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E-WASTE GOVERNANCE IN NIGERIA: UNRAVELING NIGERIA'S LEGAL STRUGGLE WITH E-WASTE IN A GLOBALIZED WORLD

MBONU, Agozirim Sylvester*

ABSTRACT

Nigeria faces a mounting electronic waste (e-waste) crisis, importing 500,000 tons of used electronics annually and generating over 277,000 tons domestically, yet its legal framework struggles to respond effectively. This article examines the deficiencies in Nigeria's e-waste governance, focusing on the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007, and the 2016 Extended Producer Responsibility (EPR) policy. These laws lack specificity and enforcement power, leaving over 80% of e-waste to an unregulated informal sector, resulting in severe environmental pollution, health risks, and economic losses. Nigeria's obligations under the Basel Convention (1989) to curb illegal imports remain unmet, exacerbating the crisis. Analyzing the impacts of polluted soil, respiratory illnesses, and squandered resources the article critiques the NESREA Act's generality and the EPR policy's implementation failures. Drawing on international best practices, it proposes a new E-Waste Management Act to mandate producer-funded collection, an eco-levy for recycling infrastructure, and regulations to formalize informal workers, inspired by Japan, Ghana, and the EU. Strengthening NESREA's enforcement capacity is critical to align with global standards. In a world producing 62 million tons of e-waste in 2022, Nigeria's reform could set a precedent for Africa. This article calls for legislative action, institutional enhancement, and international support to transform Nigeria's e-waste management into a model of legal resilience.

INTRODUCTION

Imagine a young worker in Lagos' Alaba Market, sifting through heaps of discarded computers and mobile phones, his hands stained from handling obsolete electronics. Nigeria imports approximately 500,000 tons of used electrical and electronic equipment annually items such as televisions, laptops, and refrigerators much of which is beyond repair. This influx contributes to a global crisis: in 2022, the world produced 62 million tons of electronic waste (e-waste), with Nigeria and other African nations struggling to manage their share due to inadequate legal

frameworks.[1] As Nigeria emerges as a technological hub in Africa, its laws fail to address the mounting e-waste challenge, jeopardizing environmental integrity and public health.

E-waste encompasses discarded electrical and electronic devices, distinguished by their hazardous components, including lead, mercury, and persistent organic pollutants. In Nigeria, over 80% of this waste is processed by an unregulated informal sector, which employs methods such as burning and acid leaching to extract valuable materials.[2] These practices release toxic substances into the air and soil, creating a legal as well as practical problem. The primary statute, the *National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007,*[3] establishes NESREA to regulate hazardous waste, a category that includes e-waste. However, this legislation lacks specificity for e-waste management and sufficient enforcement mechanisms, leaving Nigeria vulnerable to an escalating crisis.

In 2016, the Nigerian government introduced the Extended Producer Responsibility (EPR) policy, intending to hold producers' importers, manufacturers, and distributors accountable for managing e-waste, in alignment with international standards. This policy was formalized through the *EPR Guidance Document* in 2020 and reinforced by amendments to the *National Environmental (Electrical and Electronic Sector) Regulations, 2011* in 2022, mandating producer-led collection and recycling initiatives. Despite it being nearly a decade since its inception, implementation remains ineffective. NESREA lacks the resources and authority to enforce compliance, and the informal sector continues to dominate e-waste processing in urban centres like Lagos and Port Harcourt. This domestic shortfall intersects with Nigeria's obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and

*Mbonu Agozirim Sylvester, Llb(Hons) Nnamdi Azikiwe University (NAU), LLM Rivers State University (RSU), PhD (in-view) 07064553812, mbonuagozirim@gmail.com

[1] Cornelis P Baldé *and others*, *The Global E-waste Monitor 2024* (United Nations University, International Telecommunication Union, and United Nations Institute for Training and Research 2024)

[2] O Osibanjo and IC Nnorom, 'The Challenge of Electronic Waste (E-waste) Management in Developing Countries' (2007) 25 *Waste Management & Research* 489-501. https://doi.org/10.1177/0734242X07078211

[3] Cap N164 LFN, 2010.

Their Disposal, which seeks to prevent illegal e-waste imports an obligation Nigeria struggles to fulfil as 500,000 tons enter annually.[4]

This article examines the deficiencies within Nigeria's legal framework for e-waste governance. It criticizes the *NESREA Act* for its generality, the EPR policy for its weak enforcement, and the exclusion of the informal sector from regulatory oversight. These shortcomings permit e-waste to accumulate unchecked, with severe consequences for the environment and public welfare. Beyond identifying failures, the article proposes solutions informed by international models. Japan's producer-driven recycling laws, Ghana's tailored e-waste legislation, and the European Union's comprehensive directives offer practical lessons Nigeria can adapt to strengthen its legal approach.

The significance of this analysis extends beyond Nigeria's borders. In an interconnected world reliant on technology, e-waste presents a universal challenge, and Nigeria's legal response holds implications for global environmental governance. Effective reform could mitigate harm within Nigeria and serve as a precedent for other jurisdictions. This article aims to illuminate the gaps in Nigeria's current laws and provide a legally grounded strategy for improvement, drawing on global best practices to transform Nigeria's e-waste management from a point of vulnerability into an example of legislative progress.

LITERATURE AND CONTEXT

Electronic waste (e-waste) poses a significant challenge to legal systems worldwide, requiring robust frameworks to manage its environmental and health impacts. E-waste includes discarded electrical and electronic devices such as mobile phones, computers, and refrigerators characterized by hazardous components like lead, mercury, and brominated flame retardants.[5] Globally, e-waste reached 62 million tons in 2022, projected to rise to 82 million tons by 2030, with developing

[4] Basel Convention Secretariat, *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal* (United Nations Environment Programme 1989)

[5] R Widmer *and others*, 'Global Perspectives on E-waste' (2005) 25(5) 436–458 *Environmental Impact Assessment Review* 436. https://doi.org/10.1016/j.eiar.2005.04.001

nations like Nigeria bearing a disproportionate burden due to weak legal controls.[6] Effective governance of e-waste is essential not only to mitigate harm but also to recover valuable materials, a dual purpose that demands clear legal standards.

Legal scholarship defines e-waste as a distinct category of waste due to its hazardous nature, aligning it with international treaties such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. Adopted in 1989, this convention classifies e-waste as hazardous and regulates its cross-border movement, aiming to prevent illegal dumping in countries with limited capacity to manage it safely.[7] Another key legal principle, sustainable development, emerged from the 1987 Brundtland Report, urging nations to balance current resource use with future needs.[8] This principle underpins modern environmental law and calls for e-waste systems that minimize harm while promoting recycling and reuse, as seen in circular economy models adopted by jurisdictions like the European Union.

Nigeria's context amplifies these legal concerns. As Africa's largest economy and a major recipient of used electronics, Nigeria imports approximately 500,000 tons of electrical and electronic equipment annually, much of it obsolete upon arrival. Domestically, the country generates over 277,000 tons of e-waste each year, adding to an untracked volume of imports that positions Nigeria as a significant e-waste hub.[9]Over 80% of this waste is processed by an unregulated informal sector, which employs unsafe methods such as open burning and acid leaching to extract metals like copper and gold. These practices release toxic substances into the environment, a problem compounded by the informal sector's economic role in supporting tens of thousands of livelihoods in cities like Lagos and Port Harcourt.[10]

The health consequences of this unregulated activity further highlight the legal stakes. Workers and residents near e-waste sites, such as Ikeja Computer Village, experience elevated rates of respiratory illnesses, skin conditions, and neurological damage due to exposure to fumes and contaminated materials. Children, often involved in scavenging, face particular risks, with

[6] Balde, (n1.)
[7] Basel, (n.4)
[8] United Nations, *Our Common Future (Brundtland Report)* (Oxford University Press 1987)
[9] Balde, (n.1)
[10] Osinbanjo, (n.2)

studies linking informal e-waste handling to long-term health impacts.[11] These outcomes underscore the need for a legal framework that not only curbs environmental damage but also protects public health, a duty that Nigeria's current laws struggle to fulfil.

Nigeria's primary legal response rests on the *National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007,*[12]which authorizes NESREA to regulate hazardous waste, including e-waste. This statute provides a broad mandate to establish standards, monitor compliance, and impose penalties, yet it lacks specific provisions addressing e-waste collection, treatment, or disposal. In 2016, Nigeria introduced the Extended Producer Responsibility (EPR) policy, formalized in the *EPR Guidance Document* of 2020, to shift responsibility to producers importers, manufacturers, and distributors for managing e-waste. This policy aims to align with global standards, but its enforcement remains weak, leaving the informal sector outside its scope and allowing hazardous practices to persist.[13]

Internationally, Nigeria is bound by the Basel Convention, which it ratified in 1991, committing to prevent illegal e-waste imports and ensure safe management. Despite this obligation, customs controls fail to stem the influx of 500,000 tons of used electronics annually, much of it entering as undocumented shipments.[14] Legal scholars, such as Osibanjo and Nnorom,[15] argue that Nigeria's lack of e-waste-specific legislation and robust enforcement mechanisms perpetuates environmental and health harms, a critique echoed in broader studies of developing nations. These studies note that while advanced economies like Japan and the EU have tailored laws for e-waste, adapting such models to informal economies remains a challenge.

This section establishes the legal and contextual foundation for Nigeria's e-waste crisis. Globally, e-waste governance hinges on treaties like the Basel Convention and principles like sustainable development, yet Nigeria's domestic framework falls short. The *NESREA Act* provides a starting point but lacks detail, while the EPR policy, though promising, fails to deliver due to

[11] ibid
[12] NESREA (n.3)
[13] National Environmental Standards and Regulations Enforcement Agency, *Guidance Document on Extended Producer Responsibility (EPR)* (Federal Government of Nigeria 2020)
[14] Basel, (n.4)
[15] Osinbajo, (n.2)

enforcement gaps. The informal sector's dominance in handling over 80% of e-waste complicates regulation, balancing economic necessity against environmental and health risks. This article builds on this foundation, analyzing Nigeria's legal deficiencies and proposing reforms informed by international best practices to address these pressing issues.

NIGERIA'S LEGAL FRAMEWORK

Nigeria's legal framework for managing electronic waste (e-waste) centres on the *National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007*[16] a statute designed to protect the environment through waste regulation. Enacted to address a broad range of environmental challenges, this law establishes NESREA as the primary authority responsible for overseeing hazardous waste, a category that includes e-waste due to its toxic components like lead, mercury, and persistent organic pollutants. NESREA's mandate includes setting standards, monitoring compliance, and imposing penalties for violations. However, the Act's provisions are general and do not specifically address e-waste management issues such as collection, recycling, or disposal. Nigeria generates over 277,000 tons of e-waste annually, and over 80% is handled by an unregulated informal sector using methods like burning and acid leaching, yet the law offers no tailored guidance for this scale or practice.[17]

Enforcement under the *NESREA Act* reveals further limitations. The agency struggles with inadequate funding and staffing, undermining its ability to monitor and penalize violations effectively. Urban centres like Lagos and Port Harcourt bear witness to this weakness, with e-waste accumulating in open dumpsites and informal recycling hubs operating without oversight[18]. The *National Environmental (Sanitation and Wastes Control) Regulations, 2009,*[19]a subsidiary legislation, provides operational guidelines for waste management but remains too broad to tackle e-waste's unique challenges, such as its rapid generation and hazardous processing. This

[16] NESREA (n.3)
[17] Osibanjo, (n.2)
[18] ibid
[19] National Environmental Standards and Regulations Enforcement Agency. (2014). *Operational guidelines for the Extended Producer Responsibility Programme*. Federal Government of Nigeria.

regulatory gap leaves Nigeria ill-equipped to manage a waste stream that exceeds domestic production with an additional 500,000 tons imported yearly.[20]

Recognizing these shortcomings, Nigeria introduced the Extended Producer Responsibility (EPR) policy in 2016 to shift e-waste management obligations to producers' importers, manufacturers, and distributors of electrical and electronic equipment[21]. This policy draws on international frameworks, such as those promoted by the Organisation for Economic Co-operation and Development (OECD), which emphasize producer accountability for lifecycle waste management. The *EPR Guidance Document*, gazette in 2020, outlines specific duties for producers, including registering with Producer Responsibility Organizations (PROs), identifying covered product categories, and setting recycling targets.[22] In 2022, amendments to the *National Environmental (Electrical and Electronic Sector) Regulations, 2011* reinforced these requirements, mandating EPR subscriptions and prohibiting unsafe e-waste handling practices like open burning. These updates aim to formalize e-waste management by requiring producers to establish take-back schemes and collaborate with PROs, such as the E-Waste Producer Responsibility Organization Nigeria (EPRON), to collect and recycle waste.

Despite these advancements, the EPR policy's implementation falls short of its objectives. Compliance among producers remains inconsistent, with few documented penalties for non-adherence, reflecting NESREA's limited enforcement capacity. A 2021 pilot project supported by the Global Environment Facility collected 1,000 tons of e-waste in Lagos, demonstrating potential, yet this effort has not been scaled nationwide due to resource constraints.[23] Moreover, the informal sector handling over 80% of Nigeria's e-waste operates largely outside the EPR framework, as the policy does not integrate or regulate these workers effectively. This exclusion perpetuates hazardous practices, undermining the legal intent to establish a controlled e-waste management system.

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[20] Balde, (n.1)
[21] National Environmental Standards and Regulations Enforcement Agency, *Guidance Document on Extended Producer Responsibility (EPR)* (Federal Government of Nigeria 2020)
[22] ibid
[23] O Osibanjo *and others*, 'E-waste Management in Nigeria: Challenges and Opportunities in the Circular Economy' (2023) 382 *Journal of Cleaner Production* 135. https://doi.org/10.1016/j.jclepro.2022.135147

Institutional coordination presents another weakness. NESREA's collaboration with agencies like the Nigeria Customs Service and the Federal Ministry of Environment is fragmented, hampering efforts to enforce Nigeria's obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. Ratified by Nigeria in 1991, the Basel Convention requires the prevention of illegal e-waste imports, yet approximately 500,000 tons enter annually, often declared as unfunctional goods.[24] Customs lacks the technical expertise and resources to intercept these shipments, and NESREA's oversight does not extend effectively to border controls, allowing violations to persist unchecked.

The informal sector's role adds complexity to Nigeria's legal framework. Estimates suggest that over 100,000 individuals in Lagos alone depend on e-waste scavenging and dismantling for their livelihoods, operating in markets like Alaba and Ikeja Computer Village. These workers extract valuable materials gold, copper, and rare earth but their unregulated methods exacerbate environmental and health risks.[25] Efforts to formalize this sector, such as licensing or training programs, remain limited and underfunded, leaving a significant portion of e-waste management beyond legal reach. The *NESREA Act* and EPR policy do not address this economic reality, creating a disconnect between legal intent and practical application.

Nigeria's legal framework thus exhibits both strengths and critical deficiencies. The *NESREA Act* provides a foundational authority for waste regulation, and the EPR policy introduces a modern approach to producer accountability, aligning with global standards. However, these laws falter in execution. The *NESREA Act* lacks specificity for e-waste, failing to address its unique management needs or the informal sector's dominance. Enforcement under both the Act and the EPR policy is weakened by insufficient resources and poor inter-agency coordination, allowing illegal imports and hazardous practices to continue. The 500,000 tons of imported e-waste annually, combined with the domestic generation, overwhelms a system that cannot adapt to the scale or complexity of the crisis.[26]

[24] Basel, (n.4)
[25] A Manhart, O Osibanjo, A Aderinto and S Prakash, Informal e-waste management in Lagos, Nigeria–socio-economic Impacts and Feasibility of International Recycling Co-operations [2011] (3) *Final report of component*. 1-129.
[26] Balde, (n.1)

This analysis reveals a legal framework with potential but significant gaps. The *NESREA Act* and EPR policy lay the groundwork for e-waste governance, yet their lack of detailed provisions, weak enforcement, and failure to integrate the informal sector hinder effectiveness. Nigeria's obligations under the Basel Convention remain unmet, and the informal sector's economic importance complicates reform. Addressing these deficiencies requires targeted legislative and institutional changes, informed by international models, to create a framework capable of managing Nigeria's e-waste challenge comprehensively.

THE E-WASTE CRISIS IMPACT

Nigeria's legal framework fails to contain an escalating electronic waste (e-waste) crisis, resulting in significant environmental, health, and economic consequences. The country imports approximately 500,000 tons of used electrical and electronic equipment annually much of it obsolete and generates over 277,000 tons of e-waste domestically, yet its laws lack the specificity and enforcement power to manage this volume effectively.[27]Over 80% of this waste is processed by an unregulated informal sector employing hazardous methods like open burning and acid leaching, prevalent at sites such as Alaba Market and Olusosun dumpsite in Lagos. These practices release toxic substances lead, mercury, cadmium, and brominated flame retardants into the environment, amplifying the crisis due to gaps in legal oversight.[28]

The environmental impact is severe and well-documented. Soil samples near informal e-waste sites show lead concentrations up to 100 times above permissible levels, while groundwater in these areas contains heavy metals, rendering it unfit for consumption. Open burning, a common practice to extract metals, emits dioxins and other pollutants into the air, exceeding safe thresholds and contributing to widespread ecological damage.[29] These outcomes stem directly from the *National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007* (Cap N164, Laws of the Federation of Nigeria 2010), which empowers NESREA to regulate hazardous waste but lacks provisions targeting e-waste-specific pollution sources. Without clear

[27] Balde,(n.1)
[28] Osibanjo, (n.2)
[29] A Adeyi, Heavy metal pollution of soil and groundwater from informal e-waste recycling sites in Lagos, Nigeria [2021] *189*(8), *Environmental Monitoring and Assessment* 1–12. https://doi.org/10.1007/s10661-017-6118-6

standards or enforcement mechanisms to curb informal processing, Nigeria's environment bears the brunt of a legal system unable to adapt to the scale of the problem.

Public health faces equally dire consequences tied to these legal shortcomings. Informal workers estimated in the tens of thousands nationwide handle e-waste without protective measures or regulatory safeguards under the *NESREA Act*. In areas like Ikeja Computer Village, exposure to toxic fumes and contaminated materials results in elevated rates of respiratory illnesses, skin disorders, and neurological impairments among workers and nearby residents. Children, often involved in scavenging, are particularly vulnerable, with studies showing blood lead levels far exceeding safe limits, linked to developmental delays.[30] These health risks persist because the law does not mandate safety standards for e-waste handling or provide mechanisms to monitor and mitigate exposure, leaving communities unprotected.

Economically, the e-waste crisis presents a dual-edged impact, further exposing legal deficiencies. On one hand, informal recycling sustains livelihoods for over 100,000 individuals in Lagos alone, who extract valuable materials like gold and copper from discarded electronics. This sector fills a gap left by the absence of a robust formal recycling system, a gap the 2016 Extended Producer Responsibility (EPR) policy aimed to address by requiring producers to manage e-waste. Formalized in the *EPR Guidance Document* of 2020 and reinforced by 2022 amendments to the *National Environmental (Electrical and Electronic Sector) Regulations, 2011*, the EPR policy seeks to establish producer-led collection and recycling, yet its weak enforcement allows informal practices to dominate (National Environmental Standards and Regulations Enforcement Agency, 2020). On the other hand, this reliance on informal processing incurs significant costs. Environmental cleanup and healthcare expenses drain public resources, while the loss of recoverable materials due to inefficient methods represents an economic opportunity squandered, estimated at millions of dollars annually.[31]

[30] C M Ohajinwa, C. M et al. Health risks awareness of electronic waste workers in the informal sector in Nigeria [2017] (14) (8) *International Journal of Environmental Research and Public Health, 14*(8),911. https://doi.org/10.3390/ijerph14080911

[31] Balde, (n.1)

The interplay between these impacts and Nigeria's international obligations underscores the legal failure. Under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, ratified in 1991, Nigeria is required to prevent illegal e-waste imports and ensure environmentally sound management. Yet, 500,000 tons of used electronics enter annually, often misclassified as functional goods, due to inadequate customs enforcement and NESREA's limited authority over border controls.[32] This breach of international law fuels the informal sector's growth, as imported waste supplements domestic supply, perpetuating the cycle of environmental harm, health risks, and economic loss.

The *NESREA Act*'s lack of e-waste-specific provisions exacerbates these impacts. While it designates NESREA to regulate hazardous waste, it does not address the unique challenges of e-waste its volume, hazardous processing, or informal dominance nor does it empower the agency with sufficient resources to enforce compliance. The EPR policy, despite its progressive intent, fails to redirect waste flows to formal channels, as producers evade responsibility and recycling infrastructure remains underdeveloped. A 2021 pilot project in Lagos, supported by the Global Environment Facility, recycled 1,000 tons of e-waste, proving formal management is feasible, yet this effort has not expanded due to funding and enforcement constraints.[33] Without legal mandates to ban hazardous practices or integrate informal workers, the crisis deepens.

Nigeria's e-waste crisis thus reflects a legal framework that cannot contain its consequences. Environmentally, unregulated processing pollutes land, water, and air, with cleanup costs mounting. Health-wise, informal workers and communities suffer preventable illnesses, unprotected by law. Economically, the informal sector's role sustains livelihoods but at a high cost, as valuable resources are lost and public funds are diverted to address the fallout. The failure to enforce the Basel Convention allows illegal imports to persist, amplifying these impacts. This analysis demonstrates that Nigeria's current laws the *NESREA Act* and EPR policy are inadequate to address the e-waste crisis, necessitating reforms to protect the environment, public health, and economic interests.

[32] Basel, (n4)
[33] Osinbanjo, (n.23).

SOLUTIONS FROM INTERNATIONAL BEST PRACTICES

Nigeria's legal framework for electronic waste (e-waste) management, anchored in the *National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007* (Cap N164, Laws of the Federation of Nigeria 2010) and the 2016 Extended Producer Responsibility (EPR) policy, falls short in addressing the country's e-waste crisis. With 500,000 tons of used electronics imported annually and over 277,000 tons generated domestically, the current laws lack specificity, enforcement power, and integration of the informal sector. To strengthen its approach, Nigeria can adopt solutions from international best practices Japan's producer-led recycling laws, Ghana's context-specific legislation, and the EU's comprehensive directives adapting them to its legal and economic realities.

Japan's Legal Model

Japan offers a robust framework through the *Law for the Recycling of Specified Kinds of Home Appliances (LRHA)*, effective since 2001, which mandates producers to finance and manage the recycling of designated items like televisions and refrigerators. Producers establish collection points and recycling facilities, while consumers pay a small fee typically ¥1,000–¥3,000 (about $7–$20) at disposal, achieving an 80% recycling rate for covered appliances. The *Law for the Promotion of Effective Utilization of Resources (LPUR)*, revised in 2001, complements this by requiring producers to design products that reduce waste and enhance recyclability. Japan's system shifts responsibility from public authorities to industry, enforced through strict compliance monitoring by government agencies. Nigeria could adapt this model by amending the EPR policy to mandate producers to fund and operate recycling infrastructure, establishing 50–100 collection points in urban centres like Lagos and Abuja within five years. A disposal fee of ₦500–₦2,000 ($1–$5) per item could incentivize participation, while NESREA enforces compliance with penalties for non-adherence. Given Nigeria's informal sector, training programs could license 20,000 workers to join these systems, preserving livelihoods while aligning with legal standards.

Ghana's Legal Model

Ghana provides a developing-country example with the *Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917),* which imposes an eco-levy on electrical and electronic equipment imports ranging from $0.10 to $10 per item to fund recycling infrastructure and formalize informal workers. The accompanying *Hazardous and Electronic Waste Control and Management Regulations, 2016 (LI 2250)* set technical standards for collection and treatment, licensing operators, and reducing open burning by approximately 15% in areas like Agbogbloshie. Ghana's approach generates revenue of over $10 million annually and integrates informal recyclers through training and registration, balancing economic and environmental goals.[34] Nigeria could enact a similar levy, set at ₦200–₦2,000 ($0.50–$5) per imported device, to raise funds for 10–15 recycling centres in major cities within three years. Regulations could ban hazardous practices like burning and licensing informal workers targeting 20,000 in Lagos and Port Harcourt using levy proceeds for training and equipment. NESREA would oversee licensing and enforcement, drawing on Ghana's model to address Nigeria's informal sector dominance.

European Union's Legal Model

The EU's *Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE Directive)*[35] sets a comprehensive standard, requiring producers to finance e-waste management and meet ambitious targets: 65% collection of equipment placed on the market or 85% of e-waste generated. Paired with the *Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive),*[36] it limits toxic substances in new electronics, achieving a 55% recycling rate across member states (Eurostat, 2023). The EU enforces this through national agencies and producer registration, with fines for non-compliance. Nigeria could adopt phased targets of 20% collection by 2030, rising to 50% by 2035 mandating producers to establish collection networks, starting with 50 sites in five years. A law restricting hazardous substances in imported electronics, enforced by NESREA and customs,

[34] R Grant and M Oteng-Ababio, Ghana's E-waste Policy and Implementation: A Case Study of Agbogbloshie [2021] (132)*Waste Management,* 54–63. https://doi.org/10.1016/j.wasman.2021.07.015
[35] Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE Directive) (European Union).
[36] Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive) (European Union).

could reduce disposal risks. While the EU's scale exceeds Nigeria's capacity, a gradual rollout in urban areas, supported by EPRON, could build a formal system over time.

PROPOSED LEGAL REFORMS FOR NIGERIA

To integrate these models, Nigeria must enact a standalone *E-Waste Management Act* to replace the *NESREA Act*'s generality with specific provisions. This law should:

1. **Mandate EPR Compliance**: Require producers to register with PROs like EPRON, fund collection points (50–100 nationwide in five years), and meet targets (20% collection by 2030), with fines of ₦5 million ($12,000) for non-compliance, adapting Japan's producer responsibility.

2. **Establish an Eco-Levy**: Impose a levy of ₦200–₦2,000 per imported device, raising ₦50–100 billion ($120–$240 million) annually to build 10–15 recycling centres and train informal workers, mirroring Ghana's approach.[37]

3. **Regulate Hazardous Practices**: Ban open burning and acid leaching via regulations, with penalties of ₦1–5 million ($2,400–$12,000) per violation, and license 20,000 informal workers within three years, using levy funds for training and equipment.

4. **Restrict Hazardous Substances**: Prohibit imports of electronics containing banned substances (e.g., lead, mercury), aligning with the EU's RoHS Directive, enforced by NESREA and customs with inspections at ports.

Institutional reforms are equally critical. NESREA's capacity must be enhanced with a dedicated e-waste unit, staffed by 50–100 specialists and funded by 10% of levy proceeds approximately ₦5–10 billion ($12–$24 million) yearly. Collaboration with the Nigeria Customs Service should be formalized through a joint task force to enforce Basel Convention obligations, targeting a 50% reduction in illegal imports (250,000 tons) within five years.[38] A 2021 Global Environment Facility

[37] R Grant and M Oteng-Ababio, Ghana's e-waste policy and implementation: A case study of Agbogbloshie (2021) [132] *Waste Management* 54–63. https://doi.org/10.1016/j.wasman.2021.07.015
[38] Basel,(n.4)

project recycled 1,000 tons in Lagos, proving feasibility with scaled investment. This could expand to 10,000 tons annually with proper funding and enforcement.

IMPLEMENTATION CONSIDERATIONS

These reforms balance Nigeria's realities its informal sector and resource constraints with international standards. The EPR mandate and levy draw on Japan and Ghana, ensuring producer funding and infrastructure growth, while collection targets and substance restrictions echo the EU's ambition, phased for practicality. Licensing informal workers addresses economic needs, integrating over 100,000 livelihoods into a legal framework.[39] Enforcement hinges on NESREA's empowerment, requiring political commitment to allocate levy funds and strengthen customs coordination. Pilot successes, like the 2021 Lagos project, suggest a five-year timeline: Year 1 for legislation, Years 2–3 for infrastructure and training, and Years 4–5 for scaling and enforcement.

This hybrid approach offers Nigeria a legally sound path forward. A new *E-Waste Management Act* would provide specificity missing from the *NESREA Act*, while enhanced enforcement and informal sector integration overcome EPR policy weaknesses. By adapting Japan's producer focus, Ghana's levy and worker inclusion, and the EU's targets, Nigeria can transform its e-waste management, reducing environmental harm, protecting health, and capturing economic value from its 500,000-ton annual burden.

CONCLUSION

Nigeria's legal struggle with electronic waste (e-waste) reveals a framework unable to manage a growing crisis, with profound implications for its environment, health, and economy. The country imports 500,000 tons of used electronics annually and generates over 277,000 tons domestically, yet the *National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007* lacks the specificity and enforcement power to address this burden. The 2016 Extended Producer Responsibility (EPR) policy, formalized in the 2020 *EPR Guidance Document* and reinforced by 2022 amendments to the *National Environmental (Electrical and Electronic Sector)*

[39] Manhart, (n.25)

Regulations, 2011, aimed to shift responsibility to producers, but weak implementation was hindered by institutional limitations and exclusion of the informal sector has failed to curb environmental damage, health risks, and economic losses. Over 80% of e-waste remains in the hands of unregulated workers, amplifying the crisis.

This article has demonstrated that Nigeria's current laws fall short of containing the e-waste challenge. The *NESREA Act* provides a broad mandate but no detailed provisions for e-waste management, while the EPR policy struggles with enforcement, leaving informal practices unchecked. These deficiencies result in polluted soil and water, widespread health issues among workers and communities, and economic costs from cleanup and lost resources. Nigeria's obligations under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal to prevent illegal imports and ensure safe management remain unfulfilled as 500,000 tons enter yearly. International best practices offer a path forward. Japan's producer-led recycling under the *Law for the Recycling of Specified Kinds of Home Appliances* and *Law for the Promotion of Effective Utilization of Resources*, Ghana's *Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917)* with its eco-levy and worker integration, and the EU's *WEEE Directive* with ambitious targets provide proven models.

A hybrid solution tailored to Nigeria's context is both feasible and urgent. A new *E-Waste Management Act* should mandate producer responsibility, impose an eco-levy of ₦200–₦2,000 per imported device to fund recycling hubs and formalize informal workers through licensing and training targeting 20,000 within three years. Detailed regulations must ban hazardous practices like open burning, with penalties of ₦1–5 million per violation, while NESREA gains a dedicated e-waste unit funded by levy proceeds to enforce compliance and reduce illegal imports by 50% in five years, aligning with the Basel Convention. A 2021 Global Environment Facility project recycled 1,000 tons in Lagos, showing this approach can work with sufficient investment and political will. This reform blends Japan's producer accountability, Ghana's levy-funded infrastructure, and the EU's structured targets, adapted to Nigeria's informal sector and resource constraints.

The stakes extend beyond Nigeria's borders. In 2022, global e-waste reached 62 million tons, a shared challenge that underscores the need for effective national responses. Successful

reform could position Nigeria as a leader in African environmental governance, offering a replicable model for countries like Ghana and Kenya while strengthening the Basel Convention's global impact. Failure to act perpetuates Nigeria's role as a dumping ground, deepening environmental and health harms. The proposed *E-Waste Management Act* and institutional enhancements provide a legally sound framework to reverse this trend, capturing economic value from e-waste while protecting public welfare.

This conclusion calls for immediate action. Nigerian lawmakers must prioritize the *E-Waste Management Act*, allocating levy funds to NESREA and formalizing informal workers to bridge legal gaps. Legal scholars should refine this framework, testing its provisions against Nigeria's socio-economic realities, while international partners like the United Nations Environment Programme (UNEP) or Global Environment Facility must provide technical and financial support to ensure implementation. Nigeria's e-waste crisis demands a decisive legal response, one that transforms vulnerability into leadership, aligning domestic law with global standards to address a pressing universal challenge.