WHO BEARS THE BURDEN? ORPHANED OIL ASSETS AND DECOMMISSIONING OBLIGATIONS IN NIGERIA UNDER THE PETROLEUM INDUSTRY ACT 2021*

Abstract

This study examined orphaned oil and gas assets as significant legal, environmental, and financial challenges in petroleum-producing jurisdictions, particularly Nigeria. It analysed the Petroleum Industry Act (PIA) and its framework for decommissioning and abandonment (D&A), focusing on funding mechanisms, regulatory oversight, and compliance obligations for license holders. The study found that the PIA improved the previously fragmented regulatory regime by establishing clear decommissioning obligations and dedicated abandonment funds, thereby enhancing financial preparedness and regulatory control. However, important gaps remain. Ambiguities persist regarding residual liability where decommissioning funds are insufficient, especially when operators become insolvent or fail to meet their obligations. Uncertainties also exist concerning the responsibilities of regulators and the state, as well as the legal framework for third-party intervention in decommissioning activities. The study concluded that the PIA, despite its reforms, does not fully eliminate the risk of orphaned assets and recommended further legal and institutional strengthening.

Keywords: Orphaned Petroleum Assets, Environment, PIA 2021, Decommissioning

1. Introduction

The proliferation of orphaned oil and gas assets has emerged as a critical concern across petroleum-producing jurisdictions, raising complex legal, environmental, and financial questions regarding responsibility for decommissioning and site remediation. Orphaned assets defined broadly as oil and gas infrastructure for which no financially viable or legally accountable owner can be identified either because the licensee is insolvent, dissolved, untraceable or for which ownership is disputed or unclear.[1] Such assets pose environmental hazards, impose financial burdens on the state, impact on environmental sustainability, public safety, and fiscal stability.[2] The central postulation underpinning this analysis is that the effectiveness of any petroleum regulatory regime depends on its ability to ensure that operators internalize the full lifecycle costs of petroleum development. This includes not only exploration and production costs but also end-of-life obligations such as decommissioning, environmental restoration, and site remediation. In many mature hydrocarbon provinces, including those in sub-Saharan Africa, decades of exploration and production activities have resulted in aging infrastructure, much of which is approaching the end of its economic life.[3]

Without robust legal and financial frameworks to govern decommissioning and abandonment (D&A), such assets risk becoming liabilities that ultimately fall upon the state and, by extension, the public.[4] In Nigeria, Africa's largest oil producer just like in many oil producing nations of the world, the challenge of orphaned oil facilities is particularly acute.[5] The country's petroleum sector has historically been characterized by regulatory fragmentation, weak enforcement mechanisms, and insufficient financial provisioning for end-of-life asset management. Prior to 2021, the legal regime governing decommissioning obligations was largely dispersed across subsidiary legislation, guidelines, and contractual arrangements, resulting in uncertainty and inconsistency in the allocation of liability.[6] This regulatory gap not only increased the likelihood of asset abandonment but also contributed to environmental degradation in oil-producing regions, particularly in the Niger Delta, where legacy pollution remains a persistent issue. The enactment of the Petroleum Industry Act (PIA) represents a watershed moment in Nigeria's petroleum governance, introducing a comprehensive statutory, codidied framework that seeks to address longstanding deficiencies in the management of petroleum resources, including the decommissioning of oil and gas infrastructure.[7]

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[1] EG Pereira, TO Taiwo and NC Ole, 'Addressing Residual Liability and Insolvency in Disused Oil and Gas Infrastructure Left in Place: The Cases of Brazil, Nigeria, and Trinidad and Tobago') *Journal of Sustainable Development Law and Policy.* (2021) https://www.researchgate.net/publication/349194457_Addressing_Residual_Liability_and_Insolvency_in_Disused_Oil_and_Gas_Infrastructure_Left_in_Place_The_Cases_of_Brazil_Nigeria_and_Trinidad_and_Tobago_Addressing_Residual_Liability_and_Insolvency_in_Dis accessed 25th April, 2026

[2] D Raimi, *The Fracking Debate: The Risks, Benefits, and Uncertainties of the Shale Revolution* (New York: Columbia University Press, 2017).

[3] EE Smith, JS Dzienkowski, OL Anderson and JS Lowe, *International Petroleum Transactions* (3rd edn, Rocky Mountain Mineral Law Foundation, 2010).

[4] MJ Kaiser, *The Offshore Petroleum Decommissioning Report* (London: Springer, 2020).

[5] D Raimi, AJ Krupnick, JS Shah, and A Thompson, 'Decommissioning Orphaned and Abandoned Oil and Gas Wells: New Estimates and Cost Drivers' *Environmental Science & Technology* (2021) 55(15) 10224–10230. *https://pubs.acs.org/doi/10.1021/acs.est.1c02234* accessed 25 April, 2026. A Alsubaih, K Sepehrnoori, and M Delshad, 'Environmental Impacts of Orphaned and Abandoned Wells: Methane Emissions and Implications for Carbon Storage' *Applied Sciences* (2024) 14(24) 11518. https://www.researchgate.net/publication/386898450_Environmental_Impacts_of_Orphaned_and_Abandoned_Wells_Methane_Emissions_and_Implications_for_Carbon_Storage accessed 25th April, 2026.

[6] Petroleum Act, 1969 and its regulations.

[7] Chime, I., Nwogu-Ikojo, A.L. and Ike, C.M., 'Legal Framework for the Regulation of Abandonment and Decommissioning in Nigeria' *Nnamdi Azikiwe University Journal of Commercial and Property* (2024) 11(2) https://www.researchgate.net/publication/382967714_Legal_Framework_for_the_Regulation_of_Abandonment_and_Decommissioning_in_Nigeria_Ikechukwu_Chime_Akachi_Lynda_Nwogu-Ikojo accessed 25 April, 2026., OJ Olujobi,, The Petroleum Industry Act 2021: *A Legal and Institutional Analysis of Reform in Nigeria's Oil and Gas Sector* (Ibadan: Spectrum Books, 2022).

From a theoretical standpoint, the issue is grounded in the principle of polluter pays, a cornerstone of environmental law articulated in instruments such as Principle 16 of the Rio Declaration (1992). The failure to enforce this principle results in negative externalities, where environmental and financial burdens are transferred from private operators to the state.

2. The PIA Framework on Decommissioning and Abandonment

Central to this statutory framework of the PIA are the relevant sections of the Act, which collectively establish the legal architecture for the planning, funding, and execution of decommissioning activities. At the core of the PIA's statutory framework is the explicit allocation of primary liability for decommissioning to licensees and lessees.[8] The Act imposes a direct legal obligation on operators to plan for, fund, and execute the decommissioning of petroleum facilities at the end of their productive life.[9] This obligation is not merely procedural but substantive, requiring operators to restore affected sites in accordance with prescribed environmental and safety standards. By embedding these duties within statute, the PIA eliminates the ambiguity that previously characterized decommissioning responsibilities and aligns Nigeria's regime with the international principle that the polluter should bear the cost of remediation.

Submission of Detailed Decommissioning Plans

A key statutory innovation is the requirement for the preparation and approval of Decommissioning and Abandonment Plans (DAPs). These plans must be submitted to the relevant regulator as a condition of continued operations and must contain detailed technical, financial, and environmental information.[10] This obligation reflects a shift from the pre-PIA regime, where decommissioning was often treated as a post-operational concern rather than an integral component of project lifecycle planning. The legal significance of this requirement lies in its preventative orientation. By mandating early-stage planning, the Act seeks to eliminate the regulatory lacuna that historically enabled operators to defer or evade decommissioning responsibilities. In doctrinal terms, this reflects a movement towards ex ante regulation, where obligations are imposed at the outset rather than enforced retrospectively.[11]

Inclusion of Cost Estimates, Timelines and Methodologies

The second critical component of the statutory framework is the requirement that decommissioning plans incorporate detailed cost estimates, timelines, and technical methodologies. These elements serve as the operational backbone of the D&A regime.[12]

Cost Estimates: Operators are required to provide comprehensive financial projections covering all aspects of decommissioning, including, removal of infrastructure; site remediation and environmental restoration; waste management and disposal; monitoring and post-abandonment obligations. The inclusion of cost estimates is directly linked to the funding requirements under the PIA, particularly the establishment of Decommissioning and Abandonment Funds. Accurate cost estimation is therefore essential to ensure that sufficient financial resources are set aside over the lifecycle of the project.[13] However, a persistent challenge, observed across global petroleum jurisdictions is the systematic underestimation of decommissioning costs. Empirical studies from mature basins such as the North Sea indicate that actual costs often exceed initial projections by significant margins. Factors contributing to this discrepancy include technological uncertainty, regulatory changes, inflation, and unforeseen environmental conditions.[14]

Timelines: The PIA further requires operators to specify clear timelines for the execution of decommissioning activities. These timelines must align with the cessation of production and should account for: Phased shutdown of operations; Sequential removal of infrastructure; Environmental restoration milestones. The inclusion of timelines serves both a planning and enforcement function. From a regulatory perspective, it enables authorities to monitor compliance and intervene where delays occur. From an operational standpoint, it ensures that decommissioning is integrated into the broader project lifecycle.[15]

Methodologies: In addition to financial and temporal elements, operators must detail the technical methodologies to be employed in decommissioning. This includes engineering techniques for dismantling facilities, environmental remediation

[8] Petroleum Industry Act 2021, s 233

[9] EO Okumagba, 'Decommissioning of Oil and Gas Installations in Nigeria: A Critical Appraisal of the Impacts of the Petroleum Industry Act 2021' *Baltic Journal of Law & Politics* (2022) 15(7) 1370–1393. https://www.researchgate.net/publication/371762644_Decommissioning_of_Oil_and_Gas_Installations_in_Nigeria_A_Critical_Appraisal_of_the_Impacts_of_the_Petroleum_Industry_Act_2021 accessed 26 April, 2026.

[10] (n8)

[11] G Hecht, *Residual Governance: How South Africa Foretells Planetary Futures* (Duke University Press 2023)

[12] PO Ogbeide, and I Omoregbee, 'Cost Analysis of Decommissioning Process of Offshore Structure: A Comparative Study for Removal Options', *Journal of Energy Technology and Environment*, (2023) 5(2). file:///C:/Users/na03180/Downloads/NJETE-B-23-015%20(1).pdf accessed 28 April, 2026.

[13] Petroleum Industry Act 2021, s.232

[14] S Tromans, Oil and Gas Decommissioning: Law, Policy and Comparative Practice. (2nd edn. Globe Law and Business 2018).

[15] (n13)

processes, and health and safety protocols. The requirement for methodological specificity ensures that decommissioning activities adhere to recognized industry standards and minimizes the risk of environmental harm.[16]

Compliance with Environmental and Safety Standards

A third pillar of the PIA's statutory framework is the obligation to ensure compliance with environmental and safety standards. Decommissioning activities, if improperly executed, can result in significant ecological damage, including soil contamination, marine pollution, and habitat destruction. The PIA I integrates environmental governance into the decommissioning process by requiring that all plans align with applicable environmental laws and international best practices. This includes adherence to principles such as: Environmental impact assessment (EIA); Risk mitigation and hazard management; Restoration of sites to their original or agreed condition.[17] The emphasis on environmental and safety compliance reflects a broader shift towards sustainable petroleum governance, where economic development is balanced against ecological preservation.

Requirement for Periodic Updates

An important feature of the PIA's framework is the requirement that decommissioning plans be periodically updated. This ensures that plans remain responsive to evolving operational realities, technological advancements, and cost dynamics. Periodic updates serve several functions which includes the need for accuracy allowing for the revision of cost estimates to reflect current market conditions, for relevance in order to ensure that methodologies remain aligned with technological innovations and for compliance which will enable regulators to reassess risks and enforce updated standards.[18] This approach mirrors international best practice, particularly as seen in the United Kingdom under the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED), where operators are required to submit revised decommissioning programmes at regular intervals. The requirement for updates underscores the dynamic nature of petroleum operations and recognizes that static planning is insufficient in a sector characterized by uncertainty and long project lifecycles.[19]

Challenges in Cost Estimation and Financial Provisioning

Notwithstanding the robustness of the statutory framework, a critical issue lies in the reliability of cost estimation. As noted earlier, empirical evidence suggests that decommissioning costs are frequently underestimated. This has significant implications for the effectiveness of the PIA's financial assurance mechanisms. Underestimation can result in insufficient funding in Decommissioning and Abandonment Funds, increased risk of asset orphaning, and potential transfer of financial burden to the state. These challenges raise questions about whether the PIA's reliance on operator-generated cost estimates is sufficient to guarantee full lifecycle cost internalization.[20] Therefore, the persistence of ambiguities regarding residual liability, insolvency scenarios, and state responsibility indicates that the framework is not entirely comprehensive. While the PIA establishes a strong foundation, its effectiveness ultimately depends on the resolution of these outstanding issues through regulatory practice, judicial interpretation, or future legislative reform.

3. Decommissioning and Abandonment Fund

Equally significant is the establishment of the Decommissioning and Abandonment Fund (DAF), which serves as the financial backbone of the statutory regime.[21] The Act mandates that operators make periodic contributions to a dedicated, ring-fenced fund designed exclusively for decommissioning purposes.[22] The legal structure of the DAF is particularly important, by insulating these funds from the general assets of the operator, the PIA ensures that they remain available even in cases of insolvency. This represents a marked improvement over the pre-PIA regime, where the absence of secured financial provisioning often resulted in unfunded liabilities and, ultimately, orphaned assets. Specifically, the Act requires operators to create and maintain a dedicated fund for the exclusive purpose of decommissioning and abandonment activities; make periodic financial contributions based on cost estimates approved by the regulator and ensure that the fund is held and managed by an independent financial institution.[23] These provisions are reinforced by Section 232, which approves a Decommissioning Plan. From a legal standpoint, this requirement imposes a fiduciary-like obligation on the licensee. The

[16] Ibid.
[17] Petroleum Industry Act 2021, ss.102 and 103
[18] Although the Petroleum Industry Act does not expressly mandate 'periodic updates' in explicit terms, such a requirement is implicit in Sections 232 and 233. These provisions require regulatory approval of decommissioning plans and continuous funding based on updated cost estimates, thereby necessitating periodic review to ensure accuracy, regulatory compliance, and alignment with evolving operational and economic conditions.
[19] Hassan, M. and R. Dixon. 'Managing Decommissioning Liabilities in the Oil and Gas Sector.' *Journal of Energy & Natural Resources Law* 38, no. 2 (2020): 145–168. https://www.researchgate.net/publication/393751912_Decommissioning_Liabilities_in_Offshore_Petroleum_Operations_and_Transfer_of_Interests_Assignment_of_Petroleum_Contracts_Current_Trends_and_Practices accessed 29 April, 2026; MJ Kaiser, *Decommissioning Offshore Structures*. (Gulf Professional Publishing, 2019).
[20] B Taverne, *Oil and Gas Decommissioning: Law, Policy and Comparative Practice* (Kluwer Law International 2012).
[21] Petroleum Industry Act 2021, s 232
[22] S Dunmade, , I Adeyemo, and J Uka-Ofor, *Decommissioning and Abandonment: Nigeria's Experience in a Global Context* (SSRN, 2023)., CO Akenbor, and TO Imo, 'Decommissioning Costs in Oil and Gas Operations in Nigeria: Theoretical Reflection' Nigerian *Academy of Management Journal*. (2022) file:///C:/Users/na03180/Downloads/NAMJ+17(2)+June+2022-30-38%20(20).pdf accessed 26 April, 2026.
[23] (n21)

operator is not merely a contributor but also a steward of funds earmarked for a specific statutory purpose.[24] The funds cannot be diverted for operational expenses, debt servicing, or shareholder distributions. The dedicated nature of the fund addresses a key weakness in earlier regimes, where decommissioning obligations were often unfunded or reliant on the financial health of the operator at the end of the project lifecycle. By mandating the creation of a separate fund, the PIA ensures that financial provisioning begins early and accumulates over time.[25]

Periodic Contributions Based on Approved Cost Estimates

A second critical feature of the DAF is the requirement for periodic contributions, calculated based on cost estimates contained in the approved Decommissioning and Abandonment Plan. These contributions are typically structured over the productive life of the asset, thereby distributing the financial burden across the revenue-generating phase of the project.[26] The role of the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) is central in this regard. The Commission is responsible for reviewing and approving cost estimates; Determining the schedule and quantum of contributions; Monitoring compliance and enforcing adjustments where necessary.[27] This regulatory oversight introduces a layer of accountability, ensuring that contributions are neither arbitrary nor insufficient. It also reflects an attempt to operationalize the polluter pays principle, by requiring operators to internalize the costs of environmental remediation.[28] However, as noted in earlier analysis, the reliability of cost estimates remains a critical concern. If initial projections are flawed, the resulting contributions may be inadequate, leading to funding shortfalls at the decommissioning stage.

Custody yy Independent Financial Institutions

The PIA further requires that the DAF be held by an independent financial institution, rather than being retained within the operator's balance sheet.[29] This provision serves multiple legal and practical purposes. First, it enhances transparency and accountability, as funds are subject to external management and oversight. Second, it reduces the risk of misappropriation or diversion by the operator. Third, it facilitates regulatory access to the funds in the event of default. The involvement of independent financial institutions also introduces elements of trust law and custodial arrangements, whereby the institution acts as a custodian or trustee of the funds. Although the PIA does not explicitly characterize the DAF as a trust, its structural features closely resemble trust-based financial arrangements commonly used in environmental liability regimes.[30]

Ring-Fencing and Legal Characterization of the DAF

Perhaps the most significant aspect of the DAF is its characterization as a ring-fenced fund. In legal terms, ring-fencing refers to the segregation of assets for a specific purpose, such that they are insulated from the general financial obligations of the entity.[31] Under the PIA framework, the DAF is legally distinct from the operator's general assets; Restricted in use exclusively to decommissioning and abandonment activities; Protected from claims by creditors in the event of insolvency. This ring-fencing mechanism is critical in addressing one of the primary causes of orphaned oil assets namely, the insolvency of operators. In the absence of such protection, decommissioning funds could be absorbed into the general asset pool and subjected to creditor claims during liquidation proceedings.[32] By insulating the DAF, the PIA ensures that funds remain available for their intended purpose, regardless of the operator's financial condition. This aligns with international best practices, particularly in jurisdictions such as the United Kingdom, where financial security arrangements are similarly protected.

Insolvency Protection and Creditor Claims

The insolvency protection afforded by the ring-fenced structure has significant legal implications. In insolvency law, creditors typically have recourse to the debtor's assets to satisfy outstanding obligations. However, assets that are legally segregated such as trust funds or statutory reserves may fall outside the insolvency estate. The DAF, by virtue of its statutory basis and restricted purpose, can be interpreted as excluded from the pool of assets available to creditors. This interpretation is supported by the explicit requirement that the fund be used solely for decommissioning. Nevertheless, the effectiveness

[24] O Akintayo*, Oil and Gas Law in Nigeria* (2nd edn, Princeton Publishing 2021).
[25] PD Cameron, *International Petroleum Law and Policy* (Oxford University Press 2010).
[26] S Dunmade, I Adeyemo, & J Uka-Ofor, *Decommissioning and Abandonment: Nigeria's Experience in a Global Context* (SSRN 2023)., SC Dike, Decommissioning and Abandonment of Oil and Gas Facilities Legal Regime in Nigeria: Lessons from Norway, UK and Brazil Journal of Property Law and Contemporary Issues. (2017) https://www.researchgate.net/publication/335870663_DECOMMISSIONING_AND_ABANDONMENT_OF_OIL_ND_GAS_FACILITIES_LEGAL_REGIME_IN_NIGERIA_ANY_LESSON_FROM_NORWAY_THE_UK_AND_BRAZILIAN_LEGAL_FRAMEWORKS accessed 29 April, 2026.
[27] (n13)
[28] S Damilola, *Nigerian Oil and Gas Law* (Spectrum Books 2021).
[29] Petroleum Industry Act 2021, s.233
[30] OJ Olujobi, (2022) 'Environmental liability and financial assurance mechanisms in Nigeria's upstream petroleum sector' Oil, Gas & Energy Law Intelligence (OGEL). https://www.researchgate.net/publication/371724083_THE_LEGAL_REGIME_ON_OIL_AND_GAS_WASTES_CAN_DECOMMISSIONING_OF_PETROLEUM_ASSETS_UNDER_THE_PETROLEUM_INDUSTRY_ACT_2021_COMBAT_ENVIRONMENTAL_DEGRADATION_RISK_IN_NIGERIA'S_UPSTREAM_PETROLEUM_SECTOR accessed 26 April, 2026
[31] E Avgouleas, *Banking Law and Financial Regulation* (Oxford University Press 2019)
[32] E O Okumagba, 'Decommissioning of Oil and Gas Installations in Nigeria: A Critical Appraisal of the Impacts of the Petroleum Industry Act 2021. *Baltic Journal of Law & Politics*, (2022). 15(7), 1370–1393. https://www.researchgate.net/publication/371762644_Decommissioning_of_Oil_and_Gas_Installations_in_Nigeria_A_Critical_Appraisal_of_the_Impacts_of_the_Petroleum_Industry_Act_2021 accessed 28 April, 2026.

of this protection may depend on the precise legal documentation governing the fund, judicial interpretation in insolvency proceedings, and the strength of regulatory enforcement. Any ambiguity in these areas could expose the fund to legal challenges, thereby undermining its protective function.

Limitations of the Fund Mechanism

The DAF, established under the Petroleum Industry Act, is not without structural and operational limitations. Notwithstanding its central role in Nigeria's decommissioning framework, the Decommissioning and Abandonment mechanism still faces several risks that may undermine its effectiveness in guaranteeing full financial coverage of end-of-life obligations.

Underfunding Risk: A primary limitation of the DAF lies in its dependence on projected cost estimates. Section 233 of the PIA requires operators to make periodic contributions to the fund based on the estimated costs of implementing an approved Decommissioning and Abandonment Plan.[33] However, such estimates are inherently speculative, particularly given the long lifecycle of petroleum projects. Over time, actual decommissioning costs may diverge significantly from initial projections due to factors such as inflation, exchange rate volatility, regulatory tightening, and technological complexity. The PIA attempts to mitigate this risk by mandating periodic reviews and adjustments of fund contributions.[34]

Timing and Funding Gaps: A second limitation relates to the timing of contributions. Although the PIA requires that funds be accumulated over the life of the asset, it does not prescribe a strictly front-loaded funding model. This creates the possibility that contributions may be backloaded, with significant payments deferred to later stages of production. Such an approach presents risks where Production declines earlier than expected, operators divest or exit prematurely, and financial distress occurs before adequate funds have been accumulated. In these scenarios, the DAF may be insufficiently capitalized at the point when decommissioning obligations crystallize. While the section 233 of the PIA empowers regulators to enforce compliance and adjust contribution schedules, the absence of explicit statutory requirements for early-stage capitalization leaves room for funding gaps, particularly in high-risk or marginal fields.[35]

Scope Limitations: A further concern is the limited scope of the DAF. The PIA primarily envisions the fund as covering the direct costs of decommissioning activities as outlined in approved plans. However, petroleum operations often give rise to unforeseen environmental liabilities, including contamination, long-term ecological damage, and third-party claims.[36]The statutory provisions do not explicitly clarify whether the DAF extends to: Compensation for environmental damage beyond planned remediation; Civil liabilities arising from third-party claims; post-abandonment monitoring beyond defined timelines. This ambiguity creates potential gaps in coverage, particularly in cases involving latent environmental harm or community-related claims. In such instances, the financial burden may exceed the resources available in the DAF, thereby shifting residual liability to operators (where solvent) or, ultimately, to the state.[37] Taken together, these limitations highlight a critical tension within the PIA's financial assurance framework. Accordingly, without complementary mechanisms such as additional financial guarantees, insurance instruments, or stricter regulatory enforcement the DAF may not fully eliminate the risk of orphaned oil assets or the eventual transfer of financial burdens to the Nigerian state.

Ambiguities From Joint Venture Arrangements: The issue of joint venture (JV) arrangements further complicates the allocation of liability. Nigeria's petroleum sector is dominated by JV structures involving multiple parties, including international oil companies and the national oil company. While the PIA imposes obligations on license holders, it does not comprehensively address the extent to which liability is joint and several among JV partners, particularly in situations where one or more parties default. This creates potential gaps in accountability, as solvent partners may seek to limit their exposure, leaving regulators with limited recourse.[38] One of the most significant areas of ambiguity concerns residual liability, specifically, the question of who bears responsibility when the DAF proves insufficient to cover the full cost of decommissioning.[39] While the Act clearly establishes the operator's primary liability, it does not comprehensively address scenarios in which financial provisions fall short due to underestimation, inflation, or unforeseen technical challenges. In such cases, it remains unclear whether liability can be extended to former licensees, joint venture partners, or other stakeholders, or whether the burden ultimately shifts to the state. This gap is particularly problematic in the context of insolvency.[40] Although the ring-fenced nature of the DAF provides a degree of protection, it does not guarantee that

[33] E O Okumagba, 'Decommissioning of oil and gas installations in Nigeria: A critical appraisal of the impacts of the Petroleum Industry Act 2021, *Baltic Journal of Law & Politics*, (2022). 15(7), 1370–1393. https://www.researchgate.net/publication/371762644_Decommissioning_of_Oil_and_Gas_Installations_in_Nigeria_A_Critical_Appraisal_of_the_Impacts_of_the_Petroleum_Industry_Act_2021 accessed 26th April, 2026.

[34] Petroleum Industry Act, 2021 s. 233(5)

[35] Hammerson, M, *Oil and Gas Decommissioning: Law, Policy and Comparative Practice*, (2nd edn Globe Law and Business 2016), T Hunter, *Decommissioning and Financial Security in the Oil and Gas Industry (Routledge 2015)*

[36] (n33)

[37] M Roggenkamp, C Redgwell, I del Guayo and A Ronne, *Energy Law in Europe: National, EU and International Regulation* (3rd Edition Oxford University Press 2016)

[38] J Paterson, *Oil and Gas Law: Current Practice and Emerging Trends* (Dundee University Press 2011)

[39] Abdul Karim, 'Financial Security and Environmental Liability in Offshore Petroleum Decommissioning' *Journal of World Energy Law & Business* (2020) 13(4), 295–312

[40] D Ong, *The Law of Energy Underground: Understanding New Developments in Subsurface Production, Transmission, and Storage,* (Edward Elgar Publishing 2015)

sufficient funds will always be available. Where an operator becomes insolvent and the fund is inadequate, the statutory framework offers limited guidance on the allocation of additional liability.[41] This raises concerns about the potential for environmental risks to be externalized, thereby undermining the polluter pays principle that the PIA seeks to uphold.

Furthermore, the Act does not fully clarify the extent of regulatory and state responsibility in such circumstances. While regulators are empowered to intervene and execute decommissioning activities, their role is primarily facilitative rather than substitutive. The absence of explicit provisions assigning ultimate liability to the state creates a degree of legal uncertainty, particularly in cases involving legacy assets or defunct operators. In practice, however, it is likely that the state would assume responsibility as a matter of necessity, given its overarching duty to protect public health and the environment.[42]

Another unresolved issue relates to the treatment of joint venture arrangements, which are a dominant feature of Nigeria's petroleum sector. The PIA does not explicitly provide for joint and several liability in all cases, leaving open the possibility that liability may be fragmented among partners. This could complicate enforcement efforts, particularly where one or more partners are unable or unwilling to meet their obligations. Comparative jurisprudence suggests that a more robust approach such as the imposition of continuing or joint liability would provide greater assurance against the risk of orphaned assets.[43]

4. Transfer of Assets

Another critical area of ambiguity relates to residual liability following the transfer, assignment, or relinquishment of petroleum interests. The PIA introduces provisions governing the assignment of licenses and leases, but it is not always clear whether and to what extent previous holders retain liability for decommissioning obligations. In the absence of explicit statutory provisions establishing continuing liability, there is a risk that operators may divest mature assets to less financially robust entities, thereby increasing the likelihood of orphaning.[44] This phenomenon, often referred to as 'asset dumping,' has been observed in other jurisdictions and underscores the importance of rigorous financial and technical due diligence in the approval of asset transfers.

5. Comparative Perspective

Comparative analysis reveals that leading petroleum jurisdictions have adopted robust mechanisms to prevent asset orphaning. In the United Kingdom, the Petroleum Act 1998 imposes joint and several liability, ensuring that all licensees remain responsible for decommissioning regardless of changes in ownership.[45] The UK regime requires operators to provide financial security through escrow accounts, letters of credit, or parent company guarantees[46] Norwegian law similarly enforces continuing liability, supported by strong state participation and financial vetting of operators.[47] Canadian provinces employ industry-funded orphan well programs, backed by mandatory levies.[48] These systems share a common feature: they minimize the risk of orphaned assets by ensuring that liability persists beyond the operational life of the asset and is not extinguished by corporate restructuring. The PIA's approach particularly its emphasis on ring-fencing places Nigeria within the spectrum of jurisdictions adopting proactive financial assurance mechanisms.[49] In sum, the legal status and structure of the Decommissioning and Abandonment Fund under the PIA represent a significant advancement in Nigeria's petroleum regulatory framework.

6. Regulatory Oversight

The effectiveness of the decommissioning and abandonment (D&A) regime under the Petroleum Industry Act (PIA) is significantly dependent on the strength and scope of regulatory oversight. Central to this framework is the role of the Nigerian Upstream Petroleum Regulatory Commission (NUPRC), which is vested with broad statutory powers to supervise, enforce, and ensure compliance with decommissioning obligations. Under the PIA, the NUPRC's oversight functions are expressly anchored in provisions relating to decommissioning and abandonment, particularly within several sections.[50] These provisions collectively establish a system of pre-approval, continuous monitoring, and enforcement intervention. First, the Commission is empowered to approve fund contributions to the Decommissioning and Abandonment Fund (DAF).[51] By virtue of the Act, licensees and lessees are required to make periodic financial contributions based on cost estimates contained in their approved decommissioning plans. However, such contributions are not left to the discretion of operators. The NUPRC must review and approve the quantum, structure, and timing of these contributions to ensure

[41] M Hammerson, *Oil and Gas Decommissioning: Law, Policy and Comparative Practice*, (2nd Edition Globe Law and Business 2016)
[42] G Gordon, J Paterson and E Usenmez, *International Petroleum Law and Policy* (2nd Edition Oxford University Press 2018).
[43] Ibid.
[44] B Adaralegbe, 'The Legal Regime for Assignment of Interests in Nigeria's Upstream Petroleum Sector' (2022) 15(1) *Journal of World Energy Law & Business* 22–37 https://academic.oup.com/jwelb/article-abstract/15/1/22/6511902 accessed 30 April, 2026., EG Pereira, O Y Omotuyi, AE Koenck, OJ Olujobi and G Loss, 'Decommissioning Liabilities in Offshore Petroleum Operations and Transfer of Interests/Assignment of Petroleum Contracts: Current Trends and Practices' OGEL 2. (2025) https://www.researchgate.net/publication/393751912_Decommissioning_Liabilities_in_Offshore_Petroleum_Operations_and_Transfer_of_Interests_Assignment_of_Petroleum_Contracts_Current_Trends_and_Practices accessed 30 April, 2026.
[45] United Kingdom, Petroleum Act 1998, (c.17), ss. 29–45.,
[46] United Kingdom, Petroleum Act 1998 s.29
[47] Petroleum Activities Act 1996 (Norway), Act of 29 November 1996 No. 72, Chapter 5 (Cessation of Petroleum Activities), s. 5-4.
[48] Oil and Gas Conservation Act, RSA 2000, c O-6 (Canada – Alberta), ss. 70, 73–77
[49]G Gordon, JP and E Usenmez, *Oil and Gas Law: Current Practice and Emerging Trends* (2nd Edition Dundee University Press 2018).
[50] Petroleum Industry Act 2021, ss. 232–238
[51] Petroleum Industry Act, 2021 s. 233

adequacy and alignment with projected decommissioning liabilities. This pre-approval mechanism serves as a critical safeguard against deliberate underfunding or financial misrepresentation by operators.

Secondly, the Commission exercises ongoing monitoring and compliance oversight.[52] The NUPRC is tasked with verifying compliance with these obligations through audits, reporting requirements, and inspections. This continuous supervision ensures that operators remain financially and technically prepared to meet their end-of-life obligations throughout the lifecycle of the petroleum asset.

Thirdly, and most significantly, the NUPRC possesses the authority to access and utilize the DAF in cases of default. Where an operator fails to carry out approved decommissioning activities or becomes insolvent, the PIA empowers the Commission to draw from the fund to execute the required works, either directly or through third-party contractors.[53] This provision operationalizes the principle of financial assurance by ensuring that funds set aside for decommissioning are not merely theoretical but are readily deployable when needed.

This tripartite oversight structure of approval, monitoring, and intervention, is designed to address a persistent challenge in petroleum regulation: the diversion or misuse of decommissioning funds. In jurisdictions lacking strict regulatory control, operators may underfund, delay contributions, or repurpose allocated funds, thereby increasing the risk of orphaned assets. The PIA mitigates this risk by ring-fencing the DAF and placing it under regulatory scrutiny. Furthermore, under Sections 102 and 232–238, regulators may issue directives for compliance, impose penalties for non-compliance, and suspend or revoke licenses.[54] Nevertheless, the effectiveness of this oversight regime ultimately depends on the institutional capacity, technical expertise, and independence of the NUPRC. While the statutory framework is robust, its practical success will hinge on consistent enforcement and transparency in regulatory processes.

Challenges in Enforcement

Notwithstanding these powers, enforcement remains contingent on institutional capacity. Key challenges include limited technical expertise; resource constraints; potential regulatory capture. These factors may undermine the effectiveness of the statutory framework.[55]

Insolvency of Operators

One of the most significant risks to effective decommissioning is the insolvency of license holders. The PIA anticipates this possibility and attempts to mitigate it through statutory provisions requiring financial preparedness. However, insolvency risk is not entirely neutralized. Where the DAF is insufficient to cover the full cost of decommissioning, the question of residual liability arises. The PIA does not expressly provide for a comprehensive continuing liability regime akin to that found in jurisdictions such as the United Kingdom, where previous licensees may remain liable even after divestment. Consequently, in cases of operator insolvency combined with underfunding, a regulatory gap emerges, potentially shifting the burden to the state.

Inadequate Funding

Closely linked to insolvency is the issue of inadequate financial provisioning. While the PIA creates a structured funding mechanism, its effectiveness is contingent on the accuracy and reliability of those estimates.[56] In practice, decommissioning costs are inherently uncertain and subject to fluctuation over time. The implication is that, despite the existence of the DAF, there remains a real possibility of funding shortfalls

Weak Enforcement and Institutional Capacity

A third critical factor influencing orphaned asset risk is the effectiveness of regulatory enforcement. The PIA confers broad enforcement powers on regulatory bodies, including the NUPRC and NMDPRA. These powers include the authority to: approve and reject decommissioning plans, monitor compliance with funding obligations, issue directives and sanctions for non-compliance, and undertake decommissioning activities in default scenarios.[57] It has been stated that these powers have not been effectively utilised.[58]

[52] Section 232 of the PIA mandates operators to submit and periodically update decommissioning plans, while Section 233 requires continuous funding of the DAF.
[53] Petroleum Industry Act, 2021 s. 233(5)
[54] DS Olawuyi, 'Decommissioning and Abandonment under Nigeria's Petroleum Industry Act 2021: Legal and Regulatory Perspectives' *Journal of Energy & Natural Resources Law* (2022) 40(4) 567–586.
[55] Y Omorogbe & P Oniemola, *Oil and Gas Law in Nigeria: Theory and Practice* (Malthouse Press, 2016).
[56] Petroleum Industry Act 2021 ss. 232 -233
[57] BFI Anyatang & BE. Kooffreh, 'Abandonment/decommissioning under Nigerian legal regimes: A comparative analysis' *International Energy Law Review* (2021)23(2).https://www.researchgate.net/publication/381136263_ An_Appraisal_of_the_Legal_Frameworks_and_ Policy_Shift_in_the_Nigerian_Energy_Sector accessed 30 April, 2026.
[58] (n7)

7. Role of the NMDPRA

The Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) oversees midstream and downstream facilities, ensuring that decommissioning obligations extend across the entire petroleum value chain.[59]

8. Implications for Orphaned Asset Risk under the PIA

Orphaned or residual assets arise where decommissioning obligations are not fully discharged, leaving behind infrastructure that poses environmental and safety risks. Under the PIA, primary responsibility for such assets lies with the licensee or lessee. However, the Act implicitly recognizes that this responsibility may not always be enforceable. In situations where: the operator is insolvent; the DAF is insufficient; enforcement mechanisms fail; the responsibility for managing residual assets may shift to the regulator and, by extension, the Nigerian state.[60] This is evident in the regulator's power to step in and execute decommissioning using available funds or alternative arrangements. The absence of explicit provisions on ultimate liability creates ambiguity. Unlike jurisdictions that impose joint and several liability on all current and former license holders, the PIA does not comprehensively address the chain of responsibility beyond the immediate operator. This gap increases the likelihood that the state will act as the 'operator of last resort.'

Who Bears the Ultimate Burden?

A critical question arising from the foregoing analysis is, who ultimately bears the burden of decommissioning in cases of orphaned assets? Under the PIA, the hierarchy of liability can be summarised as follows: Primary Liability are the Licensees and Lessees. The Act clearly places the initial obligation on operators to fund and execute decommissioning. This is consistent with Sections 232 and 233. Secondary interventions are the regulators, where operators default, regulators such as the NUPRC are empowered to access the DAF and undertake decommissioning activities. Residual Burden is the State, in cases where funds are insufficient and no responsible operator exists, the burden effectively shifts to the government.[61] This may involve direct public expenditure or reliance on ad hoc arrangements. This layered structure reflects a partial internalization of costs, but it does not fully eliminate the possibility of public liability.[62] In practical terms, the Nigerian state remains the ultimate guarantor of environmental remediation, particularly in extreme cases of orphaned assets.[63]

9. Conclusion

The Petroleum Industry Act (PIA) significantly improves Nigeria's decommissioning and abandonment framework through mandatory planning, dedicated funding mechanisms, and enhanced regulatory oversight, thereby reducing the risk of orphaned oil and gas assets. Nevertheless, the framework remains vulnerable to challenges such as operator insolvency, inadequate funding, weak enforcement, and ambiguities surrounding residual liability. These limitations indicate that the possibility of orphaned assets has not been entirely eliminated and that the state may ultimately bear responsibility in certain circumstances. The study therefore recommends further reforms aimed at strengthening financial assurance mechanisms, clarifying liability provisions, and improving regulatory capacity to achieve environmental sustainability and fiscal responsibility.

[59]Petroleum Industry Act, 2021 ss. 29, 32-33, 125–129
[60] Petroleum Industry Act, 2021 ss. 236–237 –
[61] Ibid.
[62] B Sweeney & H Vanhove, *Decommissioning and Abandonment in the Oil and Gas Industry: Legal and Regulatory Perspectives*, (Oxford University Press, 2019).
[63] PN Okoro, *Environmental Liability and Petroleum Regulation in Nigeria* (Routledge, 2020).