



## Environmental Protection in Nigeria's Upstream Petroleum Sector: An Appraisal of the Petroleum Industry Act 2021

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### Abstract

This research critically examines the environmental regulatory framework governing Nigeria's upstream petroleum sector under the Petroleum Industry Act (PIA) 2021, with a particular focus on the role of the Nigerian Upstream Petroleum Regulatory Commission (NUPRC). Despite the PIA's comprehensive provisions for environmental protection, including risk registers, evaluation studies, waste management strategies, and the establishment of the Upstream Environmental Remediation Fund, significant challenges remain in its effective implementation. These challenges include institutional fragmentation, overlapping mandates between regulatory bodies, weak enforcement mechanisms, and the limited legal enforceability of environmental rights, which hinder the desired environmental outcomes in the petroleum sector. The research identifies a crucial gap in the literature regarding the practical application of the PIA's environmental provisions and the institutional challenges that have obstructed its effective implementation. It highlights the persistent disconnect between policy intentions and real-world outcomes, particularly in the regulation of oil spills, gas flaring, and hazardous waste disposal. Drawing on international frameworks like the Basel Convention and the Stockholm Convention, as well as comparative experiences from Ghana and Brazil, the research recommends enhancing institutional capacity, clarifying inter-agency roles, promoting transparency, incentivizing corporate accountability, and ensuring judicial recognition of environmental rights. Using a doctrinal methodology, this study explores primary and secondary legal sources, including statutes, regulations, case law, and scholarly articles, to evaluate the adequacy of the PIA's environmental protection mechanisms. The research also critically analyses the gaps in enforcement and the implementation challenges that hinder the realization of the PIA's objectives. Ultimately, this paper seeks to fill the gap in scholarly discourse by offering actionable recommendations for improving environmental governance within Nigeria's upstream petroleum sector, contributing to the body of knowledge on petroleum regulation and environmental law in developing nations.

**Keywords:** Petroleum Industry Act, Environmental Protection, Upstream Petroleum Sector, NUPRC, Oil Spills

### Introduction

Environmental protection refers to the suite of programs and policies aimed at reducing environmental risks arising from contaminants such as hazardous materials, industrial waste, fuels, and oils <sup>[1]</sup>. These initiatives emphasize pollution prevention, regulatory compliance, and the implementation of safety measures including procedures for the safe handling of materials, inspection of storage vessels, preventative maintenance, and the development of emergency response plans to address potential environmental spills or releases <sup>[2]</sup>. The oil and gas industry, a major driver of Nigeria's economy, is structured into three segments: upstream, midstream, and downstream. The upstream sector, also known as the exploration and production (E&P) phase, is the earliest and most environmentally intrusive stage of oil and gas operations. It encompasses exploration, seismic surveys, drilling, and extraction. Companies engaged in upstream activities focus on locating and extracting petroleum resources from beneath the earth's surface. Due to the nature of these operations, the upstream sector poses significant environmental risks including land degradation, oil spills, gas flaring, and improper waste disposal <sup>[3]</sup>.

Nigeria's journey towards effective petroleum sector regulation began in the colonial era with the establishment

of the Hydrocarbon Department under the Ministry of Lagos Affairs, which reported directly to the Governor-General. This department was tasked with overseeing petroleum-related activities such as importation, distribution, and safety enforcement. As the industry expanded, the department evolved into a Petroleum Division within the Ministry of Mines and Power, later becoming the Department of Petroleum Resources (DPR) with broader regulatory authority <sup>[4]</sup>. In 1971, the Nigerian National Oil Corporation (NNOC) was created to manage commercial petroleum operations. By 1977, Decree No. 33 merged the NNOC and the Ministry of Petroleum Resources to establish the Nigerian National Petroleum Corporation (NNPC), integrating regulatory and operational functions. Subsequent reforms saw the re-establishment of the Ministry of Petroleum Resources and the reorganization of the Petroleum Inspectorate, which was eventually renamed the DPR <sup>[5]</sup>. Significant transformation came with the enactment of the Petroleum Industry Act (PIA) in 2021, signed into law by President Muhammadu Buhari. The PIA introduced a comprehensive overhaul of the petroleum regulatory landscape, dissolving the DPR, the Petroleum Products Pricing Regulatory Agency (PPPRA), and the Petroleum Equalisation Fund (PEF). These were replaced by the Nigerian Midstream and Downstream Petroleum Regulatory

Authority (NPRA) and the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) <sup>[6]</sup>. Environmental degradation associated with petroleum exploration and production has long plagued Nigeria's oil-rich regions. Historically, oil spills, gas flaring, and inadequate remediation have adversely affected ecosystems and local communities. In response, the PIA was designed to embed sustainability and environmental accountability into the legal and operational framework governing the petroleum sector. The NUPRC, established under the PIA, is now vested with the authority to regulate upstream petroleum operations, enforce environmental standards, and ensure compliance with health and safety protocols <sup>[7]</sup>.

This paper critically examines the environmental protection mechanisms embedded in the PIA, with particular attention to the mandates and operations of the NUPRC. It assesses the adequacy of these measures in addressing long-standing environmental challenges in Nigeria's upstream sector and proposes policy recommendations for enhancing environmental governance in the petroleum industry.

### **The Upstream Sector of the Nigeria's Oil and Gas Industry**

The upstream sector of Nigeria's oil and gas industry involves the crucial phases of exploration, development, and production of crude oil and natural gas under an integrated legal framework <sup>[8]</sup>. Prior to 2021, this sector was governed by outdated statutes such as the Petroleum Act 1969, the Petroleum Profit Tax Act, and the Deep Offshore and Inland Basin PSC Act 1993 <sup>[9]</sup>. The Petroleum Industry Act 2021 (PIA) ushered in sweeping reforms, consolidating these laws and creating a modern, transparent, and investor-friendly regime <sup>[10]</sup>. Under Section 4 of the PIA, the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) was established as the chief regulatory authority responsible for licensing, compliance monitoring, and enforcement within the upstream sector. The Commission's functions mirror its mandate to ensure adherence to health, safety, and ensure strict implementation of environmental policies as stipulated in Sections 6(h) and 6(i) <sup>[11]</sup>. Additionally, the PIA instituted new fiscal terms, i.e. Hydrocarbon Tax, Royalties, and Revenue-sharing mechanisms in Chapter 4, offering progressive rates and incentives for deepwater and frontier exploration <sup>[12]</sup>. Crucially, Chapter 3 mandates the creation of Host Community Development Trusts, requiring oil operators to dedicate 3% of their annual operating expenditure toward community development <sup>[13]</sup>. The PIA outline a revised licence regime consisting of; Petroleum Exploration Licence (PEL), 3-year non-exclusive survey rights; Petroleum Prospecting Licence (PPL), 6- to 10-year exclusive drilling rights; and Petroleum Mining Lease (PML), 20-year production rights, renewable <sup>[14]</sup>. Section 73 mandates transparent competitive bidding for oil blocks, enhancing fairness in acreage allocation. For instance, the 2020 Marginal Fields Round allocated 57 blocks to local firms, while future rounds including the 2024 iteration are expected to proceed wholly under PIA protocols <sup>[15]</sup>. Operators failing to meet obligations risk licence revocation under Section 96; a notable example is the revocation of Pan Ocean's OML 147 in 2023 due to inactivity and regulatory default <sup>[16]</sup>.

Fiscal Regime provisions of the PIA includes one Hydrocarbon Tax <sup>[15]</sup> which is 30% for onshore/shallow

water and 15% for deepwater, replacing the outdated Petroleum Profit Tax, secondly is the Royalties <sup>[17]</sup>, sliding royalty rates from 5–15% depending on terrain and depth, with a 5% rate for frontier basins and thirdly the, Production Sharing Contracts (PSC) reforms <sup>[19]</sup> which deeper government profit oil share revised notably in 2022 with the Bonga Field PSC renegotiation <sup>[20]</sup>.

Environmental and social obligations include one, Gas flaring regulation <sup>[21]</sup> aligning with Nigeria's zero routine flaring commitment, PIA mandates a \$2/1,000 scf penalty, though enforcement and deterrence remain inadequate <sup>[22]</sup>. A study found these penalties insufficient and enforcement technology lacking <sup>[23]</sup>. In 2024 alone, companies paid N391 billion (\$100 million) in flare fines, but flaring remained around 7–8% of total gas output <sup>[24]</sup>. Two, Domestic Gas Supply Obligation (DGSO) obliges operators to allocate a share of gas to domestic refineries, with penalties of \$3.50/MMBtu for non-performance <sup>[25]</sup>. Implementation has encountered delays and challenges especially around Dangote Refinery's crude off-take agreements <sup>[26]</sup>. Three is the Host Community Development Trusts, that is 3% operator expenditure allocation <sup>[27]</sup>. In 2023, Chevron's Escravos HCDT funded healthcare and education projects, showcasing HCDT potential in community development <sup>[28]</sup>.

The Petroleum Industry Act 2021 marks a milestone in Nigeria's upstream sector reform, offering clarity, environmental safeguards, and community accountability. However, realizing its potential hinges on enhanced enforcement, improved security, and institutional strengthening.

### **Regulatory Oversight of the Upstream Sector Under the Petroleum Industry Act 2021**

The Nigerian Upstream Petroleum Regulatory Commission (NUPRC), hereinafter referred to as the Commission, is the primary regulatory authority responsible for overseeing upstream petroleum operations in Nigeria <sup>[29]</sup>. Established under the Part III of the Petroleum Industry Act 2021 (PIA), the Commission is tasked with ensuring that upstream activities are conducted in a manner that guarantees environmental sustainability, health and safety compliance, and adherence to global best practices <sup>[30]</sup>. In line with this mandate, the Commission has developed a comprehensive framework of regulations and guidelines to manage the environmental risks associated with upstream petroleum operations. Operators are required to submit development and operational plans that incorporate pollution prevention strategies and environmental hazard controls. The Commission further mandates routine environmental inspections and incident reporting, thereby fostering transparency and accountability within the sector <sup>[31]</sup>. To mitigate environmental damage, operators must implement pollution control plans and adopt technologies that minimize the release of hazardous materials. Regulations also govern the proper treatment and disposal of wastewater, drilling residues, and other waste products. These measures aim to ensure that all waste generated from exploration and production is handled in an environmentally responsible manner <sup>[32]</sup>.

Additionally, the Commission enforces the establishment of Environmental Management Systems (EMS) by all licensees and lessees. These systems serve as the operational

backbone for environmental performance, ensuring that industry activities comply with statutory requirements and internationally accepted environmental standards <sup>[33]</sup>. The regulatory authority of the Commission is grounded in various provisions of the PIA, particularly sections 10(f), 6(h), 6(i), 234(2), and 235(6)(a). These provisions empower the Commission to issue guidelines, enforce environmental compliance, and create an enabling investment climate for upstream petroleum operations. In exercise of these powers, the Commission has enacted several environmental regulations and continues to update legacy instruments to reflect contemporary realities.

### 1. Pre-PIA Regulatory Instruments

Before the enactment of the PIA, Nigeria's upstream sector was regulated by a number of statutory instruments and subsidiary legislations, including:

1. Petroleum (Drilling and Production) (Amendment) Regulations, 2019
2. Flare Gas (Prevention of Waste & Pollution) Regulations, 2018
3. Oil Block Allocations to Companies (Back-in Rights) Regulations, 2019
4. National Data Repository Regulations, 2020
5. Petroleum (Drilling & Production) (Amendments) Regulations, 2020

These instruments laid the groundwork for environmental oversight, although enforcement was often fragmented and inconsistent.

#### 1.1 Post-PIA Regulatory Developments

Following the passage of the PIA and the formal establishment of the NUPRC, the regulatory landscape has been substantially reformed. Several new regulations have been introduced, specifically targeting environmental protection in upstream operations. These include:

**1.2 Upstream Petroleum Environmental Regulations, 2022:** the primary regulation governing environmental assessments, pollution control, waste management, and remediation in upstream operations;

#### 1.3 Project Based Environmental Studies

Project based environmental studies is a multidisciplinary academic field that systematically studies human interaction with the environment and addresses complex contemporary environmental issues <sup>[34]</sup>. It involves problem-oriented and student-centred learning that is organised around projects <sup>[35]</sup>. Project based environmental studies can help develop twenty-first century skills such as critical thinking, collaboration, creativity, and communication, as well as scientific literacy and environmental awareness <sup>[36]</sup>. Investigating local or global environmental problems, such as climate change, pollution, biodiversity loss, or deforestation, and proposing solutions or actions. It also includes designing and implementation of environmental campaigns or initiatives, such as recycling, composting, gardening, or energy conservation <sup>[37]</sup>.

#### 1.4 Environmental Risk Register

Environmental risk registers help companies in the industries to summarise and document the potential environmental risks associated with a particular project.

These registers enable companies to look objectively both before and during a project, at the potential environmental risks which could eventuate from the works or activities being conducted and create opportunities to improve their risk profile and environmental performance <sup>[38]</sup>. Environmental Risk Register is required to understand and collate all risks posed by the proposed project to the people and environment, and for the approval of the project <sup>[39]</sup>. A licensee/lessee and/or operator shall prepare an ERR for every development and/or upgrade modification of a facility such as: All Seismic Operations, Oil and Gas development activities, Development well drilling, Construction or modification of oil and gas production facilities integrated upstream terminal facilities including Floating storage & offloading (FSO) and Floating Production Storage & Offloading (FPSO) vessels. Laying of crude oil and gas delivery lines, flowlines, and pipelines in cumulative excess of 20km length and/or as determined by the Commission <sup>[40]</sup>. Construction and/or Installation of Upstream Petroleum Waste Treatment and/or Disposal Facilities, viz: Wastewater Treatment Plant, Waste treatment/recycling /reuse facilities, Engineered Landfills. Landfarming/ex-situ bioremediation more than 1.25km<sup>2</sup> of land take. Dredging activities involving greater than or equal to 2,500m<sup>3</sup> of dredge spoils or 1,000m<sup>2</sup> of total area dredged. ix. Any other upstream petroleum activity / facility as may be determined by the Commission Chief Executive <sup>[41]</sup>. The Environmental Risk Register shall contain details of the concepts of the project, a list of the risks associated with the concepts, a qualitative description and quantitative ranking of the risk before and after risk elimination or reduction measures. Such measures shall be considered and approved by the Commission or rejected until an acceptable replacement is provided. Additional details on the content and procedure for preparing an ERR are contained in the UEGASPIN <sup>[42]</sup>. Environmental Risk Registers are kept valid as long as environmental monitoring and relevant statutory studies are conducted as applicable.

#### 1.5 Environmental Evaluation Studies

A licensee/lessee and/or an Operator shall conduct an EES every Five (5) years from the date of commencement of operations in line with the Upstream Environmental Guidelines and Standards for the Petroleum Industry (UEGASPIN) <sup>[43]</sup>. Environmental Evaluation Studies is a systematic, documented verification process for objectively obtaining and evaluating evidence to determine whether specified environmental activities, events, conditions, management systems conform with audit criteria <sup>[44]</sup>, and communicating the results of this process to Nigerian Upstream Regulatory Commission (NURPC). It is an investigative process to determine if an existing facility is following applicable environmental laws and regulations. This service is essential to the environmental management process, as it complements associated field services aimed at analysing environmental parameters. An environmental evaluation report ideally contains a statement of environmental performance and environmental position and may also aim to define what needs to be done to sustain or improve on indicators of such performance and position <sup>[45]</sup>. A licensee/lessee and/or an Operator that intends to divest any interests in its concession shall be required to conduct an EES to document the current state of the environment at the time of the divestment. The EES shall be supervised,

and the report submitted for approval by Commission Chief Executive prior to finalising any divestment agreements<sup>[46]</sup>. An Operator shall conduct a Post Impact Assessment following the clean-up after any incident such as oil or hazardous materials spillages, explosion/blow-out etc. has occurred, to ascertain the impact of the incident on the environment with a view to the restoration/remediation of same and for payment of compensation where applicable. The PIA shall commence not more than 1 week from the date the clean-up is certified. He shall conduct an EBS for onshore drilling of exploratory or appraisal wells of less than three (3) onshore exploratory or appraisal wells within any given 12- month duration. However, drilling of three (3) or more exploratory/appraisal wells within a 12-month period shall require an ERR.

A licensee or lessee who engages in petroleum operations under the Petroleum Industry Act, 2021, shall submit for approval to the Commission an environmental management plan in respect of all projects. Details requirements and contents of the EMP are as provided in the Upstream Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (UEGASPIN)<sup>[47]</sup>. It must be in writing, in a form approved by the Commission.

The objective of the Environmental Management Plan shall be to demonstrate to the Commission that the operator has provided all required technology details of the project, the inherent risks, and the means of reducing such risks to as low as reasonably practicable as detailed in the Environmental Risk Register and that the Environmental Management Plan is a documentation of the resources and procedures to manage the said risks as approved by the Commission<sup>[48]</sup>. Under Section 20 of the Environmental Management Plan shall: Identify and discuss the management and/or implementation of commitments to stakeholders, as identified in the Environmental Risk Register, Discuss how to implement the mitigating/amelioration measures, as identified in the Environmental Risk Register, Design and implement an appropriate post-Environmental Risk Register monitoring and, Identify the action party and provide time frame for implementation of issues identified, Have a budget for implementation of mitigative measures and monitoring, Put in place a systematic procedure of obtaining all necessary regulatory approvals for all the aspects of the project from start-up to de-commissioning. The environmental management plan must include an implementation strategy for the petroleum operations in accordance with this Regulation. The implementation strategy must establish a clear chain of command, setting out the roles and responsibilities of personnel in relation to the implementation, management, and review of the environmental management plan. It must include measures to ensure that each employee or contractor working on, or in connection with, the petroleum operations is aware of his or her responsibilities in relation to the environmental management plan and has the appropriate competencies and training.

**Oil Field Waste Management** Oil and gas waste management is the systematic handling, treatment, and disposal of waste materials generated during the exploration, extraction, refining, and distribution processes within the oil and gas industry. The goal of effective waste management is to minimize the environmental and health impact, promote sustainability, and ensure compliance with

relevant regulations<sup>[49]</sup>. Oil Field Wastes shall not be discharged into the environment without the written approval of the CCE. Where required, such wastes shall be transported in fit-for-purpose containers/vessels as determined by the Commission<sup>[50]</sup>. In oil and gas industries, wastes are either unwanted leftovers from production processes or waste products that result from other activities that consume resources without adding value. These wastes can be generated throughout different phases including the exploration, extraction, refining, and distribution processes within the industry. Oil and gas wastes can exist in different types, such as liquid waste, semiliquid rubbish, solid rubbish, chemical waste, spent catalysts, emissions, etc. Waste types and quantities may vary depending on operations, production stage, and location of oil and gas facilities<sup>[51]</sup>.

### 1.6 Drilling Waste Management

Discharge of whole water-based drilling mud or fluids spent water-based drilling mud or fluids, brine, drill cuttings, well treatment wastes, deck drainage or residues thereof shall only be permitted in offshore areas, beyond the Zero Discharge Zone following treatment to limits that have been prescribed by the Commission. A Licensee, Lessee or Operator shall not discharge whole drilling mud or fluids, spent drilling mud or fluids, brine, drill cuttings, well treatment wastes, deck drainage or residues thereof, from water and oil or synthetic based muds from drilling activities without a written approval of the Commission Chief Executive directly or indirectly into<sup>[52]</sup>:

- a. Land, any inland waters or public drains and sewer.
- b. Swamp, Coastal, nearshore waters and offshore zero discharge zone
- c. Any pit on land/swamp other than approved temporary retention pit and/or steel tanks so designed and utilized that there shall be no overflow, leakage or seepage into the environment.

### 1.7 Other Operational Wastes Management

Hydrotest Water, pigging waste and any other effluent contaminated with production, drilling and completion chemicals from upstream operations shall not be discharged without written consent or approval from the CCE. Solid wastes including but not limited to Produced sand, treated organic residues from primary oily wastewater treatment plant, spent catalyst, rust, ash, general refuse etc, off-spec product, oily sludges, shall be disposed of by methods approved by the Commission Chief Executive. Sanitary wastes from upstream oil and gas facilities and upstream installations in nearshore and inland facilities shall be treated using biological waste treatment system to satisfy discharge limitations prescribed by the Commission. A Licensee, Lessee or Operator shall provide refuse containers for segregation of all waste streams and dispose of same in accordance with public health and sanitation procedures as well as procedures approved by the Commission Chief Executive. Spent lubricants shall be differentially segregated from other oily effluents and channelled into a source recovery system where feasible or into a receptacle approved by the Commission Chief Executive. The treatment and disposal methods for the spent lubricants shall be approved by the Commission Chief Executive. These treatment and disposal methods shall include but not limited to recycling and incineration. The Operators, ship owners,

charterers and ship agents shall ensure that samples of clean ballast and treated bilge water to be disposed of shall meet effluent limitations for ocean ballast and disposal conditions as prescribed by the Commission before discharge in the offshore discharge zone. All petroleum storage tanks, and vessel cleaning activities shall be conducted using only automated technology approved by the Commission Chief Executive. The tank cleaning activities shall be carried out only under the supervision of competent persons. Realtime Online monitoring and recording facilities shall be installed to determine all gaseous emissions compositions and concentrations which shall be reported to the Commission in a frequency as may be determined by the Commission <sup>[53]</sup>.

## **2. Emergency Response and Pollution Abatement**

### **2.1 Oil Spill Contingency Planning**

This can be found under section 67- 69 of the Upstream Petroleum Environmental Regulations 2022 where it provides that an Operator shall submit its current Oil Spill Contingency Plan (OSCP) document to the Commission within the first quarter of the year for review. The OSCP shall be activated annually. Each upstream Operator or upstream Facility Owner shall describe the areas of its operation. The operator is to identify beforehand, all sensitive areas that should be protected in the event of an emergency and provide other relevant information as may be determined by the Commission. An Environmental Sensitivity Index Map prepared to the standard provided by the Commission shall be required for the purpose.

### **2.2 Remediation and Restoration of Impacted Area**

The approval of the Commission Chief Executive shall be sought first before the commencement of any remediation project. The licensee, lessee or operator shall be responsible to restore as much as possible the impacted environment to its original state. Any restorative process to be embarked upon shall adequately evaluate the biological sensitivities of the impacted environment. The post impact assessment study conducted shall determine the extent of damage and the estimated duration for complete recovery of such an environment. A Licensee, lessee, or Operator of a Facility responsible for a spill that results to impact of the environment shall monitor the impacted environment alongside the restorative activities as to be determined by the Commission <sup>[54]</sup>.

### **2.3 Use of Oil Spill Chemicals and Remediation Products**

Chemical dispersants are some of the best tools to clean up after an oil spill. However, scientists do not fully understand how well they work. A new study validated their efficacy to better prepare for the next disaster <sup>[55]</sup>. The Upstream Petroleum Environmental Regulations 2022 has made adequate provisions to regulate the use of these chemicals to wit: all oil spill chemicals and remediation products intended for use within Nigeria and its territorial waters shall be subjected to relevant tests (microbial screening and/or terrestrial toxicity) prior to its approval by the Commission Chief Executive. Any product containing exogenous microbes shall not be approved for used in remediation of any spill impacted sites in the Nigerian oil and gas industry. The use of oil spill chemicals is prohibited in coastal and inland waters. The On-Scene-Commander

shall apply to the Commission for an authorization to deploy the oil spill chemical in offshore waters during a spill <sup>[56]</sup>.

## **2.4 Abandonment, Decommissioning and Decontamination**

### **2.4.1 Oil and Gas Facilities**

This can be under part 7 of the UER in sections 92-96 where law rules provide that the licensee, lessee or operator of an upstream facility shall plan for Decommissioning prior to project commencement and the details documented in the pre-project Environmental Study. At the point of decommissioning, the licensee, lessee, or operator shall provide an updated Decommissioning plan incorporating inventorisation of idle irons, Naturally Occurring Radioactive Materials survey report, Naturally Occurring Radioactive Materials decontamination plan, environmental remediation and restorative programmes, Environmental Evaluation study Report amongst others as may be determined by the Commission. The operators, Licensee or Lessee shall appropriately decontaminate, dismantle, and remove structures from upstream oil and gas installations and facilities after such installations and facilities have been abandoned and decommissioned in line with statutory provisions, approved guidelines and other requirements may be determined by the Commission. Removal of Naturally Occurring Radioactive Materials containing scales and sludges from plant and equipment, during decommissioning, shall be conducted with adequate radiation protection measures and with due regard for other relevant safety, waste management and environmental considerations. For facilities completely shut down and abandoned, decommissioning activities including physical removal of structures shall commence not later than one (1) year after abandonment and shall be completed within the stipulated period as approved by the Commission Chief Executive.

### **2.4.2 Environmental Management Systems**

Environmental Management system is a set of internal rules which are defined by a collection of policies, processes, procedures, and records. This system defines how a company will identify, assess, monitor, and maintain the interactions with the environment to prevent negative environmental impacts <sup>[57]</sup>. A licensee, lessee, or operator shall establish an Environmental Management System for its organisation which shall conform to statutory provisions, guidelines and directives as may be issued by the Commission <sup>[58]</sup>.

### **2.4.3 Environmental Audits and Reviews**

An environmental Audit provides an assessment of the environmental performance of a business or organization. The audit reveals details about the activities of a company and its compliance with environmental regulations. Audit information is presented to the management team and employees. An environmental audit evaluates and quantifies the environmental performance. It identifies compliance problems or management system implementation issues <sup>[59]</sup>. A Licensee, lessee or operator shall conduct environmental audits to facilitate management control of environmental practices and to assess compliance with the Environmental Management System and regulatory requirements. A Licensee, lessee or operator shall regularly conduct environmental management reviews and verifications to

evaluate the status and adequacy of its environmental policy, systems, and procedures in relation to environmental issues, regulations and changing circumstances <sup>[60]</sup>.

#### **2.4.4 Upstream Environmental Remediation Fund Regulations**

establishing a dedicated fund for environmental restoration where operators default on remediation obligations; The environmental remediation fund is established for the upstream petroleum operations under licences and leases, administered by the Commission under the Petroleum Industry Act, 2021, to be known as the Upstream Environmental Remediation Fund, in these Regulations referred to as the Fund. The Fund shall be administered by the Commission pursuant to these Regulations. The Commission shall be responsible to manage the funds of the Fund in accordance with the applicable laws. These Regulations apply to the environmental remediation fund required under section 103 of the Petroleum Industry Act, 2021 <sup>[61]</sup>. The Fund shall be funded by the financial contributions for remediation of environmental damage levied on licensees of petroleum prospecting licenses and lessees under section 103 of the Petroleum Industry Act, 2021 and under these Regulations. The main purpose of the Fund is to provide a source of funding for the rehabilitation or management of negative environmental impacts from petroleum operations, which shall include upstream petroleum operations and petroleum operations that meet the condition of section 8(g) of the Petroleum Industry Act, 2021. These funds shall be only used if a licensee or lessee who engages in petroleum operations under such licences or leases has failed or unable to undertake necessary rehabilitation or management of negative environmental impacts of such petroleum operations, and the Commission has failed to enforce under the law that such rehabilitation or management of negative environmental impacts is fulfilled by such licensee or lessee. Where the Commission decides to apply the Fund, the procurement of any goods, works or services required to rehabilitate or manage the negative environmental impact shall be subject to the laws and regulations applicable to public procurement. A written notice is required to be given to a holder of such licence or a lease that they have defaulted to fulfil their obligation where the Commission decides to apply the Fund to rehabilitate or manage the negative environmental impact relating to a particular licence or a lease.

#### **2.4.5 Amount of the Financial Contribution**

The financial contribution shall be paid each year with respect to each petroleum prospecting licence or a lease, including for the year in which a petroleum prospecting licence or a lease have been granted <sup>[62]</sup>. The financial contribution shall be paid in United States dollars. For the purpose of determining the financial contribution, the volume of crude oil, condensates, separately produced natural gas liquids, and natural gas, produced from a licence or a lease during a year for which the financial contribution is payable, shall be the production subject to royalty under the Petroleum Industry Act, 2021 and the Petroleum Royalty Regulations, 2021. It also includes the Upstream Capital Expenditure and shall not include exploration and appraisal expenditure, and contributions to a decommissioning and abandonment fund. The Upstream Capital Expenditure shall also include expenditure relating to midstream operations,

where a licence or a lease meets the condition of section 8(g) of the Petroleum Industry Act, 2021. For the avoidance of doubt, the amounts of expenditure incurred during a relevant year, which is characterised as expenditure of capital nature under the Companies Income Tax Act, shall be included in full amount incurred during the relevant year and shall not be depreciated under the initial and annual allowances rules for the purpose of the calculation of the financial contribution.

#### **2.4.6 Payment of the Financial Contribution**

Under section 4 of the Upstream Environmental Remediation Fund Regulations, the initial financial contribution shall be paid by the prospective licensee or lessee prior to the granting of the licence or lease and shall apply to the first year in which a licence or a lease is granted. The initial financial contribution shall consist solely of the Fixed Contribution provided for in section 3(4) of these Regulations. The annual financial contribution for any succeeding year shall be paid by the licensee or lessee prior to each anniversary of the effective date of the licence or lease. Such annual financial contribution shall consist of the Fixed Contribution plus the capital and production related components of the contribution related to the estimated capital expenditures and production for the year prior to the succeeding year pursuant to section 3(4) of these Regulations. The applicable financial contribution shall be paid prior to the termination of a licence or lease, where the period of a licence or lease terminates prior an anniversary of the effective date of such a licence or lease.

#### **2.4.7 Nigerian Upstream Petroleum Host Communities Development Regulations, 2022**

Governing the participation and benefit-sharing mechanisms for host communities affected by petroleum operations; Pursuant to Chapter 3, the Petroleum Industry Act mandates settlor oil companies to incorporate Host Community Development Trusts. In furtherance of that, section 234 of the Act further granted powers to the Nigerian Upstream Regulatory Commission to make regulations governing the administration of the said Trust, with respect to settlor companies. It is in pursuance of this power that the Nigerian Upstream Regulatory Commission have now made the Nigeria Upstream Petroleum Host Communities Regulations, made a gazette on the 23rd day of June 2022 <sup>[63]</sup>. These regulations covers' the duties of the various parties under the Act and Regulations, duties of the Settlers and board of trustees, duties of the management committee, duties of advisory committee, incorporating the trust, need assessment/development plan, fund distribution matrix, host community's development plan, fund distributions among many other things contained therein.

#### **2.4.8 Host Communities Development Trust Implementation Template**

Providing a practical framework for the establishment and governance of Host Community Trusts; In accordance with this legal requirement and international best practises in the industry. In order to effectively combat unrest in the host communities, ensure smooth operations, increase investor confidence, and create an environment that supports the sustainable development of the nation's hydrocarbon resources, the NUPRC developed a robust implementation template for the Trust in collaboration with the relevant

stakeholders. The Host Communities Trust Fund's main goal is to take care of the affected communities' development requirements in the oil-producing regions. In order to achieve that purpose, this paper is intended to give the required parameters and navigational help. It is our intention that by doing so, it will solve this important problem in the operations of the industry<sup>[64]</sup>.

#### **2.4.9 Upstream Petroleum Safety Regulations, 2022**

Issued by the Minister of Petroleum to complement environmental safeguards with stringent occupational health and safety requirements. Regulation made by the Minister of Petroleum, in exercise of the powers conferred by section 3(1)(a) of Petroleum Industry Act 2021 and all other powers enabling in that behalf, President Muhammadu Buhari as he then was, President of the Federal Republic of Nigeria and Minister of Petroleum Resources, make the following Regulations.

Under regulation 47, The handling and disposal of Waste Management: - (a) Liquid and solid wastes, including drilling fluids and mud, drill cuttings, deck drainages, sanitary and domestic wastes, accidental oil spills or blowout and (b) Other wastes generated from drilling operations; shall conform with specifications prescribed in the Upstream Petroleum Environmental Regulations "UPER" as approved by the Commission Chief Executive. Regulation 52 – Handling of Radioactive Materials with equivalent section in the PIA S. 225 Without prejudice to the provisions of the Nuclear Safety and Radiation Protection Act 1995, the Manager shall ensure that (a) every radioactive source planned to be used in a petroleum operation shall be registered with the Commission. The Manager shall provide all necessary information as may be required by the Commission in respect of the radioactive source.

Regulation 61 makes a mandatory Display of Regulations. A copy of these Regulations shall be prominently always displayed at ever, location, facility or installation undertaking oil and gas operations.

#### **2.4.10 Upstream Petroleum Environmental Remediation Regulation, 2024**

The Upstream Petroleum Environmental Remediation Regulation, 2024 is a pivotal framework established by the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) to address the environmental impacts of upstream petroleum operations. This regulation, rooted in Section 103 of the Petroleum Industry Act (PIA) 2021, mandates the creation of a dedicated fund the Upstream Environmental Remediation Fund to finance the rehabilitation and management of environmental damages resulting from oil and gas activities<sup>[65]</sup>.

The regulation necessitates the creation of a fund to manage environmental damages from upstream petroleum operations. Licensees and lessees are required to make annual financial contributions to the fund. The contributions are determined based on factors such as location, production volume, and capital expenditure<sup>[66]</sup>. The fund is designated for the rehabilitation or management of negative environmental impacts, including those from undetermined sources or abandoned sites<sup>[67]</sup>. The regulation mandates that an annual statement detailing the fund's financial activities be published within 90 days after the end of each financial year, ensuring transparency and public accountability<sup>[68]</sup>.

The regulation also aims to facilitate the restoration of ecosystems affected by petroleum operations<sup>[69]</sup>. To ensure the long-term management of environmental impacts, promoting sustainable oil and gas exploration practices. To mitigate the adverse effects on communities residing in oil-producing areas, enhancing their quality of life<sup>[70]</sup>. Despite the regulation's enactment, the fund's activation has faced delays, hindering timely remediation efforts. There have been concerns regarding the transparency in the utilization of the fund, with calls for detailed public disclosures. Effective coordination among relevant agencies is essential for the fund's successful implementation, yet challenges persist.

The Upstream Petroleum Environmental Remediation Regulation, 2024, represents a significant step towards addressing the environmental challenges posed by upstream petroleum operations in Nigeria. While the regulation lays a solid foundation for environmental stewardship, its success hinges on timely activation, transparent management, and robust institutional collaboration. Ensuring these elements will be crucial in achieving the regulation's objectives and fostering sustainable oil and gas exploration in the country. Some of these regulations are fully gazetted, while others exist as internal regulatory instruments pending official gazette. Collectively, they represent a shift towards a more robust, transparent, and environmentally conscious upstream petroleum regime.

#### **Challenges to Effective Implementation**

Despite the comprehensive legal framework introduced by the Petroleum Industry Act (PIA) 2021, significant challenges persist in the implementation of environmental regulations in Nigeria's upstream petroleum sector. These challenges stem from both institutional fragmentation and systemic legal weaknesses. One key issue is institutional overlap, particularly between the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) and the National Oil Spill Detection and Response Agency (NOSDRA). While the PIA vests NUPRC with regulatory oversight of upstream operations, including environmental compliance<sup>[71]</sup>, NOSDRA maintains statutory powers under the NOSDRA Act 2006 to monitor, detect, and respond to oil spills<sup>[72]</sup>. This dual mandate often leads to regulatory confusion, enforcement delays, and duplication of functions, which weakens the efficacy of environmental governance. Compounding the issue again is the lack of institutional capacity within these regulatory agencies. Reports by independent observers and civil society organisations have documented inadequate technical expertise, limited manpower, and poor funding across both federal and state environmental institutions<sup>[73]</sup>. As a result, routine monitoring and real-time enforcement are often absent, allowing operators to circumvent environmental obligations. Additionally, the problem of weak enforcement mechanisms persists. Regulatory capture, political interference, and the absence of a robust compliance culture allow powerful actors, particularly international oil companies (IOCs), to negotiate penalties or avoid sanctions altogether<sup>[74]</sup>. For instance, fines for gas flaring mandated under Section 104 of the PIA are frequently under-enforced or unpaid, leading to persistent environmental degradation.

A deep-seated distrust between host communities and regulators also contributes to the implementation gap. Years of environmental neglect, failure to remediate polluted

lands, and a lack of community involvement in decision-making have created a hostile atmosphere <sup>[75]</sup>. Although the PIA introduced Host Community Development Trusts (HCDTs) to facilitate benefit-sharing and improve engagement <sup>[76]</sup>, reports of opaque fund management and unequal representation in trust boards have already begun to emerge <sup>[77]</sup>. The legal justiciability of environmental rights under the Nigerian Constitution remains contested. Environmental protection is enshrined in Section 20 of the 1999 Constitution (As Amended), but as part of Chapter II (Directive Principles of State Policy), it is non-justiciable <sup>[78]</sup>. This means that individuals cannot directly enforce environmental rights in court. Litigants have attempted to invoke other provisions most notably, the right to life under Section 33 to anchor environmental claims. In *Gbemre v Shell Petroleum Development Co.*, the court held that gas flaring violated the applicant's constitutional rights to life and dignity <sup>[79]</sup>. However, such cases remain rare exceptions, and the absence of a dedicated, enforceable constitutional environmental right continues to hinder judicial accountability <sup>[80]</sup>. The implementation of the PIA's environmental provisions faces multiple challenges, ranging from Institutional reforms, capacity building, improved inter-agency coordination, and constitutional recognition of environmental rights are critical for closing the gap between policy aspirations and practical outcomes.

### Comparative and International Perspectives

International frameworks and comparative international experiences can serve as valuable sources of insight for strengthening Nigeria's environmental regulations in the upstream petroleum sector. Two key international frameworks—the Basel Convention and the Stockholm Convention—are relevant here, as they provide globally accepted guidelines for managing hazardous waste and persistent organic pollutants (POPs), respectively. Additionally, examining the experiences of nations like Ghana and Brazil, which face similar challenges in managing oil and gas operations, offers practical lessons that Nigeria could benefit from in enhancing the effectiveness of the Petroleum Industry Act (PIA) <sup>[81]</sup>.

The Basel Convention focuses on the control of hazardous waste, ensuring that the transportation and disposal of waste are done in an environmentally sound manner. For Nigeria, a country with vast upstream petroleum operations, ensuring that oil and gas waste such as drilling muds, sludge, and chemicals is managed in a way that minimizes harm to the environment is critical <sup>[82]</sup>. Under the PIA, regulations regarding oil field waste management are somewhat aligned with the principles of the Basel Convention, especially in the requirement for waste management plans and approvals for disposal methods. However, the enforcement of these regulations often lacks the strength seen in Basel-compliant countries <sup>[83]</sup>. Nigeria could adopt more stringent controls over the movement and disposal of hazardous materials and increase penalties for non-compliance with waste management protocols. Drawing from the Basel Convention's compliance mechanisms, Nigeria could establish a central database for tracking hazardous waste, including real-time monitoring and mandatory reporting for oil and gas operators. This would address concerns about the opaque handling of waste disposal that currently plagues many oil-producing regions in Nigeria <sup>[84]</sup>.

The Stockholm Convention focuses on eliminating or restricting the use of persistent organic pollutants (POPs), which are often released during petroleum exploration and production activities. POPs can have severe long-term effects on human health and the environment <sup>[85]</sup>. Nigeria, despite having regulations that mirror some aspects of the Stockholm Convention, still struggles with the large-scale use and disposal of chemicals that can lead to the creation of POPs. The use of unregulated chemical dispersants in oil spill responses is one such example, which can lead to long-term contamination of ecosystems <sup>[86]</sup>. Nigeria could benefit from the Stockholm Convention's stricter measures on the use of chemicals in upstream operations. By adopting a more comprehensive approach to controlling hazardous substances and requiring better environmental impact assessments before chemical use in oil spill mitigation, Nigeria could reduce the potential for POP formation and ensure more sustainable spill management practices <sup>[87]</sup>.

Both Ghana and Brazil have faced challenges in balancing economic growth from oil and gas with effective environmental regulation, offering lessons that Nigeria could adapt to its own regulatory landscape. Ghana has made significant strides in developing a transparent and accountable framework for oil and gas operations through institutions such as the Environmental Protection Agency (EPA) and the Ghana National Petroleum Corporation (GNPC) <sup>[88]</sup>. One of Ghana's most successful initiatives is the use of Environmental Impact Assessments (EIA) for all oil and gas projects, which must be publicly disclosed. Additionally, the country has successfully implemented mechanisms for public participation in the decision-making process, especially in the context of oil and gas operations in the coastal and offshore regions. The transparency in Ghana's regulatory framework, combined with its focus on local community participation, has helped mitigate local opposition to oil exploration, especially in sensitive areas like the Western Region <sup>[89]</sup>. Nigeria could adopt a more transparent EIA process, making all environmental assessments publicly accessible, and introducing public hearings as a requirement for all significant upstream petroleum operations. Encouraging public participation in oil spill management plans, like Ghana's practice of consulting local communities on EIA findings, could strengthen community trust and improve enforcement of environmental regulations. Brazil's experience with oil and gas operations in the pre-salt oil fields offers another useful comparison. Brazil has developed a comprehensive regulatory regime overseen by the National Petroleum Agency (ANP), which sets strict environmental requirements for upstream operators. One of the key lessons from Brazil is its enforcement of Corporate Social Responsibility (CSR) practices, requiring operators to not only comply with environmental laws but also actively contribute to the local development of oil-producing regions through local hiring initiatives, environmental restoration projects, and investments in community infrastructure. Brazil has also made progress in penalizing non-compliance with its environmental regulations, holding companies accountable for environmental damage through hefty fines and sanctions <sup>[90]</sup>. Nigeria could adopt Brazil's approach to corporate accountability, ensuring that oil companies contribute not only to the economy but also to the sustainable development of affected communities.

Expanding the PIA's Host Community Development Trusts (HCDTs) to include specific performance targets for oil companies such as the funding of local infrastructure projects and environmental restoration initiatives could create a more direct link between petroleum companies and the well-being of local communities<sup>[91]</sup>.

Additionally, Brazil's proactive monitoring and enforcement mechanisms, which include rigorous penalties for environmental violations, could be implemented more effectively in Nigeria to tackle chronic issues like oil spills and gas flaring. In comparing Nigeria's environmental regulatory framework with international standards and the experiences of Ghana and Brazil, it becomes evident that while Nigeria's PIA aligns with global best practices on paper, its implementation remains inconsistent. The dual regulatory mandates, weak enforcement mechanisms, and institutional fragmentation in Nigeria hinder the effective application of these frameworks. Drawing from the experiences of Ghana and Brazil, Nigeria could enhance its regulatory approach by:

1. Strengthening independent regulatory oversight to eliminate overlaps and inefficiencies between institutions like NUPRC and NOSDRA.
2. Ensuring better public participation in the environmental decision-making process, including the integration of community concerns in environmental impact assessments and oil spill management strategies.
3. Enhancing penalties for non-compliance, particularly in areas such as gas flaring, and instituting clear, consistent enforcement of fines.
4. Building stronger institutional capacity within NUPRC, similar to how Brazil has empowered its National Petroleum Agency with both financial resources and technical expertise.
5. Encouraging more stringent monitoring and reporting systems for oil and gas waste, as seen in Ghana's approach to public disclosure of environmental data.

By incorporating these lessons from international frameworks and countries like Ghana and Brazil, Nigeria can better meet its environmental obligations under the PIA and create a more sustainable and socially responsible petroleum industry.

### Strategic Recommendations

The Nigerian Upstream Petroleum Regulatory Commission (NUPRC) must receive adequate funding and personnel training to effectively carry out its mandate. Increased financial resources would support expanded operations, enhanced data management, and improved monitoring technologies. Personnel should undergo continuous training in petroleum engineering, environmental science, and regulatory practices, particularly in emerging technologies like satellite monitoring and automated reporting systems<sup>[92]</sup>. There is significant overlap between agencies like the NUPRC, the National Oil Spill Detection and Response Agency (NOSDRA), and the Federal Ministry of Environment. This causes inefficiencies and confusion in regulatory enforcement. To address this, the Nigerian government should clearly define each agency's responsibilities and create a national framework for collaboration, including shared databases and joint inspections to improve coordination<sup>[93]</sup>. Increasing transparency through regular, publicly available

environmental reports will foster trust. The NUPRC should publish annual environmental performance reports detailing oil spills, gas flaring levels, and waste management. This can be complemented by regular community consultations and public forums, ensuring local communities and stakeholders are informed and able to voice concerns. Transparent processes will also help reduce conflicts between oil companies and affected communities<sup>[94]</sup>. To encourage oil companies to exceed basic compliance, Nigeria could introduce incentives such as tax breaks, government contracts, and preferential treatment for those companies demonstrating superior environmental management. This would promote the adoption of best practices, particularly in waste management, carbon emissions reduction, and oil spill prevention<sup>[95]</sup>. Currently, Nigeria's constitutional provisions on environmental protection are non-justiciable, preventing individuals from directly enforcing their environmental rights in court. To address this, Nigeria should amend its constitution to make environmental rights enforceable, allowing citizens and communities to bring cases against violators. Establishing specialized environmental courts or tribunals could further improve accountability<sup>[96]</sup>. By implementing these reforms strengthening NUPRC's capacity, clarifying roles, enhancing transparency, incentivizing corporate excellence, and ensuring enforceable environmental rights Nigeria can create a more effective regulatory environment that balances environmental protection with sustainable economic growth in the petroleum sector.

### Conclusion

The Petroleum Industry Act (PIA) 2021 represents a critical step toward reforming Nigeria's upstream petroleum sector, particularly in terms of environmental governance. By establishing the Nigerian Upstream Petroleum Regulatory Commission (NUPRC), the PIA lays the foundation for a more structured and transparent regulatory environment, with provisions for environmental risk registers, waste management, and community development. However, despite the innovative frameworks and mechanisms embedded within the PIA, significant challenges remain in its execution. Institutional capacity gaps, overlapping mandates between regulatory agencies, and weak enforcement mechanisms continue to hinder the full realization of the PIA's potential. The lack of adequate funding, technical expertise, and clear delineation of roles among agencies creates inefficiencies that prevent timely and effective regulatory oversight. Furthermore, the limited legal enforceability of environmental rights under Nigeria's constitution, coupled with the absence of strong penalties for non-compliance, leaves room for persistent environmental violations, such as gas flaring and oil spills, to go unpunished. Comparative lessons from international frameworks like the Basel Convention and Stockholm Convention, as well as from countries like Ghana and Brazil, underscore the importance of strengthening regulatory oversight, promoting transparency, and encouraging corporate accountability. These countries have developed robust frameworks that not only address environmental challenges but also emphasize the importance of public participation, corporate social responsibility (CSR), and community development. By drawing on these lessons, Nigeria can enhance its environmental regulatory framework, ensuring that oil and

gas operations contribute to both economic growth and sustainable environmental management. For Nigeria to move forward, it must prioritize strengthening the capacity of regulatory institutions like the NUPRC, improve inter-agency coordination, enhance transparency in environmental reporting, and introduce incentives for companies that exceed basic compliance. Moreover, ensuring that environmental rights are enforceable in the judicial system will empower citizens and communities to hold operators accountable and drive more sustainable practices in the sector. While the PIA represents a significant reform, its success will hinge on the commitment of the government, regulatory agencies, oil companies, and local communities to implement the provisions effectively. With the right investment in institutional capacity, public participation, and regulatory enforcement, Nigeria can create a petroleum sector that not only fuels the economy but also safeguards the environment for future generations.

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