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Developing Legal Framework for Plastic Waste Management in Nigeria

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Abstract: *In Nigeria, the right to a clean and satisfactory environment will be sustainable when the issue of inadequacy of waste management laws and policy measures are addressed and there are effective waste management laws in the country. The advent of the problem of industrialization and urbanization has resulted in plastic waste in Nigeria which has posed a challenge and is still posing challenge to human health, animals as well as environmental damage. Plastic waste pollution has become a pressing environmental concern globally, particularly for countries like Nigeria without a proper mechanism for managing its impacts. Though, Nigeria has established a wide range of legal and institutional framework to combat environmental issues including the Plastic Bag Bill, National Policy on plastic Waste Management 2020, National Environmental Standards and Regulations Enforcement Agency (NESREA) Act and the Harmful Waste (Special Criminal Provisions, etc.) Act. However, despite the existence of these laws and the legislative efforts, the problem of plastic waste pollution in Nigeria still persists as result of the absence of national law that addresses plastic waste pollution. The problem of enforcement management mechanisms, limited resources, inadequate monitoring and indiscriminate waste disposal are also factors addressed in this study. In the light of the above, this study proffers solution to the problem of plastic waste management in Nigeria. This study also addressing measuring aimed at mitigating plastic waste pollution, highlighting the challenges impeding the effectiveness of the relevant existing legal framework on the subject. This study adopted the doctrinal method of Legal research. Relying on textbooks, journals, case and statutory laws, online articles and other sources of law. The study reveals the inadequacies prevalent in the waste management laws and how lack of proper management of plastic waste in Nigeria is a challenge to the right to clean and satisfactory environment. This study advocates for a regime that projects strengthening the enforcement mechanism through enhanced monitoring and stricter penalties to bolster compliance and deter violations as well as promoting sustainable plastic waste management practices in line with global best practices. The study further advocates that the legislature be more proactive and recognize plastic waste as a significant cause of environmental pollution and as such enact more laws that specifically address plastic waste indiscriminate disposal.*
Keywords: environment, plastic waste pollution, legal framework, factors, Nigeria.

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INTRODUCTION

Plastic is a group of materials whether synthetic or naturally occurring polymers that lose form when heated up. It is a synthetic material made from a wide range of organic polymers which can be molded when soft and formed into a solid shape. The use of plastic in the areas of medical, beverage, food industry and agriculture *etcetera*, can never be overemphasized. However, the chemical properties that makes plastic incredibly useful also makes it difficult to dispose of, thus causing a bigger environmental problem. Plastic waste management encompasses every activity including the generation to disposal of waste, segregation, its collection, storage, treatment, transportation and minimization. Plastic pollution is a global.

problem to both developed and developing countries, with Nigeria grappling to manage its impacts, as result of the rapid growth in population, advancement in industrialization and urbanization, Nigeria is faced with significant challenges in managing plastic waste effectively in the country. The negative impact of plastic waste pollution is so grave that their impact affects the environment as well as human health without effective management techniques and laws to address the indiscriminate disposal of plastic waste in Nigeria.

The Nigeria Legal Framework for Plastic Waste management is still inadequate, as there is no specific National Legislation targeting plastic pollution. Although there are regulations concerning overall waste management, there is no national law as well as state laws directly addressing plastic pollution management in Nigeria. And therefore, the urgent need for a new national law. However, developing a comprehensive national law that will address plastic waste pollution in Nigeria will require the presentation of a Bill to the National Assembly and this process will require the urgent actions of the legislature and the judiciary. Nigeria operates a federal system of government under a three arm structure namely: the Executive responsible for implementing the laws made by the legislature and enforcing the laws, the Judiciary responsible for interpreting the law and the legislature responsibly for making the laws. This is what is obtained both at the federal level and the State level.

At the federal level, there is a bicameral legislature that comprised of two primary law making chambers; the Senate and the House of Representatives. Both chambers make up what is referred to as the National Assembly. The National Assembly is empowered by section 4(2) of the Constitution to make laws for the peace and order and good government of the federation or part therefor with respect to any matter included in the exclusive legislative list set out in part 1 of the second schedule to this constitution. In Nigeria, before a bill becomes law, it must go through the following stages from presentation of the bill, first review of the bill, gazetting of the bill, first reading, second reading, committee stage, third and final reading and signing of the bill. This study aims to identify the factors that hinders the effective plastic waste management in Nigeria while providing useful recommendations to address the various factors.

Waste

The Waste Management Licensing Regulation, 1999 defines waste as "any substance or object which the producer or the person in possession of it discards or intends or is required to be discarded." The term waste has been defined by various scholars based on their individual perspectives. This is so, because what maybe waste to one may be useful to another. The Oxford Advanced Learner's Dictionary defines waste as something that is not or no longer useful and is to be thrown away, or disposed of.

The world Health Organization (W.H.O), defines waste as something which the owner no longer wants at a given place and time and which has no current or perceived market values. The Base Convention, defined waste as substances or objects which are disposed or are intended to be disposed or are required to be disposed of by the provisions of national laws".

According to the 1990 United Kingdom Environmental Protection Act, waste is defined as:

a) Any substance which constitutes a scrap material, an effluent or other unwanted surplus substance arising from the application of any process.
b) Any substance or articles, which needs to be disposed of, as being broken, worn out, contaminated or otherwise spoiled.

In Nigeria, the NESREA Act which is the extant law on environmental protection does not define waste. However some states like Delta State and Lagos State attempt to define waste as any discarded material or substance whether or not the same can be put to any use other than its original use. The Lagos State Environmental Sanitation Edict of 1985 which adopted the same definition of waste as defined by the United Kingdom Environmental Protection Act of 1990 define waste as:

a) Waste of all description
b) Any substance which constitutes scrap material, an effluent or other application of any process.

Waste is thus, any object or substance that was once useful to the owner but has become useless or lack market value to the owner and is required to be discarded.

Plastic Waste Pollution

The word pollution is derived from the word pollute which means "to corrupt or to defile". It is the introduction of contamination into the natural environment that cause harm. Notwithstanding the fact that environmental pollution can be caused by natural events, pollution generally implies that the contamination have a human source created by human activities such as the extractive activates of industries, manufacturing, poor waste management, agriculture and transportation. This position aligns with the definition as provided for by the NESREA Act of 2007. The Act defined pollution as man-made or man-aided alteration of chemical, physical, or biological quality of the environment beyond acceptable limits and pollutants shall be costumed accordingly.

Plastic which was invented in 1907 is a group of materials whether synthetic or naturally occurring polymers that can lose its form anytime is heated up. Plastic pollution therefore is the accumulation of

plastic objects and particles such as bottle, bags and micro beads in the earth's environment that adversely affects humans, wildlife, marine life and their habitat.
Plastic products are not too expensive, they are durable and versatile and because of their qualities, they are usually adopted for different uses, by manufactures who prefer to use plastics over other materials. However, the chemical component of most plastics that are being manufactured renders them resistant to many natural processes of degradation and as a result they are slow to degrade.
Resulting from the above factors, large volumes of plastic waste being seen everywhere in the environment as mismanaged waste which persists in the ecosystem and travels throughout food webs and as well affects land, waterways and ocean. In Nigeria, the major products of plastic pollutants are the single used plastics such as plastic bottles, disposable plastic plates, cups and spoon, shopping bags, *etcetera.* The presence of these pollutants are largely due to the rapid growth in population, consumption and production particularly in the urban areas and water-ways without proper disposal techniques. These pit falls therefore, highlights the urgent need for comprehensive legal framework in addressing the challenges of plastic waste in the country.

Plastic Waste Management Techniques in Nigeria.
Plastic waste management technique refers to the method of collection, processing and disposal of plastic waste. The techniques includes Landfill, incineration, conversion and recycling techniques.

Landfill Technique

Landfill is a specific location where waste is disposed of by burying them in the ground, typically within a carefully designed and maintained site. Landfill plays a vital role in waste management, especially for materials that cannot be recycled or reused. Landfill aims at reducing environmental impact through various engineering methods and operational strategies. Landfill as a method of plastic waste management relies on the microbial organism confined to the environment to facilitate as well as burying them or by burning of the plastic waste. However, landfill as a method of plastic waste management is arguably the least recommended method, because some of the dumped plastic wastes find their way back into the public and water bodies.

Landfill is the cheapest, simplest and most commonly used method for plastic waste disposal. It refers to all designated location and regions where all disposable plastic waste or waste generally are discarded after utilization before being buried beneath the surface of the earth. To achieve the purpose of landfill as a technique of plastic waste management requires a lot of work on the part of the community such as digging a deep hole in the ground, filling it with waste and allowing it to decompose.

Despite the purpose of the landfill arrangement, landfill method is faced with some setbacks such as leaching. For example, over time the liquid seep through landfill, takes with it harmful chemicals from the waste and if is rotten, it produces harmful methane gas and carbon (IV) oxide. In 2007, it was reported that landfill were responsible for 49% of England's methane emissions. Also, landfills take up space that could be used for more profitable activities like development and agriculture. This is made worse by the fact that most plastic waste takes longer period to degrade due to their chemical structures, which implies that the contaminated land and ground water will remain inaccessible for a long time.

Incineration Technique

Incineration is another technique of plastic waste management. It involves the full oxidation combustion where plastic waste or waste generally, are burnt at very high temperatures and transformed into ash, heat and flue gases. The waste converted into ash, heat and flue gases through the incineration process can be used to generate electricity or providing heating functions and the ashes can be further converted into various products such ceramics cement and construction materials. Although incineration reduce the volume of waste, this method should be used with caution because this method when used causes the release of hazardous gas into the atmosphere which causes air pollution.

Conversion Technique

Another method of plastic waste management is the conversion of plastic waste into valuable products. The conversion technique is an innovative solution in plastic waste management that is used to convert plastic waste into useful building materials like paving blocks, roofing sheets, tiles, landscaping materials, new plastic products and road construction materials. Extruder machines like single-screw extruders or twin screw extruders are used to melt plastic waste and when mixed with other materials such as rubber power and calcium carbonate can be used to produce equipment that can withstand heavy loads and equally reduce much pressure on the natural resources, reduce pollution and lower carbon footprints.

This method though maybe costly, is a very plausible method for plastic waste management that ensures the sustainability of construction industries in Nigeria.

The Three Rs.

The Three Rs are the abbreviated forms of Reduce, Reuse and Recycle. These Three Rs are the fundamental methods in sustainable waste management and environmental conservation. These methods are essential in minimizing plastic waste, maximizing resources more effectively and reducing the menace of plastic waste on the environment. The Three Rs are the Safest and easiest methods of plastic waste management and if properly implemented can to a large extent reduce amount of plastic waste that goes into landfills thereby reducing carbon footprint or the environment.

Reduce

The volume of plastic waste can be reduced by geared towards that can decreasing the use of plastic products. Strategies can be adopted to reduce the consumption and production of plastic products especially at their production stage such as imposition of a fixed production quota and importation; imposition of taxes on plastic production, fostering the production of alternative bio-degradable plastic products and placing a ban on single-use-plastic in the country are also veritable means of combating the problem. Waste reduction is the highest priority in the hierarchy of effective waste management and is known to have the greatest benefits. This plastic waste reduction is therefore any action that reduces plastic waste by using less material in the production of plastic waste.

Plastic waste reduction can be actualized by using ceramic mugs instead of disposable plastic cups or buying in bulk rather than individually packaged items. The idea is to conserve energy and reduce air pollution and water contamination that is often caused by the producers of plastic materials and equally reduce the use of landfills and recoveries of resources. Reducing the amount of plastic production and consumption is one of the effective ways to combat the challenges of plastic waste pollution. Reducing single-use plastics and promoting sustainable alternatives can decrease the volume of plastic waste on

the environment been littered everywhere can be reduced by imposing bans on single-use plastics and creating public awareness and encouraging consumers of the importance of reducing the use of plastic. The problem of indiscriminate plastic waste disposal will become a thing of the past.

Reuse

Reusing is one of the easiest and most efficient ways of maintaining a sustainable environment by fashioning plastic into other products. It will reduces the amount of plastic waste polluting the environment and it will preserve more energy and materials used to make entirely new products.

Reuse in the context of plastic waste management involves the use of end-of-life plastic products repeatedly in their cycle before they finally enter the waste stream. This practice is very common in Nigeria. Various plastic product are informally collected by plastic waste scavengers from waste bin, dumpsites, landfills and buy used plastic from people. After collection of these plastic products, they sort and sell them to the cottage industry which reuses them in the secondary packaging of several consumer products. For instance, end of life plastic paint containers are reused as buckets in various households in Nigeria, water dispenser bottle can be refilled and reused. They can also be used for storing unbranded vegetable oil, palm oil, cashew nuts, groundnut *etcetera*

The sustainability of the environment is ensured when plastic waste is properly reused. However, the reuse of plastic highly depends on the quality of their production. For example, single use plastic like pure water sachet or Styrofoam cannot be reused because of their light weighted structures. Reusable plastic products aids the maintenance of plastic waste on the environment.

Recycling

Plastic recycling is the process of reprocessing recovered plastic products to make new products. It is the processing of plastic waste into other useful products. Recycling can reduce dependence on landfills, conserve resources and protect the environment from plastic pollution and greenhouse gas emissions.

From the inception of plastic production to 2015, the world had generated over 6.3 billion tonnes of plastic waste. Out of the numbers only 9% has been recycled, 12% was incinerated and 79% was either sent to landfill or causing pollution to the environment. Almost all plastic produced are non- bio-degradable and without recycling. These wastes find their way into streams and causes plastic pollution to the environment. Once a solid recyclable material enters the waste stream after the reuse stage, it can either be retrieved through recycling or resource recovery processes. Resources recovery which also includes energy recovery, involves using the plastic's calorific value as fuel, gas or energy through controlled heating. Plastic recycling can be categorized into three, namely:

i) Primary Recycling
ii) Secondary Recycling
iii) Tertiary Recycling

i) Primary Recycling involves mechanically reprocessing plastic waste into products with similar characteristics. For a material or product to be deemed primary recycled, it should remain unchanged in any manner. Essentially, primary recycling refers to second hand usage, this could involve reusing an item giving it to a charity or selling it.

ii) Secondary Recycling involves processing plastic waste into products with different characteristics. And this category of recycling involves altering the material or product without employing chemical processes. For instance, modifying the upper part of a plastic bottle to serve as a plant pot, reshaping various plastic waste items for arts and crafts *etcetera.*

iii) Tertiary Recycling involves recovering chemical constituents and producing basic chemical and fuel from segregated municipal solid waste. When a material or product undergoes tertiary recycling, it has been reprocessed either through chemical methods or heat application. Examples of this process include melting metals, chemically recycling old paper and breaking down plastic bottles to create new products. Tertiary recycling can be categorized as either external or internal. External recycling involves the recovery and reprocessing of materials/products through public involvement, where individuals sort waste and place it in recycling bins for collection and transport to processing plants. In contrast, internal recycling occurs when materials/products are typically taking place within factories and manufacturing facilities.

Plastic waste basically are recycled either mechanically or chemically, into new product. Chemical recycling or tertiary recycling which is not commonly practiced involved the conversation of polymeric waste by changing its chemical structure and turning it back into substance that can be used as raw materials for the manufacturing of other products.

Mechanical/primary and secondary types of recycling of plastic are very common in Nigeria. Mechanical recycling is the processing of plastic waste into secondary raw materials or products without significantly changing the chemical structure of the material. Annually, about 10,000 tons of Polypropylene (PP) and Polyethylene (PE) Plastic waste is recycled mechanically in Nigeria. However, the recycling rates for PP and PE are quite low due to several factors which include the challenges of recycling and the difficulty in differentiating these polymers from other type of Plastics. Additionally, not all plastics can be recycled, so it's crucial to understand which types of plastics are recyclable. The society of the plastics industry developed a coding of system to distinguish among different plastics. The plastics most frequently recycled are Polyethylene Terephthalate (PET) which are found in various products like bottles, containers, and packaging materials. PET is often used for beverage bottles, food containers, and polyester fibers. It is highly recyclable and can be repurposed into new items, such as clothing, carpet fibers, and furniture. In contrast, High-Density Polyethylene (HDPE) is typically used for milk jugs, detergent, shampoos, bottles for milk and plastic bags, as well as pipes, toys and grocery bags. It is also highly recyclable and can be converted into new bottles, plastic lumber and playground equipment. While PET and HDPE are two plastics most commonly recycled plastics.

Selected Legal Framework for Plastic Waste in Nigeria

This aspect of the study tends to examine the existing policies and regulations that have been laid down over the years in Nigeria in relation to waste management and also to raise the question as to whether the existing National laws have adequately addresses plastic waste production in Nigeria in line with international standard and practices. The Nigeria Legal Framework for Plastic Waste management is still in adequate, as there is no specific National Legislation targeting plastic pollution. Although there

are regulations concerning overall waste management, there is no nation law as well as state laws directly addressing plastic pollution management in Nigeria.
The laws mentioned below are not specifically designed for plastic waste management or pollution but have some provisions that indirectly safeguard the environment against plastic waste pollution in the country.

The 1999 Constitution of the Federal Republic of Nigeria
In the history of Nigeria's Constitutional evolution, several key documents have been created including the Clifford Constitution of 1922, the MacPherson constitution of 1954, the independence constitution of 1960, the 1963 Republican Constitution, the 1979 constitution of the Federal Republic of Nigeria, the aborted 1989 constitution. Unfortunately, throughout the history of Nigeria's constitutional development, it was only on the 1999 constitution that environmental provisions were first incorporated into the Nigeria's constitution though is provided for under chapter 2 of the 1999 constitution.

The Constitution is supreme and provisions shall have binding force on all authorities and persons throughout the Federal Republic of Nigeria. All laws derive their existence and validity from the constitution; the effectiveness and validity of any law whatsoever is based on its compliance and compatibility with the provision of the constitution. Section (1) and (3) of the constitution provide as follows:

(1) This constitution is supreme and its provisions shall have binding source on all authorities and person throughout the Federal Republic of Nigeria.
(2) If any other law is inconsistent with the provisions of this constitution, this constitution shall prevail, and that other law shall do the extent of the inconsistency be void.

Consequently, even existing law must obtain their legitimacy from the constitution which some scholar and legal experts refer to as the "grundnorm". Tobi Jsc in the case of *AG Federation v A.G Abia State*, successfully described the constitution thus:

> "The Constitution of Nation is the Fons et Origo, not only of the Juris prudence but also of the legal system of the nation. It is the beginning and the end of the legal system. In Greek language it is the Alpha and Omega. It is the barometer with which all statutes are measured".

The Constitution embodies the basis of environmental policy in Nigeria. Although, the constitution does not directly address waste, it includes some relevant provisions related to environmental protection and management that can be associated with waste management in Nigeria. It asserts the right to a healthy environment, highlighting the need for environmental conservation, including effective waste management. Section 20 of the constitution provides thus: "The State shall protect and improve environment and safeguard the water, and land, forest and wildlife as Nigeria."

This provision obligates the state to safeguard Nigeria's environment. According to the interpretation clause of the constitution, the term "State" when used otherwise than its reference to one of the federation's components encompasses the government. And government by the said section include government of the federation, or any state, or Local Government Council, or any person who exercises

power or authority on its behalf. The import of section 20 is that the environment is viewed as an issue that the government must safeguard enforce the preservation of a clean and sustainable environment. However, this obligation placed on the government cannot be enforced by citizen because there is no corresponding legal right on them to enforce such provision in the event of failure to fulfill this obligation. In other words, this provision falls within the rights under chapter II of the constitution which are non-justiciable rights.

They come under the fundamental objectives and Directive principles of State Policies. Therefore, the Nigeria government cannot be the held responsible for sailing to perform under this chapter. The courts have held in Plethora of cases on this that they don't have jurisdiction to enforce any provisions of chapter II of the constitution. For instance, in the case of *A.G. Ondo v A.G Federation,* the Supreme Court held, inter alia, courts cannot enforce any provisions of chapter II of the constitution. The court stated that the objectives and principles that serve as the constitutional policy of government remain mere declarations that cannot be enforced by legal means.

The court in *Olafisoye v Federal Republic of Nigeria*, also held that chapter II of the constitution is not justifiable, but the non-justifiability of section b(b) (c) of the constitution is neither total nor sacrosanct because the subsection provides a headway by using the words except as otherwise provided by the constitution. The court relied on item 60 (a) of the exclusive legislative lost second schedule to the constitution which gives the Federal Government power to establish authorities to promote and enforce the observance of the federal objective and directive principle. The unenforceability of the section 20 of the constitution has contributed to the improper disposal of plastic waste on the country because no person would be seen responsible for causing the menace of plastic waste pollution in the country. As far as this provision is concerned, it is just as toothless bull dog that can bark but cannot bite. It is my view that the provisions of the constitution on relation to the environment are not sufficient because aside for section 20 of the constitution, and some inferable provision matter that borders on environmental protection are not specifically addressed especially, waste or plastic waste management.

National Environmental Standards and Regulation Enforcement Agency(Establishment) Act 2007:

Although this is not in the constitution itself, it functions within the framework of laws and regulations that derive their authority from the constitution, establishing environmental laws. The act is the primary legislation for environmental protection in Nigeria enacted in 2007. Section 1 of the Act established the National Environmental Standards and Regulations Enforcement Agency (NESREA). It repeated the Federal Environmental Protection Agency (FEPA) Act. It grants the Agency authority to create regulations aimed at safeguarding public health and encouraging sound environmental sanitation. The NESREA Act is vital for regulations various elements. Section 1 of the Act established the National Environmental Standards and Regulations Enforcement Agency (NESREA) of environmental provision, particularly regarding plastic pollution and the use of plastic bags. It offers a legal framework to tackle environment issue and ensures adherence to environmental standards. The Act includes provisions to mitigate their adverse effects on the environment and promote sustainable practices, enabling NESREA to set environmental standards, regulate hazardous substances and enforce compliance particularly concerning plastic pollution.

The NESREA Act grants the Agency the authority to create and implement regulations related to environmental protection including the management distribution and use of plastic bags. This power enables NESREA Act to establish standards regarding the materials, sizes, and proper disposal of plastic bags. In addition, some regulations specifically target effluent and waste discharges from certain industries such as textiles, steel and metals, industrial plastic and rubber, mineral manufacturing electronic chemicals and paracortical as well as textiles and footwear. The NESREA is tasked with the responsibility of protecting and promoting the environment, conserving biodiversity, and advancing sustainable development in Nigeria's natural resources with a vision claimed as providing a cleaner and healthier environment for Nigerians and aims to cultivate a sense of individual and collective responsibility in creating an environmentally conscious society.

The functions of NESREA according to section 7 of the Act includes; enforce compliance with environmental matters, laws, guidelines, policies and standards, regulations and enforcement and ensure compliance with the provision of international agreements, protocols, conventions and treaties on the environment, which includes among other things, pollution and sanitation. The Act empowers the Agency to ensure proper enforcement and compliance of waste management and environmental sanitation laws, guidelines, policies and standards in Nigeria and other international treaties to which Nigeria has ratified for instance the Base convention on transboundary movement of hazardous waste and other wastes and its amendments. Section 8 of the Act provides that in coordination with relevant agencies and with the minister's approval, NESREA will create initiatives focused on establishing standards and regulations to prevent, reduce and eliminate pollution as well as address different types of environmental degradation in the air, land, oceans, seas and other water bodies.

These initiatives will also include efforts to restore and embark the nation's environment and natural resources. By these initiatives, NESREA strives to achieve sustainable development in Nigeria. According to section 20 (i) of the Act, the Agency is authorized to establish regulations defining specifications and standards aimed of safeguarding and improving the quality of Nigeria, air resources which is done to advance public health and well-being, as well as to support the natural growth and productive potential of the nation's human, animal, marines and plant ecosystems.
Section 25 of the Act, further provide that:

1. The Agency may make regulations for the purpose of protecting public health and promotion of sound environmental sanitation.
2. A person who violate the provisions of the regulations made pursuant to sub-section (i) of this section shall be guilty of an offence and punished under the penalties imposed in the regulations made pursuance thereto.

Thus, the law did not however, makes Provision for penalties that would be meted out to defaulters rather it simply left it to the regulations. The NESREA is the rational agency in Nigeria tasked with enforcing environmental standards or regulation. It has established several policies and guidelines aimed of managing plastic waste and encouraging sustainable waste management practices. Although these efforts of NESREA and commendable, these effectiveness remains uncertain.

Harmful Waste (Special Criminal Provisions Etc) Act

This act was enacted in response to the koko incident in June, 1998 which involved the dumping of toxic wastes by the Italian industries in koko a village located in Delta State within southern Nigeria. Section 1 (i) of the Harmful waste (special criminal provisions Etc) Act, provides that;

> (i) notwithstanding the provision of the customs, excise tariff etc (consolidation) Act or any other enactment or law all activities relating to the purchase, sale importation, transit, transportation, deposit, storage of harmful waste are hereby prohibited.

According to the aforementioned provisions, no person in Nigeria is allowed to engage in any activities related to harmful waste. However, these provisions do not address the generation or production of harmful waste, leading to ambiguity about whether creating such waste considered an offense. It seems that it is only viewed as an offense when the waste is imported, purchased, sold, transported, deposited or stored. The Act is a significant legal framework in Nigeria aimed at prohibiting the carrying depositing and dumping of hazardous wastes on any land, territorial waters and mutters relating thereto. In describing what depositing or dumping harmful wastes means, section 1(3) of the Act 131 provides thus: A person shall be deemed to deposit or dump harmful waste under this Act if he deposits, or dumps the harmful waste, whether solid, semi-solid or liquid in such circumstance or for such period he may be deemed;

(a) To have abandoned if where it is deposited or dumped; or
(b) To have brought it to the place where it is so deposited or dumped for the purpose of its being deposited of or abandoned whether by him any or any other person.

Section 15 of the Act defines harmful wastes as any injurious, poisonous, toxic or noxious substances as to subject any person to the risk of death, fatal injury or incurable impairment of physical and mental health; and the fact that the harmful waste is placed in a container shall not by itself be taken to exclude any risk which might be expected to arise from the harmful waste. Although plastic waste not mention in Act as harmful waste, but from the definition of harmful waste, plastics can be considered harmful waste did to their detrimental effects on the environment and human health. They contain various toxic components such as biphenyl, poly fluorinated chemicals, brominated flare retardants and antimony trioxide which can reach out to hare adverse effect to the environment and public health. Reports from China, Nigeria and India indicated that plastic hazardous substances from e-wastes can migrate beyond the processing sites and into the environment. From the definition of harmful wastes therefore, plastics can be regarded as detrimental waste due to their adverse effects on the environment and human health as result of its toxic components. The criminalized dumping of harmful waste and the punishment for any person found guilty of the crime is life imprisonment. Diplomatic personalities are not exempted from offences committed contrary to the provision section 1 to 5 of the Act Section 6 of the Act provides thus: Any person found guilty of a crime under section 1 to 5 of this Act shall on conviction be sentenced to imprisonment for life, and in addition.

a. Any carrier, including aircraft, vehicle, container and any other thing whatsoever used in the transportation or importation of the harmful waste and

b. Any land on which the harmful waste was deposited or dumped, shall be forfeited to the vest in the federal military government without any further assurance other than this Act.

It is however, observed that since the enactment of this Act, there had never been a decided case of nay person whether natural or artificial and prosecuted pursuant to the provision of this Act. The Act, if properly enforce, it could be ensure to play a vital roles in plastic waste management. The act can help in the prohibition of the production, use and importation of single-use plastic and prohibit the improper disposal of these plastics.

National Policy on the Plastic Waste Management 2020

This policy is the most recent and comprehensive effort to promote the sustainable management of plastic waste in Nigeria. The policy is built upon the foundation of the National Policy on the Environment of 1991 and the 2018 National Policy on Solid Waste Management which governs the waste sector. The policy was developed after a consultative forum organized by the federal ministry of Environment on the 16th October, 2018 to sanitize stakeholders on the proposed initiative. It was later approved by the federal executive council on 21st October, 2020 after the draft and development of the policy by the Federal ministry of Environment in conjunction with relevant stakeholders. The policy recognizes that plastic waste is harmful to the Nigeria environment and that there is a pressing need to tackle the problem to protect and sustain the environment. Thus, the policy was developed due to the urgent need to promote environmental protection, encourage resource efficiency and enhance conservation of natural resources through sustainable production and consumption of plastics. Since its inception, the policy has been under consideration and continues to evolve and by this year, 2025, the policy aims to reduce plastic waste generation in the environment by 50 percent compared to the baseline figure of 2020. It also aims to phase out single-use plastic bugs and Styrofoam by 2028, contributing to a significant reduction in plastic pollution. Furthermore, it envisions that all plastic packaging in the market will be recyclable or biodegradable by 2030, fostering a more sustainable approach to plastic use and disposal. The policy is divided into six (6) chapters. Chapter one describes plastics as a material consisting of any hide range of synthetics or semi-synthetic organic compounds that are malleable and can be moulded into solid objects. The justification for the development of the policy is the deleterion effects arising from the improper management of plastic wastes. The relevant stakeholders to plastic waste management were provided as plastic raw materials producers or primary manufacturer. The plastic materials users that is primary uses, consumers of plastic packaged products, those involved in plastic waste materials collection, recycling reusing, recovery, operations for production, import or export or management and users of alternatives of plastics.

Chapter 2.2 of the Policy is on plastic waste management statement which shows that the overall goal of the policy is to promote sustainable use of plastic as a resource throughout its lifecycle. The policy statements also includes the fact that the policy goals is to develop laws, standards, measures, models and systems that shall support plastic waste management, to limit the impact of littering, reduce plastic waste generation and the harmful effect of global warming and greenhouse gases associated with plastic production to encourage recycling and promote sustainable use of alternatives to single use plastics such leaves, paper, jute bag, glass bottles from May 2020. According to the policy plastic waste management activities shall be funded mainly through the annual budget from the national, state and local government and the additional appropriate task regime put in place.

This policy has faced criticism for failing to address significant aspects of the Base convention and for neglecting to regulate the international trade (import and export) of plastic waste, despite the fact that the base convention has been ratified by the Nigeria government. Additionally, the policy does not recognize the Nigeria customs service as an important stakeholder in managing plastic waste, with regard to the regulation of transboundary movement of plastics. Notwithstanding, the criticism against the policy, the policy still marks an important advancement in tackling the urgent problem of plastic waste in the nation and encourages a more eco-friendly mindset regarding plastic consumption across its entire life cycle. It focuses on promoting recycling, reusing and minimizing the use of plastic bags. As discussions around this policy progress and it is fine-tuned, it could help create a cleaner, more sustainable environment for future generations. Thus, the core objectives of the policy in line with sustainable development goals can be achieved specifically by these three objects:

i. Make Nigeria cities, ecosystem and human settlement clean, plastic litter free and sustainable.
ii. Ensure sustainable consumption and production patterns that recognize the environmental guiding principle management hierarchy and support the setting of circular plastic economy in Nigeria.
iii. Managing carbon offsetting, carbon emission, reducing carbon foot print and benefiting from carbon credit financing.

The National Environmental Domestic Industrial, Plastic Rubber and Foam Sector Regulation 2011

This regulation was enacted in 2011, PART 1 of this regulation provides for the objective of the regulation, the section provides thus: The principle thrust of these regulation is to prevent and minimize pollution from all operations and ancillary activities of the domestic and industrial plastic rubber and foam sector to the Nigeria Environment. The Regulation aims to reduce the environmental impact of activities in these industries. The regulation seeks to minimize both primary and second any environmental effects caused by the domestic and industrial use of plastics, rubber, and foam. It mandates that an environmental impact assessment be conducted for new projects or modifications, including expansions, prior to the commencement of any activities. Additionally, the regulation requires that new facilities within the sector implements modern, efficient and cost-effective production technologies to safeguard against pollution. The polluter pays principle is also a key component, making it the responsibility of each facility to manage the collection, treatment, transport and disposal of waste generated from its operations. The facilities are responsible for any pollution resulting from their activities and must compensate for any damages caused. Regulation 11 emphasizes the extended producer responsibility (EPR), which mandates producers to manage waste disposal associated with their products and treatment for recycling purposes. Those who violate these regulations may face penalties, including zones up to N200,000 (Two Hundred Thousand Naira) or six months imprisonment or lesser companies that violate are to pay the sum of N1,000,000 (One Million naira) and additional N50,000 (Fifty thousand Naira) every day the offence subsists.

In 2015, NESREA joined the countries to implement EPR in beverage sector. The EPR was enacted under the producer responsibility organization which aims and promoting clean environment. Schedule XIII of the Regulation provides for the guideline for the Extended producers responsibility programme

and requires that producers and importers are to partake with the agency, NESREA to develop an effective EPR program, producers and importer are to make proposals to the agency stating the proposed retrieval and processing mechanism to be adopted on post-consumer products and their roles in the reduction and adoption of other effective waste agreement mechanism. The agency role is to cover statistics on the waste collected, processed, managed and the location of collection facilities.
The polluter pay principle that was first formally articulated on 1972, by the council of the organization for economic co-operation and development (OECD) posit that the cost of cleaning up the damages caused by pollution should be borne by the person responsible for causing the pollution. Regulation 7 (4) recommend compliances and encourages the application of the 5Rs which are Reduce, Repair, Reuse, Recycle and Recover. This Regulation however, excluded consumer's responsibility thereby availing the consumers of these products of the opportunity of not been responsible of taking care of these plastic products and package post-use making them to disposed of these plastics improperly. This has also hinders the joint collective efforts of creating a clear and sustainable environment.

Extended Producer Responsibility (EPR)
The Extended Producers Responsibility (EPR) initiative of NESREA has become the primary government policy addressing plastic waste in Nigeria. The concept of EPR originated in Sweden during the 1990s and aims to encourage eco-friendly manufacturing and disposal of products. NESREA first presented its EPR operational guidelines in 2014 and officially launched the program in 2016, targeting the food and beverage sector, which significantly contributes to the nation's plastic waste. The EPR initiative seeks to foster partnerships between the government and the private sector to achieve a zero waste goal, holiday manufacturers or brand owners accountable for these products throughout their entire life cycle. Covering take back, recycling and final disposal. To support this initiative chord-party organization known as producer's responsibility organizations (PROs) like food and beverages recycling allowance (FBRA), have been established to manage these responsibilities collectively. Currently, the FBRA has ten member companies involved in the program. However, some manufacturers responsible for generating plastic waste have been hesitant to join the allowance. This reluctance is partly due to differences on manufacturers' standards and capabilities that affect their compliance with EPR guidelines, as well as lack of clear understanding regarding policy implementation, fueled by insufficient communicator and information between the government and industry.

The roles and responsibilities of stakeholders within the EPR program remain unclear, and the economic implications and in creative worked to the initiative have not been well defined. Additionally, there is limited funding for monitoring and weak enforcement have diminished the effectiveness of the program. In spite of these obstacles, organizations like FBRA persist in their partnerships with small local vendors to promote advocacy, collection and recycling effort in General. The EPR program marks a meaningful advancement in tackling plastic waste in Nigeria. However, significant challenges remain. Thus, enhancing communication, establishing clear guidelines and ensuring sufficient funding for monitoring and enforcement and crucial for the program's effectiveness EPR tend to ensure producers to assume responsibility for the recycling and proper disposal of their products to mitigate plastic waste. Environmental Impact Assessment Act Cap E12 LEN 2004.
This Act came into effect on December 10, 1992, the air of limiting public and private projects that could impact the environment. It mandates that any organization proposing activities likely to

significantly affect the environment must conduct an environmental impact assessment. These impacts may be physical biological, economic, or social. The goal is to ensure that these effects and considered during the planning design, authorization and implementation of the project. The Act established a crucial mechanism for promotion environmentally and socially responsible sustainable development through environmental impact assessment (EIA). EIA assesses the environmental implications of a project. This Act was enacted to demonstrate Nigeria's dedication to the Rio Declaration and aims to regulate the industrialization process with regard for the environment. It mandates that no industrial activity or project can proceed without first accounting for the potential environmental impacts through an EIA. Consequently, conducting an EIA is required when a project is likely to adversely affect the environment. The federal ministry of Environment is the governing body responsible for EIA administration in Nigeria, and it is important to note that the agency mentioned in the Act is the National Environmental Standards and Regulation's Enforcement Agency, as the Federal Environmental protection Agency is now defunct.

The Act clearly states the objectives/goals of the EIA as follows:

a) To ascertain the environmental effects of the activities/project to be carried out before embarking on the activity or project.
b) To promote the implementation of appropriate policy in all Federal lands (however acquired) states and local Government Area; consistent with all laws and decision-making processes through which the goal and objectives in paragraph (a) of this section may be realized.
c) To encourage the development of procedures for information exchange, notification and consultation between organs and persons when proposed activities are likely to have significant environmental effects on boundary or trans-state or on the environment of bordering towns and villages. By the provision of section 3 of Act, for any project to commenced or embarked on environmental issues that may arise have to be identified and studies to ascertain the environmental impact on the Nigerian environment.

This applies to industries when producing plastics or in the recycling of plastics precautions and preventive measures have to be taken in order not to negatively impact or pollute the environment. In the schedule to the Act, waste treatment and disposal is one of the mandatory study activities. The mandatory study list specified in the schedule to the EIA Act specifies the types of projects which fall within the requirements of the Act. Waste treatment and disposal is for toxic and hazardous wastes, municipal solid waste and municipal sewage.

The processes listed includes the conjunction of wastes treatment and/or disposal facilities, incineration process, engineering sanitary landfilling and construction of recovery/recycling plant. Section 7 of the Act give the Public notice requirement to give the public the opportunity of commenting on the implication of embarking on the project that is the environmental effects. The Act also encourages public participation. This was illustrated in Etche community in River State in the Niger Delta protection of their environment in respect of the ill-planned waste management facility for non-hazardous and hazardous wastes tagged integrated waste management facility proposed to be built and operated by shell petroleum Development Company on the community between the periods of 1999 – 2006.

The EIA Act requires a mandatory study to be conducted and mandatory report prepared and submitted to the Agency in accordance with the provisions of the Act. However, the EIA in Nigeria has be criticized by scholar due to the fact that reports are not published in Local languages other than English Language contrary to what is obtainable in developed countries.

National Policy on Solid Waste Management 2020

The policy was made to address the significant challenges associated with solid waste management. It aims to foster circular economy principles, focusing on sustainability and striving for zero waste and ensuring sustainable resource use including plastics. According to this policy, solid waste includes various unwanted and discarded materials both biodegradable and non– biodegradable on solid or semi-solid forms. Within this framework, plastic waste is categorized as solid waste, specifically noted in the policy's Annex as a non-organic component. The policy emphasizes that effective recycling of municipal plastic waste could greatly benefit the socio-economic development of the municipality by enhancing resource conservation, lowering green-house gas emissions especially when plastics are transformed into diesel fuel and diminishing the generation of persistent organic pollutants .(POPs), particularly when plastics and burnt in landfills. Additionally, segregation of plastics and PET bottles would facilitate their recycling in a more economically feasible way, while sorting and collecting these materials of the source would simplify and make recycling more appealing.

National Environmental Sanitation and Waste Control) Regulation 2009

This regulation addresses environmental sanitation and all types of waste, including plastic waste. Its main goal is to reduce pollution by implementing sustainable and eco-friendly practices in environmental sanitation and waste management. To enhance environmental standards, the regulation prohibits indiscriminate littering of refuse or waste. And the only legalized places for such litters or refuse are designated litter bins. Furthermore, property owners, operators, and those responsible for managing premises must ensure that litter is not released into the environment. Vehicle owners and occupants are also prohibited from littering on the street, roads, high-ways, public spaces and other undesignated places. The purpose of these provisions is to eliminate littering of wastes including plastic wastes. The regulation also prevents unregulated dumping by requiring waste generators to hire licensed services for waste transportation and disposal at designated waste management facility. To sure proper plastic waste management Regulation 18 bans specific types of plastic bags in Nigeria such as those made of plastic films with a wall thickness of less than 80 micrometers. This regulation criminalizes littering and improper waste disposal, imposition a fine of N20,000 or fix month of imprisonment, or both.

Import Prohibition Act

Section 1 of the Act for the strict prohibition of the rethreaded or used types as well as certain foodstuffs and items into Nigeria especially those contaminated by toxic substances and further prescribes punishment for violation.

The Act provides thus:

> "Not withstanding anything contained in the customs and Excise Tariff, Etc consolidation) Act or in any Act or other enactment (including any statutory instrument or order), the goods specific in the schedule to this that shall be

> absolutely prohibited from being imported into Nigeria either by way of trade or otherwise".

At the time the schedule the Act was made, the Act did not list some plastic materials among the prohibited items. However, in an updated import prohibited list of 2022; sanitary wares of plastics where listed. The Act criminalizes violation of the provisions of the Act and prescribes a life imprisonment as punishment for offenders and confiscation of the means those items are transported into Nigeria.

Legislative Efforts in Plastic Waste Management

Developing a comprehensive law that will address plastic waste pollution in Nigeria will require the presentation of a Bill to the National Assembly and this process will require the urgent actions of the legislature and the judiciary. Nigeria operates a federal system of government under a three arm structure namely: the Executive responsible for implementing the laws made by the legislature and enforcing the laws, the Judiciary responsible for interpreting the law and the legislature responsibly for making the laws. This is what is obtained both at the federal level and the State level. At the federal level, there is a bicameral legislature that comprised of two primary law making chambers; the Senate and the House of Representatives. Both chambers make up what is referred to as the National Assembly. The National Assembly is empowered by section 4(2) of the Constitution to make laws for the peace and order and good government of the federation or part therefor with respect to any matter included in the exclusive legislative list set out in part 1 of the second schedule to this constitution. In Nigeria, before a bill becomes law, it must go through the following stages from presentation of the bill, first review of the bill, gazetting of the bill, first reading, second reading, committee stage, third and final reading and signing of the bill.

In Nigeria, there is a wide array of legislation that addresses various aspects of environmental laws, including the regulation, management and protection of the environment. These laws pertain to air, water and soil pollution, food, waste management, land use and conservation. It has been argued that approximately 20% of the environmental laws currently in force in Nigeria are based on international legal norms and principles which include treaties, conventions, customary law, protocols and other binding agreement. And the power to make these laws are derive from the constitution. The necessity for environmental protection against plastic waste pollution in the country has captured widespread attention, including the government and legislators. Prior to the1999 constitution, the previous constitutions in Nigeria did not make specific provisions on environmental protection. However, taking the 1979 constitution as an example although environmental protection was not focused upon directly, yet there is provision, in that constitution which, when viewed critically, would seem to have a bearing on environmental protection Section 11 of the 1999 constitution provides:

> 11 (i) The National Assembly may make laws for the Federation or any part therefore with respect to the maintenance and securing of public safety and public order and providing, maintaining and securing of such supplies and service as may be designed by the National Assembly as essential supplies and services.

In essence, section 11 of the constitution, grants the National Assembly the authority to create laws aimed at maintaining the nations stability and welfare, focusing on matters related to public safety, order and the environment.

The 1999 constitution introduced a significant and comprehensive provision in chapters 2 of the constitution. Section 20 of the constitution provides that: "The state shall protect and improve the environmental and safeguard that water, air and land, forest and wildlife in Nigeria."

This provision marking the first time that environmental issues were included in Nigeria Constitution. While this inclusion is certainly a positive advancement and legislative effort in protecting the environment, the unfortunate part is that it appears in chapter 2 of the constitution, which was previously mentioned, renders it non-justiciable. It follows therefore that the National Assembly and by extension the state Houses of Assembly have the power to legislate for the protection of the environment and safeguard land under section 20 of the constitution. In this study, the researcher shall limit his discussions only to the legislative efforts in plastic waste management of the National Level. According to the Black's Law Dictionary "Legislation is the act of giving or enacting laws, the power to make laws, the act of legislating preparation and enactment of law. By virtue of the constitution, it is the duty of the legislative to legislate for the benefit and good of all Nigerians, law spark societal and economic growth of the people. Section 4 (1-2) of the constitution provides thus:

4(1) The Legislative powers of the Federal Republic of Nigeria shall be vested in a National Assembly for the Federation which shall consist of a Senate and a House of Representatives;

4(2) The National Assembly shall have power to make laws for the peace, order and good government of the Federation or any part thereof with respect to any matter included in the exclusive Legislative list set out in part 1 of the second schedule to this constitution.

Aligning with these provisions, and for effective plastic waste management in the country Honourable Deacon Sergius Ose Ogun sponsored a Bill in 2018 titled plastic Bag (Prohibition) Bill 2018 that seek among other things prohibit the use, manufactures and importation of all plastic bags used for commercial and household packaging on order to address its harmful impacts to oceans, rivers, lakes, forests, environment wildlife as well as human beings and also to relieve pressure on landfills and waste management and for other related matters. In May, 2019 the bill was passed by house of representative, but the Senate is yet to do its part to see that the bill is passed into law. The bill consists of two brief sections the first part addresses prohibitions and the second part outlines penalties. The complete text of the bio reads as follows:

Section 1

(1) The use manufacturing importation or sale of plastic bag is prohibited.
(2) A retailer shall often a paper bag to the customer at a point of sale
(3) Any:
    a) Retailer who provides customer with the plastic bag at a point of sale is quietly of an offence

b) Person who manufacture plastic bag for the purpose of selling is guilty of an offence
c) Person who import plastic bags whether as carryout bags or for sales is guilty of an offence.

Section 2

(1) Any person found guilty of the offence under clause I shall be liable or conviction to a fine not exceeding Five Hundred Thousand Naira (N500,000) to imprisonment for a term not Three years to both such and imprisonment.
(2) Any company or organization found guilty of the offence provided in clause I shall on conviction be liable to a not Five Million Naira.

According to Nwafor, the proposed Bill is an outright ban and mirrors those adopted elsewhere in Africa and like other jurisdictions may have limited effectiveness of reducing plastic pollution from plastic bag use and management. They further argue that the Bill does not make provision for plastic bag alternatives and market-based instrument (MB/S) which includes taxes, charges, fees, fines, penalties, liability and compensation schemes, subsidies and incentives and tradable permit scheme's to change consumer behavior of plastic use, which are not only serve as effective approaches for managing the quantity of plastic, but would generate revenue for the Government. For instance in Ghana, the 10% Environmental Excise Tax on plastic was, amounting to over $163 Million USD, has not been utilized as intended to facilitate plastic recycling. The Nigeria government needs to ensure that the Bill includes measures for transparency and accurate accounting of this revenues generated from taxes on exempted plastics. To effectively combat plastic pollution, it is essential to provide viable alternatives tailored to the specific purposes of various plastic products. Such as re-useable bags, glass and mental straws. In addition to these alternatives materials voluntary reduction strategies area used. These entail getting commitment from citizens to reduce use of single-use plastics. Such commitments may come from manufacturers, suppliers, retailers and consumers. This approach may yield better outcomes than outright bans that fail to consider factors such as availability and cost. Nonetheless, the bill is deficient in several key aspects, including adequate notification for citizens, opportunities for public consultation legal precedent and implementation feasibility, as demonstrated in other jurisdictions where thorough public engagement was prioritized. According to Hon Yusuf Lasum, Deputy Speaker of the House of Representatives wondered why the bill made no provision for recycling of plastic bags. He was quoted as saying:

> "There should be room for recycling because by this bill, you are simply saying that plastic materials should not be seen anywhere. And this would mean the need for another amendment. Recycling is still part of cleaning the environment".

Although, the bill has good objectives, however without provision for recycling and alternatives to plastic bags and market based instrument this bill among others would only lead to another failed plastic management policy and in turn urge the current legislature to look into this gaps before making it an Act an create other sound policies proper plastic waste managements**.**

Factors Giving Rise to the Problem of Plastic Waste Management in Nigeria.

The problem of plastic pollution poses a lot of environmental as well as health hazards with potential risks to marine life, wild life and human health due to its unguarded use and indiscriminate disposal. Plastic products by their chemical structure are non-degradable classes of waste that can remain on the earth for a long time without decaying especially if they are not properly disposed of or managed. In Nigeria with a population of over 200 million people, there are little or no available data on the use of plastic products in relation to their disposal, collection and recycling method.

The factors giving rise to plastic waste pollution includes:

(a) Lack of Inadequate facilities for waste disposal.

The inadequate facilities for waste collection, recycling and disposal in the country hinder the proper management of plastic waste. Many regions do not have the necessary facilities for advanced recycling methods, such as chemical or mechanical recycling of intricate plastics. As a result, they depend on landfilling or incineration, which can adversely affect the environment.

(b) Rapid Population Growth and inadequate funding.

Plastic waste management by nature is capital intensive. To effectively manage waste requires huge capital expenditure. This is particularly with respect to funding of the regulatory agencies and private sector participants that are involved in the waste collection, disposal and procurement of machines *etcetera*. Poor funding of the regulatory agencies *vis-a-vis* the government unwillingness or inability to bear the cost of waste management has posed a significant challenge in the fight against improper plastic waste management in Nigeria.In Nigeria, the volume of plastic waste produced does not align with the approach to its management and disposal. The process of plastic waste collection is far behind the volume of plastic waste produce, leading to an accumulation of plastic waste in every street, drainages, channel and road *etcetera.* This issue is exacerbated by the growing population and industrialization.

(c) Lack of Public Awareness

In Nigeria, there is a low level of public awareness on the adverse effects of improper plastic waste management on public health and on the environment. This lack of awareness can lead to indifference and apathy, hindering the support needed for effective pollution control.

(d) Lack of Comprehensive Legal Framework for Plastic Waste Management.

In Nigeria, there is no legislation that specifically addresses plastic waste pollution. The absence of comprehensive legal frameworks especially for plastic waste management poses a major challenge, even though there are general laws pertaining to waste management in the country. Although, there are policies aimed at environmental protection, the only working document that seeks to tackle the problem of plastic waste is the National Policy on Plastic Waste Management 2020 and on Solid Waste Management. These policy documents have lapses, for instance, the National Policy on Plastic Waste Management 2020, does not have the force of law but only serves as guidelines and action plans for managing plastic wastes. Secondly, the policy does not cover international trade of plastic waste.

(e) Weak Implementation and Enforcement of Plastic Waste Management Regulation.
The problem of corruption, inadequate manpower, limited resources and lack of seriousness on the part of the government and citizen in ensuring proper plastic waste management in the country has resulted in the weak enforcement of the enabling laws on waste management generally. The weak enforcement caused by corruption and limited regulatory capacity has to a large extent undermined the effectiveness of proper plastic waste management.

(f) Lack of Modern Technologies
Nigeria is faced with the challenge of plastic waste owing to the practice of single-use plastic been littered everywhere without modern technologies for incinerating or recycling of these waste even though there are agencies in place for their collection and disposal. These agencies lack the equipment required for proper plastic waste management.

(g) Lack of Effective Monitoring and Control
In Nigeria, there is no effective monitoring and control of the production, consumption and disposal of plastic waste. The lack of effective monitoring and control in plastic waste management results in a lack of reliable data on plastic pollution which hinders the development of effective solutions and policies. The absence of numerical information regarding the production and importation of plastic waste in Nigeria poses a significant challenge for managing plastic waste. Even where data is available, there are discrepancies in the reports concerning plastic products usage in relation to urban populations, as well as their disposal, collection and recycling practices/processes.

Environmental Impact of Plastic Waste Pollution
Plastic waste pollution is a pressing issue that impacts the environment globally. The excessive use of plastics as result of their inexpensive and durable nature of plastic products has led to an increase demand for plastics and production of large plastic supplies. However, the chemical structure is not only harmful to wildlife and marine ecosystems, but also poses significant threats to human health

Impact on Human Health;
Environmental health is the interconnection between people and their environment, the interaction humans and the environment affect the quality of life, health disparities and a healthy life span. A healthier environment can prevent 13 million death. The human health is an important part for the proper function of other areas of our lives, chemicals such as dioxins, mercury, polyethylene (PE), polypropylene (PP) and Polystyrene (PS). These plastics have high concentration of carbon monoxide and noxious emission.

Plastic waste pollution threatens food safety and quality, as well as human health. Majority of the chemicals used in the production of plastics have been found to be carcinogenic thereby capable of interfering with the human endocrine system and causing sever human disorders. The ingestion of such toxic substances from plastic wastes can poison aquatic animals and consequently adversely affect the supply of food for human consumption.

Similarly, various toxic contaminants accumulate on the surface of plastics from exposure to water over a long period of time. When aquatic organisms ingest such plastics, the contaminants accumulate

in their system over time and such contaminants may be transferred to humans through consumption of seafood thus occasioning health hazards. In some communities in Nigeria, where their only sources of drinking water are from the streams and lake and when such water are contaminated by plastic debris, it will affects the health of the people who drink from such water and feed on some of the fishes that mistake micro-plastic for food.

In addition, traces of invisible plastics have been reported in salt, tap water and beer, among others. Also open burning or incineration of plastic wastes releases toxic greenhouse gases into the environment and when inhaled by humans, such greenhouse gases can cause severe health hazards especially respiratory disorders.

In the late 1990s and early 2000s, concerns started cropping up among government regulations, scientists and consumers regarding the safety of Bisphenol A [BPA] used in plastic food and drink containers**.** BPA just one of thousands of chemicals that are added to plastics to make it more bendable or rigid, give it colour, or otherwise modify its appearance. Many of those chemicals are highly toxic. They include carcinogens, neurotoxins and hormone disruptors known to be harmful to human health. Exposure to BPA was linked to a range of health issues, affecting infant and child brain development, elevating blood pressure and increasing the risk of cardiovascular diseases. The entire lifecycle of plastic, from oil and gas extraction to product manufacturing and disposal, emits toxic chemicals into the air, water and soil putting workers and nearby communities at a higher risk for health issues such as heart disease, various types of cancer, reduced fertility and living diseases.

Impact on the marine life.

Improper plastic waste management or plastic pollution poses a significant danger to marine life. The ocean is arguably the most vulnerable environment to plastic wastes.It has no limits once it enters the water, waves and storms can transport it to the most remote areas of the ocean where they accumulate into large gyres on the high seas or get trapped in fragile coastal ecosystems and shorelines. Some plastic waste have even been discovered on deserted islands, over time , as plastic are battered by waves and storms at sea, they degrade into increasingly smaller fragments, eventually becoming smaller than a grain of sand. Most plastic waste get into the oceans due to man-made activities and through natural agents. For instance, it is been reported that 80% of marine debris comes from trash and debris in urban runoff that is land based sources. Key components of land based sources include litter, trash and plastic debris from construction, ports, marines, commercial and industrial facilities and trash blown out of garbage containers, trucks and landfills. Ocean based sources, such as, over board discharges from ships and discarded fishing gear, accounting for the other 20%. Over time, as plastics are battered by waves and storms at sea, they degrade into increasingly smaller fragments, eventually becoming smaller than a grain of sand. Large plastic debris such as fishing net, plastic bags and six pack rings can trap marine animals like sea turtles, dolphins, whales and seabirds resulting in injuries to ingestion, entanglement and toxic contamination. The major determining factor is the size of the plastic. For example, micro-plastic can adversely affect different species in different ways and on different time scales**.**

Micro-plastics are tiny plastic particles less than 5mm in size that are often invisible to the naked eye. They are created when larger plastic products breakdown or when micro-beads are used in personal care products. Micro-plastics are found in oceans and waterways worldwide and are ingested by marine

animals who mistake micro-plastic for jellyfishes and small fishes by seabirds leading to blockages in their digestive systems, malnutrition and death. A recent study revealed that more than 90% of seabirds have ingested plastic, which is expected to rise to 99% by 2050 if immediate measures are not taken. Marine plastic pollution has impacted at least 267 marine animals globally, including 86% of all seabirds' species. The impacts include fatalities, starvation, infection, suffocation and drowning. For instance, in 2010, a California grey whale washed up dead on the shores of Puget Sound. Autopsies indicated that its stomach contained a pair of pants and a golf ball, more than 20 plastic bags, small towels, duct tape and surgical gloves. Also, in 2019, a whale was found washed up with 40kg of plastic in its stomach, predominantly comprising of plastic bags.
The frequent loss of marine species can affect the sustainability of coastal tourism and this may adversely affect the economy.

The Impacts of Plastic Waste on the Land:
Improper plastic waste management by the general public can lead to indirect negative impacts on the environment the environment. The most obvious of plastic waste impacts is that it causes air pollution, groundwater pollution and soil contamination. The leaching of toxic chemicals from plastic waste such as phthalates and bisphenol A can adversely affect soil quality. This contamination can hinder plant growth, reduce agricultural productivity, disrupt microbial community and impact the overall health of terrestrial ecosystems. Furthermore, when plastic wastes are burnt or incinerated openly, can release carbon emissions into the atmosphere, and may contribute to global warming.

CONCLUSION AND RECOMMENDATIONS.

Despite the multiple uses of plastic, it is clear that plastic poses a significant challenge that requires an urgent attention. A review of the existing legal framework for plastic waste management in Nigeria, reveals that more action is needed both at the governmental level, individuals companies and within the communities in order to achieve a plastic free environment. It is essential for the National Assembly to enact a law that specifically addresses plastic waste with a focus on core environmental principles, shifting from a linear economy of "take-make-dispose" system to a circular economy of "reduce-reuse-recycle-recover" system.

Furthermore, the continuous sensitization of residents of low-income neigbourhoods to better awareness is very essential. Prodding citizens to fulfil their obligations to maintain a clean environment and adopt eco-friendly practices is crucial to promoting social responsibility by providing succinct, accurate and hands-on information on the effect of improper plastic waste management, to deter delinquent behavior while promoting and incentivizing behavioral change that promotes plastic waste segregation at source rather than lumping everything together to send to landfills.

To reform plastic waste management in Nigeria, certain recommendations are made in this study as follows:

i. There should be a comprehensive national law that specifically focused on plastic waste management should be enacted. The law should lay down rules to tackle plastic production to the point of disposal and impose fines, strict tax and prison sentences on individuals and companies responsible for the discharge of plastic waste in the environment. The law should incorporate a deposit refund scheme, inclusion of consumer's responsibility and implement

stringent measures to promote recycling, providing incentives for companies to participate. The responsibilities of sthe various agencies tasked with plastic waste management must be clearly defined within the law. Furthermore, the law should ban single use plastic which are primary contributor to the plastic waste crisis, establish deadlines for phasing out banned plastic products and create room for sustainable alternatives.

ii. There should be a strict adherence to circular economy practices, emphasizing sustainable alternatives that foster economic development, value creation and skill enhancement, thereby significantly reducing plastic waste in the country.

iii. An effective monitoring system for plastic waste is very essential and should be monitored by NESREA in collaboration with State environmental agencies.

iv. The government should demonstrate its commitment to addressing the plastic waste issue by ensuring that recycling centres are provided and properly utilized, adequate funding of environmental agencies and adequate manpower are employed, providing training for personnel on facility operations.

v. There should be more awareness campaigns to educate the public both in English and indigenous languages on the significance of plastic waste management, the impacts of plastic waste on human health and the environment and the actions that consumers can undertake to reduce plastic waste, such as reuse, reduce and recycle.

vi. The government's support for scientific research should be encouraged and funded to provide a comprehensive numerical data on the production, import, usage, generation, collection and disposal of plastic which will aid in managing the plastic waste crisis and effective plastic waste management in Nigeria.

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