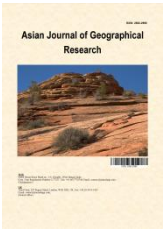

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Investigation of Efforts and Problems in Implementing the Basel Convention on the Control of Transboundary Movements of Wastes and Their Disposal in Nigeria

Oladosu, Olayinka Amos [a], Olodo Abdulrahamon Abiodun [b], Oloruntoba, Emmanuel Olalekan [c], Oluwaseun Tolulope Opeodu [d] and Adegoroye Ademola [e*]

[a] Department of Environmental Planning, Faculty of Environment and Natural Sciences, Brandenburgische Technische Universität, Germany.
[b] Department of Environmental Planning, Faculty of Environmental Health and Safety, Amazon Vz Berlin Brandenburg, Germany.
[c] Department of Power Engineering, Environment Planning, Faculty of Environment and Natural Sciences, and Mechanical Engineering, Electrical and Energy Systems, Brandenburgische Technische Universität, Germany.
[d] Department of Sociology of Technology and Environment, Brandenburgische Technische Universität, Germany.
[e] Department of Finance, Ambassador Crawford College of Business, Kent State University, Ohio, United States.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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**Corresponding author: E-mail: ademolaadegoroye191@gmail.com;*

ABSTRACT

Pollution from toxic chemicals and hazardous waste from domestic and international sources are among the environmental challenges that Nigeria is facing. It is against this background that the country ratified the Basel Convention on the control of transboundary movements of hazardous wastes. This project was designed to discuss Nigeria's efforts in implementing and complying with the Convention. It relied on secondary sources of information such as published articles and books. The study finds that there is a potential threat to human health and the environment posed by the importation of used consumer electronics such as televisions, laptop computers, music systems, and mobile phones. The study results also show that there is a significant amount of waste that is dumped illegally over international borders and improperly managed, which is detrimental to the country's ecology, economic expansion, and public health. Heavy metals are introduced into the environment as a consequence of the unregulated disposal of hazardous waste and electronic trash that occurs across international borders. While the prevention of waste or its reduction should be of the utmost importance, waste treatment and disposal should be prioritized so that they are carried out as close as possible to its point of origin. It was also discovered that there is continuous sensitization of the people who have been dumping electronic garbage about the repercussions of their acts, and new regulations and legislation have been enacted to prevent this from happening again in the future. There is a need to strengthen institutions and effectively implement the laws to adequately protect human health and the environment against the adverse effects of waste.

Keywords: Basel convention; environment; pollution; transboundary; waste; Nigeria.

1. INTRODUCTION

1.1 Background of the Study

Environmental degradation and public health impacts from solid waste dumping in underdeveloped countries are geopolitical issues. In 1988, the media documented a series of garbage barges transporting dangerous wastes floating globally, seeking dumping sites. According to [1], industrial or developed and developing countries opposed these barges, with the Koko Incident in Nigeria a widely studied case. In 1987 and 1988, an Italian trash tycoon and locals dumped 3,800 metric tons of hazardous waste in Koko [1,2]. Locals growing ill and dying led authorities to waste dumped in a dirt lot. Nigeria ordered Italy to retrieve the rubbish, but Italy couldn't find an African or Western European country to receive it. It took a German vessel two months to offload a portion of this rubbish at Livorno, Italy.

Apart from the Koko Incident, Ghana and Nigeria ordered and imported radioactive cattle from the 1986 Chornobyl nuclear accident. Several factors explain the continued dumping of harmful items and wastes in Nigeria and other African nations, according to [3]. First, developed countries are aware of the environmental concerns of toxic wastes and hunt for dump places elsewhere. Foreign corporations are financially rewarded for disposing of rubbish in Africa rather than affluent nations. Lui [1] noted that the U.S. government approved the Resource Conservation and Recovery Act in 1978, which made domestic rules for the proper removal of dangerous wastes more strict and costly, motivating waste dealers to seek less expensive and unhindered business sectors abroad. This and similar legislation prompted the 1989 Basel Convention to safeguard vulnerable nations from trans-border toxic waste transit and dumping. Third, industrialized nations need better hazardous waste facilities. Fourth, developing countries lack legislative and technical measures to limit illegal and legal waste flow [4]. Financial incentive plays a significant part in African countries' clandestine imports of dangerous wastes [2]. Developing nations have minimal control over U.S., EU, and other developed country products and trash crossing their borders.

1.1.1 Transboundary e-waste in West Africa

Like all other African countries, Nigeria experiences rapid transformations in technological advancements as it attempts to reduce the digital divide. Abalansa et al. [5] recently reported that e-waste comprises over 5 percent of the world's municipal waste. This figure is expected to rise with the ongoing sales and dumping of used electronic products in African nations. For example, Abuja generated

slightly over 250,000 tons of solid waste in 2010, with Nigeria's capital city closing four large-scale disposal sites due to burning wastes, odors, and water and air pollution [6,7]. These findings suggest that the country lacks the much-needed resources, equipment, and infrastructure for environmentally sound e-waste management. Electrical and electronic equipment trade thrives in Nigeria for various reasons, including cost-effective prices, the growing demand for high-quality used products, and the lack of employment. Although an electronic device, such as a laptop, maybe near its end of life in the United Kingdom, a student in Nigeria often considers it new and functional [8]. These imports not only provide a low-cost choice for tech-savvy young people and ICT businesses, but they also produce jobs. The United Nations Office on Drugs and Crime reports that there is a growing local demand for Electrical and Electronic Equipment in Nigeria, as well as a steady supply of E.E.E. coming into Nigeria from countries that are members of the OECD [5]. As a result of this tendency, member countries of the OECD continue to serve as the most significant transboundary e-waste dumping sites in Africa.

1.1.2 Health and environmental impacts

The importation of secondhand TVs, laptops, music systems, and mobile phones poses a health and environmental concern. Transboundary garbage dumping and mishandling are frequent in Nigeria, affecting environmental sustainability, economic growth, and public health. Uncontrolled cross-border e-waste and hazardous waste disposal pollute air, land, and water with heavy metals [6]. Open burning of these wastes emits large amounts of carbon monoxide and nitrogen oxide. Toxic waste dumps degrade livability because they threaten public safety. Waste picking in open dumpsites in Nigerian cities and rural regions poses major health concerns, according to [9,10]. The Koko Incident is a typical example since health officials received serious chemical burns, dockworkers got crippled, and 19 people died after eating tainted rice [1]. These ecological and human health problems have impacted Nigeria's socio-economic development, as shown by the low quality of life and high unemployment rates (27.1% in 2020) [11,12]. Thus, Nigeria can only achieve sustainable development goals by implementing Basel Convention laws to monitor, limit, and ban transboundary toxic waste concentrations.

1.1.3 Stopping waste trade and adopting basel convention

Nigeria and other nations have opposed hazardous waste commerce since the 1970s. Julius Kiano, a Kenyan minister, requested a UNEP meeting in May 1977 to impose proactive international limits to prevent affluent nations from dumping inadequately tested commodities in poorer ones [1]. The UNEP's Governing Council recognized the issue's global scope by calling on member states, including Nigeria, to trade data on hazardous synthetic compounds and dangerous drug items [13]. This project allowed the UNEP to test and pursue resolutions requiring exporting or dumping governments to have the destination country and trading partner consent before transporting garbage barges. These were voluntary recommendations [1]. Despite these soft laws, affluent countries sent toxic garbage to Nigeria and the developing world. Nigerian officials denounced hazardous rubbish shipments after Koko. Nigeria opposed transboundary toxic waste flows, accusing developed countries of imperialism. Nigerian authorities and activists accused developed nations of terrorism [1]. The incident's parties and the toxic waste business were punished. Nigeria demanded that Italy remove 3,800 tons of dangerous waste and pay damages. Other countries agreed to the Basel Convention while the government demanded a ban on toxic wastes. Nigeria signed this in 1991. Moreover, Nigeria also ratified the Amendment to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal on 24.05.2004 and it entered into force on 05.12.2019. This initiative examines Nigeria's Basel Convention implementation. It also examines barriers to attaining the Convention's goals, such as trans-border toxic waste transportation and dumping in Nigeria. The study project also aims to assess the Basel Convention's progress after Nigeria ratified it, highlighting any difficulties.

1.2 Statement of the Problem

Handling toxic waste products is critical to a society's well-being. The human population is increasingly rising, producing more toxic waste in the environment. Likewise, nations are running out of landfills to dispose of the toxic waste elements, forcing them to opt for cheaper ways of waste management such as exporting to other countries with less strict waste management regulations [14]. Akpan and Bassey [15] note

concerns relating to the international transfer of toxic materials from developed nations to underdeveloped and rising countries. With the importation of discarded computers and other electronic devices, Africa, particularly Nigeria, is now becoming a dumping site for toxic waste materials [15].

Nonetheless, poor treatment of toxic waste products has been linked to public health risks such as congenital disabilities, malignancies, and even contagious ailments [16]. Initiatives to control the international transfer of toxic materials, such as signing the Basel Convention agreement, have faced several challenges in implementation, particularly in Nigeria. Also, there is an apparent dearth of research on the progress of the Basel Convention and its implementation challenges in Africa. For this reason, the proposed study will seek to add to the existing knowledge of Basel implementation by assessing how the Convention is performing in reducing the transnational disposal of toxic waste in Nigeria.

1.3 Research Questions

The proposed study will examine the implementation of the Basel Convention in Nigeria, assessing areas where the implementation may have been successful or may have encountered challenges. As such, the study seeks to address the following research questions:

i. What efforts have been put into implementing the Basel Convention in Nigeria?
ii. What challenges have been encountered in implementing the Basel Convention in Nigeria?
iii. What remedy actions can be adopted to ensure the effectiveness of implementing the Basel Convention in Nigeria?

1.4 Objective of the Study

The main aim of the proposed study is to gain insight into the current state of toxic waste management in Nigeria by investigating the efforts made in implementing the Basel Convention, as well as assessing the challenges encountered in implementing the goals of a Basel Convention on the regulation of transboundary mobility of toxic wastes and their disposal in Nigeria. The specific objectives of the study are to:

Examine the progress of the implementation of the Basel Convention on the regulation of transboundary movement of toxic wastes in Nigeria;

Investigate the challenges faced in implementing the Basel Convention on the regulation of transboundary movement of toxic wastes in Nigeria; and

Determine the measures that can be adopted to ensure the effectiveness of implementing the Basel Convention on the regulation of transboundary movement of toxic wastes in Nigeria.

2. METHODOLOGY

2.1 Research Design

The study sought to utilize the benefits of the qualitative research method to ensure an improved comprehension of the findings. Specifically, the study used a literature-based research design which entails gathering data from secondary sources such as journals that have information already available in the form of text. Consequently, since the data presented in the study stems from secondary sources, the study had access to a wide range of information on the topic. Also, secondary data is helpful as it enables a researcher to examine the various perspectives of other scholars and add to the existing knowledge without duplicating the present information [17]. The study utilized secondary sources such as academic journals, research books, and reports from formal sites. Journals, research, and other publications were used as secondary data sources, and the findings were analyzed and debated in great detail over the course of the project.

2.2 Structure of the Study

Each part of the study project follows a similar structure. This study project consists of six sections. The first section presents a general introduction. The second section provides the methodology of the study while the remaining sections present an overview of the Basel Convention, followed by an investigation of the Basel Convention's implementation in Nigeria, and the final section presents findings and recommendations for further research.

3. OVERVIEW OF THE BASEL CONVENTION

The Basel Convention has an integral aspect under discussion in this paper, and this section gives an overview of the critical aspects that the Basel Convention entails. In achieving this goal, we will discuss the core objectives that the Basel Convention is deemed to achieve and the obligations that the state parties have in achieving the objectives highlighted in the Basel Convention.

Overview of the Basel Convention: The Basel Convention was signed on March 22, 1989, to regulate the disposal of hazardous waste and ensure its safe movement across international borders. To this day, it is the world's most comprehensive environmental accord regulating hazardous wastes and other pollutants [18]. The Convention was created to defend human health and the environment against the severe effects of the accumulation of hazardous waste. According to the Basel Convention, all organizations are obligated to ensure that hazardous and nonhazardous wastes are adequately managed and disposed of in a manner that is kind to the environment while passing through international boundaries. The processing and disposal of garbage should take place as close to where it was generated as is practically possible, and the prevention or reduction of waste should be a top priority [19]. The Basel Convention's primary objective is to prevent damage to human health and the natural environment caused by wastes containing dangerous substances. It is possible to make use of a wide variety of hazardous wastes, such as household garbage and ash from an incinerator. Both of these waste types are classified as other wastes and can be utilized for either of these purposes.

The primary goals of the Convention are to reduce the generation and use of harmful substances, to promote environmentally sound waste management wherever harmful wastes are disposed of, and to limit the transboundary movement of hazardous wastes unless it is deemed to be following the principles of environmentally sound management. All of these goals will be accomplished through the implementation of the Convention. As a result, state governments are obligated to comply with a wide variety of standards, including those that demand a foundational commitment to environmentally responsible waste management practices (Article 4 Basel Convention). To satisfy the second objective, no hazardous waste can be shipped to Antarctica or any other country that has a ban on the importation of hazardous waste (Article 4 Basel Convention). The Basel Convention does not exclude countries from entering into bilateral or multilateral agreements on the management of hazardous waste, provided those agreements are at least as ecologically friendly as the Basel Convention (Article 11 Basel Convention). Although theoretically, transboundary movement may be regulated, for it to be ecologically sound, it must also comply with environmentally sound management principles and the regulatory system established by the Convention.

According to the Basel Convention, the initial regulatory framework is an essential component of the Convention (Article 3 Basel Convention). According to the concept of prior informed consent, the nation that will be doing the exporting is obligated to inform potential nations of import and transit that it will be sending a shipment (Article 4 Basel Convention). Before the effort can move forward, it needs to receive written approval from each of the states that are participating in it (Article 6 & 7 Basel Convention). Participants in the Basel Convention can communicate information with one another on challenges of implementation, as well as provide one another with technical support, to assist developing nations (Articles 10 and 13 of Basel Convention). The Secretariat is obligated to fulfill its duties as a facilitator for this relationship to succeed (article 16). If it is discovered that a transboundary transfer of hazardous wastes was carried out unlawfully or could not be completed as planned, the nation or countries that participated in the transfer are held accountable for the proper disposal of the wastes, as required by the Convention (Article 8 and 9 Basel Convention).

3.1 Objectives of the Basel Convention

The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. It aims to protect human health and the environment against the adverse effects resulting from the generation, management, transboundary movements, and disposal of hazardous and other wastes. (Article 14 Basel Convention). To accomplish this, several interdependent goals must be met. According to the rules of the Convention, all

permitted transboundary movements must be tightly regulated to decrease the amount of waste transported over international borders while maintaining environmentally sound and efficient management. Environmentally responsible waste management entails treating wastes as close as feasible to their point of origin while reducing the volume and toxicity of wastes produced. Providing aid to developing nations to dispose of their hazardous and other waste in an environmentally responsible manner (Article 13 Basel Convention). As a result, the Basel Convention proposes to assist in lowering the quantity of hazardous waste moved over international boundaries and manage and dispose of this garbage in an environmentally responsible manner.

3.2 Obligations of the State Parties

The imposition of restrictions on the import and export of the wastes previously stated has resulted in stringent regulations for the movement of rubbish across national borders. Everyone who is involved in this situation has a responsibility to contribute what they can to reduce the amount of rubbish and hazardous waste that is produced. It is the responsibility of each party to ensure that the areas bordering its territory contain adequate waste disposal facilities (Art. 4 para 2b. Basel Convention).

Each participant is responsible for taking the necessary safety measures to prevent pollution (Art. 4 para 2c. Basel Convention). Cooperation between the parties is necessary to accomplish the sharing of information, the observation of impacts, the development and implementation of environmentally friendly technologies, and the transfer of such technologies. There is a rule that strictly forbids any transfer to third parties other than environmentally competent management (Art. 4 para 5 Basel Convention). Article 4(4) of this Convention mandates that each Party adopt appropriate legal, administrative, and other steps, including measures to ban and punish behavior that is contrary to the Convention. This provision was included to ensure that this Convention is implemented and enforced. Any hazardous waste generator or exporter is required to provide a written notification for the movement of any hazardous waste across international borders (Art. 6 para 1 Basel Convention). There should be a window of time of thirty days during which the state of import is responsible for ensuring that any hazardous wastes or other wastes that are suspected of being illegally trafficked are disposed of in an environmentally sound manner by the importer or disposer, or by the state itself if necessary. Management of waste that is both smart and successful should focus on minimization to the maximum extent possible (Art. 4 para 2d. Basel Convention). Countries that place restrictions on imports are not eligible to receive exports.

3.3 Parties to the Convention must Honor Import Bans of other Parties

Article 4 of the Basel Convention mandates that there be a general decrease in the amount of waste that is produced, and this decrease is required to take place. Additionally, the Basel Convention requires that there be a general cutback in the quantity of trash that is produced in the world. It is essential to encourage countries to keep their garbage inside their borders and as close as possible to the location where it originated to cut down on the amount of waste and pollution that is produced. This will allow for a reduction in the amount of waste and pollution that is produced. Because of this, we will be able to significantly reduce the quantity of waste that is produced. Because of this, we will be able to contribute to a general decrease in the amount of waste that is produced (Article 13 Basel Convention). When parties to the treaty are not in compliance with its provisions, it is a violation of the terms of the treaty for those parties to import wastes that are regulated by the terms of the treaty or export wastes from parties that comply with the provisions of the treaty. This is because the terms of the treaty stipulate that parties cannot import wastes from parties that comply with the provisions of the treaty. This is because the parties to the treaty are prohibited from importing wastes from other parties that conform with the terms of the treaty, as stated in the articles of the treaty. Even though the agreement makes it illegal to move hazardous material without the proper authority, there are no procedures in place to determine whether or not the agreement is being followed. This is even though the agreement makes it illegal to do so. Even though doing so is expressly prohibited by the agreement, this situation persists.

The construction of a framework for the establishment of liability standards and procedures when hazardous commodities are transported across international boundaries is essential, as stated in Article 12 of the Convention. This framework must be established as soon as possible. By the Convention, it is of the utmost importance that a structure be built to

establish liability standards and processes [20]. Because it is commonly accepted that this is the situation, it is against the law to transport trash from electronic equipment to a site that is not located on the surface of the earth. This is because, by the basics of international law, there is no such thing as a nation that is large enough to include a whole area within its boundary.

4. NIGERIA'S EFFORTS TO IMPLEMENT BASEL CONVENTION

This chapter discusses Nigeria's implementation of the Basel Convention. It elucidates the efforts that Nigeria has put into implementing the Basel Convention and the challenges that it has encountered in implementing the Convention in Nigeria.

4.1 Hazardous Waste Transported to Nigeria and Source

The worthless technological rubbish created by countries in the Western Hemisphere may include, amongst others pieces of household equipment, desktop computers, televisions, refrigerators, and mobile phones, amongst other things. It is conceivable for electronic trash to contain a large array of different chemical substances that could be harmful. The elements lead, mercury, beryllium, and cadmium as well as brominated flame retardants are just a few examples of the types of chemicals that fall under this category. Nevertheless, this is not a comprehensive list (Article 7 Basel Convention). Because it is essential to protect human health as well as the health of the environment from the negative effects of these compounds, as much exposure to these compounds as is practically practicable must be avoided. Because it is essential to protect human health, it is also necessary to protect the health of the environment. This is because it is necessary to minimize one's contact with these substances to the greatest extent that is humanly possible. It is possible that the delivery of medical treatment in Nigeria could result in the generation of wastes that could contain substances that could place the general public in jeopardy. This is a possibility. Bear in mind that this is something that must be considered, as this must be done. Mercury, chemotherapeutic chemicals, anesthetic gas, caustic, and pharmaceutical products that have been used after their expiration date are some examples of the various types of trash that are considered to be particularly hazardous. Other types of trash that are considered to be particularly hazardous include: Caustic.

They were placed in an environment where they were subjected to potentially lethal radiation levels from the sun. Furthermore, some youngsters were in the immediate area, which made them a very dangerous threat. They were also put in a setting where they were around other youngsters who may potentially harm them. Because these potentially harmful substances were left in an area where they might be reached by children, the safety of children who lived in the immediate neighborhood was put in jeopardy as a result (Article 8 Basel Convention). When contaminated rice was introduced into the water supply of the city, it set off a chain reaction that, in the end, led to the deaths of hundreds of individuals who lived in the areas that were immediately surrounding the city. This culminated in the city itself becoming infected with the disease. Because they were transporting potentially dangerous waste, Italy and the Danix ship were both denied permission to enter the territorial seas of Nigeria as a direct consequence of the event. This was the outcome that was brought about as a direct result of the occurrence. The M.V. Piave was detained and searched regardless of the circumstances, even though it had no connection to the purported illegal transportation of illicit commodities [21]. It was not until Italy decided to allow the rubbish to be reimported into the country that diplomatic links between the two countries were reestablished; before that, Italy had been unwilling to allow this to occur.

Local opposition to toxic waste dump sites has developed in industrialized nations as a result of a shortage of viable sites, financial incentives, particularly for highly indebted African countries, neocolonial and public awareness campaigns, and a shortage of viable sites. Financial incentives are especially important for heavily indebted African countries. Other factors that contribute include financial incentives, particularly for nations in Africa that have a high degree of debt. These are but some of the many factors that, over the course of history, have played a role in the evolution of this phenomenon. There are still a great many more. Others can be found in significant numbers [21]. The Basel Convention was adopted and signed on March 13, 1991, in the city of Lagos, which is located in the country of Nigeria. The date of the event is March 13. This occurrence happened in the country of Nigeria. This event took place in

Africa, namely in one of the countries. At that time, it was determined that the Federal Ministry of the Environment would be the organization that would be best suited to serve as the Convention's competent authority. This was the conclusion that was reached at the time. Because the Federal Ministry of the Environment is in charge of environmental policy, this decision was made.

This research project also investigated Nigeria's participation in Waste Electrical and Electronic Equipment (WEEE), which is also known as E-waste, as well as the Inventory Assessment Manual developed by the United Nations Environment Programme and the Basel Convention, with a particular focus on Nigeria's WEEE. Environmentalists have been devoting the majority of their attention to this subject since 2007 when WEEE and E-waste accounted for an average of 1 percent of the world's solid junk. This is because this problem could potentially have a big impact on the surrounding ecosystem. A portion of the increase in the amount of electronic trash that has been produced can be attributed to the fact that electronic items are imported into Nigeria from other nations whose economies are further advanced in the process of developing and industrializing. The economies of these other countries are much further along in their development than Nigeria's is.

4.2 Electronic Waste and Nigeria

In a presentation given in 2012, the Director-General of the National Environmental Standards and Regulations Enforcement Agency emphasized that Nigeria faces significant challenges in managing this electronic waste, which is either produced locally or exported. The waste in question can be either exported or produced locally. In question is the practice of either exporting or locally manufacturing e-waste. Both domestic and international contexts may contain examples of this kind of discarded electronic equipment. This rubbish almost certainly contributes, in some kind, to the damage that is being done to the ecosystem. Urban industrialism and the garbage age have a wide range of undesirable effects and costs in Nigeria (Article 5 Basel Convention), the specific nature of which regularly varies from city to city. These effects and costs include in addition, the costs associated with these occurrences are typically more expensive in larger cities. In addition to this, the costs and the outcomes are not divided equitably across the nation. One of the most challenging and potentially catastrophic environmental problems of our day is the accumulation, transportation, and disposal of municipal and industrial garbage in the constantly growing urban agglomeration that is Nigeria. This is because Nigeria's urban agglomeration is rapidly expanding at an alarming rate. This is a result of the fact that Nigeria possesses a substantial quantity of both kinds of rubbish.

There is an increased risk of hazardous organic pollutants being discharged into the environment when different types of waste are mixed in open dumpsites that are distributed across the country. As a direct consequence of this, people's health is put in jeopardy. Remote sources of electronic waste in the country include the importation of Waste Electrical and Electronic Equipment (WEEE), the disposal of electronic waste in landfills, and the disposal of electronic waste in municipal trash. Both of these activities contribute to environmental pollution.WEEE stands for waste electrical and electronic equipment (Article 7 Basel Convention). Countries with a greater level of industrialization are the source of a significant portion of the electronic hardware that is imported into Nigeria. This is done to help bridge the digital divide that currently exists between Nigeria and other countries that are further forward in terms of their technological capabilities. This is a component of an initiative to bring Nigeria's standard of living up to the level of that of other countries. There are a lot of things available right now that give off the impression that they are in perfect operating order, but the truth is that they only have a certain amount of time left before they go bad. This is because, upon arrival, the vast majority of these products had either been broken while being transported, were obsolete, out of date, or were generally unacceptable in some way. Regarding the capabilities of this particular piece of machinery to carry out its intended functions, the manufacturer offers no assurances or guarantees of any kind, under any circumstances. As a direct result of this fact, Nigeria has made the executive decision to begin strictly enforcing the hazardous waste regulations that have already been put into place, while simultaneously establishing new regulations that more correctly portray the reality that exists today.

Disassembly, uncontrolled disposal, and pyrolytic processes make up the majority of the recycling process for electronic trash in Nigeria, as

indicated by the findings of multiple research. There are perhaps other references available for this topic. It is not possible to demonstrate beyond a reasonable doubt that significant metals were leached from printed circuit boards as a result of hydrolytic processes. This is because there is no mechanism to demonstrate this. This is because it is not possible to establish a concrete connection between the two occurrences. This is because there is no established protocol for proving the occurrence of an event of this nature. The process of gathering, refurbishing, or repairing Electrical and Electronic Equipment (EEE.) may have some unintended repercussions; however, in the majority of situations, these implications will be small. During the disassembly stage of many recycling processes, potentially harmful substances are released into the environment without first being screened. These activities are carried out on land that is not in any way protected, which enables them to continue unimpeded because there is no one to stop them. When copper connections and cables are burned, trash and, to a lesser extent, waste that has been consumed concentrate near the regions where the copper is consumed. This is because copper connections and cables are made of copper. This is a result of the copper consumption of rubbish and other waste products. This is because the process of combustion results in the production of waste products such as garbage and debris.

Reusing and recycling materials that contain CFCs, such as polyurethane found in old tires and refrigerators, is a widespread activity. This action not only adds to severe and long-term chemical risks at the consuming site, but it also contributes to the release of substances into the atmosphere that deplete the ozone layer and destroy the ozone layer (Article 7 Basel Convention). People who work in the field of recycling electronic waste are at risk of being exposed to potentially harmful substances in two different ways, as the results of a survey conducted across the state have shown. One of these techniques is called inhalation. The first way is through inhalation of the dangerous compounds that are created when cables are burned to recover copper. The second way is through direct skin contact with the cable. Both of these approaches are broken down in greater detail below. Both of these methods will be broken down into their parts in the following paragraphs.

The recovery of precious metals through the use of leaching processes can on occasion result in the emission of poisonous gases. There is some semblance of possibility in this scenario. Employees who work in the demolition and restoration industries commonly report experiencing symptoms such as an ongoing cough, sore eyes and skin, and general weariness as part of their work conditions. It is possible that the dirt and particles that are created as a result of these processes are to blame for these symptoms. In the following sections, the policies that are currently in place at the national level in Nigeria to manage WEEE will be the primary focus of our attention. These policies can be found in the section below.

4.3 The Harmful Waste Act C.A.P. H1, LFN 2004

This prohibits the unauthorized transport, disposal, and discharge of hazardous wastes in Nigeria's air, land, or water without authorization. This law complies with Article 4(4) of the Basel Convention which requires each Party to adopt appropriate legal, administrative, and other steps, including measures to ban and punish behavior that is contrary to the Convention. Sections of relevance include:

Section 6: provides for the execution of criminals and the confiscation of any property utilized in their crimes.

Section 12: any offender's legal culpability is defined as anyone harmed due to his obscene act would have a case against him.

4.4 The National Environmental Regulations S.I. No 23 of 2011

When doing a life-cycle study, it is necessary to take into account not only newly purchased but also previously owned pieces of electronic equipment [22]. There are a great many distinct methods of management that are currently being utilized in businesses and organizations all around the world. Some examples of these types of approaches include the Polluter Pays Principle, environmental impact assessments, environmental audits, environmental management plans, and legislation governing the importation of reconditioned electronic equipment. These are only some of the many available management strategies. In addition to that, the legislation includes provisions for penalties in the form of fines and procedures to

be carried out to assure compliance with its conditions.

In addition, to demonstrate conformity with national environmental standards, all retailers as well as manufacturers of electrical and electronic equipment must participate in the Extended Producers Responsibility Program (E.P.R), which is run by the Environmental Protection Agency. This is done so that the retailers and manufacturers can show that they comply with the standards (EPA). It is required of participants in an EPR program who are also working with NESREA that they will either import or distribute electrical and electronic equipment (EEE) to individuals, educational institutions, religious groups, community organizations, or commercial groups [23]. Those that create, import, distribute, or sell EEE. things are the ones who are accountable for developing E.E.E. collection sites or facilities, and they are the ones who are responsible for creating those facilities.

All parties involved in the production, distribution, importation, and retail sale of EEE, items fall under this category. It is the responsibility of the producers and manufacturers of EEE, according to the laws that have been established by the federal government to ensure that the electronic waste that is gathered at these collection points is processed in a manner that is not harmful to the environment. These collection points can be found all over the country. This duty was delegated to the producers and manufacturers of electrical and electronic equipment. It is the consumer's responsibility to return an EEE, device to a collection site after the gadget has reached the point where it is no longer functioning correctly so that it can be recycled. To encourage ecologically responsible methods for the management of WEEE, the National Environmental Sales and Recycling Association (NESREA) charges a fee for administrative services on all importers of new and used EEE, to fund the organization's operations. This is done to promote the adoption of more ecologically responsible behaviors.

Based on the conclusions of a substantial amount of research, the Basel Action Network and the Basel Convention Coordinating Center in Nigeria have concluded that Lagos is responsible for the annual export of used computers. According to the results of the survey, more than two-thirds of imported machinery is either unfit for the purpose for which it was designed or is rejected; as a direct result of this, the machinery is either destroyed or abandoned without a second thought. One of the reasons that enormous amounts of waste electrical and electronic equipment (WEEE) have accumulated in both commercial and household settings is the fact that we live in a culture that places a bigger premium on emotional value than on material goods. In certain areas, the construction of recycling facilities that are on pace with the most recent technical advancements has already begun, while in others, work is just getting started. These facilities will be constructed to recycle materials in an environmentally responsible manner.

According to Miranda Amachree, Deputy Director of the National Environmental Standards and Regulations Enforcement Agency (NESREA), who is in charge of the Industrial Compliance Monitoring Division, NESREA has been able to identify and certify credible importers of used electrical and electronic equipment since July of 2013. The Industrial Compliance Monitoring Division is under Amachree's supervision at the moment. Miranda Amachree claims that the Agency has also been effective in fining and punishing importers who do not possess the requisite certifications. According to Article 9, individuals who import waste and those who are responsible for its disposal have the responsibility of ensuring that any hazardous waste or other material that is considered unlawful commerce is disposed of within thirty days of it crossing state lines. This obligation falls on whoever is responsible for the disposal of the waste (3). According to the provisions of Section 11 Subsections 1 and 4 of Decree No. 42 of 1988 on Harmful Wastes, the Ministry of Environment and Natural Resources must determine when and how hazardous waste is disposed of in conformity with these provisions. These provisions are described in greater detail in Section 11. This is necessary to ensure that all of the requirements imposed by the law are satisfied. By the responsibilities outlined in Article 9(3) of the Basel Convention, the Department of Homeland Security has returned 14 containers and 12 trucks' worth of electronic waste, imprisoned 17 individuals who illegally imported the waste, and fined those individuals.

5. IMPLEMENTATION EFFORTS

Climate change and environmental deterioration are two of the world's most significant issues today. This Convention requires Parties to take all legal, administrative, and other means necessary to implement and enforce its

provisions. Deterrent and punishment tactics are included in this category. Two significant pieces of environmental regulation were put into effect as a result of the Koko disaster. The Decree of 1988, Number 42. Nigeria's Decree 42 of 1988 states that anyone found guilty of dumping or transferring hazardous waste is sentenced to life in prison. Section 6 stipulates that any aircraft, vehicle, and even land that was involved in the violation will be forfeited. As part of the Basel Convention, efforts are being made to integrate 1988 Decree 42 on hazardous waste.

This was the first time Nigeria has approved comprehensive legislation forbidding the disposal of hazardous waste on its soil, in its territorial waters, neighboring zones, or its exclusive economic zone. To maintain environmentally sound and efficient management, it is the responsibility of all parties to keep the transboundary movement of hazardous wastes and other wastes to a minimum (Art. 4 para 2d. Basel Convention). Parties are required to reduce or eliminate hazardous waste generation and cross-border transportation by implementing measures such as the following:

Policies and strategies at the national and international levels that make it easier for enterprises to use environmentally friendly production practices.

The establishment of a Clean Production Center is necessary.

Incorporating incinerators to dispose of hazardous waste from hospitals.

Increasing public awareness regularly.

Ceremony to inaugurate Basel Convention Coordinating Center at the University of Ibadan in Nigeria.

5.1 Action Plan for Biomedical Wastes

The Electronic Waste Action Plan of the United States.

The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act No. 25 of 2007.

This Act mandates that the Agency, which is responsible for the conservation and development of the environment, coordinates Nigeria's natural resources and environmental technologies, including environmental standards, regulations, rules, laws, and policies [23]. This effort will govern transboundary waste movements by requiring its parties to manage and dispose of hazardous and other trash in an environmentally sound manner. This group's work contributes to the Convention's inclusion of hazardous and poisonous waste, as well as corrosive, flammable, and infectious waste.

5.2 The National Urban and Regional Planning Decree No 58 of 1992

An industrial or residential site's location and the positioning of waste generation, collection, and disposal locations cannot be understated when it comes to the physical planning of solid waste management. Physical development plans are mandated by law for federal, state, and local governments [24]. Many other types of plans fall under the authority of local government, such as a town plan, a rural plan, a local plan, and an atopic plan (section 4). To achieve the legal criteria for physical planning, private developers, government agencies, and organizations must work together. Enforcing physical planning laws is essential. It is possible to manage solid waste at the source better if all levels of government and the public and private sectors make preparations for it. This initiative will regulate transboundary waste movements by requiring its participants to manage and dispose of hazardous and other trash in an environmentally responsible manner. The work of this group contributes to the inclusion of hazardous and poisonous waste, as well as corrosive, flammable, and infectious waste, in the Convention.

5.3 Water-Related Legislation

If a breach of the regulations has occurred, S.1.8 of 1991, which requires industrial facilities to install pollution-control equipment, allows for effluent treatment and sets maximum limits for effluent characteristics. It also dictates that all Nigerian industries employ the greatest available technology. This program will govern cross-border garbage transportation by forcing partners to manage and dispose of hazardous and other trash in an environmentally appropriate manner. As a result, hazardous and toxic waste, as well as corrosive, flammable, and infectious waste, will be included in the Convention.

5.4 Specific E-waste Management Legislation

By 2011, the National Environmental Regulations (S.I. No. 23) had come into force. The primary goal of the regulations is to keep Nigeria's

environment free of pollution caused by the electrical and electronic sectors and their supporting activities [24]. The whole electrical/electronic sector is governed by legislation based on the concept of a life cycle. The 5Rs are the driving force behind these laws, which apply to all types and subcategories of electrical and electronic equipment. According to NESREA's guidebook, importers can determine how to import used EEE. into Nigeria and what can't be imported. NESREA mandates that all importers of used EEE, in Nigeria be registered due to this directive. By requiring participants to handle and dispose of hazardous and other rubbish in an environmentally responsible manner, this program will regulate cross-border garbage transit. As a result, the Convention will include hazardous and poisonous waste as well as corrosive, flammable, and infectious waste.

5.5 Policy Implementation Challenges

The National Environmental Standards and Regulations Enforcement Agency (NESREA) authorized the N.E.R.'s implementation in 2011, already in operation [25]. However, the most challenging issues must still be addressed and corrected because the regulations' implementation and enforcement have not yet been finished. Some of the challenges include;

At the national level, the organizations who are working to stop E-waste do not efficiently collaborate to accomplish their goals.

The absence of trash disposal solutions that are better for the environment and are now available to the public is preventing proper waste management.

Because there is a lack of coordination in the process of collecting electronic waste in Nigeria, it will often end up in landfills together with other types of garbage. This is because most landfills are already full.

The informal sector is currently responsible for dealing with the environmental and health repercussions that emerge as a result of inappropriate management of electronic waste. These repercussions occur as a result of incorrect management of electronic waste. The official sector was formerly in charge of carrying out this task.

Moreover, Nigeria faces several challenges, including avoiding the importation of old electronic equipment and e-waste and interfering with the profitable trade in high-quality used electronic and electrical items. Aside from that, the large volume of electronic waste generated in the United States needs an efficient local recycling and take-back infrastructure. The development of effective collection mechanisms is critical. Another is to ensure that a vast quantity of valuable and non-value waste components is collected in equal quantities and sent to appropriate treatment and disposal facilities [25]. This effort relies heavily on bridging the gap between informal collectors and professional recycling organizations and providing the necessary capacity building and training. According to the legislation, the Nigerian Customs Service may only carry out its mandated activities while following federal government budgetary guidelines and acting as an agent for federal law enforcement and security agencies. The Agency's responsibilities must not contradict our enabling legislation or fiscal policies to be effective. Used electrical devices are not considered contraband, according to Customs. As a result, Customs and excise duties apply to these items.

Because each party is at a different stage of development, they have developed diverse techniques for hazardous waste disposal [25]. A regional plan is also required because it lets stakeholders adopt a consistent template for handling ESM of hazardous materials in a coordinated manner. There are also advantages for regional parties falling behind in the drive for advancement. Environmentally sound waste management practices are crucial for achieving long-term economic viability, the M.D.G.s, and protecting human health and the environment. This project promotes environmentally responsible waste disposal.

When dealing with capacity, there are numerous problems to consider. On average, a garbage disposal facility is more common than one that handles trash, including waste collection and storage and sorting, transportation, recycling, processing, and disposal. These issues are typically created by insufficient infrastructure for hazardous processing waste and a shortage of staff with the appropriate expertise and experience. Inadequacy or absence of legislation and institutional/administrative structures for hazardous waste ESM and transboundary movement control may also be problems [25]. With limited resources, poor hazardous waste management standards result. There may not be enough political will to address the issue due to a general lack of understanding about hazardous waste's negative environmental and human

health repercussions. Furthermore, because the Basel Convention has not been domesticated.

6. CONCLUSION AND RECOMMENDATIONS

This section summarizes the findings and makes recommendations for the field's future development in the coming decades. Concerning the nature of the topic at hand, suggestions will be made based on the findings and information gleaned from the investigation.

6.1 Conclusion

The Basel Convention has been thoroughly covered in this research work. It has focused on Nigeria's commitments under the Convention as well as what Nigeria has to accomplish to stay away from creating waste dumps. This research finds that the danger posed by electronic waste to both human health and the natural environment has increased. Both human health and the environment are put in jeopardy when old consumer items are imported into the country. These goods include televisions, laptop computers, audio systems, and mobile phones. A significant problem in Nigeria is the unlawful dumping of garbage across international borders and the ineffective management of this waste, both of which put the country's future ecological, economic, and health development in jeopardy. Heavy metals are released into the environment as a result of the uncontrolled disposal of hazardous waste and electronic trash that takes place across international borders. A Convention Concerning Basel It is generally acknowledged to be the most comprehensive environmental protection accord ever reached to this day. Accumulation of waste, development across international borders, and actions taken by executive branch officials are all potential threats to human health and the environment. Everyone involved has a responsibility to collaborate for the sake of the environment and the community as a whole to ensure that trash, both hazardous and nonhazardous, is handled and disposed of in an appropriate manner. Treatment of waste and disposal of waste should be prioritized so that it is carried out as close to the source of the trash as is practically practicable. This should be the case regardless of how important it is to prevent or reduce waste.

6.2 Recommendations

i. Restrictions on imports: A majority of the imported e-waste was mended and sold on the spot, while the other half was dumped. Previously used EEE was sold for a brief period before it was discarded or recycled. End-of-life equipment is part of Nigeria's e-waste. There is no impact on the trade-in of obsolete EEE, despite the arrival of electronic garbage and end-of-life equipment from Nigerian ports. An example of this is the Alaba market in Lagos, where a wide variety of goods are sold in a wide range of categories including electronics, food, and clothing. Global industrial growth may be boosted by its strong, well-organized sector. This company provides I.C.T. and EEE, products at a reasonable price for persons with modest means. A blanket ban on secondhand imports and refurbishment should be avoided due to Nigeria's remarkable socioeconomic success in favor of a cooperative plan involving market and industry associations. E-waste policies and economic assessments are difficult without this text. EEE imports and e-waste statistics should be updated regularly.

ii. Collection and recycling: Despite Nigeria's efforts to prohibit the export of e-waste, domestic e-waste will stifle economic growth. High-quality, long-lasting electronics account for half of all e-waste in the United States. EEE, imports account for 30% of waste. Part of it must be handled carefully due to storage to avoid contamination. This solution necessitates recycling and waste disposal. Green collection, transportation, treatment, and disposal are required. They require training and capacity-building before they can join a formal network. The informal sector can help the recycling industry and the underprivileged. Examine the functions of informal collection and disassemble systems before creating an e-waste competition. Informal collectors and recyclers of electronic waste must be recognized. Formalization of the informal sector is required for ecologically responsible operations.

iii. Policy and legislation: To establish a long-term e-waste management system, a financial basis, level playing fields, and market incentives must be established. In Nigeria, as in other OECD nations, Extended Producer Responsibility should serve as the cornerstone for e-waste recycling policies, as it does in the United States. Producers and importers must be held accountable for the waste generated during the manufacturing of their products and the proper disposal of that trash. As long as the legislative framework is clear and correct, producers and importers should be free to

develop their own environmentally friendly systems following their unique circumstances. Electronic waste and counterfeit equipment, for example, must be addressed in E.P.R. legislation in Nigeria, as must the question of who will cover the cost of recycling these waste products that have been unlawfully imported. The development of recycling facilities that comply with international rules and procedures and the ability to interact with producers are required before E.P.R. systems can be implemented in Nigeria. Increasing the number of programs and activities, such as those stated above, would be required to assist in the development of legislation and the implementation of regulations for e-waste management in Nigeria. These will be required to deal with the country's e-waste problems. The growth of EEE, traffic implies that the port of entry is no longer the end destination in most situations. Used electrical and electronic equipment that has been reconditioned is often found in specialized clusters before being sold to dealers in adjacent nations and other countries worldwide. Due to the increasing severity of the e-waste problem in Nigeria and Africa, adopting a regional approach to assist with environmentally sound management of electronic waste and the prevention of illegal trafficking across West and Central Africa appears to be essential. Moreover, the laws can also be applied to the commodity in question to minimize the risk of leaks involving crude oil. The manufacturing of petrochemicals in Nigeria is the most significant contributor to the country's overall volume of hazardous waste. These spills occurred during the years of 1976 and 1996. It is expected that there will be no escape of hazardous waste into the environment in Nigeria as a direct consequence of the policies, rules, and regulations that have been established.

COMPETING INTERESTS

Authors have declared that they have no known competing financial interests or non-financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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