, is a national cleanliness campaign launched by the Indian government. The campaign aims to promote cleanliness and proper waste management practices, including the proper disposal of e-waste.

National E-waste Management Program (NeMMP): The NeMMP was launched by the Indian government to promote responsible e-waste management practices and to create a sustainable e-waste management ecosystem in the country.

Make in India: The Make in India initiative aims to promote domestic manufacturing and reduce the country's dependence on imports. By promoting local manufacturing, the government hopes to reduce the amount of e-waste generated by imported electronic devices.

Clean Energy Cess: The Clean Energy Cess is a tax levied on coal, lignite, and peat. The revenue generated from this tax is used to fund the National Clean Energy Fund, which supports clean energy projects in the country, including e-waste management initiatives.

Overall, these government schemes aim to promote responsible e-waste management practices and reduce the amount of e-waste generated in the country. Through these initiatives, the government is working to create a sustainable e-waste management ecosystem in India.

Legislations on e waste in India

There are several legislations and regulations in India related to e-waste management. Here are some of the key ones:

The E-Waste (Management) Rules, 2016: These rules were introduced by the Ministry of Environment, Forest and Climate Change in 2016 and provide a legal framework for the management of e-waste in India. The rules set out guidelines for e-waste collection, transportation, storage, and disposal.

The Hazardous Waste Management Rules, 2016: These rules were introduced by the Ministry of Environment, Forest and Climate Change in 2016 and provide guidelines for the handling, storage, and disposal of hazardous waste, including e-waste.

The Environment (Protection) Act, 1986: This Act is a framework legislation that provides the legal basis for environmental protection in India. The act empowers the central government to take measures to protect the environment and prevent pollution.

The Basel Convention: India is a signatory to the Basel Convention, an international treaty that regulates the movement of hazardous waste between countries. The treaty aims to reduce the global production of hazardous waste and prevent its transfer from developed to developing countries.

The Extended Producer Responsibility (EPR) Framework: Under the EPR framework, manufacturers and importers of electronic products are responsible for the proper disposal of e-waste generated by their products. The framework is enforced under the E-Waste (Management) Rules, 2016.

The Central Pollution Control Board (CPCB): The CPCB is a statutory organization that is responsible for the prevention and control of pollution in India. The board plays a key role in the implementation and enforcement of e-waste management regulations in the country.

These legislations and regulations aim to promote responsible e-waste management practices in India and prevent environmental damage caused by the improper disposal of e-waste.

Suggestions to reduce e waste

Reducing e-waste requires a comprehensive approach involving various stakeholders. Here are some suggestions to reduce e-waste:

Reduce Consumption: One of the most effective ways to reduce e-waste is to consume fewer electronic products. Purchase only what you need and try to use electronic devices for their full lifespan.

Proper Disposal: When disposing of electronic devices, do so properly. Many cities have e-waste collection centers or recycling programs. Alternatively, electronic devices can be donated or sold to be reused.

Repair instead of replacing: Instead of replacing a broken device, consider repairing it. This can be a cost-effective way to extend the device's lifespan and reduce e-waste.

Recycle: Recycling electronic devices is an effective way to recover valuable materials and reduce the amount of waste going to landfills. Recycling also reduces the environmental impact of mining for new materials.

Use energy-efficient devices: Energy-efficient devices consume less power and produce less e-waste than less efficient devices. Consider purchasing energy-efficient devices when upgrading electronics.

Promote Circular Economy: A circular economy is an economic system aimed at minimizing waste and making the most of resources. It involves reducing consumption, reusing and repairing products, and recycling materials. Promoting a circular economy can reduce e-waste.

Educate Others: Finally, individuals can help reduce e-waste by educating others about responsible e-waste management practices. Sharing information about e-waste and its impact on the environment can help raise awareness and encourage others to take action.

By taking these steps, individuals can contribute to reducing e-waste and promoting responsible e-waste management.

Conclusions

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