

Transparency and Governance Challenges in Nigeria's Petroleum Supply Chain

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DOI: <https://doi.org/10.47772/IJRISS.2026.100300562>

Received: 01 April 2026; Accepted: 06 April 2026; Published: 18 April 2026

ABSTRACT

Nigeria's petroleum sector contributes approximately 76% of federal revenue, yet remains plagued by systemic governance deficits. This paper examines transparency and governance challenges in Nigeria's petroleum supply chain, focusing on the impact of post-Petroleum Industry Act (PIA) 2021 reforms. Drawing on institutional and political economy theories, the analysis reveals that despite the PIA's comprehensive restructuring including the creation of new regulatory bodies and the commercialization of NNPC Limited significant implementation gaps persist. Key challenges include opacity in crude allocation, incomplete beneficial ownership disclosure, regulatory overlap, weak enforcement, and pervasive crude oil theft resulting in estimated losses of N8.41 trillion (2021–2025). The paper argues that entrenched rent-seeking, weak institutional coordination, and political interference undermine reform efforts. It recommends strengthening regulatory coordination, enhancing beneficial ownership transparency, and introducing independent auditing and robust oversight mechanisms to realize the PIA's transformative potential.

Keywords: Transparency, Governance, Petroleum Supply Chain.

INTRODUCTION

Nigeria's petroleum sector stands as the cornerstone of its national economy, representing the primary source of government revenue, foreign exchange earnings, and economic sustenance. As Africa's largest crude oil producer, Nigeria's economic fortunes remain inextricably linked to the performance and governance of its petroleum industry (Muzan, 2024; Olaniyi-Quadri, 2026). According to Nwaoburu and Akiri (2025), the Nigerian National Petroleum Corporation (NNPC) alone is responsible for approximately 76% of federal revenue, underscoring the sector's dominant role in financing national development. The petroleum industry's significance extends beyond fiscal contributions to encompass employment generation, industrial development, and energy security for a population exceeding 200 million people (Adesola et al., 2024; Osho, 2025).

The downstream sector, in particular, occupies a critical position in Nigeria's petroleum supply chain, encompassing refining, storage, distribution, and retail of refined petroleum products. As Okoye (2026) noted, the downstream sector “stands at a critical juncture in Africa,” undergoing fundamental transformation from long-standing market structures characterized by state monopolies and multinational dominance toward diversified competition involving indigenous firms, private equity, and digitised supply chains. This transformation is particularly evident in Nigeria, where the launch of the Dangote Group Refinery (650,000 b/d capacity) in late 2024 and the Bua Energy expansion “signalled a milestone in the move towards import replacement and enhanced domestic capacity” (Okoye, 2026).

Recent global geopolitical tensions have added a new layer of complexity to Nigeria's petroleum supply chain. The escalation of hostilities between Iran and the United States, coupled with persistent conflicts in the Middle East and the Russia-Ukraine war, have repeatedly disrupted global crude oil flows and triggered sharp price volatility (Olawin et al., 2026; Veiga et al., 2026). For a country that imports approximately 70% of its refined petroleum products, these external shocks translate directly into domestic supply insecurity and pump price instability (Anyagou, 2024). In 2024–2026, attacks on shipping in the Red Sea and threats to the Strait of

Hormuz transit led to increased freight and insurance costs for Nigerian fuel imports, further straining an already fragile supply chain (UNCTAD, 2026; Folorunsho, 2026; Jeremiah et al., 2026; Odunewu, 2026). The removal of fuel subsidies in May 2023, while intended to align the downstream sector with the market-based principles of the Petroleum Industry Act, has exposed Nigerian consumers to the full force of global price movements, with pump prices rising from an average of ₦198 per litre to between ₦800 and ₦1,200 per litre by early 2026 (NMDPRA, 2026; Olawin et al., 2026).

The petroleum supply chain in Nigeria comprises three interconnected segments that collectively determine the sector's efficiency, transparency, and stability. As Patidar et al. (2023) explained, "The oil and gas industry is divided into upstream, midstream, and downstream sectors, with each sector serving a crucial role in the overall supply chain. The upstream sector focuses on exploration and extraction, while midstream involves transportation and downstream handles refining and distribution." This structural complexity, combined with Nigeria's heavy reliance on petroleum revenues, creates a governance environment where transparency and accountability are essential for sustainable development. Despite its vast hydrocarbon wealth, Nigeria presents a classic manifestation of the "resource curse" phenomenon, where natural resource abundance paradoxically correlates with economic underdevelopment, political instability, and governance failures. According to Borha and Olujobi (2023), "the expected benefits of such endowment, however, have not always materialized, primarily because of several factors, such as the failure to use the revenues generated from the exploitation of natural resources to promote development, the abrogation of good governance, corruption, and a lack of accountability. This results in a 'paradox of plenty', with glaring underdevelopment and poverty in the presence of abundant resources."

This paradox is starkly evident in Nigeria's petroleum supply chain, where systemic governance challenges have historically undermined the sector's potential contribution to national development. As Afolabi (2023) observed, "Rentier state theory posits that resource-dependent countries like Nigeria often face political instability, corruption, and governance challenges. Oil wealth, rather than driving development, fuels rent-seeking behavior and elite competition, which undermines democratic processes, stifles diversification, and perpetuates socio-political inequality in Nigeria." The consequences of governance failures in the petroleum supply chain are far-reaching. As Borha and Olujobi (2023) noted, "corruption is an ever-present problem in the petroleum industry, from the initial stages of exploration and drilling through the latter stages of refining and distribution." They warn that "where a country mainly dependent on one single product or resources, like petroleum, for its social, economic growth, and development and corruption in that industry has a cumulative effect on the rest of the country's economy and other industries." This systemic vulnerability exposes Nigeria to significant risks, as disruptions in the petroleum supply chain can trigger broader economic instability.

The Petroleum Industry Act (PIA) 2021 represents the most comprehensive legislative reform in Nigeria's petroleum sector since the industry's inception. As Aladeitan, Chime, and Ater (2025) stated, the PIA "aims to overhaul the inefficient and non-transparent processes in Nigeria's oil rights acquisition by creating transparent licensing procedures, eliminating discretionary powers, and promoting a fair, open, and competitive bidding process." This reform agenda directly addresses the transparency and governance deficits that have historically plagued the sector. The PIA introduces fundamental structural changes designed to enhance transparency and accountability across the petroleum supply chain. According to Onuh (2021), the Act serves as a "consolidation of fragmented laws into a single framework to promote transparency and accountability. By curtailing the Minister's sole discretionary powers and mandating recommendations from the Commission, the Act seeks to create a more transparent, profit-oriented, and globally competitive petroleum industry."

Central to the PIA's governance reforms is the separation of regulatory and commercial functions. As Udejimba (2024) explained, "the PIA established various regulatory bodies with specific mandates to regulate different aspects of the oil and gas industry," including the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) for upstream operations, the Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) for midstream and downstream operations, and the transformation of NNPC into NNPC Limited as "a commercially oriented and profit-driven national petroleum company." This institutional restructuring aims to eliminate the conflicts of interest that arose when NNPC simultaneously served as regulator, commercial operator, and policy implementer. The PIA also strengthens transparency

mechanisms through provisions for contract disclosure, beneficial ownership reporting, and host community development trusts. As Isallah (2023) noted, “the PIA intensifies taxation transparency to combat illicit financial flows and tax evasion, emphasizing that transparent reporting of financial activities and CSR initiatives is essential for fostering public confidence and effective governance in Nigeria's oil sector.” These provisions align Nigeria's regulatory framework with international best practices, including the Extractive Industries Transparency Initiative (EITI) standards.

This paper examines the governance and transparency challenges in Nigeria's petroleum supply chain, with particular focus on the impact of post-PIA reforms on accountability mechanisms and market stability. The analysis encompasses the entire supply chain, upstream, midstream, and downstream and evaluates the effectiveness of institutional reforms introduced by the PIA in addressing long-standing governance deficits. This paper addresses the following key questions: What are the primary governance and transparency challenges facing Nigeria's petroleum supply chain? How have post-PIA reforms affected accountability mechanisms and market stability? What gaps persist between regulatory frameworks and implementation outcomes? And what institutional and policy reforms are necessary to strengthen transparency and accountability in the sector? The scope of this analysis extends from crude oil extraction and allocation through refining, distribution, and retail of petroleum products. It examines the roles and relationships among key stakeholders, including regulatory agencies (NUPRC, NMDPRA), the national oil company (NNPC Limited), international and indigenous oil companies, and civil society organizations. The paper draws on theoretical frameworks from institutional theory, principal-agent theory, and political economy perspectives to explain the persistence of governance challenges despite comprehensive legal reforms.

Background to Nigeria's Petroleum Supply Chain

Overview of the Petroleum Supply Chain: Upstream, Midstream, and Downstream

Nigeria's petroleum supply chain is structured across three core segments: upstream, midstream, and downstream, each playing a critical role in the overall functioning of the sector. According to Zheng et al. (2025), “the global petroleum supply chain is a complex, heterogeneous network where central hub countries like China and the United States pivotally determine network efficiency.” For Nigeria, the structure of this supply chain is shaped by historical patterns of resource extraction, regulatory evolution, and market dynamics.

Upstream operations involve exploration, drilling, and extraction of crude oil and natural gas from beneath the earth's surface. As Ogbaini (2025) explained, this segment encompasses “exploration and production operations and this part of the chain introduces crude oil to other nodes in the supply chain.” The upstream sector is dominated by major international oil companies (IOCs) such as Shell, ExxonMobil, and Chevron, alongside the national oil company NNPC, which holds significant stakes in joint ventures. According to Omorogbe (2023), these actors rely on concessions granted by the government and are regulated by the Nigerian Upstream Petroleum Regulatory Commission (NUPRC), which oversees exploration, production, and regulatory compliance. Liu et al. (2025) emphasized that the upstream stage carries distinctive risks beyond mere supply volumes. They note that geopolitical factors in producing countries, such as “strategic control, political and economic collapse, wars, government failure, and political systems instability,” are critical risks that must be assessed alongside the diversification of supply sources. These risks are particularly pronounced in Nigeria, where the Niger Delta region has experienced decades of conflict, environmental degradation, and community grievances linked to oil extraction.

The midstream sector consists of the transportation, storage, and wholesale distribution of petroleum products. As Ogbaini (2025) described, this segment “consists of all transport facilities for movement of crude oil and petroleum products to refineries and storage facilities.” Key infrastructure includes pipelines, tanker fleets, and storage facilities. Pipelines such as the Trans Niger Pipeline (TNP) and the Escravos-Lagos Pipeline are vital to transporting crude oil to refineries or export terminals. However, as the Extractive Industries Transparency Initiative (EITI, 2020) reported, midstream infrastructure has been plagued by a lack of investment and significant vulnerabilities to vandalism and theft. Liu et al. (2025) highlighted the crucial function of the midstream stage as a buffer against global disruptions, noting that refinery capacity reflects a

nation's ability to meet domestic needs through its own processing level and technology, while strategic petroleum reserves (SPR) can “considerably alleviate the impact of global energy supply disruptions.” For Nigeria, the underdevelopment of midstream infrastructure, particularly refining capacity, has created persistent vulnerabilities in the supply chain.

Downstream operations focused on refining, marketing, and retail distribution of petroleum products. According to Panle (2024), “The last segment of the petroleum industry SC is the downstream sector which is responsible for processing, transportation, marketing and distribution of petroleum products.” This segment converts crude oil into usable products such as gasoline, diesel, kerosene, and jet fuel, and ensures their delivery to end consumers. Despite being Africa’s largest crude oil producer, Nigeria continues to rely heavily on imports of refined petroleum products because its four state-owned refineries operate far below installed capacity, a situation compounded by decades of neglect, inadequate maintenance, and underinvestment (Itsekor, 2020; Itumo & Onyejiuba, 2019). Even as domestic refining capacity expands with the Dangote and modular refineries, structural shortages of crude oil feedstock persist, forcing local refiners to import crude spending over N5.7 trillion in 2025 alone, to keep production running, a stark reflection of the country’s inability to prioritize domestic supply despite abundant natural resources (Aina, 2026; Okoro et al., 2017). To meet domestic demand, Nigeria imports around 70% of its refined fuel, a situation compounded by the decayed infrastructure at its local refineries (Anyago, 2024). This import dependency creates significant governance challenges, as the downstream sector becomes vulnerable to subsidy policies, pricing distortions, and opaque import allocation processes.

Nigeria’s heavy reliance on imported refined products exposes the downstream sector to global supply chain disruptions. When geopolitical conflicts such as the Iran-US standoff or drone attacks on Saudi oil facilities, cause crude prices to spike or shipping lanes to become hazardous, landing costs for petrol, diesel, and aviation fuel rise sharply (Aina, 2026; Ibrahim, 2026). These external pressures interact with domestic governance deficits: opaque import allocations, delayed payments to suppliers, and regulatory uncertainty often amplify the impact of global shocks, leading to acute fuel shortages and unannounced price hikes (Ibrahim, 2026; Olawin et al., 2026). The 2026 Iran-US-Israel conflict, which prompted the closure of the Strait of Hormuz to tanker traffic, added a war-risk premium of up to ten times normal levels, making crude transportation to Nigeria significantly more expensive (Awambeng, 2026; Hoskins & Edser, 2026).

Key Stakeholders and Institutions in the Petroleum Sector

The governance structure of Nigeria's petroleum sector involves a complex network of stakeholders and regulatory institutions. According to Patidar et al. (2023), “Stakeholders in the petroleum sector include government agencies, exploration companies, regulatory bodies, and local communities. Each has distinct responsibilities, with the government setting policies, regulatory bodies ensuring compliance, and companies conducting exploration, extraction, and distribution. Effective governance relies on collaboration across these entities (Ang’ana, 2025; Voets et al., 2021).”

At the apex of this structure is the Ministry of Petroleum Resources, which oversees policy formulation and implementation in the sector. However, as De Vita, Lagoke, and Adesola (2015) noted, the interaction between stakeholders often “lacks the reciprocity required for effective policy implementation, as a significant proportion of relationships between key players remain unidirectional, hindering collective accountability.” The Nigerian National Petroleum Corporation (NNPC), now transformed into NNPC Limited under the PIA, historically played a dual role as both a commercial entity and a regulator. According to Nwaoburu and Akiri (2025), the NNPC serves as “the central institutional player in Nigeria's petroleum sector, responsible for 76% of federal revenue.” However, they note that “historically, the NNPC has been plagued by bureaucratic red tape, financial mismanagement, and a lack of transparency, which has undermined public trust and necessitated a shift toward market-driven incentives and accountability mechanisms.” The passage of the PIA in 2021 introduced fundamental institutional restructuring. According to Olujobi et al. (2025), the Act “structurally redefined the institutional landscape by creating the NUPRC for upstream regulation, the NMDPRA for midstream and downstream oversight, and transitioning the national oil corporation into NNPC Ltd, a

commercial entity intended to promote transparency and accountability.” This separation aims to eliminate the conflicts of interest that arose when NNPC served as both regulator and operator.

The Nigerian Upstream Petroleum Regulatory Commission (NUPRC) is responsible for regulating exploration, production, and all activities related to crude oil extraction. As Komolafe (2023) explained, “The PIA has transformed Nigeria's oil and gas sector by introducing clear rules and regulations for upstream petroleum activities. The Act empowers the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) to oversee technical, commercial, and environmental standards, ensuring sustainable and transparent operations.” The Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) focuses on midstream and downstream regulation, including the oversight of product distribution, pricing, and retail operations. According to Peekate and Duson (2025), the NMDPRA has the specific mandate to “ensure security of supply of natural gas and petroleum products” and implement “consumer protection measures.”

A key institution promoting transparency is the Nigeria Extractive Industries Transparency Initiative (NEITI). According to El Hamad et al. (2024), “NEITI was established in 2004 by the former Nigerian president, Obasanjo, as part of a comprehensive socio-economic reform strategy following decades of protest and conflict among oil-producing communities in the Niger Delta region.” They note that “by 2007, Nigeria codified the EITI principles into its national laws, the (NEITI Act, 2007), making the Nigerian Extractive Industries Transparency Initiative (NEITI) the first to enshrine the principles of transparency and accountability in law.” NEITI's annual reports provide critical insights into revenue management, though critics argue that the initiative has yet to result in substantial changes in accountability culture (Shaxson, 2009).

Post-PIA Legal and Regulatory Framework

The Petroleum Industry Act 2021 represents a watershed moment in Nigeria's petroleum governance landscape. According to Owolabi (2021), “The Petroleum Industry Act (PIA) 2021 marks a critical shift in Nigeria's oil and gas regulation, aiming to enhance governance by restructuring the regulatory bodies, improving fiscal regimes, and fostering transparency. The Act introduces robust provisions for midstream and downstream sectors, promoting accountability and market stability.” The PIA's key objectives include: creating efficient and effective governing institutions with clear and separate roles; establishing a framework for a commercially oriented and profit-driven national petroleum company; promoting transparency, good governance, and accountability; fostering a business environment conducive to petroleum operations; and deepening local content practice (Udejimba, 2024).

The Act introduces several fundamental reforms. First, it establishes independent regulatory bodies, NUPRC for upstream and NMDPRA for midstream and downstream, thereby separating regulatory functions from commercial activities. As Peekate and Duson (2025) noted, this structure “adopts the 'Norwegian Model,' which enforces a strict separation of roles between commercial, policy, and regulatory institutions. This structure is designed to entrench focused regulation, transparency, and accountability while creating a commercially oriented and profit-driven national petroleum company (NNPC Ltd) to stabilize the industry.”

Second, the PIA transforms the NNPC into NNPC Limited, a commercial entity operating under the Companies and Allied Matters Act (CAMA). According to Atoyebi (2024), “NNPC no longer exists as an entity existing to serve any form of public interest as it is now privatized,” a shift that fundamentally alters the accountability structure of the state's primary petroleum agent.

Third, the Act introduces fiscal reforms designed to enhance transparency and revenue collection. According to Isallah (2023), “the PIA establishes a fiscal framework based on principles of clarity and dynamism, aiming to simplify tax administration while expanding the government's revenue base.”

Fourth, the PIA mandates transparency in licensing and contract allocation. As Aladeitan et al. (2025) stated, the Act “creates transparent licensing procedures, eliminating discretionary powers, and promoting a fair, open, and competitive bidding process.” This represents a significant departure from previous practices where ministerial discretion often obscured the allocation of lucrative oil blocks and contracts. Despite these comprehensive reforms, significant implementation challenges persist. According to Nwuke (2021), while the

PIA addresses many “old problems” of the Nigerian petroleum industry, it also creates “new ones” related to the transition and implementation phases that could impact short-term market stability. Similarly, Udejimba (2024) noted persistent challenges including “bureaucratic challenges, corruption, legal ambiguities, and resistance from stakeholders accustomed to the old regulatory framework.”

Theoretical Framework

Institutional Theory and Transparency in Governance

Institutional theory, rooted in the work of DiMaggio and Powell (1983) and later refined by Scott (1995), provides a robust framework for understanding how formal rules, informal norms, and organizational structures shape governance outcomes in Nigeria's petroleum sector. According to Scott (1995), “Institutions are social structures composed of cultural-cognitive, normative, and regulative elements that provide stability and meaning to social life. In the context of governance, these structures shape behaviors, define roles, and enforce compliance, impacting the effectiveness of transparency initiatives like Nigeria's PIA reforms.” Jamaluddin et al. (2023) elaborated that “Institutional theory posits that organizations are shaped by the rules, norms, and cultural values of their environment, influencing their behavior and governance structures. The interaction between institutional pressures and organizational behavior defines the capacity for transparency and accountability within sectors like the public service.” This perspective is particularly relevant for analyzing Nigeria's petroleum sector, where formal institutions (regulatory agencies, legal frameworks) interact with informal practices (patronage networks, rent-seeking behavior) to produce governance outcomes.

The post-PIA institutional reforms represent an attempt to strengthen the regulative pillars of governance, the formal rules and enforcement mechanisms that shape organizational behavior. According to Emeh et al. (2019), “Good governance is measured by how institutions exercise authority, ensure transparency, and provide accountability.” The PIA's creation of distinct regulatory bodies with clear mandates aims to strengthen institutional capacity for oversight and enforcement (Peekate & Duson, 2025). However, institutional theory also recognized that formal structures often decouple from actual practices. According to Elijah et al. (2025), “Institutional theory explores how both formal institutions and informal practices shape the governance and operational structure of societies, particularly in resource-rich nations like Nigeria. These frameworks influence the transparency and accountability mechanisms, highlighting how systemic challenges undermine institutional integrity and governance efficiency.”

The persistence of informal practices despite formal reforms is evident in Nigeria's petroleum sector. As Elijah et al. (2025) noted, “Institutional failures in Nigeria's governance structure, particularly in the petroleum sector, result from weak enforcement of laws and corruption, which hinder the efficient management of resources and transparency, thus creating governance vacuums.” This gap between formal institutional design and actual governance outcomes is central to understanding the challenges facing post-PIA implementation. Mthwakazi (2022) emphasized that “Weak institutions fail to enforce laws consistently, leading to corruption, inefficiency, and poor governance. In Nigeria, the persistence of weak institutions in the petroleum sector hinders transparency and accountability, making it difficult for reforms like the PIA to achieve their full potential in improving governance.” This perspective suggests that institutional reforms must go beyond structural reorganization to address the deeper normative and cognitive elements that shape behavior.

Principal-Agent Theory: Information Asymmetry and Accountability

Principal-agent theory, developed by Jensen and Meckling (1976) and Ross (1973), offers valuable insights into the accountability challenges inherent in Nigeria's petroleum governance structure. According to Kopp (2025), “agency theory addresses the disputes that arise when a principal delegates decision-making authority to an agent whose priorities or risk tolerances may differ. This creates a 'principal-agent problem' where the agent may act in self-interest rather than for the optimal benefit of the principal.” For Nigeria's petroleum sector, multiple principal-agent relationships exist. The Nigerian citizenry (as principals) delegate authority to the government to manage petroleum resources for national benefit. The government, in turn, delegates operational responsibilities to regulatory agencies (NUPRC, NMDPRA) and the national oil company (NNPC Limited). Each delegation creates information asymmetries and opportunities for agency loss, the gap between

optimal outcomes and actual agent performance. According to Gailmard (2012), “Principal-agent theory provides a flexible framework for understanding how accountability in public governance is mediated by information asymmetries between agents and principals. In Nigeria's petroleum sector, these information gaps hinder effective oversight, reducing transparency and accountability, which the Post-PIA reforms aim to address.”

The problem of information asymmetry is particularly acute in extractive industries where the technical complexity of operations creates knowledge gaps between operators and overseers. As Lupia and McCubbins (1998) note, principal-agent theory focuses on “minimizing agency loss by ensuring that both the principal and agent share common interests and that the principal is well-informed about the agent's actions.” This is crucial in settings where transparency and accountability are essential to maintain trust and stability in governance. The PIA's transparency provisions including contract disclosure, beneficial ownership reporting, and independent audits can be understood as mechanisms to reduce information asymmetry and align agent behavior with principal interests. According to Kadi et al. (2017), “The principal-agent relationship is defined by information asymmetry, where agents typically possess more information than principals. In business compliance contexts, this imbalance can lead to inefficiencies, such as moral hazard or adverse selection. Addressing this asymmetry is essential for improving governance and transparency.” However, the effectiveness of these mechanisms depends on the principal's ability to verify information and enforce compliance. As McCubbins, Noll, and Weingast (1987) argued, “Agency loss, arising from the failure of agents to act in the best interest of the principal, is a core challenge in governance. In Nigeria's petroleum sector, this issue is exacerbated by weak institutional structures, which prevent the full realization of the accountability goals of the PIA reforms.”

Political Economy Perspective: Resource Curse and Rent-Seeking Behavior

The political economy perspective, particularly theories of the resource curse and rent-seeking behavior, provides critical insights into the structural constraints on transparency and accountability in resource-dependent states like Nigeria. According to Dode (2012), “The exploitation of natural resources, particularly oil, has been a source of political conflict rather than development in Nigeria. The resulting resource curse is tied to rent-seeking behavior, where the wealth generated from oil has led to the impoverishment of citizens and exacerbated social inequality.” The resource curse theory suggests that countries rich in natural resources often experience slower economic growth, weaker institutions, and more conflict than their resource-poor counterparts. According to Savoia and Sen (2021), “the presence of natural resource wealth alone does not guarantee developmental success. It is the type of political institutions that govern the resource-rich economies that determine whether the resource wealth contributes to or hinders development outcomes.” For Nigeria, the resource curse manifests through several mechanisms. According to Afolabi (2023), “Rentier state theory posits that resource-dependent countries like Nigeria often face political instability, corruption, and governance challenges. Oil wealth, rather than driving development, fuels rent-seeking behavior and elite competition, which undermines democratic processes, stifles diversification, and perpetuates socio-political inequality in Nigeria.”

Rent-seeking behavior, the pursuit of wealth through manipulation of the political system rather than productive economic activity is a central feature of the resource curse. According to Tullock (1967), “Rent-seeking involves individuals or firms seeking to increase their share of existing wealth without creating new wealth. In rentier states like Nigeria, the petroleum sector becomes a battleground for rent-seeking behavior, where political elites and corporations engage in practices that hinder sustainable economic development.” The concentration of petroleum revenues creates powerful incentives for elite capture of the state. According to Ezeaku and Omodero (2021), “The resource curse in Nigeria is exacerbated by the concentration of political power in the hands of elites who control the nation's oil revenues, thus hindering the development of strong institutions, effective governance, and economic diversification, despite the enormous wealth generated by oil.” This political economy context explains why governance reforms often face resistance from entrenched interests. According to Ross (2012), “Oil wealth can undermine democratic institutions and accountability, especially when rent-seeking behavior flourishes. In Nigeria, this phenomenon has led to ineffective governance, as political elites focus on controlling oil revenues rather than fostering inclusive development.”

The PIA's reforms, particularly the separation of regulatory and commercial functions and the commercialization of NNPC can be understood as attempts to break the link between political power and resource control. However, as Borha and Olujobi (2023) noted, the Act has also “created unintentional divisions or factions between the north and the south legislatures in the National Assembly,” with southern legislators believing the law “favours the northern interests at the expense of the southern interests.” This regional tension highlights how political economy factors continue to shape governance outcomes despite formal reforms.

Legal and Policy Framework

The Petroleum Industry Act 2021: Key Reforms and Objectives

The Petroleum Industry Act 2021 represents the most comprehensive legislative reform in Nigeria's petroleum sector since the industry's inception. The Petroleum Industry Act 2021 establishes the Nigerian Upstream Regulatory Commission (NUPRC) to regulate upstream operations and the Nigerian Midstream and Downstream Petroleum Regulatory Authority (NMDPRA) to regulate midstream and downstream operations, thereby separating regulatory functions from commercial activities (Federal Republic of Nigeria, 2021). The PIA's objectives, as outlined by Udejimba (2024), include: “To create efficient and effective governing institutions, with clear and separate roles for the petroleum industry; To establish a framework for the creation of a commercially oriented and profit-driven national petroleum company; To promote transparency, good governance and accountability in the administration of the petroleum resources of Nigeria; To foster a business environment conducive to petroleum operations; and To deepen local content practice in Nigeria's Oil and Gas Industry.”

A fundamental reform introduced by the PIA is the separation of commercial and regulatory functions previously conflated in the NNPC. According to Borha and Olujobi (2023), the Act “unbundled the industry by designing a well-organised governance structure with dynamic and distinct roles for the industry.” The Act establishes NNPC Limited as a profit-oriented commercial entity under the Companies and Allied Matters Act (CAMA), while creating independent regulatory bodies to oversee the upstream, midstream, and downstream sectors.

The PIA also introduces transparency mechanisms designed to address historical governance deficits, including the establishment of a Host Communities Development Trust to ensure direct benefits to oil-producing communities, as well as requirements for the disclosure of petroleum contracts, licenses, and leases (Federal Republic of Nigeria, 2021). These mechanisms aim to address governance challenges related to revenue management and community relations across the supply chain. In terms of market stability, the Act provides for deregulation of the downstream sector by establishing a framework for free-market pricing of petroleum products, thereby removing the government's sole authority to set prices. This framework is intended to attract private investment, enhance competition, and improve supply chain efficiency across the midstream and downstream segments (Federal Republic of Nigeria, 2021). However, the PIA's implementation has faced significant challenges. According to Borha and Olujobi (2023), while the Act “introduces and specifies the regulations, procedures, and institutions which will ensure good governance, transparency, and accountability in the petroleum industry,” certain provisions remain problematic. They identify key gaps including “the allocation of 30% to the frontier basins fund, allocation of just 3% to the host communities; use of ambiguous and complex words, and lack of whistle-blowing provisions.”

NEITI and EITI Reporting and Transparency Measures

The Nigeria Extractive Industries Transparency Initiative (NEITI) serves as the primary institutional mechanism for promoting transparency in the extractive sector. According to El Hamad et al. (2024), “NEITI was established in 2004 by the former Nigerian president, Obasanjo, as part of a comprehensive socio-economic reform strategy following decades of protest and conflict among oil-producing communities in the Niger Delta region. Underpinned by both international appeals and domestic reforms, its inception aimed to increase transparency across Nigeria's economic, political, and social landscapes and restore State legitimacy in the extractive industries by promoting an inclusive and accountable governance initiative.”

NEITI's legal mandate is codified in the NEITI Act 2007, making Nigeria the first EITI-implementing country with statutory backing for its operations. According to Oladele et al. (2013), “with this [NEITI Act], Nigeria became the first EITI-implementing country with a statutory backing for its operations,” representing a significant step in institutionalizing transparency in the extractive sector. The National Stakeholder Working Group (NSWG) plays a pivotal role in NEITI's governance structure. According to El Hamad et al. (2024), “the NSWG plays a pivotal role in NEITI and serves as a decision-making and oversight body responsible for developing a work plan, setting the strategic direction for NEITI, and overseeing the production and dissemination of the EITI reports as the primary mechanism of transparency of financial flows between extractive companies and the Nigerian government.”

NEITI's audits have historically revealed significant governance challenges. According to Oladele et al. (2013), the audit “identified unprecedented financial discrepancies, mis paid taxes, and system inefficiencies. Over US\$800m of unresolved differences between what companies said they paid in taxes (PPT, Royalties and signature bonuses), and what the governments said it received were identified.” This included US\$4.7bn owed by NNPC for domestic crude payments. Despite these contributions, NEITI faces significant limitations. According to Ejiogu et al. (2019), “transparency in the extractive industry is often erroneously reduced to mere information disclosure, which can inadvertently legitimize corrupt reporting systems and conceal the operational weaknesses of government agencies, thereby hindering genuine accountability and market stability within the Nigerian petroleum sector.” The limitations of NEITI's enforcement capacity are particularly significant. According to El Hamad et al. (2024), “the limited legislative power of the Act and its inability to enforce compliance with EITI principles or undertake criminal prosecutions signify a gap in converting a transparency ideal into accountable extractive industries.” They note that despite many breaches of the NEITI Act, “to date, there are no reports of MNCs or local extractive company sanctions or legal proceedings.”

Domestic Crude Supply Obligations and Pricing Framework

The Domestic Crude Oil Supply Obligation (DCSO) represents a critical mechanism for ensuring energy security under the PIA. According to Ejelonu and Akinsanya (2026), the DCSO is “a statutorily entrenched framework under Section 109 of the PIA that mandates upstream producers to allocate specific volumes to local refineries on a 'willing buyer, willing seller' basis to ensure national energy security and curb product import dependence.” The DCSO framework aims to balance energy security with market principles. According to Jackson et al. (2025), the DCSO is “a strategic regulatory intervention mandated by the PIA that compels upstream lessees to prioritize feedstock supply for local refineries to rectify systemic inefficiencies and bolster national energy security.” The framework requires parties to “determine crude oil prices by considering the fiscal oil price differentials published by the Commission to ensure pricing reflects prevailing market realities and fiscal benchmarks.”

The NUPRC's 2022 DCSO Regulations operationalize this framework. According to NUPRC (2022), “The supply of crude oil under the DCSO must be commercially negotiated between the lessee and the refiner, specifically having regard to the prevailing international market price for similar grades of crude oil.” The Commission utilizes a “National Crude Oil Demand Requirement Supply Curve” as a transparent benchmark to identify producing fields that meet the quality requirements of willing buyers. Enforcement mechanisms are critical to the DCSO's effectiveness. According to NUPRC (2022), “any lessee who fails to deliver their allocated DCSO volume without a valid excuse (such as force majeure) incurs a significant penalty of 50% of the Fiscal Price per barrel not delivered.”

This penalty structure aims to ensure that upstream producers prioritize domestic supply over more lucrative export markets. However, the DCSO has generated significant controversy. According to Aduloju (2024), the Independent Petroleum Producers Group (IPPG) has called for “transparency in how the allocations to oil producers were determined and requested NUPRC to provide clear details on the allocation criteria and methodology.” IPPG criticized the approach, “saying it went against the spirit of the willing-buyer, willing-seller framework stipulated in the Petroleum Industry Act and put them under obligation.” The pricing framework has also been contentious. According to AO2LAW (2024), “the Commission [NUPRC] may intervene if unreasonable demands are made on the refineries by the petroleum producers by imposing an

obligation... with the Authority being notified of such intervention.” This intervention authority introduces elements of regulatory discretion that can create uncertainty and opacity in the market.

Role of State-Owned Enterprises (SOEs) in the Petroleum Sector

State-owned enterprises (SOEs) have historically played a dominant role in Nigeria's petroleum sector, with the NNPC serving as the primary instrument of state participation. According to Oloyede (2020), “state participation in the petroleum sector is a strategic legal arrangement designed to shift control from private foreign entities to national companies, ensuring that the government can directly manage, implement, and evaluate the exploitation of natural resources for the sustainable benefit of the society.” However, the governance of SOEs has been a persistent challenge. According to Oladosu, Ibrahim, and Bara (2024), “State-Owned Enterprises (SOEs) are corporate entities established by the government to combine public administration features with private enterprise flexibility, aiming to provide essential commodities and foster economic growth while navigating the complexities of commercialization and financial performance.” Yet they note that “while the discovery of oil catalyzed active state participation in Nigeria's energy sector, many SOEs have historically deteriorated into inefficient, monopolistic entities that demand significant government financial support rather than generating sustainable economic value.”

The transformation of NNPC into NNPC Limited under the PIA represents an attempt to address these governance challenges. According to Udejimba (2024), “NNPC Limited, which was once a state corporation, is now required to function independently and competitively with the aim of maximising profits for shareholders, which includes the Nigerian government. The purpose of this change was to improve accountability and efficiency within the national oil company.” The governance of SOEs remains subject to political influence despite formal commercialization. According to Sunday et al. (2025), “the lack of transparency in Nigerian State-Owned Enterprises (SOEs) like NNPC is deeply political. Board appointments are often driven by political loyalty rather than merit, which compromises accountability and the effectiveness of corporate governance frameworks intended to improve operational efficiency.”

The PIA's governance reforms also include provisions for fiscal discipline. According to Onuh (2021), Section 3(1) of the PIA curtails the Minister's sole prerogative to issue or revoke licenses, requiring instead a recommendation from the Commission. This is a “novel change” intended to make the process “more transparent with clear guidelines,” thereby improving the investment climate and market stability. However, concerns persist about the effectiveness of these reforms. According to Onuh (2021), the transition to NNPC Limited (Section 53) aims for a “commercially oriented and profit-driven” entity. Yet Onuh warns of a “governance risk” because the company remains wholly government-owned, noting that “directors and managers are not shareholders... it is unlikely that they will put in their best efforts,” which may hinder the achievement of economic objectives.

Governance and Transparency Challenges in the Petroleum Supply Chain

Opacity in Crude Allocation and Domestic Supply Obligations

Despite the PIA's transparency provisions, crude oil allocation remains characterized by opacity and governance deficits. According to Nwapi et al. (2021), “In some cases, a company applying for contracts hunts for politically exposed persons (PEPs), whom it offers a beneficial ownership stake in the deal in exchange for the PEPs to use their influence to enable the company to obtain a licence.” This practice directly undermines the transparency of crude allocation and domestic supply obligations. The DCSO framework, while intended to ensure energy security, has generated controversy regarding its implementation. According to Aduloju (2024), the IPPG has called for “transparency in how the allocations to oil producers were determined and requested NUPRC to provide clear details on the allocation criteria and methodology.” The IPPG criticized the approach, “saying it went against the spirit of the willing-buyer, willing-seller framework stipulated in the Petroleum Industry Act and put them under obligation.”

The lack of transparency in allocation criteria creates risks of regulatory capture and market distortion. According to Coker et al. (2025), “enforcing domestic supply can trigger legal and financial risks for

independent producers who have long-term 'offtake agreements' and pre-arranged financing with international traders, potentially leading to damages claims and loss of capital.” This creates a governance tension between ensuring domestic supply and respecting commercial contracts. The opacity extends to pricing mechanisms. According to AO2LAW (2024), “for international investors, the [FEC] Directive introduces an element of currency risk... which could erode their returns when repatriating profits. This increased currency risk could make Nigerian crude less attractive to foreign investors.” The shift to Naira-denominated transactions creates currency risk that can deter investment and complicate market stability. The governance of crude allocation also suffers from regulatory ambiguity. According to AO2LAW (2024), “the ambiguity in policy implementation, including the criteria for meeting DCSO and the penalty for non-compliance, are potential sources of disputes between the government and oil companies.” This ambiguity creates space for discretionary decision-making that undermines transparency.

Beneficial Ownership and Contract/Licence Disclosure Gaps

Beneficial ownership transparency, the disclosure of natural persons who ultimately own or control corporate entities remains a significant governance gap in Nigeria's petroleum sector. According to Nwapi et al. (2021), a beneficial owner is defined as “a natural person who directly or indirectly owns or controls a legal person; disclosure of such individuals is essential in the extractive industries to strip company ownership of 'mysterious darkness' and prevent the use of anonymous shell companies for executing dubious contracts. Despite the PIA's transparency provisions, beneficial ownership disclosure remains incomplete. According to Nwapi et al. (2021), “Nigeria's Companies and Allied Matters Act 2020 suffers many of the limitations of its predecessor... [it] focuses mainly on legal ownership/control and fails to fully address the issue of ultimate ownership/control critical to beneficial ownership secrecy.” This legal gap allows the true owners of petroleum assets to remain hidden behind corporate structures.

The use of proxies to mask control is a persistent challenge. According to Nwapi et al. (2021), “corporate governance studies in Nigeria have also shown that most of the companies... are controlled by a set of 'director-shareholders' who... represent the minority but whose controlling power stems from the fact that they have proxies holding majority shares.” This practice obscures the identities of ultimate owners and complicates accountability. Contract transparency also remains limited. According to Sayne et al. (2015), contract secrecy in Nigeria's petroleum sector has prevented citizens and even legislators from understanding the fiscal terms and governance rules that shape the industry, as evidenced by the absence of formal contracts for the multi-billion-dollar domestic crude allocation and the non-disclosure of swap and government-to-government deals. The lack of coordinated data systems further undermines transparency. According to Dogara (2025), “Post-PIA governance faces a 'siloes data challenge' where the NUPRC and the Mining Cadastre Office maintain sectoral registers that must be harmonized with the CAC's central database to effectively combat illicit financial flows in the energy sector.” This fragmentation prevents effective verification of ownership information. According to Oluwatoyin (2024), “The shift toward transparency under the PIA is hampered by the 'beneficial ownership verification gap,' where the CAC and NUPRC databases often lack synchronized, real-time data to verify the identities of politically exposed persons (PEPs) in oil block ownership.”

Regulatory Overlap and Implementation Weaknesses

Despite the PIA's creation of distinct regulatory bodies, regulatory overlap and coordination challenges persist. According to Sunny-Hart (2024), the transition to the PIA was intended to provide regulatory clarity, yet the industry continues to grapple with “bureaucratic red tape,” persistent corruption, and “weak regulatory institutions.” Adding to this environmental complexity, Okegbemi (2024) highlighted that pervasive governance issues and a complex regulatory environment marked by bureaucratic red tape and a lack of transparency continue to distort market mechanisms in Nigeria (Mairiga et al., 2026). The overlapping mandates of regulatory agencies create implementation weaknesses. According to Harvey et al. (2021), “regulatory overlap occurs when multiple agencies possess coinciding mandates, leading to 'competition rather than collaboration' and diluted institutional effectiveness.” This fragmentation undermines the investigation of corruption, as “siloes data and poor inter-agency information sharing create significant 'implementation weaknesses' in governance.”

The transition from legacy agencies to new regulatory structures has created transitional challenges. According to Sunny-Hart (2024), the scrapping of legacy agencies like the DPR, PPPRA, and PEF in favor of the NUPRC and NMDPRA aimed to streamline the sector, but “effective enforcement is crucial for sustainable development,” as implementation remains a hurdle. The capacity of regulatory agencies to enforce compliance remains limited. According to Agbonifo (2024), natural resource governance in Nigeria is characterized by “lethargic institutional and regulatory compliance capacity,” where gaps in enforcement mechanisms and monitoring are frequently undermined by political elites, resulting in a “weak governance space” that fails to translate oil wealth into sustainable development outcomes. Regulatory inconsistency creates uncertainty for investors. According to the Nigeria Economic Summit Group [NESG] (2021), “policy and regulatory inconsistency” is identified as a major bane of private investment, suggesting that the post-PIA landscape still struggles with providing a predictable environment for stakeholders. The complexity of the regulatory framework creates compliance burdens. According to Benjamin (2025), international oil companies (IOCs) remain concerned about the “administrative burden of compliance” and the cost implications of the new fiscal terms, which can impact market participation.

NNPC Accountability and State-Owned Enterprise Governance

The governance of NNPC Limited transformed from the former NNPC, remains a central concern for transparency and accountability. According to Agunia (2023), the transition from NNPC to NNPC Limited under the PIA “aims to introduce commercial viability, but it is still hindered by persistent issues such as excessive government interference, weak regulatory enforcement, and the transfer of corrupt personnel from the defunct NNPC.” Political interference continues to undermine NNPC Limited's operational independence. According to Agunia (2023), “while the incorporation of NNPC Limited was intended to create a profit-oriented entity, the excessive control by the Nigerian President in appointing the board members has led to political influence and corruption, which disrupts the company's operational independence and accountability.”

The exemption of NNPC Limited from certain laws raises transparency concerns. According to Agunia (2023), “the exemption of NNPC Limited from certain laws, such as the Public Procurement Act, raises concerns about transparency and accountability, as it allows the company to operate without adequate public oversight, which may foster corruption.” Financial opacity remains a persistent challenge. According to Omotere (2026), “the lack of transparency in the Nigerian National Petroleum Company Limited (NNPCL) regarding roughly ₦200 trillion in unaccounted funds comprising joint venture costs, operational expenses, and subsidies highlights critical failures in state-owned enterprise governance that undermine public confidence and risk the distortion of vital economic evidence.” Audit and accountability mechanisms remain weak. Sayne et al. (2015) documented that the absence of independent performance audits within NNPC has rendered accountability nearly impossible, particularly in critical but opaque areas such as the domestic crude allocation where no formal contract existed despite billions of dollars in annual transactions, oil-for-product swaps, and the earnings of the corporation's trading subsidiaries, which functioned as “operational and financial black boxes” with undisclosed earnings and opaque governance practices. The political nature of governance in SOEs hampers accountability. According to Sunday et al. (2025), “the political nature of governance in Nigerian SOEs such as NNPC hampers effective transparency and accountability. Despite reforms, entrenched political influence limits the corporation's ability to operate in a commercially viable and transparent manner.”

Crude Theft, Losses, and Metering/Accountability Issues

Crude oil theft and pipeline vandalism represent significant governance challenges that undermine transparency and market stability. According to Asiegbe (2024), oil theft in Nigeria encompasses “pipeline clamping, illegal connections to significant pipelines, exploitation of abandoned oil wellheads, pipeline breakages, and vandalism of critical national assets” as the most common methods of unlawfully siphoning crude into waiting vessels stationed at strategic terminals. The scale of revenue losses from oil theft is staggering. According to Asiegbe (2024), citing a Nigerian National Petroleum Corporation report, “between 2009 and 2018, the country lost approximately \$41.9 billion to oil theft,” with subsequent revenue losses recorded in 2021, 2022, and 2023. Danco Group (2025) reported that “Nigeria has experienced a massive loss of crude oil valued at N8.41 trillion due to theft and metering deficiencies from 2021 to July 2025,”

representing cumulative losses of 37.6 million barrels in 2021 alone. Metering inaccuracies compound the problem of crude losses. According to Komolafe (2023), a forensic audit conducted by the NUPRC revealed that “approximately 40% of the volumes credited to crude losses in the Nigerian petroleum industry are actually attributable to measurement inaccuracies and not theft as often reported.” This finding highlights the importance of accurate hydrocarbon accounting for accountability.

The consequences of crude theft extend beyond revenue losses. According to Panle (2024), “crude oil theft and pipeline vandalism are established products supply chain disruptors in Nigeria which are rendering the task of running an efficient petroleum supply chain onerous.” It further notes that “about 7% of Nigeria's daily crude production is lost to these disruptors” and that “the oil supply chain of the Nigerian National Petroleum Corporation has been plagued by disruptions in the form of crude oil theft and pipeline vandalism which has had debilitating effects on its value.” The involvement of security personnel in oil theft indicates systemic governance failures. According to Dimkpa et al. (2023), “it is further reported that some of the National security personnel deployed to guard oil installations and stop crude oil theft had turned themselves into oil bandits in collusion with some International Oil Companies (IOCs), government officials, ex-militants and illegal refinery operators.” The lack of accountability for oil theft undermines deterrence. According to Danco Group (2025), Professor Dayo Ayoade argued that “without deterrent punishment, oil theft will persist,” stating that “until we start jailing people including complicit security officials and politicians, this cycle will continue. Governance failure lies at the root of the problem.”

Pricing, Subsidy Politics, and Market Transparency

The politics of fuel pricing and subsidy have historically created significant governance challenges in Nigeria's downstream sector. According to Nkogbu (2015), deregulation of the downstream sector involves “redefining the government's role by removing price controls and monopolies to allow market forces to prevail, thereby addressing the transparency and leadership failures that have historically characterized the management of Nigeria's oil wealth and hindered national economic transformation.” Subsidy policies have created opportunities for corruption and inefficiency. According to Nkogbu (2015), the existence of petroleum subsidies has made corruption “obvious in the petroleum industry,” creating a signpost for systemic accountability failures. The subsidy regime has historically distorted market dynamics and created incentives for smuggling and diversion of products. The removal of subsidies under the PIA represents a significant shift. According to Udejimba (2024), “President Bola Tinubu formally phased out Nigeria's long-standing petrol subsidy scheme in May 2023. Pricing for petroleum products is now solely determined by the market owing to the PIA.” Macroeconomic instability, characterized by high inflation rates, exchange rate volatility, and fiscal deficits, undermines consumer purchasing power and investor confidence, while Nigeria's heavy reliance on oil exacerbates these issues (Okegbemi, 2024).

However, market transparency remains limited. Following deregulation, pump prices increased from an average of ₦198 per litre to over ₦600 within weeks, and by early 2026 prices had reached between ₦800 and ₦1,200-1300 per litre in different regions (Nigerian Midstream and Downstream Petroleum Regulatory Authority, 2026; Olawin et al., 2026). While the government cited the need to eliminate fiscal waste, the sharp increases combined with sporadic scarcity have fuelled public discontent and exposed the fragility of a market where prices are supposed to be determined by competition but where supply remains dominated by a few importers (Aina, 2026; Olawin et al., 2026). Global oil price spikes, such as those triggered by escalating Iran-US tensions in late 2025, further exacerbated domestic price volatility, underscoring the vulnerability of Nigeria's deregulated but still concentrated downstream market (NESG, 2026; Olawin et al., 2026).

The Nigeria Labour Congress called for urgent government intervention, warning that workers were already struggling to cope with soaring fuel costs that climbed to between ₦1,170 and ₦1,300 per litre, worsening hardship for Nigerian workers (Olawin et al., 2026). Similarly, the Independent Petroleum Marketers Association of Nigeria urged the government to cut down taxes and charges imposed by agencies such as NIMASA and NPA, arguing that such levies contribute to the high pump prices (Olawin et al., 2026). Stakeholders, including the Lagos Chamber of Commerce and Industry, the Centre for the Promotion of Private Enterprise (CPPE), and the Nigerian Economic Summit Group, recommended that the government

channel additional oil revenue into strategic investments such as Compressed Natural Gas (CNG) transportation infrastructure and support for domestic refineries rather than reverting to fuel subsidies (Olawin et al., 2026; Onwuamaeze, 2026). The CPPE specifically urged the government to support domestic refining through a coordinated mix of trade, fiscal, and monetary policies, including ensuring reliable crude supply arrangements, strengthening petroleum distribution infrastructure, and encouraging additional refining investments (Onwuamaeze, 2026). Scholars have also identified CNG as a critical transitional fuel that can reduce Nigeria's dependence on imported petroleum, lower greenhouse gas emissions, and enhance energy security, provided that infrastructure deficiencies and high conversion costs are addressed through targeted public-private partnerships (Oluku & Olori, 2025; Peterside, 2025).

Discussion: Why Governance Gaps Persist

Political-Economy Factors Contributing to Governance Failures

The persistence of governance gaps despite comprehensive legal reforms can be understood through political economy factors that shape institutional behavior. According to Ukiwo (2018), regulatory overlap and implementation weaknesses arise from the “contradictions of the Nigerian oil industry,” where centralized state monopoly over access and control frequently conflicts with the statutory responsibilities of fragmented regulatory agencies, leading to institutional paralysis and truncated reform visions. The resource curse continues to structure political incentives. According to Elijah and Liman (2025), “Crude oil, while contributing to Nigeria's revenue, has paradoxically hindered development due to rent-seeking behaviors, political instability, and institutional weaknesses. The resource curse theory emphasizes that overdependence on oil wealth fosters corruption, undermines diversification, and perpetuates governance failures, leaving the country vulnerable to external shocks.”

Rent-seeking behavior remains deeply embedded in the political economy of oil. According to Tullock (1967), “Rent-seeking involves individuals or firms seeking to increase their share of existing wealth without creating new wealth.” In Nigeria, the petroleum sector continues to serve as a battleground for rent-seeking behavior, where political elites and corporations engage in practices that hinder sustainable economic development. The political dynamics of resource allocation create resistance to transparency. According to Ross (2012), “Oil wealth can undermine democratic institutions and accountability, especially when rent-seeking behavior flourishes. In Nigeria, this phenomenon has led to ineffective governance, as political elites focus on controlling oil revenues rather than fostering inclusive development.” Patronage networks continue to shape governance outcomes. According to Musa (2022), the NNPC has historically functioned within a “patronage ecosystem,” where it lacks full control over its revenue and remains dependent on International Oil Companies (IOCs), which undermines its capacity for independent strategy and transparency.

Weak Institutional Coordination and Enforcement Challenges

The fragmentation of regulatory responsibilities creates coordination challenges that undermine implementation. According to Adewale (2024), “The transition from the DPR to the dual-regulator model (NUPRC and NMDPRA) under the PIA has introduced new layers of regulatory overlap, where jurisdictional friction over midstream assets often delays transparency audits and market stabilization efforts.” The capacity of regulatory agencies to enforce compliance remains limited. According to Agbonifo (2024), the industry suffers from a “near-absent” state of compliance and governance awareness, further complicated by a “lax regulatory environment” that fosters mismanagement and maladministration.

Information asymmetry between regulators and operators persists. According to Ijeomah (2020), “Access to real-time and transparent data reduces the bullwhip effect and offers the exact demand and supply information required to minimize the differences in demand and supply for the commodity.” The lack of such data undermines effective regulation. The digitalization of regulatory processes remains incomplete. According to Okeke and Williams (2025), “While the PIA mandates the use of digital registries for contract disclosure, the persistence of 'manual record-keeping cultures' within state-level agencies remains a primary implementation weakness that shields beneficial owners from central federal oversight.” Enforcement mechanisms lack deterrent effect. According to Danco Group (2025), “security forces burn illegal refineries but fail to arrest and

prosecute the masterminds. There is nobody in jail for these crimes, despite trillions lost. This points to systemic complicity.” The absence of credible prosecution undermines deterrence.

The Role of Rent-Seeking and Corruption in Shaping Market Outcomes

Corruption and rent-seeking behavior continue to shape market outcomes in the petroleum sector. According to Borha and Olujobi (2023), “corruption is an ever-present problem in the petroleum industry, from the initial stages of exploration and drilling through the latter stages of refining and distribution.” This systemic corruption creates inefficiencies that undermine market stability.

The structure of incentives encourages rent-seeking rather than productive investment. According to Tornell and Lane (1999), rent-seeking theory posits that resource dependence leads to a system where all participants, domestic and foreign are overwhelmingly concerned with seeking alliances to secure a “share of the resource,” often leading to “voracity effects” that disrupt production and hinder GDP growth. Corruption affects supply chain efficiency. According to Ubini and Otombosoba (2023), “management should exhibit transparency, accountability, and integrity in all departments and sector of the industry.

In most cases, Leaders in this sector are not accountable and transparent in the management of the oil and gas industry, leading to non-economic development.” The interaction between corruption and opacity creates self-reinforcing cycles. According to Oyewunmi and Olujobi (2016), specifics of industry transactions are often disguised, making it “practically impossible for an interested stakeholder to monitor the level of royalties, taxes, fees and charges paid to the Federal Government.” Corruption undermines public trust and investor confidence. According to Panle (2024), “good government policies and completion of current supply chain strategies enhancements will boost investor confidence.” However, the persistence of corruption undermines the credibility of reforms and deters investment.

Implications of Governance and Transparency Challenges

Impact on Energy Security and Public Confidence

Governance deficits in the petroleum supply chain have direct implications for Nigeria's energy security. According to Peekate and Duson (2025), the NMDPRA has the specific mandate to “ensure security of supply of natural gas and petroleum products.” However, persistent opacity and inefficiency undermine this mandate. The lack of transparency in crude allocation and domestic supply obligations creates supply vulnerabilities. According to Anyaogu (2024), Nigeria imports around 70% of its refined fuel due to underdeveloped domestic refining capacity, creating dependency on international markets and exposure to global price volatility.

Public confidence in the petroleum sector remains low. According to Fagbemi and Mgbenuelu (2023), “the secrecy surrounding NNPC's operations, including its delayed financial disclosures and opaque contracts, has contributed to a lack of transparency and accountability. These issues have historically undermined public trust.” The perception of corruption undermines legitimacy. According to Ubini and Otombosoba (2023), “expert asserts the preference for Nigerian importation of refined products in to flawed industry structure, corruption and weak governance.” This perception creates skepticism about the effectiveness of reforms. Energy security is threatened by infrastructure vulnerabilities. According to Panle (2024), “crude oil theft and pipeline vandalism are established products supply chain disruptors in Nigeria which are rendering the task of running an efficient petroleum supply chain onerous.” These disruptions directly impact the reliability of energy supply.

Effects on Domestic Refining, Product Distribution, and Consumer Prices

Governance challenges have direct effects on domestic refining capacity. According to Okoye (2026), Nigeria's downstream sector “stands at a critical juncture,” with the launch of the Dangote Group Refinery (650,000 b/d capacity) in late 2024 representing a “milestone in the move towards import replacement and enhanced domestic capacity.” However, opaque allocation practices and regulatory uncertainty threaten to undermine this potential. The lack of transparency in product distribution creates supply disruptions. According to Ameh

(2024), “a lack of good governance and responsible management” is identified as one of the key challenges disrupting Nigeria's O&G supply chain in the downstream sector. This results in periodic fuel scarcity and long queues at retail outlets.

Consumer prices are affected by governance inefficiencies. According to Udejimba (2024), the removal of fuel subsidies in May 2023 and the shift to market-based pricing aim to reduce fiscal pressures and improve efficiency. However, the persistence of opacity in the supply chain creates uncertainty about whether consumers will benefit from these reforms.

The cost of governance failures is ultimately borne by consumers. According to Danco Group (2025), the N8.41 trillion in stolen oil value “could have built 56,074 primary health centres (at N150m each); funded 129,401 classroom blocks (at N65m each); and constructed 10,191 kilometres of roads (at N825m/km).” These forgone investments represent the opportunity cost of governance failures. Distribution inefficiencies increase costs. According to Ehinomen and Adeleke (2012), “effective distribution is hindered by the 'neglect and repeated vandalization' of state-run pipelines and oil movement infrastructure, forcing a reliance on road tankers which decreases supply chain stability.”

The Role of Transparency in Attracting Investment and Strengthening Market Stability

Transparency is critical for attracting investment in the petroleum sector. According to Panle (2024), “good government policies and completion of current supply chain strategies enhancements will boost investor confidence.” The PIA's transparency provisions are designed to create an enabling environment for investment. Investor confidence depends on regulatory predictability. According to the Nigeria Economic Summit Group [NESG] (2021), “policy and regulatory inconsistency” is identified as a major bane of private investment. The persistence of opaque practices undermines the predictability that investors require. Transparency reduces risk and facilitates capital allocation. According to Komolafe (2023), the Commission is committed “to creating enabling and predictable regulatory environment via the development of regulations that will give meaning and intent to the PIA 2021.” This predictability is essential for attracting long-term investment in refining and distribution infrastructure.

Market stability depends on transparent information flows. According to Zheng et al. (2025), “structural resilience in the petroleum network depends on node redundancy and resistance; however, when the loss ratio of nodes reaches a specific threshold, the overall efficiency of the supply chain drops to near zero, leading to total network paralysis.” Transparency helps identify vulnerabilities and maintain stability. The cost of opacity includes higher capital costs. According to AO2LAW (2024), “for international investors, the [FEC] Directive introduces an element of currency risk... which could erode their returns when repatriating profits. This increased currency risk could make Nigerian crude less attractive to foreign investors.”

Nigeria's petroleum supply chain is increasingly sensitive to geopolitical developments beyond its borders. The Iran-US-Israel confrontation, which intensified in 2025 with attacks on oil infrastructure and threats to close the Strait of Hormuz, sent global benchmark prices above \$100 per barrel for sustained periods (Liu, 2025; Odunewu, 2026). For Nigeria, this translated into higher landing costs for imported refined products, which in turn exerted upward pressure on pump prices. Moreover, the rerouting of tankers away from the Red Sea due to Houthi attacks increased freight times and costs, leading to supply delays and occasional shortages (Awambeng, 2026; Aina, 2026). These events highlight a critical governance gap: while the PIA sought to create a market-driven downstream, the sector still lacks the refining capacity, storage infrastructure, and supply chain transparency needed to buffer against external shocks. The inability to accurately track actual consumption, monitor import volumes, or enforce transparent pricing formulas means that global price spikes often result in opaque pricing practices that undermine public trust (Mazorodze, 2025; Onuma, 2025; NESG, 2026). As the Nigerian Economic Summit Group noted, the conflict could add between 1.3 and 5.2 percentage points to headline inflation over the following two to three quarters, depending on the crisis scenario (NESG, 2026). Consequently, the resilience of Nigeria's energy sector depends not only on domestic governance reforms but also on the capacity to manage external shocks through diversified supply sources, strategic petroleum reserves, and transparent pricing mechanisms.

CONCLUSION

Summary of Findings

This paper has examined the transparency and governance challenges in Nigeria's petroleum supply chain, with particular focus on the impact of post-PIA reforms on accountability mechanisms and market stability. The analysis reveals that despite comprehensive legislative reforms under the Petroleum Industry Act 2021, significant governance gaps persist across the supply chain.

The PIA introduced fundamental institutional restructuring, including the creation of NUPRC for upstream regulation, NMDPRA for midstream and downstream oversight, and the transformation of NNPC into NNPC Limited as a commercial entity. These reforms were designed to separate regulatory and commercial functions, enhance transparency, and create a more competitive and accountable petroleum sector.

However, the implementation of these reforms has been hampered by persistent challenges. Opacity in crude allocation and domestic supply obligations continues to undermine transparency, with the DCSO framework generating controversy regarding allocation criteria and methodology. Beneficial ownership disclosure remains incomplete, with legal gaps allowing true owners to remain hidden behind corporate structures and proxy arrangements. Regulatory overlap and coordination weaknesses between NUPRC and NMDPRA create implementation gaps that undermine effective oversight.

The governance of NNPC Limited remains problematic, with political interference, weak enforcement, and the transfer of corrupt personnel from the defunct NNPC undermining its commercial viability and accountability. Crude oil theft and metering inaccuracies continue to result in massive revenue losses, with an estimated N8.41 trillion lost between 2021 and 2025. The politics of fuel pricing and subsidy removal create market instability and public dissatisfaction.

The Path Forward: Policy and Governance Improvements for a Transparent Petroleum Supply Chain

Addressing these governance challenges requires comprehensive reforms that go beyond legal frameworks to address institutional capacity, political economy constraints, and enforcement weaknesses. Key priorities include: First, strengthening regulatory coordination and role clarity between NUPRC, NMDPRA, and NNPC Limited. This requires clear delineation of mandates, formal coordination mechanisms, and insulation of regulatory appointments from political influence. Second, enhancing beneficial ownership and contract transparency through comprehensive disclosure requirements, robust verification mechanisms, and public accessibility of information. This includes addressing the use of proxies and nominee arrangements to mask control.

Third, creating independent auditing and monitoring systems for crude allocation, including robust metering infrastructure, real-time monitoring, and independent oversight of the DCSO process. Fourth, implementing clear pricing and market information disclosure requirements that enable stakeholders to understand market dynamics and hold actors accountable. Fifth, introducing stronger civil society and legislative oversight mechanisms, including enhanced parliamentary scrutiny, civil society participation in regulatory processes, and robust whistleblower protections.

Final Thoughts on Energy Security and Governance in Nigeria's Petroleum Sector

The governance of Nigeria's petroleum sector is not merely a matter of regulatory compliance but a fundamental determinant of energy security, economic stability, and national development. As Zheng et al. (2025) note, "the petroleum industry chain exhibits 'small world' and 'scale-free' characteristics, meaning that disruptions at central nodes such as major oil-producing nations, cause a sharp, non-linear decrease in global network efficiency." For Nigeria, governance failures at critical nodes in the petroleum supply chain can trigger cascading disruptions with far-reaching consequences. The PIA represents a historic opportunity to transform the governance of Nigeria's petroleum sector. However, as Nwuke (2021) warned, while the Act addresses many "old problems," it also creates "new ones" related to transition and implementation. The

success of the reforms will ultimately depend not on the content of legislation alone, but on the political will to implement, the capacity of institutions to enforce, and the vigilance of citizens to hold power accountable.

The governance of Nigeria's petroleum supply chain cannot be divorced from the volatile global energy landscape. Recent geopolitical conflicts from the Iran-US-Israel standoff to the ongoing war in Ukraine have repeatedly demonstrated that external shocks are not anomalies but recurring features of the global oil market (Olawin et al., 2026; Hoskins & Edser, 2026). For Nigeria, the persistence of domestic governance gaps, including insufficient refining capacity, opaque import systems, and weak regulatory enforcement, amplifies the impact of these external disruptions. As the country moves forward with post-PIA reforms, building resilience against global supply chain distortions must become a central policy objective. This requires not only accelerating domestic refining capacity but also instituting transparent, real-time data systems that allow regulators and the public to understand how global price movements translate into domestic costs. The Dangote Refinery offers a potential buffer, but its success will depend on consistent crude feedstock supply and a regulatory environment that fosters competition rather than monopoly (Coker et al., 2025; Olawin et al., 2026). Without such reforms, Nigeria will remain vulnerable to every tremor in the international oil market.

As Nigeria navigates the complex transition toward a more transparent and accountable petroleum sector, the stakes could not be higher. The choices made today will shape not only the future of the petroleum industry but the broader trajectory of Nigerian development. The path forward requires sustained commitment to reform, robust oversight mechanisms, and a collective determination to ensure that Nigeria's hydrocarbon wealth serves the public interest rather than private enrichment. Only then can the promise of the PIA be fully realized and the curse of oil transformed into a blessing for all Nigerians.

RECOMMENDATIONS

Strengthening Regulatory Coordination and Role Clarity Between NUPRC, NMDPRA, and NNPC

Effective governance requires clear delineation of roles and robust coordination mechanisms. According to Peekate and Duson (2025), the Norwegian model "enforces a strict separation of roles between commercial, policy, and regulatory institutions." Nigeria should fully implement this separation by ensuring that NNPC Limited operates independently of regulatory oversight and that NUPRC and NMDPRA have clear, non-overlapping mandates. Establish formal coordination mechanisms between NUPRC and NMDPRA. According to Adewale (2024), "jurisdictional friction over midstream assets often delays transparency audits and market stabilization efforts." A joint technical committee with clear dispute resolution mechanisms can address coordination challenges. Strengthen regulatory independence by insulating appointments from political influence. According to Sunday et al. (2025), "board appointments are often driven by political loyalty rather than merit, which compromises accountability." Appointments to NUPRC, NMDPRA, and NNPC Limited boards should be based on technical competence and subject to legislative confirmation.

Clarify the relationship between regulatory agencies and the Ministry of Petroleum Resources. According to Onuh (2021), Section 3(1) of the PIA curtails the Minister's sole prerogative to issue or revoke licenses. This separation should be fully implemented to prevent political interference in regulatory decisions. Establish clear protocols for information sharing between agencies. According to Dogara (2025), "siloes data and poor inter-agency information sharing create significant 'implementation weaknesses' in governance." A unified digital platform for data sharing can address fragmentation.

Enhancing Beneficial Ownership and Contract Transparency

Implement comprehensive beneficial ownership disclosure for all petroleum licenses and contracts. According to Nwapi et al. (2021), "disclosure of such individuals is essential in the extractive industries to strip company ownership of 'mysterious darkness' and prevent the use of anonymous shell companies for executing dubious contracts." Strengthen verification mechanisms for beneficial ownership information. According to Oluwatoyin (2024), "the 'beneficial ownership verification gap' between CAC and NUPRC databases undermines transparency. Establish inter-agency collaboration for data verification and real-time updates.

Ensure public accessibility of beneficial ownership information. ITI (2019) mandated public registers of extractive license holders, while the Global Forum and IDB (2019) affirmed such databases enable civil society oversight. Sayne et al. (2015) documented that contract secrecy in Nigeria's petroleum sector conceals fiscal terms and enables opaque deals. FATF (2012) mandates that nominee arrangements be disclosed to competent authorities. Address the use of proxies and nominee arrangements to mask control. According to Nwapi et al. (2021), "corporate governance studies in Nigeria have also shown that most of the companies... are controlled by a set of 'director-shareholders' who... represent the minority but whose controlling power stems from the fact that they have proxies holding majority shares." Regulations should require disclosure of such arrangements.

Creating Independent Auditing and Monitoring Systems for Crude Allocation

Establish independent auditing of crude oil production and allocation. According to Komolafe (2023), a forensic audit revealed that "approximately 40% of the volumes credited to crude losses in the Nigerian petroleum industry are actually attributable to measurement inaccuracies." Regular independent audits can address these inaccuracies. Implement robust metering systems with third-party verification. According to Komolafe (2023), the Commission is implementing a reform where "Original Equipment Manufacturers (OEMs) licensed directly as agents of the Commission will be responsible for deployment and maintenance of metering facilities across Nigeria's oil and gas facilities, for transparency in hydrocarbon accounting." This reform should be fully implemented and extended to all custody transfer points. Establish real-time monitoring of crude oil production and distribution. According to Ijeomah (2020), "Access to real-time and transparent data reduces the bullwhip effect and offers the exact demand and supply information required to minimize the differences in demand and supply for the commodity." Create independent oversight of the DCSO allocation process. According to Aduloju (2024), the IPPG called for "transparency in how the allocations to oil producers were determined." An independent technical committee should verify allocation criteria and methodology. Strengthen NEITI's auditing capacity and enforcement authority. According to El Hamad et al. (2024), "the limited legislative power of the Act and its inability to enforce compliance with EITI principles or undertake criminal prosecutions signify a gap." Amend the NEITI Act to provide enforcement powers.

Implementing Clear Pricing and Market Information Disclosure Requirements

Establish transparent pricing mechanisms that reflect market realities. According to NUPRC (2022), "The supply of crude oil under the DCSO must be commercially negotiated between the lessee and the refiner, specifically having regard to the prevailing international market price for similar grades of crude oil." This principle should be consistently applied. Mandate disclosure of pricing formulas and components. According to Coker et al. (2025), "local refineries face public pressure to provide affordable products, which may drive them to negotiate for lower crude prices, creating a tension between transparency in market pricing and social expectations." Public disclosure of pricing components can help manage these tensions. Require public reporting of petroleum product imports, including volumes, prices, and suppliers. According to Ehinomen and Adeleke (2012), the domestic management of petroleum resources is fraught with "contested pump pricing." Transparent import data can address these contestations.

Establish a public dashboard for market information, including supply levels, prices, and distribution metrics. According to Okoye (2026), "what remains inadequately explored is how competition actually unfolds after deregulation." A public dashboard can fill this knowledge gap. Ensure that regulatory interventions in pricing are transparent and based on clear criteria. According to AO2LAW (2024), "the Commission [NUPRC] may intervene if unreasonable demands are made on the refineries." Such interventions should be governed by clear rules and disclosed to the public.

Introducing Stronger Civil Society and Legislative Oversight Mechanisms

Strengthen legislative oversight of the petroleum sector. According to Omotere (2026), the Senate's Public Accounts Committee can exercise its powers under Section 85(5) of the Constitution to summon officials and enforce transparency. This oversight should be robust and sustained. Enhance civil society participation in governance processes. According to El Hamad et al. (2024), "CSOs play a pivotal role in ensuring NEITI

achieves transparency by reaching out to the public, particularly those who are illiterate, through activities such as roadshows and workshops.” Support CSO capacity to engage effectively.

Establish mechanisms for public participation in regulatory decision-making. According to Nwapi (2010), a major weakness in implementation is the lack of public participation in oil and gas decision-making. The PIA should be amended to mandate public consultation on major decisions. Strengthen the Host Community Development Trust framework. According to Udejimba (2024), “the absence of defined rules for appointing the Board of Trustees raises concerns about transparency.” Clear rules for board composition and operations are essential for community trust. Ensure that whistleblower protections are robust and effective. According to Borha and Olujobi (2023), the PIA lacks “whistle-blowing provisions.” Amend the Act to include strong whistleblower protections and incentives for reporting corruption.

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