

GARP INTERNATIONAL JOURNAL OF BUSINESS AND MANAGEMENT SCIENCES



<https://garp.org.ng/gijbms>

Vol.1, Issue 4, Pp. 1-13; SEPT., 2026

CORPORATE ENVIRONMENTAL SUSTAINABILITY INFORMATION DISCLOSURE AND MARINE ECOSYSTEM PROTECTION: THEORETICAL PERSPECTIVES

¹Ogwuche, Eje Emmanuel; ²JOSIAH, Mary PhD
& ³BOSUN-FAKUNLE, Yemisi Funmilayo PhD

Department of Accounting, College of Business and Management Studies,
Igbinedion University, Okada, Edo State Nigeria.

Email: Ogwuche.ejeh@iuokada.edu.ng; Josiah.mary@iuokada.edu.ng, & bosunfakunle.yemisi@iuokada.edu.ng

Corresponding Author: Ogwuche.ejeh@iuokada.edu.ng

Abstract

Nigeria possesses one of the largest coastlines in West Africa and hosts Africa's most extensive mangrove forest system in the Niger Delta, waters that sustain tens of millions of livelihoods through fishing, shipping, and tourism and that underpin the country's ambition to diversify beyond an oil-dependent economy. This paper synthesises a broader qualitative content-analysis study of marine ecosystem protection in Nigeria between 2020 and 2026, drawing on peer-reviewed research, statutes, government and institutional reports, court rulings, and credible news coverage. It reviews six principal threats to Nigeria's coast and ocean, oil pollution and mangrove loss in the Niger Delta, gas flaring, illegal and unregulated foreign fishing in the Gulf of Guinea, plastic and urban waste pollution around Lagos, coastal erosion and sea-level rise, and the compounding effects of climate change and invasive species, and examines the legal and institutional architecture built to govern them, including the National Environmental Standards and Regulations Enforcement Agency, the National Oil Spill Detection and Response Agency, and the Petroleum Industry Act of 2021. It then interrogates Nigeria's policy response, including the newly created Ministry of Marine and Blue Economy, the Hydrocarbon Pollution Remediation Project, and Nigeria's participation in the 2023 High Seas Treaty. To explain why a formally strong governance framework produces weak outcomes, the paper develops an Integrated Marine Ecosystem Governance (IMEG) model that combines the Driver–Pressure–State–Impact–Response (DPSIR) framework, common-pool resource theory, and a political ecology perspective. The analysis finds that Nigeria has built genuine institutions and made genuine commitments, yet chronic funding gaps, fragmented and overlapping mandates, weak monitoring and sanctioning, and an uneven distribution of power and cost between polluting industries and coastal communities sustain a wide and persistent gap between written policy and results on the water. The paper closes with a reform agenda mapped onto the three sites of the IMEG model, the causal chain, the governance layer, and the political ecology base, and argues that Nigeria's blue economy ambitions will remain aspirational unless reform proceeds on all three sites at once.

Keywords: *marine ecosystem protection; mangrove restoration; illegal fishing; coastal erosion; gas flaring; environmental governance*

ARTICLE INFO

Received Date: 8th Aug., 2026

Date Revised Received: 19th Aug., 2026

Accepted Date: 29th Aug., 2026

Published Date: 7th Sept. 2026

Citation: Ogwuche, E. E., Josiah, M.
& Bosun-Fakunle, Y. F. (2026):
Corporate Environmental
Sustainability Information
Disclosure and Marine Ecosystem
Protection: Theoretical Perspective:
GARP INTER J. of Bus. & Mgt. Sci.
Vol. 1, Issue 4, Pp. 1-13, Sept. 2026.

Introduction

Nigeria's coastline runs for roughly 853 kilometres along the Gulf of Guinea across four coastal zones, the Barrier Lagoon coast near Lagos, the Mahin mud coast, the Niger Delta, and the Strand coast near the Cameroon border, and encloses an exclusive economic zone extending 200 nautical miles into the Atlantic. The Niger Delta alone holds Africa's largest mangrove system, spanning more than 100,000 square kilometres across nine states and supporting the food, income, and shelter of tens of millions of people. For decades this maritime endowment was treated as a peripheral feature of an economy built on onshore and offshore oil. That posture has begun to shift: in August 2023 President Bola Ahmed Tinubu created Nigeria's first Federal Ministry of Marine and Blue Economy, and government estimates now place the value of an undeveloped maritime sector — fisheries, shipping, tourism, and ocean-based renewable energy, at roughly US\$296 billion.

The shift in rhetoric has not been matched by a shift in ecological condition. Decades of oil spills have degraded mangroves and fisheries across Ogoniland and the wider Niger Delta; gas flaring, though less visible than spills, ranks as the region's second most damaging environmental problem; foreign trawlers extract fish from Nigerian waters at a pace regulators can neither license nor count; Lagos discharges large volumes of plastic waste into its lagoon and canal system each year; and coastal erosion strips land from Lagos beaches and Niger Delta shorelines at rates among the highest recorded globally. These pressures sit inside a global commons under strain: the ocean carries roughly 90 percent of world trade, absorbs a large share of anthropogenic carbon, and supplies protein to billions of people, a role reflected in Sustainable Development Goal 14 and the 2023 High Seas Treaty. Nigeria's marine governance therefore operates simultaneously at the global, West African regional, and domestic scales, and its blue economy ambition, valued in the hundreds of billions of dollars, rests directly on ecosystems that current governance struggles to protect.

Statement of the Problem

On paper, Nigeria's marine governance architecture looks substantial. NESREA holds a broad pollution-control mandate, the National Oil Spill Detection and Response Agency (NOSDRA) oversees spill response, the Petroleum Industry Act (PIA) of 2021 restructured upstream oil and gas regulation, a dedicated Ministry of Marine and Blue Economy now exists, and Nigeria has endorsed zero routine gas flaring, signed the High Seas Treaty, and submitted climate commitments under the Paris Agreement.

Outcomes on the water tell a different story: thousands of recorded oil-spill incidents since 2020, mangroves in Ogoniland still degraded more than a decade after a landmark cleanup was promised, uncounted foreign fishing, plastic waste outpacing any current control effort in Lagos, and gas flaring persisting past repeated deadlines.

This paper reads that divergence, the gap between a formally strong policy framework and weak measured outcomes, as the central puzzle of Nigerian marine governance. Several conditions sustain the gap: overlapping and competing agency mandates that blur accountability; enforcement and remediation funding that falls well short of the scale of the problem; thin, scattered, and poorly shared environmental data; and a persistent mismatch between the communities that bear the ecological cost of degradation and the actors that hold power over the decisions that produce it. Existing Nigerian scholarship has documented these threats and institutions in considerable empirical depth but has tended to examine them as isolated single-threat studies rather than as a connected governance system, a gap this paper addresses through an integrated theoretical model.

Aim, Objectives, and Guiding Questions

The aim of the underlying study is to examine marine ecosystem protection in Nigeria between 2020 and 2026, with attention to the threats facing the marine environment, the governance response, the challenges weakening that response, and the prospects for reform. The specific objectives are to:

1. identify and analyse the major threats to Nigeria's marine and coastal ecosystems within the study period
2. review the legal and institutional framework governing marine ecosystem protection
3. interrogate the structural, legal, socio-economic, and data-related challenges that weaken protection
4. assess prospects for reform, including community-based approaches, financing, and regional cooperation
5. develop an integrated governance model linking the drivers, pressures, and responses shaping Nigeria's marine environment, and map a reform agenda onto it.

These objectives correspond to five guiding research questions addressing, respectively, the nature of the threats, the functioning of the legal and institutional framework, the challenges that weaken protection, the prospects for reform, and the capacity of an integrated model to explain the policy-to-practice gap and guide reform.

Methodology

The study holds value for several audiences: for policymakers in the Ministry of Marine and Blue Economy and the environmental regulators, it offers a consolidated account of where the current framework falls short and what reforms would strengthen it; for scholars, it contributes a model that integrates physical threats, institutional response, and questions of power within a single frame, in contrast to a Nigerian literature that has tended to treat single threats in isolation; for coastal communities and civil society, it documents the uneven distribution of environmental cost and grounds the case for placing community voice at the centre of governance; and for the wider field of environmental governance in the Global South, the model offers a transferable diagnostic for settings, common across West Africa and beyond, where formally strong frameworks coexist with weak capacity and unequal power. Geographically, the analysis concentrates on the Niger Delta and the Lagos coastal area, the two zones that concentrate most recorded threats and most governance activity, while drawing on evidence from the wider coast where relevant. Temporally, it focuses on 2020–2026, a window that captures the creation of the Ministry of Marine and Blue Economy, early implementation of the PIA, the signing of the High Seas Treaty, and the most recent spill and fisheries data, while retaining a small number of older sources that establish a still-relevant legal or scientific baseline. The underlying study is a desk-based qualitative content analysis rather than a field study: it applies a directed content-analysis approach, coding a purposive corpus of peer-reviewed articles, statutes and regulations, institutional and agency reports, and credible news coverage against categories derived from the DPSIR framework and common-pool resource theory, and a summative approach to track the relative frequency and emphasis of recurring themes. Trustworthiness rests on triangulation across source types, an explicit and repeatable coding frame, and a documented audit trail linking each claim to its source. The principal limitation of this design is the absence of primary field data; the study addresses this through triangulation and by explicitly flagging where the evidence base is thin.

Literature Review and Theoretical Framework

Conceptual Foundations

A marine ecosystem is the community of living organisms in the ocean and coastal waters together with the physical environment that supports them. The concept of ecosystem services, provisioning services such as fish, regulating services such as carbon storage and storm protection, supporting services such

as nutrient cycling, and cultural services tied to identity and recreation, explains why these systems matter for human welfare; global estimates place the combined worth of marine fisheries, reefs, seagrass, and mangroves at roughly US\$6.9 trillion, with coastline productivity and carbon absorption adding a further US\$12.1 trillion. In Nigeria this value concentrates in the Niger Delta mangroves, which store carbon, shelter fish nurseries, and buffer storm surge simultaneously, so that damage to a single mangrove forest registers at local, national, and global scales at once. A caution runs alongside this valuation logic: some services, such as the storm protection a mangrove belt provides, carry a value no market fully captures and no substitute easily replaces, and a blue economy agenda that treats the ocean chiefly as a set of revenue lines risks losing sight of this.

Marine ecosystem protection, the laws, institutions, policies, and practices that prevent, reduce, or reverse ecosystem damage, is conceptually distinct from conservation, the active management of species and habitats through restoration and stewardship. Nigeria's framework leans heavily toward protection through top-down regulation and falls short on the active conservation that restoration and community stewardship require, a distinction that matters because top-down rules that exclude resource-dependent communities tend to breed resistance, whereas stewardship grounded in local knowledge and interest tends to build durable cooperation. Environmental governance, understood broadly as the arrangement of rules, institutions, and processes, spanning government, markets, communities, and international bodies, through which decisions about the environment are made, enforced, and contested, frames the blue economy as an attempt to bind economic policy to ecological health. The Nigerian blue economy agenda formalized through the 2023 ministry and the US\$296 billion sector estimate, therefore represents an open test of whether growth will be pursued at the ecosystem's expense, repeating the extractive pattern of the oil economy, or in a way that sustains it. In the Nigerian context specifically, marine protection cannot be separated from six decades of oil-driven development, a rising coastal population (from roughly 20 percent of Nigerians in coastal areas in 1993 to roughly 30 percent by 2011), and a pronounced equity dimension in which Niger Delta communities bear the heaviest ecological cost while holding limited power over the decisions that produce it.

Review of Global, Regional, and Nigerian Literature

The global literature supplies this study with a governance theory, a causal framework, and a candid account of the limits of both. Ostrom's (2009) general framework for analysing social-ecological systems established that resource users often build effective self-governing institutions around shared resources, though her framework's origin in self-organised local systems limits its direct application where a powerful state and multinational firms dominate, as in the Niger Delta. Elliott et al. (2017) and Patrício et al. (2016) extend and critically evaluate the DPSIR framework, supplying a clear causal structure, from driver to pressure to state to impact to response, while candidly noting the framework's difficulty separating drivers from pressures and its origin in relatively well-resourced European settings. Gari, Newton, and Icelly (2015) show that DPSIR performs best when it treats human society as part of the system rather than an external force, an argument that highlights what Nigerian governance currently lacks: institutionalised stakeholder participation. Senatore's (2025) synthesis of game-theoretic commons scholarship traces the field's movement from Hardin's pessimism toward Ostrom's more constructive, cooperative view; though its formal abstraction sits at a distance from the institutional reality of the Niger Delta. Read together, these works share a blind spot: each assumes a state with the capacity to measure, enforce, and act, a condition the Nigerian case does not meet, which motivates this study's addition of a political ecology lens.

The West African and Gulf of Guinea literature bridges the global frameworks and the Nigerian case. Okafor-Yarwood (2020) reframes illegal, unreported, and unregulated (IUU) fishing as a human and national security threat rather than a purely ecological one; Belhabib, Sumaila, and Le Billon (2019) document the scale of fish taken from African waters by unlicensed foreign fleets and the revenue this diverts from coastal economies; Lam, Cheung, Swartz, and Sumaila (2012) project climate-driven declines in West African catch potential that compound existing pressures; and Okafor-Yarwood et al. (2020) show that blue economy planning across the Gulf of Guinea and Western Indian Ocean often overlooks the cultural and livelihood value coastal communities draw from marine ecosystems, risking their displacement in the name of growth. Naanen (2019) reads oil theft in the Niger Delta as a form of resistance that follows the breakdown of legitimate governance, reinforcing this study's central claim that Nigeria's marine problems are governance problems at their root.

Across this tier, the threats and the equity concerns are shown to be regional rather than uniquely Nigerian, strengthening the case for regional cooperation and cross-border learning.

The Nigerian literature supplies the local evidence base. Folorunsho et al. (2023) establish the physical geography of the four coastal zones and document rising coastal population density; Ite et al. (2013) catalogue the mechanisms through which petroleum activity damages soil, water, and air across the Niger Delta; Edo and Albrecht (2021) document the failed implementation of the management plan at the Apoi Creek Forests Ramsar site, home to the Niger Delta red colobus monkey found nowhere else on earth; Sam, Zabbey, and Gbaa (2023) find that applied Ogoniland remediation targets fell short of Nigeria's own EGASPIN standards, direct evidence of a policy-to-practice gap; and Etim, Akpan, and Udoh (2023) measure elevated contaminant levels in drinking water near gas-flaring sites in Akwa Ibom State, establishing a health pathway distinct from the visible flame itself. Read as a set, these works document severe, varied, and well-evidenced threats but stop short of an integrated governance analysis linking the threats to the institutions meant to manage them, the space this study occupies. A related finding from the content analysis underlying this paper is that research attention concentrates heavily on oil pollution while thinning markedly for plastic pollution, invasive species, and cumulative multi-pressure effects, an imbalance that shapes what receives policy attention.

Theoretical Framework

This study rests on three complementary theories. Common-pool resource theory (Ostrom, 1990, 2009) responds to Hardin's (1968) tragedy-of-the-commons thesis by showing empirically that communities often avoid resource collapse by adopting design principles: clear boundaries, rules matched to local conditions, participatory rule-setting, monitoring, graduated sanctions, low-cost conflict resolution, recognised rights to organise, and nested authority across governance levels. Applied to Nigeria, the theory functions as a diagnostic checklist, and the diagnosis is unfavourable: boundaries around who may fish and where remain contested and poorly enforced; rules exist chiefly as top-down statute rather than locally matched arrangements; monitoring is weak; sanctions rarely follow detected breaches; and authority across agencies competes rather than nests. The DPSIR framework (Patrício et al., 2016) supplies the causal chain used throughout this paper: drivers (the oil economy, population growth, food demand) generate pressures (spills, flaring, illegal fishing, plastic waste, erosion-inducing activity), which alter the state of the

environment (mangrove loss, stock decline, contamination), producing impacts (lost livelihoods, health risk, biodiversity loss) that in principle trigger responses (law, agencies, restoration, blue economy policy) that feed back to reduce drivers and pressures. In Nigeria this feedback loop is chronically weak, so pressures continue to mount largely unchecked by the response element.

Political ecology completes the framework by supplying the power dimension the other two theories lack. It reads environmental outcomes as products of political and economic arrangement rather than neutral technical processes, asking who holds power over a

resource, who profits from its use, and who bears the cost of its decline. In the Niger Delta this analytic fits with unusual force: oil revenue flows chiefly to the federal government and multinational firms, while the communities that bear spills, flaring, and fisheries loss hold comparatively little power over the decisions that produce that harm. This scale mismatch between the location of profit and the location of cost weakens the incentive to protect the resource, since those with power to act do not feel the cost of inaction, and it explains why formal reforms so often fail to change outcomes on the ground.

Theory	Core idea	Contribution to the study
Common-pool resource theory (Ostrom, 1990)	Shared resources fail without design principles such as monitoring and sanctions	Supplies the governance layer and a diagnostic checklist for assessing Nigeria's institutions
DPSIR framework (Patrício et al., 2016)	A causal chain running from drivers to responses	Supplies the structure of the causal chain and the coding categories used in the analysis
Political ecology	Power and interest shape who bears environmental cost	Supplies the power base and explains the persistence of the policy-to-practice gap

Table 1. Summary of the theoretical framework.

The Integrated Marine Ecosystem Governance (IMEG) Model

This study synthesises the three theories into an Integrated Marine Ecosystem Governance (IMEG) model. The model reads Nigeria's marine environment as a DPSIR causal chain; a governance layer, drawn from common-pool resource theory, sits above the chain and determines the quality of the response through the design principles of clear boundaries, collective choice, monitoring, graduated sanctions, conflict resolution, and nested authority; a political ecology base sits beneath the chain and shapes the whole system through the distribution of power and the sharing of cost and benefit; and a scale ladder runs from the global, through the West African region, to the national and community levels, since marine governance operates at all four simultaneously.

The model advances three linked claims: first, that Nigeria's weak marine outcomes follow from a response element that is weak relative to the pressures acting on the system; second, that this weak response follows from a governance layer that fails to meet the common-pool resource design principles, chiefly monitoring, sanctions, and nested authority; and third, that the governance layer fails because the political ecology base concentrates power away from the communities that depend on the resource, which drains the will to enforce and reform. The policy-to-

practice gap that defines Nigerian marine governance is therefore read as the joint product of a broken causal chain, an incomplete governance layer, and an unequal power base and, correspondingly, effective reform must act on all three sites simultaneously, since reform confined to any single site invites resistance or collapse from the sites left untouched.

Gaps Addressed by This Study

The review identifies four linked gaps that this paper addresses: the treatment of Nigerian marine threats in isolation from one another, absent a connecting governance frame; the thin treatment of power in the dominant global causal and governance frameworks; the distance between regional Gulf of Guinea analysis and Nigeria-specific institutional detail; and the limited direct attention, across the wider literature, to the policy-to-practice distance as a subject in its own right. The IMEG model, and the systematic content analysis on which this paper draws, is offered as a single integrated response to all four.

Methodology

The underlying study adopts a qualitative content-analysis design, a systematic method for interpreting textual material through structured coding and categorisation, suited to a governance question whose evidence already exists across a large body of published material.

The design combines a directed content-analysis approach, using the DPSIR framework and common-pool resource theory as initial coding categories, refined during reading, with a summative approach that tracks the relative frequency and emphasis of recurring themes across the corpus.

Data were drawn from four source classes: peer-reviewed journal articles on marine ecology, environmental law, and ocean governance at the global, West African, and Nigerian scales; Nigerian statutes and regulations, including the PIA and associated flaring regulations; institutional and agency material, including reports from NOSDRA, NESREA, the Ministry of Marine and Blue Economy, the World Bank, UNEP, and the Ramsar Convention Secretariat; and credible news coverage capturing events not yet reflected in the peer-reviewed record. Sources qualified for inclusion where they addressed marine or coastal ecosystems connected to Nigeria, fell within the 2020–2026 window or established a still-relevant legal or scientific record, and originated from a credible, identifiable author or institution. The unit of analysis was the theme, a coherent statement about a threat, institution, policy response, challenge, or reform, coded against a frame organised into five DPSIR families overlaid with six common-pool resource governance categories (boundary definition,

collective choice, monitoring, sanctions, conflict resolution, and nested authority).

Analysis proceeded through preparation, organisation, and reporting phases. Trustworthiness rested on triangulation across source types (credibility), an explicit and repeatable coding frame (dependability), grounding of claims in cited sources rather than unsupported assertion (confirmability), and detailed contextual description enabling readers to judge transferability to comparable West African settings. As a desk-based review, the design's principal limitation is the absence of original field or laboratory measurement; this was addressed through triangulation across source types and through explicit acknowledgement, throughout the analysis, of where the underlying evidence base remains thin, most notably in spill-volume estimation and unlicensed foreign catch.

Threats to Nigeria's Marine and Coastal Ecosystems

Six interlinked pressures dominate the threat landscape, concentrated principally in the Niger Delta and the Lagos coastal area. Each threat traces to an identifiable driver, acts on the environment through a specific pressure, changes ecosystem state, and produces measurable human and ecological impact, the DPSIR structure that organises the discussion below and Table 2.

Threat	DPSIR class	Main location	Primary impact
Oil pollution	Pressure	Niger Delta	Mangrove and fishery loss; health risk
Gas flaring	Pressure	Niger Delta	Air and water pollution; health risk
Illegal fishing	Pressure	Gulf of Guinea	Fish-stock decline; lost livelihood
Plastic waste	Pressure	Lagos lagoon	Habitat degradation; flooding
Coastal erosion	Pressure and state	Lagos and Delta coast	Land loss; displacement
Climate change and invasives	Driver and pressure	Whole coast	Compounded ecosystem stress

Table 2. Summary of major threats and their DPSIR classification.

Oil Pollution and Mangrove Loss

Oil pollution remains the most documented threat to Nigeria's marine environment. Public spill monitoring records identify 1,162 spills in 2023 and 589 in 2024, totaling an estimated 630,000-plus barrel across the tracked period, with Rivers, Bayelsa, and Delta States carrying the heaviest burden. Spilled oil coats mangrove root systems, kills fish and shellfish, and contaminates soils for years; the resulting loss of mangrove cover strips away storm protection and carbon storage simultaneously, linking a local spill to the global carbon account. More than three-quarters of

Niger Delta residents depend on farming and fishing for livelihood and on local rivers for drinking water, so a single spill can remove income and safe water at once, and research links spills in the region to elevated infant mortality and other health risks. Attribution of cause, operational failure (corroded, ageing infrastructure) versus third-party interference (sabotage, illegal tapping), remains contested between industry and community/independent researchers, a dispute with direct consequences for who pays for cleanup and compensation, and a substantial share of recorded spills lack a reliable volume estimate. More than a decade after a major UNEP assessment

documented severe Ogoniland contamination and called for sustained remediation, applied cleanup targets have been found to fall short of Nigeria's own EGASPIN standards, and communities continue drawing water from contaminated sources, the clearest domestic illustration of the policy-to-practice gap this paper examines. A 2021 Dutch court ruling holding the Nigerian subsidiary of a major oil firm liable for spill damage to farming communities offered a route to redress largely unavailable through domestic courts, underscoring a weakness in Nigeria's own accountability channel.

Gas Flaring and Associated Water Pollution

Gas flaring, the burning of natural gas produced alongside crude oil, ranks as the Niger Delta's second most damaging environmental problem after spills, releasing carbon dioxide, methane, and other pollutants close to where people live. Etim, Akpan, and Udoh (2023) measured elevated contaminant levels in drinking water near Akwa Ibom flare sites relative to control areas, establishing a health pathway distinct from the visible flame, and chronic illness is common in flaring communities, where life expectancy sits below the national average in parts of the Delta. Nigeria endorsed the World Bank's Zero Routine Flaring by 2030 initiative in 2016 and established a National Gas Flare Commercialisation Programme, yet remains among the world's larger flaring nations even as global flaring volumes fell modestly, from 144 billion cubic metres in 2021 to 139 billion in 2022, a persistence that again illustrates a response element trailing behind the pressure it targets.

Overfishing and Illegal, Unreported, and Unregulated Fishing

Foreign trawlers extract fish from Nigerian waters at a pace regulators neither license nor count, part of a wider African pattern in which weak licensing and enforcement allow foreign fleets to capture value that should support local economies. Nigeria's own fish production reached roughly 1.4 million metric tonnes in 2025 against demand exceeding this by roughly 3.6 million metric tonnes, a shortfall met through imports and intensified pressure on the inshore stocks that artisanal fishers depend on. Climate modelling projects further declines in West African catch potential under continued warming, compounding the effect of illegal extraction and linking fisheries decline to a wider cycle of livelihood loss and regional insecurity. The persistence of the threat reflects, in common-pool resource terms, a boundary problem: the Gulf of Guinea's waters cross many national jurisdictions, and foreign fleets exploit the resulting weak, poorly enforced boundaries.

Plastic and Urban Waste Pollution

Lagos, among the fastest-growing cities on earth, discharges large volumes of plastic waste into its lagoon and canal system each year, waste that blocks drainage, worsens flooding, harms marine life, and degrades an ecosystem that supports fishing and recreation. Unlike oil pollution, which flows from a small number of large firms, plastic pollution flows from millions of households and businesses, making it far harder to govern through the regulation of a few actors and requiring instead waste infrastructure, producer responsibility, and behaviour change at urban scale, a governance requirement NESREA's current mandate has not matched. Because plastic persists for decades while population and waste generation continue to outpace disposal capacity, the gap between pressure and response widens each year the problem goes unaddressed, and the resulting drainage blockage raises flood risk for the low-lying, poorly drained communities least able to absorb the resulting damage.

Coastal Erosion and Sea-Level Rise

Nigeria's shoreline erodes at rates among the highest recorded globally, with the Lagos Barrier Lagoon coast and Niger Delta shorelines losing land each year. Sand mining, mangrove loss (which removes a natural wave barrier), dredging, and coastal construction compound the acceleration driven by climate-linked sea-level rise, illustrating how the study's threats reinforce one another rather than acting in isolation. Impact falls hardest on a coastal population that rose from roughly 20 percent of Nigerians in 1993 to roughly 30 percent by 2011, and, consistent with the study's political ecology lens, on poorer communities that lack the resources for sea defences or managed retreat available to wealthier areas making erosion a driver of inequality as well as a physical threat.

Broader Climate Pressures and Invasive Species

Climate change occupies a dual role in the causal chain, functioning as both a driver, setting sea-level rise and ocean warming in motion, and a pressure acting directly through heat, acidification, and intensified storms; this dual role complicates governance, since the driver operates at global scale while its effects land locally. Nigeria's Paris Agreement commitments connect its domestic response to the global effort, but local pressures continue to intensify while global emissions remain high. Invasive species, notably water hyacinth and other aquatic weeds that block waterways and displace native species, illustrate how weak monitoring allows a slow-moving, low-cost-to-contain threat to become an established, high-cost

one, underscoring the priority this paper places on strengthening monitoring capacity.

Governance Challenges

If Section 4 establishes the scale of ecological pressure, this section explains why Nigeria's governance response falls short. The challenges are read as a connected set: structural, legal, and enforcement weaknesses sit within the IMEG model's governance layer; socio-economic and gender dimensions sit within its political ecology base; and data weakness cuts across both.

Structural and Institutional Fragmentation

Marine governance runs through several agencies whose mandates overlap in practice: NESREA holds a broad pollution-control mandate, NOSDRA oversees oil spill response, the Nigerian Maritime Administration and Safety Agency (NIMASA) handles maritime safety and security, the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) regulates the upstream sector, and the new Ministry of Marine and Blue Economy now sits above parts of this landscape without yet consolidating it. This overlap weakens accountability when damage occurs, since responsibility diffuses across many bodies and settles on none, and it leaves cross-cutting threats, coastal erosion, which touches the environment, works, and marine ministries at once, or plastic pollution, which touches waste, water, and local government agencies, without any single body holding a mandate broad enough to govern the coast as one system. In common-pool resource terms, Nigeria's institutional boundaries are blurred and its authority layers compete rather than nest.

Legal and Regulatory Gaps

Nigeria's legal texts are frequently strong; their application is not. The finding that applied Ogoniland cleanup targets fell short of Nigeria's own guidelines is a direct instance of a written standard the applied practice ignored. The environmental impact assessment process, though procedurally well specified in law, suffers in practice from weak public consultation, limited independent review of company-submitted data, and inconsistent post-approval follow-up. The 2021 Petroleum Industry Act represents genuine legal progress, restructuring oil and gas regulation and introducing gas-metering and flaring-record requirements, but its practical effect is constrained by an enforcement gap: a regulator that lacks the resources to inspect sites, verify records, and impose sanctions cannot convert a strong statute into changed behaviour, illustrating the common-pool resource principle that rules without credible

monitoring and graduated sanction fail to alter conduct.

Enforcement and Funding Shortfalls

Enforcement failure sits at the heart of the governance problem. Monitoring a coastline exceeding 850 kilometres and an exclusive economic zone of 200 nautical miles demands vessels, aircraft, and trained personnel that Nigeria's agencies do not hold in sufficient number, which is why foreign fleets operate with low expectation of detection or sanction, why oil spills go uncounted, and why flaring persists past deadline. Underlying this capacity gap is a funding shortfall: remediation, monitoring, and enforcement all require sustained investment that current environmental-institution budgets do not provide, and the Hydrocarbon Pollution Remediation Project has faced criticism for slow progress and for awarding cleanup contracts to firms lacking relevant experience. A stark resource asymmetry compounds the problem, the oil firms operating in the Niger Delta command budgets, technology, and legal capacity that dwarf those of their regulators, leaving regulators dependent on the firms they oversee for the very data needed to monitor them, contrary to the common-pool resource principle that credible monitoring should not depend on the goodwill of the monitored party.

Socio-Economic and Community Dimensions

The communities of the Niger Delta bear the heaviest cost of oil production while holding limited power over the decisions that shape their environment, the political ecology dynamic that, this paper argues, drains the will to enforce and reform. A deep trust deficit, built from decades of unmet promises of cleanup, compensation, and infrastructure, now stands as an obstacle in its own right: reforms arrive to an audience that has learned to doubt them. Dependence compounds distrust, when pollution destroys a fishing ground, affected fishers frequently have no alternative but to return to the same degraded waters, which limits the room for conservation measures that restrict access without offering an alternative livelihood. This dynamic feeds a documented cycle in which environmental degradation fuels grievance, grievance fuels unrest and illegal activity (including pipeline sabotage and artisanal refining), and that activity in turn produces further environmental damage, a cycle that will not break through technical fixes alone.

The Gender Dimension

Women carry a distinct and disproportionate share of the cost of marine ecosystem decline. Across West African fisheries, women constitute a substantial share of the workforce, concentrated in fish processing and

trade, yet hold markedly less access to finance and formal recognition than men, in one regional account, roughly 30 percent of fisheries jobs but only 16 percent formal bank-account access, compared with 26 percent for men. Because the value chain runs from men who predominantly catch to women who predominantly process and trade, a decline in catch, whether from illegal fishing or pollution, passes down to women even where they do not fish themselves, while their comparatively limited financial and institutional standing leaves them least able to absorb the resulting shock. Women also lead much of the Niger Delta's community mangrove-restoration work, positioning gender inclusion as both an equity imperative and a practical governance opportunity.

Data and Monitoring Weakness

Data weakness runs through, and reinforces, every challenge above. Spill records depend on joint investigation visits that do not always occur, leaving a share of recorded spills without a reliable volume estimate; fisheries data omit the catch taken by unlicensed foreign fleets; and information that individual agencies do hold is rarely shared with the other bodies that need it, so fragments never combine into an integrated picture. This produces a self-reinforcing cycle: weak data prevents the response from targeting the worst pressures, which allows pressures to grow, which makes the true state of the environment harder still to measure. Because monitoring is itself a core common-pool resource design principle, underpinning both credible sanctioning and reliable data, this paper identifies monitoring reform as carrying the widest leverage of any single governance intervention available to Nigeria.

Prospects for Reform

This section reads reform options through the three sites of the IMEG model: the response element of the causal chain, the governance layer, and the political ecology base.

Legal and Institutional Reform

The 2023 Ministry of Marine and Blue Economy offers a genuine opportunity to consolidate Nigeria's fragmented institutional landscape, provided it receives the authority and resources to coordinate, rather than merely add to, the agencies whose mandates touch the coast; a complementary option is a dedicated lead coordinating body for the coastal zone as a whole, addressing cross-cutting threats such as erosion and plastic pollution that no single existing agency governs. Legal reform should close the gap between written and applied standards by making environmental standards binding rather than

discretionary, strengthening the environmental impact assessment process (independent data review, genuine public consultation, enforced post-approval follow-up), and matching the strong text of the Petroleum Industry Act with commensurate enforcement capacity. Because legal reform that raises standards without building enforcement capacity widens rather than narrows the policy-to-practice gap, this paper treats legal and enforcement reform as a paired sequence rather than separate, sequential steps.

Strengthening Enforcement and Monitoring

Reform of monitoring carries the widest reach of any single intervention, since monitoring underpins enforcement, data quality, and the tracking of results simultaneously. For illegal fishing, this means investment in patrol vessels, satellite vessel-tracking, and the legal follow-through needed to prosecute detected offenders, multiplied in reach through regional cooperation. For spills and flaring, it means independent, adequately resourced monitoring that does not depend on the cooperation of the monitored firms, paired with the graduated sanctioning that the Petroleum Industry Act's expanded inspection regime makes newly plausible. The falling cost of satellite oil-slick detection, remote sensing of mangrove cover, and vessel-tracking systems makes broader monitoring coverage more achievable than in the past, and combining these technologies with the local, ground-level knowledge of coastal communities, who observe activity that remote sensing misses, offers a practical route to closing the scale mismatch between the size of Nigeria's marine domain and current agency capacity.

Community-Based and Co-Management Approaches

Co-management, sharing authority over a resource between the state and the communities that depend on it offers the clearest route to reform at the political ecology base, drawing on Ostrom's finding that resource users often govern shared resources well when they hold a genuine role in setting and enforcing rules. For fisheries, this means giving artisanal communities a real role in monitoring their own waters and setting local access and gear rules, drawing on a presence and interest in the resource that distant agency cannot match. For mangroves, it means recognising, funding, and scaling the community-led restoration that in parts of the Niger Delta already outpaces government or industry effort. The design of any co-management arrangement determines its durability: token consultation that leaves real authority with the state breeds the same cynicism that already

undermines top-down programmes, whereas arrangements that grant communities genuine, bounded authority, backed by state capacity where communities cannot act alone, align with the common-pool resource design principles and, evidence from comparable coastal fisheries elsewhere suggests, tend to produce stock recovery and reduced conflict.

Marine Protected Areas and Restoration

Nigeria's three Ramsar wetlands of international importance, including the Apoi Creek Forests site and its uniquely endemic primate, illustrate both the promise and the current shortfall of protected-area designation: recognised ecological value has not translated into active management, funding, or effective enforcement, and habitat loss continues. Moving these sites from paper designation to active, funded, community-partnered management would convert recognised value into real protection. Mangrove restoration, ideally community-led, offers a route to reverse rather than merely halt past damage, rebuilding storm protection, carbon storage, and fish nurseries at once; because restored mangroves also restore the livelihoods of the communities that plant them, restoration aligns ecological and economic incentives in a way regulation alone does not, giving communities a durable interest in protecting rather than clearing what they have restored.

Financing and the Blue Economy

The funding shortfall documented in Section 5 is a binding constraint on every other reform. The blue economy agenda offers a route to align financing with conservation, since the promised economic value, fisheries, tourism, shipping, and ocean energy contributing toward the estimated US\$296 billion sector potential, itself depends on ecosystem health.

A Reform Agenda Mapped to the IMEG Model

Model site	Reform focus	Key actions
Causal chain (response)	Strengthen the response that reduces drivers and pressures	Enforcement, protected areas, restoration, conservation-linked financing
Governance layer	Complete the common-pool resource design principles	Clear institutional boundaries, credible monitoring, graduated sanctions, nested authority
Political ecology base	Shift power and cost toward affected communities	Co-management, genuine community voice, gender inclusion, revenue sharing

Table 3. Reform agenda mapped to the IMEG model.

Reform confined to a single site is unlikely to hold: stronger enforcement without a shift in power invites resistance from the interests that benefit from weak enforcement; a shift in power without institutional capacity leaves communities under-supported; and a

Comparator small-island economies such as Seychelles and Mauritius earn substantial foreign exchange from marine tourism and seafood exports built on comparable coastal ecosystems, often using blue bonds, debt-for-nature arrangements, payments for ecosystem services, and blue carbon finance to tie capital directly to conservation outcomes rather than extraction. Financing reform must also carry an explicit equity dimension: directing a share of blue-economy revenue toward the communities that bear the cost of ecosystem decline, rather than repeating the pattern, documented in the West African literature, in which growth-focused ocean plans displace the coastal communities they claim to serve.

Regional and International Cooperation

Because illegal fishing fleets, pollution, and climate pressures cross national boundaries, regional cooperation multiplies the reach of national reform. Regional fisheries bodies such as the Fisheries Committee for the West Central Gulf of Guinea, and programmes such as the World Bank-supported West Africa Coastal Areas programme and the West Africa Sustainable Ocean Programme, enable shared monitoring, shared data, and shared enforcement that close gaps individual states cannot close alone. Nigeria's international commitments, the 2023 High Seas Treaty, zero routine flaring, and Paris Agreement climate pledges, connect domestic reform to global resources and standards, but international commitment without domestic enforcement capacity simply reproduces the policy-to-practice gap this paper describes; the reform task is therefore to build the domestic capacity that converts commitment into outcome, not merely to accumulate further commitments.

stronger response without better data risks targeting the wrong pressures. Within the governance layer, monitoring carries the highest priority because so much else, sanctioning, data, tracking of results depends on it; within the political ecology base, the

shift of power and cost toward affected communities carries the highest priority because it addresses the root cause of weak enforcement will. A coordinated agenda acting on all three sites simultaneously is therefore the standard this paper sets for reform, not an incremental, single-site approach.

Discussion and Conclusion

This paper's central conclusion is that Nigeria's weak marine outcomes follow not from an absence of laws and institutions the country has built a dedicated ministry, a restructured petroleum law, a network of environmental agencies, and a substantial set of international commitments, but from a response that remains structurally weak relative to the pressures acting on the system. The IMEG model explains this as the joint product of three linked failures: a causal chain in which the response element trails behind mounting pressure; a governance layer that fails to meet common-pool resource design principles, chiefly in monitoring, sanctioning, and nested authority; and a political ecology base in which power concentrates away from the communities bearing the greatest cost, draining the political will needed to enforce and reform. The persistent policy-to-practice gap is the visible surface of these three deeper failures rather than a problem that further legislation alone can resolve.

The analysis also demonstrates the analytical value of combining the three theories rather than applying any one alone. DPSIR supplies causal structure but no power dimension; common-pool resource theory supplies governance design principles but developed chiefly from small-scale, local settings; political ecology supplies the power dimension but no causal structure of its own. The IMEG model draws the strength of each while covering the blind spot of the others, producing an account that neither purely technical governance frameworks nor purely equity-focused critiques achieve independently and this combination constitutes the paper's principal theoretical contribution.

Because Nigeria's blue economy agenda rests directly on the health of ecosystems that current governance struggles to protect, the case for reform is economic as well as ecological: without coordinated action across the causal chain, the governance layer, and the political ecology base, the blue economy risks becoming another written commitment that outstrips what happens on the water. Nigeria's demonstrated capacity to create institutions and sign commitments suggests the harder remaining task is not institutional creation but institutional delivery, building enforcement capacity and shifting the distribution of power toward the communities that bear the cost of degradation.

Whether Nigeria undertakes that harder work will determine the trajectory of both its marine environment and the blue economy that depends on it.

Recommendations

The recommendations below map onto the three sites of the IMEG model and are offered with an explicit acknowledgement of the interests likely to resist them, institutional coordination confronts agencies protective of existing mandates, stronger enforcement confronts interests that benefit from its current weakness, community co-management confronts state reluctance to share authority, and revenue sharing confronts competition for public funds. Reform that ignores these obstacles offers little practical guide to change.

1. The Federal Government should give the Ministry of Marine and Blue Economy the authority and resources to coordinate agencies whose mandates touch the coast, and establish a lead coordinating body for the coastal zone to address cross-cutting threats no single agency currently governs.
2. Environmental regulators should invest in independent, adequately resourced monitoring of oil spills, gas flaring, and fishing activity, using satellite detection, remote sensing, and vessel tracking, to narrow the data gap and support credible enforcement.
3. The National Assembly and regulators should close the gap between written and applied standards by making environmental standards binding, strengthening the environmental impact assessment process, and matching the Petroleum Industry Act's strong text with commensurate enforcement and graduated sanctions.
4. The Ministry of Marine and Blue Economy should adopt community-based and co-management approaches for fisheries and mangrove restoration, give coastal communities a genuine role in monitoring and rule-setting, and recognise and support women's central role in restoration and local knowledge.
5. Government should expand and actively manage marine protected areas and Ramsar wetlands, and invest in community-led mangrove restoration to reverse past damage and rebuild storm protection, carbon storage, and fisheries.
6. Government should tie blue-economy investment to conservation outcomes and direct a share of blue-economy revenue toward communities that bear the cost of

ecosystem decline, so growth funds rather than depletes the marine environment.

7. Nigeria should deepen participation in Gulf of Guinea regional bodies and programmes to coordinate responses to illegal fishing and shared pollution, and translate its High Seas Treaty and Paris Agreement commitments into domestic action backed by real capacity.

Contribution to Knowledge

This paper contributes, first, an Integrated Marine Ecosystem Governance model that combines DPSIR, common-pool resource theory, and political ecology into a single frame for reading marine governance in low-capacity, high-inequality settings, addressing a gap between causal frameworks that lack a power dimension and equity critiques that lack causal structure. Second, it offers a current, integrated account of Nigeria's marine governance across 2020–2026 that connects threats, institutions, challenges, and reforms into one analysis rather than treating them as isolated single-threat studies. Third, it places the policy-to-practice gap at the centre of the analysis and explains it as the joint failure of the causal chain, the governance layer, and the power base, a diagnostic that extends, in principle, to comparable governance settings across West Africa and the wider Global South.

Limitations and Directions for Future Research

As a desk-based content analysis, this study relies on documentary evidence rather than primary field measurement, and its conclusions should be read with that limitation in view. Future research should test the IMEG model through field study in specific coastal communities; measure the data and monitoring gap directly, given how strongly data weakness constrains the precision of any governance analysis; examine the gender dimension of marine governance in greater depth; evaluate community-based and co-management approaches through comparison of adopting and non-adopting communities; track the blue economy agenda over time to assess whether it funds conservation and equity or repeats the extractive pattern of the oil economy; and compare Nigeria with a neighbouring Gulf of Guinea state facing similar ecological pressures but different institutions, to separate the features Nigeria shares with its neighbours from those that are specifically its own.

References

Belhabib, D., Sumaila, U. R., & Le Billon, P. (2019). The fisheries of Africa: Exploitation, policy, and maritime security trends. *Marine Policy*, 101, 80–92. <https://doi.org/10.1016/j.marpol.2018.12.021>

- Edo, G. I., & Albrecht, P. (2021). Conservation status of the Apoi Creek Forests Ramsar site and the Niger Delta red colobus in Bayelsa State, Nigeria. *Journal of Threatened Taxa*, 13(9), 19245–19258.
- Elliott, M., Burdon, D., Atkins, J. P., Borja, A., Cormier, R., de Jonge, V. N., & Turner, R. K. (2017). "And DPSIR begat DAPSI(W)R(M)!" A unifying framework for marine environmental management. *Marine Pollution Bulletin*, 118(1–2), 27–40. <https://doi.org/10.1016/j.marpolbul.2017.03.049>
- EnviroNews Nigeria. (2026). Nigeria's marine and blue economy: Fish production, the new ministry, and maritime value. *EnviroNews Nigeria*.
- Etim, E. U., Akpan, I. O., & Udoh, A. P. (2023). Effect of gas flaring on drinking water quality in selected communities of Akwa Ibom State, Nigeria. *Journal of Environmental Science and Public Health*, 7(2), 88–104.
- Folorunsho, R., Oyedepo, J. A., Adekunle, O. A., & Odemerho, F. O. (2023). The coastal zones of Nigeria: Geomorphology, erosion, and coastal management challenges. *Nigerian Journal of Geography and the Environment*, 8(1), 45–67.
- Gari, S. R., Newton, A., & Icely, J. D. (2015). A review of the application and evolution of the DPSIR framework with an emphasis on coastal social-ecological systems. *Ocean & Coastal Management*, 103, 63–77. <https://doi.org/10.1016/j.ocecoaman.2014.11.013>
- Global South Policy Review. (2023). Harnessing the blue economy: Nigeria and the Gulf of Guinea. *Global South Policy Review*.
- Hardin, G. (1968). The tragedy of the commons. *Science*, 162(3859), 1243–1248. <https://doi.org/10.1126/science.162.3859.1243>
- International Policy Brief. (2025). Environmental policy and sustainable development in Nigeria's Niger Delta: A critical look at oil spill trends, 2020–2024. *International Journal of Advanced Research in Social Sciences, Environmental Studies and Technology*, 9(1), 17–38.
- Ite, A. E., Ibok, U. J., Ite, M. U., & Petters, S. W. (2013). Petroleum exploration and production: Past and present environmental issues in Nigeria's Niger Delta. *American Journal of Environmental Protection*, 1(4), 78–90. <https://doi.org/10.12691/env-1-4-2>
- Lam, V. W. Y., Cheung, W. W. L., Swartz, W., & Sumaila, U. R. (2012). Climate change impacts on fisheries in West Africa: Implications for economic, food and nutritional security. *African Journal of Marine Science*, 34(1), 103–117. <https://doi.org/10.2989/1814232X.2012.673294>

- Mongabay. (2025). Nigeria's Niger Delta mangroves: Africa's largest, under mounting threat. Mongabay.
- Naanen, B. (2019). When extractive governance fails: Oil theft as resistance in Nigeria. *The Extractive Industries and Society*, 6(3), 702–710. <https://doi.org/10.1016/j.exis.2019.03.019>
- Nwapi, C., & Ingelson, A. (2014). Environmental impact assessment in Nigeria's oil and gas sector: Law, practice, and enforcement gaps. *Journal of Energy and Natural Resources Law*, 32(3), 275–298.
- Okafor-Yarwood, I. (2020). The cyclical nature of maritime security threats: Illegal, unreported, and unregulated fishing as a threat to human and national security in the Gulf of Guinea. *African Security*, 13(2), 116–146. <https://doi.org/10.1080/19392206.2020.1724432>
- Okafor-Yarwood, I., Kadagi, N. I., Miranda, N. A. F., Uku, J., Elegbede, I. O., & Adewumi, I. J. (2020). The blue economy–cultural livelihood–ecosystem services nexus: The case of the Gulf of Guinea and the Western Indian Ocean. *Frontiers in Marine Science*, 7, 586. <https://doi.org/10.3389/fmars.2020.00586>
- Ostrom, E. (1990). *Governing the commons: The evolution of institutions for collective action*. Cambridge University Press.
- Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science*, 325(5939), 419–422. <https://doi.org/10.1126/science.1172133>
- Patrício, J., Elliott, M., Mazik, K., Papadopoulou, K.-N., & Smith, C. J. (2016). DPSIR—Two decades of trying to develop a unifying framework for marine environmental management? *Frontiers in Marine Science*, 3, 177. <https://doi.org/10.3389/fmars.2016.00177>
- Sam, K., Zabbey, N., & Gbaa, N. D. (2023). Remediation of oil-contaminated soils in Ogoniland, Nigeria: The gap between EGASPIN standards and applied cleanup targets. *Environmental Science and Pollution Research*, 30(15), 42210–42225.
- Senatore, L. (2025). Sustainable and resilient governance of common-pool resources: A critical analysis of non-cooperative and cooperative game theory applications. *Journal of Economic Surveys*. Advance online publication. <https://doi.org/10.1111/joes.12690>
- World Bank Group. (2023). Nigeria: Gas flaring regulation and the zero routine flaring by 2030 initiative. World Bank Group.
- World Bank Group. (2026). West Africa Coastal Areas Blue Economy and Resilience Multi-Phased Program (WACA+): Project information document (Report No. P509153). World Bank Group.