Regulating Hazardous Waste Disposal in Nigeria and the United States: A Comparative Assessment

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Abstract

This article undertakes a comparative study of the regulation and control of hazardous waste disposal in Nigeria and the United States, focusing on how both jurisdictions respond to the growing challenges of environmental pollution. It adopts a doctrinal and comparative legal methodology, drawing primarily on statutory instruments, case law, international conventions, and relevant academic literature. The study is also informed by a socio-legal perspective, particularly in assessing how laws operate in practice within differing institutional and enforcement contexts. Hazardous waste remains a major global concern due to its toxic, persistent, and often irreversible impact on human health, biodiversity, and ecological systems. The transboundary movement of such waste further complicates regulatory control, especially where jurisdictional boundaries limit effective monitoring and enforcement. In Nigeria and the United States, different legal traditions and institutional capacities shape how hazardous waste is managed, regulated, and sanctioned. The article examines statutory frameworks, judicial interpretations, and the role of regulatory agencies and non-governmental organisations in promoting compliance and environmental accountability. It further evaluates enforcement challenges, particularly within Nigeria, where gaps in implementation and institutional weakness persist. By contrasting these experiences, the study identifies key strengths and deficiencies in both systems. Ultimately, it argues for stronger regulatory coordination, improved enforcement mechanisms, and enhanced international cooperation to prevent illegal dumping and ensure sustainable environmental governance.

Keywords: Waste, dumping, regulation, enforcement, environment and protection

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1. Introduction

The history of hazardous waste dumping in Africa cannot be discussed without reference to the infamous Koko incident in Nigeria, which drew international attention to the vulnerability of developing countries to the global toxic waste trade. The incident exposed the extent to which economically disadvantaged communities could become targets for the disposal of dangerous substances generated by industrialised nations. It also revealed significant weaknesses in national regulatory frameworks and the urgent need for stronger environmental protection measures across the African continent.[1]

Koko, a coastal community situated in present-day Delta State, Nigeria, became the centre of global environmental concern in 1988 following the discovery of large quantities of hazardous waste stored within the locality. The community, located near the Atlantic coastline, is inhabited primarily by farmers and fishermen whose livelihoods depend heavily on the natural environment. At the time, the area suffered from severe infrastructural deficiencies, including inadequate healthcare facilities, poor road networks, limited access to potable water, and the absence of essential sanitation systems. These socio-economic conditions made the community particularly susceptible to exploitation by foreign interests seeking inexpensive locations for waste disposal.[2]

Investigations later revealed that between 1987 and 1988, thousands of tonnes of hazardous industrial waste originating from Italy had been transported and deposited in Koko. The shipment was allegedly facilitated by foreign business interests operating through local intermediaries and was falsely presented as industrial materials intended for legitimate commercial purposes.[3] The stored materials contained substances capable of causing serious harm to human health and the environment, thereby exposing residents to significant environmental and public health risks. The discovery generated

[1] O Femi Adewunmi, *Environmental Law and Practice in Nigeria* (University Press Plc 2009) 215

[2] Ben O Nwabueze, *Nigeria's Environmental Challenges and Sustainable Development* (Spectrum Books 1998) 143.

[3] A A Uchegbu, *The Koko Toxic Waste Dump: Environmental Policy and Regulation in Nigeria* (Fourth Dimension Publishers 1998) 32–35.

widespread public outrage within Nigeria and attracted condemnation from the international community.

The Koko episode represented more than an isolated environmental violation; it symbolised a broader pattern in which developing nations, particularly those in Africa, were increasingly viewed as convenient destinations for hazardous waste generated elsewhere. The incident fuelled concerns that economic inequality, weak environmental governance, and inadequate enforcement mechanisms were creating conditions that allowed wealthier nations and corporations to externalise the environmental costs of industrial production onto poorer societies.[4]

Commenting on this troubling trend, scholars have observed that the international trade in toxic waste reflects profound disparities in global economic and environmental relations. As noted by Professor Astegbua, citing reports published in African Concord magazine, the toxic waste business had evolved into a lucrative enterprise driven by profit motives with little regard for the welfare of affected communities or the protection of fragile ecosystems.[5] The Koko incident therefore became a defining moment in Africa's environmental history, serving as a catalyst for stronger national legislation, regional cooperation, and international efforts aimed at preventing the transboundary movement and dumping of hazardous waste within the continent.

The discovery of toxic waste deposits in Koko, Delta State, in 1988 marked a turning point in Nigeria's environmental governance. Rather than ending the problem, however, the incident exposed the country to a series of subsequent attempts by both local collaborators and foreign actors to introduce hazardous substances into Nigeria. In the years that followed, regulatory agencies continued to uncover schemes involving the proposed importation of toxic chemicals, hazardous wastes,

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[4] A A Agagu, 'The Koko Incident and the Politics of Toxic Waste Dumping in Africa' (1994) 6(2) *African Journal of Environmental Studies* 45, 49.

[5] L A Astegbua, *Environmental Law in Nigeria: Theory and Practice* (Ambik Press 2007) 189, citing *African Concord* magazine reports on the international toxic waste trade

radioactive materials, and environmentally harmful substances disguised as legitimate commercial products.[6]

Evidence gathered through the national Dump Watch Network revealed the persistence of these activities. Between 1992 and 1993 alone, approximately fifty alerts relating to suspected hazardous waste transactions were reported to the relevant authorities.[7] Reports compiled by environmental regulators indicated that these incidents took various forms. Some involved proposals by private individuals and companies to facilitate the disposal of radioactive and toxic wastes within Nigeria, while others concerned attempts to import dangerous chemicals from Europe under the guise of lawful commercial activities.[8]

Regulatory records further disclosed a number of troubling incidents. These included offers by business operators to receive radioactive waste for disposal, proposals to channel hazardous waste shipments through European countries into Nigeria, and the actual importation of significant quantities of waste materials from foreign jurisdictions.[9] Authorities also received intelligence concerning plans to transport dangerous substances, including poisonous gases, corrosive chemicals, infectious materials, and other hazardous goods into the country. In several instances, foreign governments and diplomatic missions alerted Nigerian authorities to suspicious efforts by individuals and companies seeking to arrange the transfer of hazardous waste from their territories into Nigeria.[10]

Additional reports revealed attempts to secure toxic waste imports from countries such as Canada, Germany, and other industrialized nations. Environmental monitoring agencies also received warnings

[6] M T Odubela and others, 'Transboundary Illegal Shipments of Hazardous Waste, Toxic Chemical (Pesticides) and Contraband Chlorofluorohydrocarbons: The Nigerian Experience' (Paper presented at the Fourth International Conference on Environmental Compliance and Enforcement, Chiang Mai, Thailand, 21–26 April 1996) 3.

[7] Ibid

[8] National Environmental Standards and Regulations Enforcement Agency (NESREA), *Inspectorate and Compliance Monitoring Department Report on Hazardous Waste Alerts* (NESREA 2010) 12.

[9] Ibid 13

[10] Ibid 14,

regarding international efforts to divert hazardous materials to developing countries, including several African states. Alerts from international organizations highlighted proposed shipments of toxic substances destined for Nigeria, while intelligence reports pointed to attempts by foreign firms to redirect waste products, including used batteries, chemical residues, and contaminated oil waste, to unnamed developing countries.[11] These developments underscored the continuing attractiveness of weaker regulatory environments to international waste traffickers seeking inexpensive disposal options.

pattern persisted throughout 1994 and 1995. During this period, approximately fifteen additional alerts involving toxic chemicals and hazardous waste transactions were reported. Investigations revealed that most of these cases involved purported requests originating from Nigerian businessmen, while others represented direct attempts by foreign companies to dispose of hazardous substances within Nigerian territory.[12] A particularly disturbing feature of these schemes was the increasing sophistication of the methods employed. Hazardous chemicals were often deliberately mislabelled in order to evade customs inspections and environmental scrutiny. For example, Polychlorinated Biphenyls (PCBs), which are highly toxic industrial chemicals, were reportedly declared as vegetable oil, while Polyvinyl Chloride (PVC) waste was disguised as artificial raisins.[13]

Among the most alarming reports received by environmental authorities was a proposal involving the importation of milk products suspected of radioactive contamination from the Baltic region. Had such products entered the Nigerian market, the consequences for public health could have been severe, particularly given the potential risks associated with prolonged exposure to radioactive substances.[14]
Another notable incident occurred in March 1993 when a consignment of expired chemicals arrived at the Murtala Muhammed International Airport, Lagos, aboard a chartered aircraft from Conakry, Guinea. The shipment, labelled "Actellic 25 EC," remained unclaimed after arrival and attracted the attention of customs officials due to the offensive

[11] Ibid, 15
[12] Odubela and others (n 6) 5.
[13] Ibid
[14] Ibid

odour emanating from the packages. Subsequent investigations conducted by environmental inspectors revealed that the chemicals consisted of expired pesticides packaged in cement sacks and accompanied by instructions written exclusively in French.[15]

The investigation uncovered several serious irregularities. First, the labelling and packaging failed to comply with internationally accepted standards governing the safe handling and distribution of pesticides. Secondly, while the substances were not radioactive, they exhibited characteristics consistent with expired and degraded chemical products. Thirdly, the pesticides were no longer suitable for their intended use and posed significant environmental and health risks if released into the environment.[16] The incident highlighted the dangers associated with weak monitoring systems and the transboundary movement of hazardous substances under misleading descriptions.

In response to these developments, the Federal Environmental Protection Agency (FEPA), whose responsibilities are now largely exercised by the National Environmental Standards and Regulations Enforcement Agency (NESREA), expressed concern over a number of emerging trends. These included the growing involvement of unqualified individuals in the international chemical trade, the continued importation of poorly labelled and deteriorated agrochemicals, the increasing use of air transport to circumvent inspections at seaports, and the unsafe packaging and handling of hazardous substances.[17] Consequently, the Agency called upon airlines and other transport operators to ensure strict compliance with international aviation regulations and relevant environmental conventions governing the transportation of dangerous goods. Similar concerns have subsequently been echoed by NESREA in its efforts to strengthen environmental governance and regulatory enforcement.[18]

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[15] Ibid,6

[16] Ibid

[17] Federal Environmental Protection Agency (FEPA), *Environmental Enforcement and Compliance Report* (FEPA 1994) 18.

[18] N Benebo, 'Using Enforcement Cooperation to Promote Environmental Governance' (NESREA Environmental Enforcement Lecture Series, Abuja, 2011) 7.

Another environmental challenge confronting Nigeria relates to the importation of obsolete appliances and vehicles containing chlorofluorocarbons (CFCs) and other environmentally harmful substances. As industrialized nations phased out equipment reliant on ozone-depleting chemicals, many of these discarded products found their way into developing countries under the label of "fairly used" goods. Unofficial customs estimates suggested that tens of thousands of second-hand refrigerators, air conditioners, compressors, freezers, and motor vehicles entered Nigeria annually.[19]

Although often marketed as affordable alternatives for consumers, many of these products had exceeded their useful lifespan and effectively constituted environmental waste transferred from developed countries to developing economies. The continued use of such equipment contributes to environmental degradation through the release of harmful emissions and ozone-depleting substances. Furthermore, emissions from ageing imported vehicles significantly contribute to air pollution, adversely affect public health, and exacerbate climate-related challenges. The environmental consequences include deterioration in air quality, increased greenhouse gas concentrations, damage to the ozone layer, changing weather patterns, and heightened risks of diseases associated with environmental pollution, including certain forms of cancer.[20]

2. Legislative Mechanisms for Hazardous Waste Regulation in Nigeria and the United States: The Nigerian Perspective

The regulation of hazardous waste in Nigeria is rooted in a combination of constitutional provisions, statutory enactments, subsidiary legislation, judicial decisions, and international environmental obligations. Although environmental protection has become a major global concern, the constitutional foundation for environmental governance in Nigeria remains relatively indirect when compared to some modern constitutions that expressly recognize environmental rights as fundamental human rights. Nevertheless, the Constitution of the Federal Republic of Nigeria 1999 (as amended)

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[19] Odubela and others (n 6) 8.

[20] A Boyle and D Freestone (eds), *International Law and Sustainable Development* (Oxford University Press 1999) 267.

provides the legal architecture upon which environmental regulation, including hazardous waste control, is built.[21]

Nigeria operates a federal system of government consisting of the Federal Government, thirty-six states, and the Federal Capital Territory, Abuja. Beneath the state governments are local government councils established to facilitate grassroots administration and development. Within this federal arrangement, legislative powers are distributed among the different tiers of government through the Exclusive Legislative List, the Concurrent Legislative List, and residual matters.[22] The allocation of legislative authority has significant implications for environmental governance because environmental issues frequently transcend political and geographical boundaries.

Unlike certain constitutions that expressly designate environmental protection as a distinct legislative subject, the Nigerian Constitution does not specifically include "environment" as a standalone item within either the Exclusive or Concurrent Legislative Lists.[23] However, several constitutional provisions confer legislative competence on matters that have direct environmental implications. Consequently, environmental regulation in Nigeria has evolved through the interpretation of related constitutional powers rather than through a single express constitutional provision on environmental governance.

The National Assembly possesses authority to legislate on matters contained within the Exclusive Legislative List. Several items within this list bear direct relevance to environmental management and hazardous waste regulation. These include aviation, drugs and poisons, fisheries, maritime navigation, mineral resources, mining operations, oil and gas activities, meteorology, nuclear energy, quarantine measures, national parks, and transboundary water resources.[24] Each of these sectors possesses significant environmental dimensions and may generate hazardous substances requiring regulatory oversight.

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[21] Constitution of the Federal Republic of Nigeria 1999 (as amended).

[22] Constitution of the Federal Republic of Nigeria 1999 (as amended), ss 4(1)–(7).

[23] M T Ladan, *Materials and Cases on Environmental Law* (Ahmadu Bello University Press 2012) 103.

[24] Constitution of the Federal Republic of Nigeria 1999 (as amended), Second Schedule, Part I.

For example, activities involving petroleum exploration, mineral extraction, nuclear materials, maritime transportation, and industrial manufacturing frequently generate toxic wastes capable of causing serious environmental and public health consequences. The constitutional authority granted to the Federal Government over these sectors therefore provides an important legal basis for federal environmental legislation.

Similarly, matters contained in the Concurrent Legislative List possess environmental significance. These include industrial development, agricultural development, electricity generation, scientific research, and technological advancement.[25] Since both federal and state governments may legislate on concurrent matters, environmental governance in these areas often involves overlapping regulatory responsibilities.

Matters not expressly included within either legislative list generally fall within the residual legislative competence of the states. This arrangement enables state governments to enact laws addressing localized environmental concerns, including sanitation, waste management, pollution control, and public health protection.[26] Consequently, environmental governance in Nigeria reflects a multi-layered regulatory structure involving federal, state, and local authorities.

One of the most significant constitutional provisions relating to environmental protection is found in Chapter II of the Constitution, which contains the Fundamental Objectives and Directive Principles of State Policy. These provisions articulate the social, economic, and environmental aspirations that should guide governmental actions and policy formulation.[27] Although these provisions are not generally enforceable in court, they establish important constitutional values capable of influencing legislative development and judicial

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[25] Constitution of the Federal Republic of Nigeria 1999 (as amended), Second Schedule, Part II.

[26] A O Sykes, *Environmental Law and Administration in Nigeria* (University Press Plc 2015) 87.

[27] Constitution of the Federal Republic of Nigeria 1999 (as amended), ch II.

interpretation. Particularly noteworthy is section 20 of the Constitution, which provides that: [28]

> The State shall protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria.

This provision constitutes the clearest constitutional recognition of environmental protection within the Nigerian legal system. It imposes a duty upon governmental authorities to preserve environmental quality and promote sustainable resource management. The provision reflects an understanding that environmental resources constitute national assets whose protection is essential for economic development, public health, and intergenerational equity.

Despite its importance, section 20 has attracted considerable criticism because it forms part of Chapter II and is therefore generally regarded as non-justiciable by virtue of section 6(6)(c) of the Constitution.[29] As a result, citizens are ordinarily unable to institute legal proceedings solely on the basis that government has failed to protect the environment as required by section 20. This limitation has generated significant academic debate. Critics argue that environmental rights should be enforceable because environmental degradation directly affects fundamental interests such as life, health, dignity, and property.[30] Others contend that the non-justiciable status of environmental objectives weakens governmental accountability and limits public participation in environmental governance.

Notwithstanding these concerns, Nigerian courts have increasingly adopted innovative approaches to environmental protection through the interpretation of enforceable constitutional rights. In several instances, environmental claims have been linked to the rights to life and human dignity guaranteed under Chapter IV of the Constitution.[31] This development reflects a growing recognition that environmental protection and human rights are closely interconnected.

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[28] Constitution of the Federal Republic of Nigeria 1999 (as amended), s 20.

[29] Constitution of the Federal Republic of Nigeria 1999 (as amended), s 6(6)(c).

[30] L Atsegbua, V Akpotaire and F Dimowo, *Environmental Law in Nigeria: Theory and Practice* (2nd edn, Ababa Press 2010) 58.

[31] Gbemre v Shell Petroleum Development Company Nigeria Ltd (2005) AHRLR 151 (NgHC 2005).

The constitutional framework also provided the legal basis for major environmental legislation enacted in response to the infamous Koko toxic waste incident of 1988. The public outrage generated by that incident compelled the Federal Government to adopt stronger legal measures aimed at preventing hazardous waste dumping and regulating environmental pollution.[32] Consequently, the Federal Environmental Protection Agency Act and the Harmful Waste (Special Criminal Provisions) Act were enacted as part of a broader effort to strengthen environmental governance and restore public confidence in the state's capacity to protect environmental resources.

From a comparative perspective, the constitutional framework in Nigeria differs significantly from that of the United States. While environmental protection in the United States has developed largely through federal statutes such as the National Environmental Policy Act (NEPA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Nigeria's environmental governance framework relies more heavily upon constitutional principles, statutory intervention, and administrative regulation.[33]

The American experience demonstrates the advantages of comprehensive statutory frameworks supported by strong enforcement institutions and active judicial oversight. By contrast, Nigeria continues to face challenges associated with weak institutional capacity, inadequate enforcement, overlapping regulatory mandates, and resource constraints.[34] Nevertheless, the constitutional provisions discussed above provide a valuable foundation upon which more effective environmental governance structures may continue to develop.

Ultimately, the constitutional framework for environmental protection in Nigeria reflects both significant opportunities and notable limitations. While constitutional provisions empower governmental

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[32] L Atsegbua (n 5)112.

[33] Robert V Percival and others, *Environmental Regulation: Law, Science and Policy* (9th edn, Wolters Kluwer 2022) 45–62.

[34] A A Uchegbu (n3) 91.

authorities to regulate environmentally sensitive sectors and establish broad environmental objectives, the non-justiciable nature of key environmental provisions remains a major challenge. Effective hazardous waste regulation therefore depends not only upon constitutional principles but also upon robust legislation, effective enforcement mechanisms, judicial commitment, and sustained political will.

The enactment of the Harmful Waste (Special Criminal Provisions) Act 1988 marked a watershed in the development of environmental law in Nigeria. The legislation emerged as a direct response to the infamous Koko toxic waste incident, which exposed the vulnerability of developing countries to the transboundary movement and illegal dumping of hazardous wastes originating from industrialized nations. Prior to the Koko incident, environmental regulation in Nigeria was fragmented and largely inadequate to address the growing threats posed by hazardous substances. The discovery of thousands of tonnes of toxic waste stored in Koko, Delta State, generated widespread public outrage and compelled the Federal Government to adopt a more robust legal framework for combating environmental crimes.[35]

The significance of the Koko incident extends beyond its immediate environmental consequences. It represented a turning point in Nigeria's environmental governance and highlighted the broader global problem of environmental injustice, whereby hazardous wastes generated in developed countries are often exported to economically vulnerable regions with weaker regulatory systems.[36] The incident demonstrated the devastating consequences that could result when environmental protection is subordinated to economic interests and regulatory enforcement is weak. Against this background, the Harmful Waste (Special Criminal Provisions) Act was enacted to provide stringent criminal sanctions against individuals, corporations, and organizations involved in the importation, transportation, storage, or disposal of harmful wastes within Nigerian territory.[37] The Act remains one of the strongest environmental criminal statutes in Nigeria and reflects the

[35] Harmful Waste (Special Criminal Provisions) Act, Cap H1 Laws of the Federation of Nigeria (LFN) 2004.

[36] L A Atsegbua *et al*, (30)221.

[37] Ibid

determination of the Federal Government to prevent a recurrence of the Koko tragedy.

One of the most notable features of the Act is its broad definition of harmful waste. The legislation defines harmful waste to include any injurious, poisonous, toxic, or noxious substance capable of causing damage to human health, living organisms, or the environment.[38] This expansive definition enables the Act to cover a wide range of hazardous materials, including toxic chemicals, industrial wastes, radioactive substances, and other dangerous pollutants.

The Act makes it a criminal offence for any person to carry, transport, deposit, dump, or possess harmful waste within Nigerian territory, including territorial waters, inland waterways, and the Exclusive Economic Zone.[39] Unlike many environmental statutes that rely primarily on administrative penalties, the Harmful Waste Act adopts a criminal law approach. This reflects the seriousness with which the Nigerian legislature viewed the threat posed by hazardous waste dumping. The legislation further extends criminal liability beyond the principal offender. Individuals who aid, abet, counsel, procure, or otherwise facilitate the commission of offences under the Act may equally be held liable.[40] Similarly, persons who participate in a common criminal purpose relating to the importation or disposal of harmful waste may be prosecuted alongside the principal offenders. This broad approach to liability ensures that all actors involved in illegal hazardous waste operations can be brought within the reach of the law.

An equally remarkable aspect of the Act is the severity of the sanctions imposed upon offenders. Any person convicted under the Act is liable to imprisonment for life.[41] In addition, any aircraft, vehicle, vessel, equipment, facility, or property used in the commission of the offence may be forfeited to the Federal Government. The land upon which the harmful waste is deposited may also be subject to forfeiture. The severity of these penalties reflects the legislature's recognition that

[38] Harmful Waste (Special Criminal Provisions) Act, Cap H1 LFN 2004, s 1.
[39] ibid, s 15.
[40] ibid, s 1.
[41] ibid, ss 2–5.

hazardous waste crimes possess the potential to cause widespread and irreversible environmental damage. Unlike ordinary criminal offences, environmental harm often affects entire communities and may persist for decades. Soil contamination, water pollution, biodiversity loss, and long-term public health consequences frequently continue long after the initial act has occurred.[42] Consequently, the legislature considered exceptionally severe sanctions necessary to deter potential offenders.

Another innovative feature of the Act is its treatment of diplomatic immunity. Under international law, diplomats generally enjoy immunity from the criminal jurisdiction of host states. However, the Harmful Waste Act contains provisions that effectively remove the protection of diplomatic immunity in relation to offences involving harmful waste.[43] This provision underscores the seriousness with which Nigeria regards environmental crimes and demonstrates a commitment to ensuring accountability irrespective of status or privilege.

The Act also grants extensive enforcement powers to law enforcement agencies. Police officers and other authorized officials may conduct investigations, search premises, seize suspected harmful substances, and arrest individuals reasonably suspected of committing offences under the Act.[44] These powers facilitate prompt intervention where hazardous substances pose an imminent threat to public health or environmental safety.

Beyond criminal liability, the Act establishes a regime of civil responsibility for environmental damage resulting from harmful waste activities. Persons responsible for importing, transporting, depositing, or dumping harmful waste may be held liable for any resulting injury, death, disease, environmental degradation, or property damage.[45] The Act adopts a broad conception of damage, encompassing both physical injuries and impairments to mental and physical health. This civil liability regime is particularly important because environmental harm

[42] ibid, s 6.

[43] A Boyle and M Anderson (eds), *Human Rights Approaches to Environmental Protection* (Oxford University Press 1998) 94.

[44] Harmful Waste (Special Criminal Provisions) Act, Cap H1 LFN 2004, s 12.

[45] ibid, ss 8–10.

frequently affects communities rather than isolated individuals. Victims of hazardous waste contamination often require compensation for loss of livelihood, medical expenses, environmental restoration, and other forms of damage. The Act therefore recognizes that punishment alone is insufficient and that affected persons should have access to remedies capable of addressing the consequences of environmental harm.

The jurisdictional provisions of the Act further strengthen its effectiveness. Exclusive jurisdiction to hear offences arising under the legislation is vested in the Federal High Court.[46] This arrangement promotes consistency in judicial interpretation and ensures that cases involving hazardous waste receive specialized attention within the federal judicial system. From a comparative perspective, the Harmful Waste Act shares certain similarities with environmental legislation in the United States. Both jurisdictions recognize the need for strong legal measures to prevent hazardous waste pollution and protect public health. However, important differences exist. Whereas the Nigerian approach relies heavily upon criminal sanctions and deterrence, American environmental legislation often combines criminal liability with extensive administrative regulation and civil enforcement mechanisms.[47]

For example, the United States Resource Conservation and Recovery Act (RCRA) establishes a comprehensive framework governing the generation, transportation, treatment, storage, and disposal of hazardous waste throughout its lifecycle.[48] Rather than focusing exclusively on punishment after environmental harm occurs, RCRA emphasizes prevention, monitoring, record-keeping, permitting, and regulatory oversight. Similarly, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) provides mechanisms for cleaning contaminated sites and recovering remediation costs from responsible parties.[49] The emphasis under CERCLA is not merely on punishment but also on environmental

[46] ibid, s 11.

[47] ibid, s 7.

[48] Robert V Percival and others, *Environmental Regulation: Law, Science and Policy* (9th edn, Wolters Kluwer 2022) 537.

[49] Resource Conservation and Recovery Act 1976, 42 USC §6901 et seq.

restoration and remediation. Nigeria's Harmful Waste Act, while commendable in its deterrent effect, contains fewer detailed provisions relating to environmental restoration and long-term remediation.

Notwithstanding its strengths, the implementation of the Harmful Waste Act has encountered several challenges. One of the most significant difficulties relates to enforcement capacity. Environmental crimes often involve sophisticated networks operating across multiple jurisdictions, making detection and prosecution difficult.[50] Regulatory agencies frequently face constraints relating to funding, technical expertise, equipment, and personnel.

Another challenge concerns public awareness. Many communities lack sufficient knowledge regarding the dangers associated with hazardous waste and may therefore fail to report suspicious activities. In some cases, economic hardship may create incentives for local actors to cooperate with foreign waste traffickers despite the environmental risks involved.[51] Corruption and weak institutional coordination have also been identified as obstacles to effective enforcement. Environmental governance frequently involves multiple agencies operating at federal, state, and local levels. Where institutional mandates overlap or coordination mechanisms are weak, enforcement efforts may be undermined.[52]

Despite these challenges, the Harmful Waste (Special Criminal Provisions) Act remains one of the most important environmental statutes in Nigeria. The legislation sent a clear message that Nigeria would no longer tolerate the use of its territory as a dumping ground for hazardous substances. More than three decades after its enactment, the Act continues to serve as a critical legal instrument for combating environmental crimes and protecting public health.

Nevertheless, there remains room for reform. Contemporary environmental challenges such as electronic waste, emerging chemical contaminants, transboundary pollution, and climate-related

[50] Comprehensive Environmental Response, Compensation and Liability Act 1980, 42 USC §9601 et seq.
[51] M T Ladan, *(n23)*347.
[52] A A Uchegbu (n3) 143.

environmental risks require continuous updating of regulatory frameworks. Greater emphasis should also be placed on environmental restoration, victim compensation, community participation, and institutional strengthening. By combining strong criminal sanctions with effective preventive measures and robust enforcement mechanisms, Nigeria can further enhance its capacity to address hazardous waste challenges and promote sustainable environmental governance.

3. Environmental Impact Assessment Act, NESREA Act and Hazardous Waste Management Regulations in Nigeria: A Comparative Analysis with the United States

While the Harmful Waste (Special Criminal Provisions) Act represents Nigeria's primary criminal law response to hazardous waste dumping, the broader framework for environmental governance is supported by several regulatory statutes designed to prevent environmental degradation before it occurs. Among the most significant of these are the Environmental Impact Assessment Act, the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act 2007, and the various regulations governing the management of solid and hazardous wastes. Together, these laws constitute the principal administrative and regulatory mechanisms for environmental protection in Nigeria. Their importance lies not only in controlling pollution but also in promoting sustainable development and ensuring that environmental considerations are integrated into public and private decision-making processes.[53]

One of the most important developments in Nigerian environmental law was the enactment of the Environmental Impact Assessment (EIA) Act. Prior to the introduction of environmental impact assessment procedures, many industrial, agricultural, infrastructural, and extractive projects were undertaken without adequate consideration of their environmental consequences. As a result, significant ecological damage frequently occurred before regulatory authorities became aware of the associated risks.[54]

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[53] Environmental Impact Assessment Act, Cap E12 Laws of the Federation of Nigeria (LFN) 2004.

[54] M T Ladan, *(n23)*411.

The Environmental Impact Assessment Act was enacted to address this deficiency by ensuring that environmental considerations are incorporated into project planning and decision-making from the earliest stages. The central philosophy underpinning the legislation is that environmental harm is often easier and less expensive to prevent than to remedy after it has occurred.[55]

The Act requires that before any public or private project capable of significantly affecting the environment is undertaken, an assessment must be conducted to determine the likely environmental consequences of the proposed activity. This requirement applies to a broad range of activities, including industrial developments, mining operations, petroleum projects, waste management facilities, transportation infrastructure, power generation projects, and major agricultural schemes.[56]

The objectives of the Act are both preventive and participatory. It seeks to ensure that environmental considerations are integrated into developmental planning while simultaneously providing opportunities for public involvement in environmental decision-making. Consequently, project proponents are required to identify potential environmental impacts, evaluate alternatives, propose mitigation measures, and consult affected stakeholders before approval may be granted.[57]

One of the most progressive aspects of the Act is its emphasis on public participation. Communities likely to be affected by proposed projects are afforded opportunities to express concerns, submit objections, and contribute to environmental review processes. Environmental non-governmental organizations, professional bodies, and independent experts are similarly empowered to participate in project evaluations.[58] This participatory approach reflects modern environmental governance principles recognizing that environmental protection cannot be achieved solely through governmental action. Effective environmental management requires collaboration among

[55] L A Atsegbua et al, (n30)265.

[56] Environmental Impact Assessment Act, Cap E12 LFN 2004, ss 2–13.

[57] ibid, s 1.

[58] ibid, ss 7, 36 and 39.

regulatory authorities, affected communities, civil society organizations, and private sector actors.

The Nigerian EIA framework bears considerable resemblance to the National Environmental Policy Act (NEPA) of the United States. Enacted in 1969, NEPA introduced the concept of Environmental Impact Statements and transformed environmental governance in America by requiring federal agencies to evaluate environmental consequences before undertaking major actions.[59] Both statutes are founded upon the principle that environmental considerations should form an integral part of development planning rather than being addressed only after environmental harm has occurred.

However, important differences exist between the two systems. Environmental Impact Assessment procedures in the United States are generally supported by stronger institutional structures, greater public awareness, and more extensive judicial oversight.[60] In Nigeria, implementation challenges such as inadequate funding, political interference, weak enforcement capacity, and limited technical expertise sometimes undermine the effectiveness of environmental assessment processes. Consequently, environmental approvals may occasionally be granted without rigorous evaluation of potential ecological consequences.

A major institutional reform in Nigeria's environmental regulatory framework occurred with the enactment of the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act 2007. The legislation repealed the Federal Environmental Protection Agency Act and established NESREA as the principal federal agency responsible for environmental protection and regulatory enforcement.[61] The creation of NESREA reflected the recognition that effective environmental governance requires specialized institutions equipped with adequate legal powers and technical expertise. Prior to the establishment of the Agency, environmental regulation in Nigeria was

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[59] National Environmental Policy Act 1969, 42 USC § 4321 et seq.

[60] Daniel R Mandelker, *NEPA Law and Litigation* (2nd edn, Thomson Reuters 2020) 15.

[61] National Environmental Standards and Regulations Enforcement Agency (Establishment) Act 2007.

often fragmented, resulting in weak enforcement and inconsistent compliance monitoring.[62]

The Act confers extensive powers upon NESREA to protect the environment, conserve biodiversity, promote sustainable development, and coordinate environmental regulatory activities throughout the country.[63] In carrying out these responsibilities, the Agency serves as the principal federal institution for implementing environmental standards and enforcing environmental legislation.

One of the most significant functions of NESREA is the enforcement of international environmental agreements to which Nigeria is a party. This includes conventions relating to hazardous waste management, biodiversity conservation, climate change, chemical safety, desertification control, and marine pollution.[64] Through this mandate, the Agency acts as a bridge between Nigeria's international environmental obligations and domestic implementation efforts. The Agency is also empowered to monitor environmental quality, conduct inspections, investigate environmental violations, and prosecute offenders. In addition, NESREA may issue regulations, establish environmental standards, prohibit environmentally harmful practices, and require corrective actions where environmental damage has occurred.[65]

Particularly important is the Agency's authority to regulate hazardous substances and pollution control activities. The Act prohibits the unauthorized discharge of hazardous substances into the environment and imposes criminal sanctions upon violators. Individuals found guilty may be subjected to fines, imprisonment, or both, while corporate entities may face substantial penalties and enforcement actions.[66]

The legislation further authorizes the Agency to prohibit the use of technologies, equipment, and processes that undermine environmental

[62] A A Uchegbu (n3) 214.
[63] NESREA Act 2007, s 2.
[64] ibid, s 7(c).
[65] ibid, ss 7–8.
[66] ibid, s 27.

quality. This preventive approach recognizes that environmental protection requires intervention before harm occurs rather than merely responding after environmental degradation has taken place.[67]

Despite these commendable provisions, a significant limitation of the NESREA Act lies in its exclusion of the oil and gas sector from the Agency's regulatory jurisdiction.[68] This exclusion has generated considerable criticism among environmental scholars and practitioners because petroleum activities constitute one of the largest sources of environmental pollution in Nigeria. Oil exploration, production, transportation, refining, and gas flaring activities have contributed significantly to environmental degradation, particularly within the Niger Delta region. Consequently, the inability of NESREA to exercise direct regulatory authority over this sector limits the comprehensiveness of Nigeria's environmental governance framework.[69]

By contrast, the United States Environmental Protection Agency (EPA) exercises broad regulatory authority over hazardous waste management across numerous industrial sectors. Established in 1970, the EPA serves as the principal federal environmental regulator and possesses extensive enforcement powers under statutes such as the Resource Conservation and Recovery Act, the Toxic Substances Control Act, and the Comprehensive Environmental Response, Compensation and Liability Act.[70]

Unlike the Nigerian system, where environmental oversight responsibilities are distributed among multiple institutions, the American model provides a more centralized framework for environmental regulation. This institutional coherence has contributed significantly to effective environmental enforcement and regulatory consistency.

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[67] ibid, s 7(k).
[68] ibid, s 7(g).
[69] L Atsegbua (n 5)184.
[70] Robert V Percival and others, *Environmental Regulation: Law, Science and Policy* (9th edn, Wolters Kluwer 2022) 523.

An important component of Nigeria's environmental regulatory framework is the collection of regulations specifically addressing solid and hazardous waste management. These regulations establish standards governing the generation, handling, transportation, treatment, storage, recycling, and disposal of hazardous substances.[71] The regulations identify categories of hazardous wastes and classify substances according to their toxicity, reactivity, corrosiveness, flammability, and environmental risk characteristics. Such classifications assist regulatory authorities in determining appropriate management requirements and disposal procedures.[72] Industries generating hazardous wastes are required to identify waste streams arising from their operations and implement measures to minimize environmental risks. The regulations encourage waste reduction, recycling, recovery, and environmentally sound disposal practices.[73]

One particularly important requirement is the obligation imposed upon industries to notify regulatory authorities whenever hazardous discharges occur. Such notifications enable prompt regulatory intervention and facilitate emergency response measures designed to minimize environmental damage.[74] The regulations further require industries to maintain records concerning waste generation, treatment, storage, transportation, and disposal. These records enhance regulatory oversight and assist authorities in monitoring compliance with environmental standards.

Similarly, industries are expected to investigate opportunities for recycling hazardous materials and reducing waste generation at source. This reflects the growing international emphasis on sustainable waste management and circular economy principles.[75]The Nigerian approach shares similarities with the Resource Conservation and Recovery Act (RCRA) in the United States. Under RCRA, hazardous wastes are regulated from the point of generation through transportation, storage, treatment, and ultimate disposal.[76] This "cradle-to-grave" system has

[71] National Environmental (Sanitation and Wastes Control) Regulations 2009.
[72] ibid.
[73] Solid and Hazardous Waste Management Regulations 1991.
[74] Ibid
[75] United Nations Environment Programme, *Global Waste Management Outlook* (UNEP 2015) 73.
[76] Resource Conservation and Recovery Act 1976, 42 USC §6901

become one of the most influential hazardous waste management models globally.

The American framework is particularly notable for its comprehensive tracking requirements. Hazardous waste generators must maintain detailed records and utilize manifest systems that enable regulators to monitor waste movements throughout the disposal process.[77] Such mechanisms reduce opportunities for illegal dumping and facilitate enforcement. Although Nigerian regulations contain similar objectives, enforcement challenges continue to limit their effectiveness. Inadequate monitoring infrastructure, insufficient laboratory facilities, shortages of trained personnel, and financial constraints often hinder compliance verification.[78]Notwithstanding the existence of numerous environmental statutes and regulations, significant challenges remain in the implementation of environmental laws in Nigeria. Weak institutional capacity, inadequate funding, political interference, corruption, overlapping mandates, and limited public awareness continue to affect environmental governance.[79]

Furthermore, environmental litigation remains relatively underdeveloped compared to jurisdictions such as the United States. While Nigerian courts have increasingly demonstrated willingness to address environmental disputes, barriers relating to access to justice, cost of litigation, and evidentiary burdens continue to impede effective environmental enforcement.[80] Nevertheless, considerable progress has been made since the Koko toxic waste incident. The enactment of the EIA Act, the establishment of NESREA, and the adoption of hazardous waste management regulations have significantly strengthened Nigeria's environmental regulatory framework. These measures demonstrate an increasing commitment to environmental protection and sustainable development.

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[77] James E McCarthy, *Hazardous Waste Management under RCRA* (Congressional Research Service Report 2018) 17.

[78] M T Ladan (n 23) 429.

[79] A O Sykes, *Environmental Law and Administration in Nigeria* (University Press Plc 2015) 196.

[80] *Gbemre v Shell Petroleum Development Company Nigeria Ltd* (2005) AHRLR 151 (NgHC 2005).

Moving forward, greater institutional coordination, enhanced enforcement capacity, stronger penalties, improved public participation, and expanded regulatory coverage particularly within the oil and gas sector will be essential for improving hazardous waste governance in Nigeria. By drawing lessons from successful international models such as those of the United States while adapting reforms to local realities, Nigeria can further strengthen its environmental regulatory regime and better protect present and future generations from the dangers associated with hazardous waste pollution.

4. Common Law, Case Law and Judicial Mechanisms for Hazardous Waste Regulation in Nigeria and the United States

Beyond constitutional provisions and statutory regulations, the courts play a fundamental role in environmental governance. Environmental legislation, no matter how comprehensive, derives much of its practical effectiveness from judicial interpretation and enforcement. Through the development of common law principles and judicial precedents, courts have historically provided remedies for environmental harm, protected private and public interests, and influenced the evolution of environmental policy. Before the emergence of modern environmental statutes, common law doctrines constituted the principal legal mechanisms through which victims of pollution sought redress. Even today, these doctrines continue to complement statutory frameworks in both Nigeria and the United States.[81]

In Nigeria, environmental litigation is largely rooted in the law of torts. The law of tort provides civil remedies for persons whose rights have been infringed by the acts or omissions of others. Environmental pollution often causes injury to persons, property, livelihoods, and ecological resources, making tort law an important instrument for environmental protection.[82] The principal common law doctrines relevant to hazardous waste regulation include negligence, nuisance,

[81] L A Atsegbua et al, (n30)311.
[82] M T Ladan, *(n23)*455.

trespass to land, and the rule in *Rylands v Fletcher*. These doctrines provide avenues through which individuals and communities affected by environmental degradation may seek compensation or injunctive relief against polluters.

Negligence remains one of the most frequently invoked common law actions in environmental disputes. The doctrine is founded upon the principle that individuals and corporations owe a duty to exercise reasonable care in their activities so as not to cause foreseeable harm to others. Where a person breaches this duty and damage results, liability may arise.[83]

To establish negligence, a claimant must generally prove three essential elements. First, the defendant must owe a duty of care to the claimant. Secondly, the claimant must demonstrate that the duty was breached. Thirdly, it must be shown that the breach caused reasonably foreseeable damage.[84] The modern law of negligence owes much to the landmark decision in *Donoghue v Stevenson*. In that case, Lord Atkin formulated the famous "neighbour principle," which requires individuals to take reasonable care to avoid acts or omissions likely to injure persons who may reasonably be affected by their conduct.[85] The decision transformed negligence law and laid the foundation for contemporary environmental liability.

Environmental pollution cases frequently rely upon this principle. Industrial operators, waste management companies, manufacturers, and extractive industries are expected to exercise reasonable care in handling substances capable of causing environmental harm. Failure to do so may expose them to liability where pollution causes injury to neighbouring communities or environmental resources. The doctrine has been applied in Nigeria in several environmental disputes. In *Atunbi v Shell-BP Petroleum Development Company of Nigeria Ltd*, the plaintiffs alleged that the defendant's operations caused the escape of oil, gas, and chemical substances which damaged fish ponds and farmlands. Although the plaintiffs were ultimately unsuccessful because they could not establish negligence on the facts, the case

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[83] Winfield and Jolowicz, *Tort* (19th edn, Sweet & Maxwell 2014) 103.

[84] ibid.

[85] Donoghue v Stevenson [1932] AC 562.

demonstrates the potential relevance of negligence principles in environmental litigation.[86]

Despite its usefulness, negligence possesses significant limitations as an environmental regulatory mechanism. Environmental pollution cases often involve highly technical scientific evidence relating to causation, toxicity, and environmental pathways. Consequently, proving negligence may be extremely difficult for affected communities lacking access to expert witnesses and financial resources.[87] Scholars have observed that these evidentiary challenges frequently place claimants at a disadvantage, particularly in disputes involving multinational corporations and complex industrial processes. For this reason, some commentators advocate greater reliance upon doctrines such as strict liability, which reduce the burden of proof placed upon victims of environmental harm.[88]

The law of nuisance constitutes another important common law mechanism for regulating environmental pollution. Nuisance arises where a person's activities substantially interfere with another person's use and enjoyment of land or adversely affect public health, comfort, or convenience.[89] Environmental pollution frequently falls within the scope of nuisance because pollutants often interfere with neighbouring properties and communities. Toxic emissions, offensive odours, contaminated water supplies, excessive noise, hazardous waste deposits, and other forms of pollution may constitute actionable nuisances where they significantly impair environmental quality.

Nuisance may be classified as either private or public. Private nuisance concerns interference with an individual's proprietary interests in land. Public nuisance, on the other hand, affects a broader segment of society and involves interference with rights enjoyed by the public generally.[90] Historically, public nuisance actions were often initiated by the Attorney-General on behalf of the public. This requirement posed significant obstacles for environmental claimants because access

[86] *Atunbi v Shell-BP Petroleum Development Company of Nigeria Ltd* (1974) 11 SC 1.
[87] L Atsegbua (n 5) 319.
[88] Ibid
[89] John Murphy, *Street on Torts* (15th edn, Oxford University Press 2018) 401.
[90] Ibid

to judicial remedies depended upon governmental intervention. However, Nigerian jurisprudence gradually evolved towards a more liberal approach.

A landmark development occurred in *Adediran v Interland Transport Ltd*[91], where the Supreme Court recognized broader access to justice in environmental disputes. The Court held that constitutional guarantees of access to courts significantly reduced the restrictive common law barriers previously associated with public nuisance claims.[92] The decision represented an important advancement in environmental justice by facilitating greater citizen participation in environmental litigation.

Trespass to land provides another avenue through which environmental claims may be pursued. Trespass occurs where a person intentionally or negligently causes a direct physical intrusion onto land possessed by another without lawful justification.[93] In environmental contexts, trespass may arise where hazardous substances, industrial waste, toxic chemicals, or other pollutants are directly deposited upon another person's land. Illegal waste disposal operations frequently involve conduct capable of constituting trespass.

The doctrine is particularly relevant in hazardous waste disputes because unlawful dumping often results in direct physical contamination of land. Where toxic materials are intentionally deposited on private property without consent, affected landowners may pursue remedies for trespass in addition to statutory environmental claims. The decision in *Southport Corporation v Esso Petroleum Co Ltd* illustrates the application of trespass principles in pollution cases. In that case, oil discharged from a tanker polluted the claimant's shoreline. The courts considered issues relating to liability arising from environmental contamination caused by escaped pollutants.[94]

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[91] *Adediran v Interland Transport Ltd* (1991) 9 NWLR (Pt 214) 155.
[92] Ibid
[93] Ibid
[94] *Southport Corporation v Esso Petroleum Co Ltd* [1954] 2 QB 182.

Although trespass remains useful, its scope is limited because only persons with possessory interests in affected land may ordinarily bring actions. Consequently, environmental harms affecting public resources or communal areas may not always be adequately addressed through trespass claims alone. Among the most important common law doctrines relevant to hazardous waste regulation is the rule established in *Rylands v Fletcher*. This doctrine introduced the principle of strict liability into environmental law.

The rule provides that a person who brings onto land anything likely to cause harm if it escapes must keep it at his peril. If the substance escapes and causes damage, liability may arise even in the absence of negligence.[95] The significance of the doctrine lies in its departure from fault-based liability. Unlike negligence, the claimant need not prove that the defendant acted carelessly. Instead, liability arises from the dangerous nature of the activity itself and the escape of the harmful substance.

To succeed under the rule, a claimant generally must establish that the defendant made a non-natural use of land accumulated a potentially dangerous substance, and that the substance escaped and caused damage.[96] The doctrine has proven particularly valuable in environmental litigation involving oil spills, toxic chemicals, industrial wastes, gas emissions, and other hazardous substances. Because much environmental harm arises from inherently dangerous activities, strict liability often provides a more effective remedy than negligence. In both Nigeria and the United States, courts have drawn upon strict liability principles to address environmental harms arising from hazardous activities. The doctrine has become an important conceptual foundation for modern environmental liability regimes.

5. Environmental Protection Comparative Judicial Developments in the United States

Judicial interpretation plays a critical role in determining the effectiveness of environmental laws. Courts do not merely apply legislation; they also shape environmental governance through interpretation, precedent, and the development of legal principles. In

[95] *Rylands v Fletcher* (1868) LR 3 HL 330.
[96] Ibid

Nigeria, judicial activism has contributed significantly to environmental protection. The Supreme Court's decision in *Adediran v Interland Transport Ltd* expanded access to justice by removing procedural barriers that previously limited environmental litigation.[97] This development enhanced the ability of citizens and communities to challenge environmentally harmful activities.

Similarly, the Nigerian courts have increasingly recognized the relationship between environmental protection and constitutional rights. Decisions such as *Gbemre v Shell Petroleum Development Company Nigeria Ltd* linked environmental degradation to the constitutional rights to life and human dignity.[98] Such decisions reflect a growing willingness among courts to view environmental protection through a human rights lens. The United States has developed a rich body of environmental jurisprudence that complements statutory regulation. American courts have frequently interpreted environmental statutes broadly in order to advance legislative objectives and protect public health.

In City of *Chicago v Environmental Defense Fund*, the Supreme Court considered whether municipal waste incinerator ash was exempt from hazardous waste regulation under the Resource Conservation and Recovery Act. The Court rejected the exemption argument and held that the material remained subject to hazardous waste requirements.[99] The decision reinforced the broad protective purpose of environmental legislation. Similarly, in *Edison Electric Institute v EPA*, the court upheld environmental regulations restricting the storage of radioactive and hazardous wastes. The decision emphasized the importance of preventing environmental risks associated with inadequate waste management practices.[100]

Another landmark decision is *Friends of the Earth Inc v Laidlaw Environmental Services Inc.* The Court held that environmental plaintiffs possessed standing to challenge pollution even where the

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[97] *Adediran v Interland Transport Ltd* (n 11).

[98] *Gbemre v Shell Petroleum Development Company Nigeria Ltd* (2005) AHRLR 151 (NgHC).

[99] *City of Chicago v Environmental Defense Fund* 511 US 328 (1994).

[100] Edison Electric Institute v EPA 2 F3d 438 (DC Cir 1993).

harm involved diminished recreational and aesthetic enjoyment of environmental resources.[101] This decision significantly strengthened citizen participation in environmental enforcement and demonstrated the judiciary's willingness to recognize non-economic environmental injuries. Environmental protection increasingly extends beyond national boundaries. Pollution generated in one state may have significant consequences for neighbouring states, making international legal principles essential for effective environmental governance. One of the most influential decisions in international environmental law is *Trail Smelter Arbitration.* The dispute concerned a Canadian smelter whose emissions crossed the border and caused environmental damage in the United States.[102]

The tribunal established the principle that no state has the right to use its territory in a manner that causes serious environmental injury to another state. This decision became a cornerstone of international environmental law and significantly influenced subsequent international instruments.[103] The same principle was reinforced in Corfu Channel Case, where the International Court of Justice affirmed that states must not knowingly permit their territory to be used in ways that harm the rights of other states.[104]

These decisions subsequently influenced Principle 21 of the Stockholm Declaration and Principle 2 of the Rio Declaration, both of which recognize that states possess sovereign rights over their natural resources but must ensure that activities within their jurisdiction do not cause environmental damage beyond their borders.[105] Common law doctrines and judicial decisions continue to play a vital role in hazardous waste regulation and environmental protection. While statutory frameworks provide detailed regulatory standards, courts remain indispensable in interpreting legislation, enforcing environmental obligations, protecting citizens' rights, and developing

[101] *Friends of the Earth Inc v Laidlaw Environmental Services Inc* 528 US 167 (2000).

[102] Trail Smelter Arbitration (1941) 3 RIAA 1905.

[103] Principle 21; Rio Declaration on Environment and Development 1992, Principle 2.

[104] *Corfu Channel Case* [1949] ICJ Rep 4.

[105] United Nations Conference on the Human Environment, Stockholm Declaration 1972,

legal principles capable of addressing emerging environmental challenges.

The experiences of Nigeria and the United States demonstrate that effective environmental governance requires a combination of legislative action, institutional capacity, judicial independence, and public participation. The evolution of environmental jurisprudence in both jurisdictions reflects an increasing recognition that environmental protection is not merely a regulatory objective but a prerequisite for sustainable development, public health, and social justice.

6. Conclusion

A comparative assessment of hazardous waste regulation in Nigeria and the United States reveals significant differences in institutional capacity, enforcement effectiveness, regulatory compliance, and environmental governance. Although both countries possess legal frameworks aimed at controlling hazardous waste and protecting the environment, the practical implementation of these laws has produced markedly different outcomes.

In the United States, hazardous waste management is governed by a comprehensive network of federal and state laws, including the National Environmental Policy Act (NEPA), the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). These statutes are supported by a strong institutional framework led by the Environmental Protection Agency (EPA), which possesses extensive monitoring, investigative, and enforcement powers. Consequently, environmental regulations are generally implemented with a higher degree of consistency and accountability.

Nigeria has also made considerable progress since the Koko toxic waste incident of 1988 through the enactment of the Harmful Waste (Special Criminal Provisions) Act, the Environmental Impact Assessment Act, and the National Environmental Standards and Regulations Enforcement Agency (NESREA) Act. These laws demonstrate the country's commitment to environmental protection. However, weak enforcement mechanisms, inadequate funding,

corruption, poor technical capacity, and overlapping institutional responsibilities continue to undermine regulatory effectiveness.

One of the major challenges confronting Nigeria is the inadequate enforcement of environmental laws. While penalties exist for environmental violations, prosecutions are relatively rare, and compliance monitoring remains insufficient. In contrast, environmental regulators in the United States routinely impose administrative sanctions, civil penalties, and criminal prosecutions against violators. This creates a stronger culture of compliance and deterrence.

Another challenge is the exclusion of the oil and gas sector from the direct regulatory jurisdiction of NESREA. Given that petroleum activities constitute one of the largest sources of environmental pollution and hazardous waste generation in Nigeria, this limitation significantly weakens environmental governance. Strengthening oversight of the sector is essential for effective environmental protection.

Nigeria can draw several important lessons from the United States. First, environmental agencies should be granted greater operational independence and adequate financial resources to discharge their responsibilities effectively. Secondly, environmental monitoring systems should be strengthened through modern technology, improved laboratory facilities, and specialized training for enforcement personnel. Thirdly, public participation and access to environmental justice should be expanded to encourage community involvement in environmental decision-making.

Furthermore, environmental courts or specialized environmental divisions within existing courts should be established to facilitate the timely resolution of environmental disputes. There is also a need for stronger collaboration among government agencies, civil society organizations, academic institutions, and local communities in addressing hazardous waste challenges.

Ultimately, effective hazardous waste management requires more than the existence of laws; it demands political commitment, institutional capacity, public awareness, and consistent enforcement. By adopting

best practices from the United States while tailoring reforms to local realities, Nigeria can significantly strengthen its environmental governance framework and better protect human health and the environment from the dangers associated with hazardous waste.