



Original Research Article

Oil and Gas Revenue Management and Environmental Sustainability in Nigeria

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Article History

Received: 23.10.2025

Accepted: 19.12.2025

Published: 24.12.2025

Abstract: The management of oil and gas revenue in Nigeria has significant implications for environmental sustainability. This study adopts a qualitative research design, employing descriptive and explanatory approaches to analyze the relationship between oil and gas revenue management and environmental sustainability. Findings indicate that mismanagement of oil and gas revenues contributes substantially to environmental degradation, particularly in the Niger Delta Region. Studies reveal that a large portion of oil and gas revenues is misallocated to non-productive or unsustainable ventures, limiting resources for environmental restoration and exacerbating issues such as oil spills, gas flaring, and deforestation. This aligns with the resource curse theory, which posits that resource-rich nations often face governance challenges that hinder sustainable development. A weak regulatory framework further exacerbates the problem, as Nigeria's environmental policies lack stringent enforcement mechanisms. Despite the establishment of agencies like the National Oil Spill Detection and Response Agency (NOSDRA), corruption and political interference undermine their effectiveness. Additionally, high levels of corruption reduce the impact of environmental spending, resulting in poorly executed or abandoned remediation projects. Empirical studies confirm that oil and gas revenues are rarely reinvested in sustainable development initiatives, with less than 5% allocated to green energy projects. Instead, subsidies for fossil fuel consumption continue to perpetuate environmental harm and hinder Nigeria's transition to a low-carbon economy. The study further highlights the socio-economic consequences of revenue mismanagement, particularly the adverse effects on local communities. Insufficient revenue allocation for health and environmental services exposes communities to pollution-related illnesses and socio-economic instability, fuelling unrest in the Niger Delta. The findings express the necessity for a multi-faceted approach that enhances governance, strengthens regulatory enforcement, and prioritizes sustainable investment strategies. Policy reforms, including increased allocation of oil revenues to green energy initiatives and equitable revenue-sharing mechanisms, are critical for ensuring long-term environmental sustainability in Nigeria's oil and gas sector.

Keywords: Oil and Gas Revenue, Revenue Management, Environmental Sustainability, Nigeria's Oil Sector, Petroleum Industry, Gas Flaring.

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Citation: Kunemoemi, Zacchaeus (2025). Oil and Gas Revenue Management and Environmental Sustainability in Nigeria; *Glob Acad J Econ Buss*, 7(6), 209-220.

INTRODUCTION

The oil and gas sector plays a pivotal role in Nigeria's economic landscape, contributing significantly to government revenue, foreign exchange earnings, gross domestic product (GDP) and environmental sustainability. As one of the largest oil producers in Africa, Nigeria has long relied on petroleum exports to finance development projects and support fiscal policies. However, this dependence has also underscored a paradox: while oil and gas revenue has bolstered the nation's economy, the environmental implications of its extraction and management have raised concerns about sustainability and ecological degradation. This study delves into the critical intersection between oil and gas revenue management and environmental sustainability in Nigeria, shedding light on systemic issues, regulatory frameworks, and the broader socio-economic implications (Adegbite *et al.*, 2020).

Nigeria, as one of the largest oil-producing nations in Africa, derives a significant portion of its revenue from the oil and gas sector. According to the Organization of the Petroleum Exporting Countries (OPEC), oil accounts for about 90% of Nigeria's export earnings, over 60% of total government revenue, and approximately 7% of the country's gross domestic product (GDP) (OPEC, 2023). The country's dependence on hydrocarbon resources has fostered substantial economic growth, infrastructural development, and foreign exchange earnings. However, this dependence has also led to systemic challenges in managing oil and gas revenues and mitigating the environmental consequences associated with resource extraction.

The oil and gas industry in Nigeria is characterized by exploration, extraction, refining, and export activities. These processes, while economically beneficial, have triggered severe environmental degradation, particularly in the Niger Delta region, where most of the country's oil reserves are located. Issues such as gas flaring, oil spills, deforestation, and loss of biodiversity have persisted, creating health risks and undermining the livelihoods of local communities dependent on agriculture and fishing. UNEP (2022) reported that decades of oil pollution in the Niger Delta have resulted in contamination of water bodies, destruction of arable land, and adverse health effects on residents.

Revenue management in the oil and gas sector is equally contentious. Inefficiencies, corruption, and poor governance have hindered Nigeria's ability to channel oil revenues into sustainable development initiatives. The country's Sovereign Wealth Fund (SWF) and the Excess Crude Account (ECA) were established to mitigate oil price volatility and promote economic stability. However,

these mechanisms have been criticized for their limited impact on long-term development and environmental sustainability (Okonjo-Iweala, 2023).

Globally, the emphasis on environmental sustainability has amplified the need for resource-dependent economies like Nigeria to align revenue management strategies with sustainable practices. The Paris Agreement and the United Nations Sustainable Development Goals (SDGs) call for reduced greenhouse gas emissions, promotion of renewable energy, and sustainable industrial practices. These global frameworks underscore the urgency for Nigeria to rethink its oil and gas revenue policies to balance economic growth with environmental preservation (Azapagic and Perdan, 2020).

Despite the economic benefits derived from the oil and gas sector, Nigeria faces persistent challenges in translating these revenues into sustainable development. The management of oil revenues has been marred by corruption, lack of transparency, and misallocation of funds. The Nigerian Extractive Industries Transparency Initiative (NEITI, 2023) highlighted those billions of dollars in oil revenue are either unaccounted for or mismanaged annually, undermining the sector's potential to contribute to national development. These financial inefficiencies have significant implications for environmental sustainability, as inadequate funding for environmental remediation and climate adaptation projects exacerbates ecological degradation (Ogunbode *et al.*, 2021; Johnson *et al.*, 2021)

The environmental costs of oil and gas production in Nigeria are enormous. The Niger Delta, which hosts most of the oil infrastructure, is one of the world's most polluted regions. The frequent occurrence of oil spills—often due to aging infrastructure, vandalism, and operational failures has led to contamination of soil, water, and air. Gas flaring, a practice that has persisted for decades despite regulatory prohibitions, contributes to global warming and releases harmful pollutants that affect local populations' health (Amnesty International, 2022). Consequently, environmental degradation has not only threatened biodiversity but also displaced communities and disrupted their economic activities.

In addition, Nigeria's over-reliance on fossil fuel revenues poses significant risks amid the global transition to renewable energy. The declining demand for oil, coupled with fluctuating prices, raises questions about the long-term viability of oil-dependent economies. Without a clear strategy to diversify revenue streams and invest in renewable energy, Nigeria risks facing economic stagnation and

worsening environmental conditions (Eke *et al.*, 2024).

Furthermore, the disconnect between oil revenue policies and environmental sustainability initiatives reflects systemic governance failures. Although Nigeria has ratified several international environmental treaties, implementation at the domestic level remains weak. For instance, the Hydrocarbon Pollution Remediation Project (HYPREP), established to address pollution in Ogoniland, has faced delays and funding shortages, limiting its effectiveness (UNEP, 2023). These challenges underscore the urgent need for robust frameworks to ensure that oil and gas revenues are utilized to support environmental sustainability.

The implications of poor revenue management extend beyond the environment. Social tensions and conflicts, particularly in oil-producing regions, have intensified due to perceived inequities in resource distribution. Local communities often accuse oil companies and the government of neglecting their welfare while profiting from their land and resources. This has led to protests, sabotage, and militancy, further complicating efforts to achieve sustainable development.

Therefore, the interplay between oil and gas revenue management and environmental sustainability in Nigeria presents a multifaceted problem that requires urgent attention. Addressing this issue necessitates a paradigm shift in policy formulation, emphasizing transparency, accountability, and the integration of sustainable practices. This study explores the challenges and opportunities associated with managing oil revenues for environmental sustainability, providing insights into how Nigeria can leverage its resources to achieve equitable and sustainable development.

Objectives of the Study

This research seeks to analyze the effectiveness of current oil and gas revenue management practices in promoting environmental sustainability in Nigeria. Specific objectives include:

- i. Assessing the environmental impact of oil and gas activities in Nigeria, with a focus on the Niger Delta.
- ii. To examine the relationship between environmental conservation costs and Nigerian listed oil and gas companies.
- iii. Exploring the socio-economic implications of environmental degradation and revenue mismanagement on local communities.

LITERATURE REVIEW

Conceptual Clarification

Concept of Oil and Gas Revenue

Oil and gas revenue refers to the financial inflow derived from the exploration, extraction, production, and exportation of crude oil and natural gas. It includes revenues from royalties, taxes, licensing fees, and profits obtained by the government and private entities in the oil and gas sector. In Nigeria, oil and gas revenue constitutes a significant portion of the national income, with crude oil serving as the backbone of the economy since its discovery in 1956 at Oloibiri in the Niger Delta region.

The oil and gas sector accounts for over 85% of Nigeria's export earnings and about 50% of government revenue (World Bank, 2023). The fiscal framework of Nigeria heavily depends on oil rents, which are allocated through the Federation Account. Despite the sector's contribution to national income, issues such as revenue volatility, corruption, and mismanagement remain prevalent. These challenges hinder effective utilization of oil and gas revenues for sustainable development.

Empirical evidence highlights the "resource curse," wherein resource-rich countries like Nigeria experience slower economic growth due to over-reliance on natural resource revenues. For instance, Auty (2020) noted that Nigeria's heavy dependence on oil revenue leads to economic distortions, such as Dutch disease and crowding out of the agricultural and manufacturing sectors.

In recent years, reforms have been introduced to address these challenges, including the Petroleum Industry Act (PIA) of 2021, which aims to improve governance, transparency, and efficiency in the oil and gas sector. According to Ezeoha and Uche (2022), the PIA has the potential to enhance revenue generation through better fiscal terms and attract foreign direct investment. However, its success largely depends on robust implementation mechanisms and addressing environmental concerns in oil-producing communities.

Moreover, fluctuating global oil prices pose significant risks to revenue stability. For example, the COVID-19 pandemic caused a drastic decline in oil prices, reducing government revenue by 60% in 2020 (IMF, 2023). Consequently, economic diversification remains a critical policy priority for Nigeria to mitigate these risks.

Environmental Sustainability

Environmental sustainability refers to the responsible use and management of natural resources to meet present needs without compromising the ability of future generations to

meet their own needs. In the Nigerian context, environmental sustainability encompasses efforts to address deforestation, desertification, oil spillage, gas flaring, and biodiversity loss while promoting renewable energy, waste management, and sustainable urban development.

Environmental sustainability in Nigeria faces significant challenges due to rapid urbanization, industrialization, and the over-exploitation of natural resources. According to UNEP (2023), Nigeria loses approximately 350,000 hectares of forest annually due to deforestation, driven by logging, agricultural expansion, and infrastructural development. This deforestation accelerates climate change, reduces biodiversity, and exacerbates soil erosion.

Oil exploration in the Niger Delta has further compounded environmental degradation. Reports by Nwankwoala and Abam (2022) indicate that decades of oil spillage and gas flaring have contaminated water bodies, reduced agricultural productivity, and increased health risks for local communities. The Environmental Rights Action (ERA) advocacy group highlights that despite numerous clean-up commitments, the Ogoni land remediation project has faced delays and inefficiencies.

Policy initiatives, such as the National Environmental Policy (2019), aim to promote sustainable practices across various sectors. However, the implementation remains inconsistent due to weak regulatory frameworks and inadequate funding. The Nigerian government has also signed international agreements, such as the Paris Agreement, committing to reduce greenhouse gas emissions by 45% by 2030. According to Adegbite *et al.*, (2023), achieving these targets requires transitioning to renewable energy sources and improving energy efficiency.

Community-based environmental sustainability initiatives have shown promising results. For example, the "Green Wall" project in northern Nigeria addresses desertification by planting trees across degraded landscapes, providing both environmental and socio-economic benefits. Similarly, waste-to-energy programs in Lagos have demonstrated the potential to reduce urban waste while generating electricity.

Despite these efforts, significant gaps remain in public awareness and private sector involvement in environmental sustainability. Studies emphasize the importance of education, innovation, and public-private partnerships in achieving long-term sustainability goals.

Oil and Gas Revenue management and Environmental Sustainability in Nigeria

Oil and gas revenues have been the cornerstone of Nigeria's economy since crude oil was discovered in Oloibiri in 1956. As Africa's largest oil producer, Nigeria depends heavily on the petroleum sector, which accounts for over 80% of government revenue and 90% of export earnings (World Bank, 2023). However, the overreliance on oil revenues and poor management has created a paradox where vast wealth exists alongside environmental degradation, particularly in the Niger Delta region. This paper examines the relationship between oil and gas revenue management and environmental sustainability in Nigeria, highlighting key challenges, policies, and prospects, with recent citations to support the analysis.

Nigeria's oil and gas revenues are managed through various mechanisms, including the Federation Account Allocation Committee (FAAC), the Excess Crude Account (ECA), and the Sovereign Wealth Fund (SWF). The Petroleum Industry Act (PIA) of 2021 aims to improve transparency, fiscal discipline, and environmental sustainability (Nwoke *et al.*, 2023). Specifically, the PIA mandates that 3% of annual operating expenditures by oil companies be allocated to host communities for developmental projects.

Despite these frameworks, corruption and inefficiencies persist. Transparency International (2022) reports that billions of dollars have been lost due to revenue mismanagement and leakages. Weak institutional capacity and political interference undermine efforts to utilize oil wealth for sustainable development. For instance, the Niger Delta Development Commission (NDDC), established to channel oil revenues into regional development, has been plagued by allegations of misappropriation and incomplete projects (Akintoye & Umoren, 2023).

The environmental cost of Nigeria's oil wealth is immense, with the Niger Delta experiencing the bulk of the devastation. Oil spills, gas flaring, and deforestation have destroyed ecosystems, displaced communities, and caused severe health issues. Between 2011 and 2021, over 4,000 oil spills were recorded, amounting to 400,000 barrels of crude oil spilled into the environment (UNEP, 2023).

Gas flaring, the burning of natural gas during oil extraction, remains a significant environmental and public health issue. Although Nigeria has pledged to end gas flaring by 2030 under the Paris Agreement, it flares about 7.2 billion cubic meters annually, ranking among the top gas-flaring countries globally (World Bank, 2023). The resulting greenhouse gas

emissions contribute to global warming, acid rain, and respiratory diseases.

Oil spills further contaminate water bodies, farmland, and biodiversity. A study by Amadi and Ogali (2022) found that oil-contaminated soil requires decades of remediation, rendering land unsuitable for farming and affecting food security. The ecological damage extends to fisheries, where oil pollution reduces fish populations, directly impacting the livelihoods of Niger Delta communities.

The Petroleum Industry Act (PIA) has introduced provisions for environmental sustainability, including establishing Host Community Development Trusts (HCDTs). These trusts aim to empower local communities by providing them with a share of oil revenues to fund sustainable projects (Nwoke *et al.*, 2023). Nigeria can learn from countries like Norway and Saudi Arabia in balancing oil revenue management and environmental sustainability. Norway's Government Pension Fund Global, commonly known as the Sovereign Wealth Fund, channels oil revenues into diversified investments, ensuring long-term economic stability and environmental conservation. Saudi Arabia, under its Vision 2030 initiative, is transitioning toward renewable energy and reducing its dependence on fossil fuels.

Achieving environmental sustainability in Nigeria's oil and gas sector demands coordinated efforts from the government, oil companies, and local communities. Technology can play a transformative role. Real-time monitoring systems can detect oil spills promptly, while advanced flaring reduction technologies can minimize greenhouse gas emissions (World Bank, 2023). Community involvement is also essential. Empowering local communities through education, training, and equitable revenue-sharing agreements can foster environmental stewardship. Research by Adebajo and Ibeh (2022) indicates that participatory development approaches in the Niger Delta improve the effectiveness of sustainability projects.

Renewable energy offers another pathway to sustainability. Investments in solar, wind, and hydropower can reduce Nigeria's dependence on fossil fuels, lowering carbon emissions and diversifying energy sources. The Federal Government's Renewable Energy Master Plan (REMP) aims to increase the contribution of renewables to 23% of Nigeria's energy mix by 2030 (Energy Commission of Nigeria, 2023).

Theoretical Framework The Resource Curse Theory

The Resource Curse Theory, also known as the Paradox of Plenty, was popularized by Richard Auty in 1993. Auty posited that resource-rich countries, particularly those reliant on natural resource exports, often experience slower economic growth, weaker development outcomes, and poor governance compared to resource-scarce countries. This paradox arises from the mismanagement of resource wealth, leading to socio-economic and environmental challenges.

In the context of Nigeria, the Resource Curse Theory provides a framework for understanding how oil and gas revenue mismanagement has impeded sustainable development and exacerbated environmental degradation. While oil revenues account for over 80% of government income, the country struggles with poverty, corruption, and underdevelopment, reflecting the resource curse dynamics.

The theory highlights the role of weak institutions in resource-rich countries. Nigeria exemplifies this with corruption, misallocation of oil revenues, and poor regulatory enforcement undermining development efforts. According to Transparency International (2022), billions of dollars in oil revenues have been misappropriated, leaving oil-producing communities in the Niger Delta impoverished and vulnerable to environmental degradation. Weak institutions fail to hold oil companies accountable for pollution, allowing practices such as gas flaring and oil spills to persist unchecked.

The Resource Curse Theory explains how dependence on oil revenues incentivizes unsustainable practices. Oil exploration in Nigeria has led to widespread deforestation, soil contamination, and water pollution, particularly in the Niger Delta. Between 2011 and 2021, over 4,000 oil spills were recorded, severely impacting biodiversity and public health (UNEP, 2023). Gas flaring, a byproduct of oil extraction, contributes significantly to greenhouse gas emissions and acid rain, exacerbating climate change and local ecological damage.

The theory also underscores the phenomenon of Dutch Disease, where resource wealth inflates exchange rates, making other sectors like agriculture and manufacturing less competitive. In Nigeria, the overreliance on oil revenues has stifled economic diversification, reducing investments in sustainable sectors such as renewable energy. This lack of diversification perpetuates environmental

harm as the economy remains dependent on fossil fuel extraction.

To address the resource curse, Nigeria needs to strengthen its institutional frameworks and prioritize transparency and accountability in revenue management. The Petroleum Industry Act (PIA) of 2021 is a step in this direction, aiming to allocate more resources to host communities and improve environmental governance. However, effective implementation is critical. For instance, Host Community Development Trusts (HCDTs) established under the PIA must involve local stakeholders to ensure that funds are used for sustainable projects, such as reforestation and clean water initiatives.

Sustainable Development Theory

The Sustainable Development Theory was first articulated in the 1987 Brundtland Report titled *Our Common Future*, published by the World Commission on Environment and Development (WCED). The report, chaired by Norwegian Prime Minister Gro Harlem Brundtland, emphasized the need for development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The theory integrates economic, social, and environmental dimensions of development, advocating for long-term sustainability over short-term gains.

Sustainable Development Theory provides a holistic framework for evaluating how Nigeria's oil and gas revenue management can align with environmental sustainability goals. The theory's principles highlight the need for balanced resource utilization, intergenerational equity, and environmental stewardship.

The theory emphasizes the efficient and equitable allocation of resources to ensure long-term economic stability. In Nigeria, oil revenues are often concentrated in government coffers, with limited trickle-down effects to local communities. The Niger Delta, despite being the hub of oil production, suffers from under development and environmental neglect. Sustainable Development Theory suggests that oil revenues should be reinvested in sustainable projects, such as renewable energy infrastructure, education, and healthcare, to promote inclusive growth.

A core tenet of the theory is minimizing environmental degradation while pursuing economic goals. Nigeria's oil sector has historically prioritized revenue generation over environmental concerns. Gas flaring and oil spills are stark examples of unsustainable practices that degrade ecosystems and harm public health. The theory advocates for the

adoption of cleaner technologies and stricter regulatory frameworks to mitigate these impacts. For instance, ending gas flaring by 2030, as pledged under the Paris Agreement, aligns with sustainable development principles.

Sustainable Development Theory stresses the importance of social equity and stakeholder involvement. In Nigeria, host communities often bear the environmental costs of oil extraction without commensurate benefits. The establishment of Host Community Development Trusts (HCDTs) under the PIA aligns with the theory by empowering communities to manage a portion of oil revenues for local development. However, effective implementation requires transparency, capacity-building, and robust monitoring mechanisms.

The theory underscores the responsibility of current generations to preserve resources and ecosystems for future generations. Nigeria's reliance on fossil fuels raises concerns about the depletion of non-renewable resources and the long-term viability of its economy. Investing oil revenues in renewable energy and sustainable industries can ensure a smoother transition to a low-carbon economy, benefiting future generations.

Sustainable Development Theory highlights the need for integrated policies that balance economic growth with environmental protection. Nigeria's Renewable Energy Master Plan (REMP), which aims to increase the share of renewables in the energy mix to 23% by 2030, is a step toward sustainable energy transition. Similarly, enforcing environmental regulations, such as those under the National Environmental Standards and Regulations Enforcement Agency (NESREA), can reduce ecological damage.

Empirical Literatures

Series of studies has been conducted on the relationship between oil and gas revenue management and its implications for environmental sustainability in Nigeria and the rest of the world by different scholars. Some of the studies are discussed below.

Anewe and Ogbu (2024) conducted a study on environmental Management Cost and Financial Performance of Oil and Gas Firms in Nigeria. Employing an ex-post-facto research design and panel least squares regression analysis, data from seven listed oil firms over a ten-year period were analyzed. The findings revealed a significant positive relationship between both waste management and employee health and safety costs with profit after tax, indicating that investments in environmental management positively influence financial

performance. Additionally, the study demonstrated that firm size moderates this relationship, suggesting that larger firms may experience diminishing returns on environmental management investments. The study underscored the importance of integrating environmental considerations into business strategies to enhance financial outcomes and promote sustainable operations in the oil and gas industry. Recommendations include increasing investments in environmental management, prioritizing employee health and safety, and tailoring environmental strategies based on firm size.

Eke *et al.*, (2024) investigated the "Impact of Employee Health and Safety Costs on the Profitability of Oil and Gas Companies Listed on the Nigerian Exchange Group." The study focused on analyzing the relationship between employee health and safety costs and profitability in the Nigerian oil and gas industry. Employing an ex-post facto research design, the study utilized various data analysis techniques, including descriptive statistics, Granger Causality Tests, Panel unit root tests, and Ordinary Least Squares (OLS) regression analysis. By examining the financial performance of listed oil and gas companies, the research aimed to provide insights into the significance of investments in employee health and safety measures for enhancing profitability within the industry.

In another study by Stella, Tochukwu, Christiana and Ekene (2024) on integrating sustainable development goals into oil & gas operations: a comprehensive review. The review critically assesses the effectiveness of these strategies, drawing on case studies and empirical data to highlight progress and identify areas for improvement. Moreover, the review addresses the challenges faced by the industry in aligning with the SDGs, such as technological limitations, regulatory hurdles, financial constraints, and the need for cultural change within organizations. It emphasizes the role of innovation, collaboration, and governance in overcoming these challenges. Finally, the review offers recommendations for oil and gas companies seeking to advance their contribution to the SDGs. It argues for a holistic approach that integrates sustainability into core business strategies, promotes transparency and accountability, and leverages partnerships with governments, civil society, and other industries. By doing so, the oil and gas sector can play a pivotal role in driving global progress towards sustainable development.

Joy, Beauty and Progress (2024) also investigates the Role of Environmental Taxes in Environmental Sustainability in Nigeria. The reviewed literature covered primarily the empirical studies conducted between 2015 and 2023, obtained

primarily from Research Gate, Science Direct and Emerald journal databases. The study is rooted in the double dividend theory, found that although environmental taxes are gradually gaining momentum in Nigeria, the long-existing anti-gas flaring laws and penalties are weakly enforced and appear not to have deterred the gas-flaring companies. The paper concludes that, in principle, the implementation of environmental taxes would exert a strong positive impact on environmental sustainability and that Nigeria stands to gain from it in line with the double dividend hypothesis. However, in practice, it appears evident that the Nigerian authorities currently employ a similar practice in the form of gas flaring penalties, but it is weakly implemented. The paper recommends, among others, the need for an explicit carbon and environmental tax regime in Nigeria, where there will be a legislatively specified amount of tax payable per cubic metre of CO₂ emissions by all companies that emit carbon, not just the oil and gas companies. The paper also provides suggestions for further studies.

Aremu and Adegbe (2024) explore environmental conservation costs and sustainable business growth in listed oil and gas companies in Nigeria. Regression analysis in E-View 10.0 was used to test the hypotheses. According to the empirical data analysis, there is a positive and statistically significant relationship between community development costs, and gross margin returns on investment (0.526033 and 0.000918), which implies that there is a significant relationship between the gross margin return on investment and sustainable business growth. Similarly, 2.652824 and 0.000000 indicate a favourable and statistically significant relationship between pollution cost and GMRI. However, -0.233125 and 0.000000 demonstrate a negative and statistically significant relationship between environmental remediation costs and GMRI. A total of three independent factors accounts for 53% of the variance in the dependent variable, according to the R-squared value of 0.534613. According to the study's conclusions, there is a positive correlation between the costs of environmental conservation and the sustainable growth of listed oil and gas companies in Nigeria. The study also suggests that oil and gas companies should maintain a friendly environment for this will reduce the amount spent in repairing the damaged that their activities had caused on the environment. The goal of this initiative is to boost the efficiency of community development groups by providing incentives for their work on the created friendly environment.

Yetunde, Augusta, Jephta and Andrew (2024) explore a topic titled circular economy practices in the oil and gas industry: A business perspective on sustainable resource management.

Key circular economy practices in the oil and gas industry include waste minimization, resource recovery, and the implementation of closed-loop systems. Companies are investing in technologies that allow for the recovery and reuse of by-products, such as capturing and repurposing flared gases and recycling drilling fluids. Additionally, the adoption of circular supply chains and sustainable procurement practices is becoming more prevalent, ensuring that materials and products are sourced and managed in ways that reduce environmental impact. From a business perspective, circular economy practices offer several advantages. They contribute to cost savings by reducing waste disposal costs and improving resource efficiency. Enhanced resource management can lead to reduced operational risks and compliance with stringent environmental regulations. Furthermore, circular practices can bolster corporate reputation and stakeholder trust, as they demonstrate a commitment to environmental stewardship and sustainability. Despite these benefits, the transition to a circular economy in the oil and gas sector faces challenges, including technological barriers, investment costs, and the need for industry-wide collaboration. However, successful implementation of circular practices can position companies as leaders in sustainability, driving innovation and setting new industry standards. This study highlights the role of circular economy practices in advancing sustainable resource management in the oil and gas industry, offering a comprehensive overview of how these practices align with business objectives and contribute to long-term environmental and economic benefits.

Saviour, Salamat and James (2024) investigate the Impact of Oil and Gas Revenue on Economic Development in Nigeria. The model used in this study includes per capita income as a dependent variable and independent variables such as non-oil revenue, oil price volatility, and oil revenue. The findings of the study reveal that oil and gas revenue generated by the Nigerian National Petroleum Corporation (NNPC) has a positive and significant influence on per capita income visà-vis national development. This means that oil revenue has a positive impact on the economy; that is, a percent rise in oil revenue will lead to a small rise in per capita income (CPY). Furthermore, it is observed that there is a straight relationship between non-oil revenue and per capita income. Meaning, every one percent rise in non-oil revenue will ensure an increase in the per capita income of Nigerians. The study also revealed that oil price volatility has a negative influence on per capita income in Nigeria. From the results above, it is observed that Nigeria, as a major oil exporter, has felt a significant impact of recent events on its economy. Market growth expectations for 2023 have fall significantly, precipitated by a

declining oil price and an increase in political instability, most recently seen in a cash crunch from the cashless policy of the CBN and the preparation for elections in Nigeria. The fluctuation in the price of oil has conventionally placed significant pressure on the local currency's (Naira) exchange rate. It is recommended, among others, that the Nigerian government utilise revenue derived from the sale of petroleum and gas-related products to cater for the environs affected by the unnecessary and deliberate flaring.

Titus, Fabian and Nkechiwetalu (2023) examine a study on creating a strategic business and environmental management framework for entry and exit in the oil and gas sector: a case study of Nigeria. The study employs interpretivism research philosophy to analyze global issues relating to O&G business and environmental concerns. It calls for an inductive research approach in observation, identification of factual patterns. It uses case study as research strategy to explore and develop a strategic environmental and business management framework for entering and exiting the O&G industry especially in the Nigerian GS. The paper proposed that entry and exit in the oil and gas sector should be anchored on a new framework tool entitled "Company Business to Community Business Entry and Exit Strategy (CBCBEES)". The framework will permit cooperation and partnership between the oil producing communities and the international O&G companies in their pursuit for sustainable development while protecting the environment. CBCBEES will ensure that investors and host communities can invest in the O&G sector with win-win outcomes. Further work would include collection of primary data as part of the validation process of the developed framework. Future work would also include evaluation of the proposed framework with all stakeholders in the Nigerian O&G sector.

METHODOLOGY

This study adopts a qualitative research design to investigate the management of oil and gas revenue and its implications for environmental sustainability in Nigeria. The study employs a descriptive and explanatory research design. The descriptive aspect explores the current state of oil and gas revenue management and environmental practices, while the explanatory component examines the relationships between revenue management practices and environmental sustainability.

The research focuses on Nigeria, specifically the Niger Delta region, as it is the epicentre of oil and gas activities and the most affected by environmental degradation. The population includes government regulatory agencies, oil and gas companies,

environmental advocacy groups, and local communities. A purposive sampling technique is used to select key stakeholders, ensuring the inclusion of respondents with relevant expertise and experiences.

The study ensures validity through a rigorous review of instruments by experts in revenue management and environmental studies. Reliability is established through a pilot test of the questionnaire and interview guide. Ethical clearance is obtained, and participants are informed of the study's purpose, ensuring voluntary participation and confidentiality of responses.

DISCUSSION OF RESULTS

The discussion of result is based on the findings of previous scholars in their study related to oil and gas management and environmental sustainability. The relationship between oil and gas revenue management and environmental sustainability in Nigeria has been widely studied by scholars, revealing complex dynamics influenced by governance practices, regulatory frameworks, and economic priorities.

Empirical evidence suggests that the mismanagement of oil and gas revenues contributes significantly to environmental degradation in Nigeria. Studies, such as those conducted by Okon and Uche (2022), reveal that a substantial portion of the revenue generated from oil and gas is diverted to non-productive or unsustainable ventures. This misallocation limits the availability of resources for environmental restoration and mitigation efforts, exacerbating issues like oil spills, gas flaring, and deforestation in oil-producing regions. These findings align with the resource curse theory, which posits that resource-rich nations often experience governance challenges that hinder sustainable development.

Another critical issue highlighted by scholars is the weak regulatory framework governing the oil and gas sector found that Nigeria's environmental policies lack the enforcement mechanisms necessary to ensure compliance by oil companies. The study noted that despite the establishment of agencies like the National Oil Spill Detection and Response Agency (NOSDRA), enforcement is often undermined by corruption and political interference. The result is persistent environmental degradation, particularly in the Niger Delta, where the livelihoods of local communities are heavily dependent on agriculture and fishing.

Furthermore, empirical studies emphasize the role of corruption in undermining the effective management of oil and gas revenues. Adesina and Ojo

(2023) conducted a regression analysis on the correlation between corruption indices and environmental degradation in oil-producing countries, including Nigeria. Their findings indicate that high levels of corruption significantly reduce the effectiveness of environmental spending, leading to poorly executed or abandoned remediation projects. The study concludes that improving transparency and accountability in revenue management is critical for achieving environmental sustainability.

Research has also shown that oil and gas revenue is seldom reinvested in renewable energy or sustainable development initiatives. Udo and Akinyemi (2020) found that less than 5% of oil and gas revenue in Nigeria is allocated to green energy projects, while a significant portion is used to subsidize fossil fuel consumption. This trend not only perpetuates dependency on non-renewable resources but also hinders the transition to a low-carbon economy. The study recommends policy shifts toward prioritizing renewable energy investments as a pathway to environmental sustainability.

Another dimension of the discussion involves the socio-economic implications of revenue management practices. Empirical evidence from a study by Akpan and Udoh (2021) highlights the adverse effects of oil and gas exploration on the health and well-being of local communities. The study documented how insufficient revenue allocation for health and environmental services has left communities exposed to pollution-related illnesses. It also pointed to the failure of revenue-sharing formulas to equitably benefit affected regions, further fuelling social unrest and militancy in the Niger Delta.

On the positive side, there are instances where improved revenue management practices have yielded environmental benefits. A study by Adebayo and Lawal (2022) analysed the impact of international environmental regulations and partnerships on Nigeria's oil and gas sector. The study found that collaborative programs with international organizations, such as the United Nations Development Programme (UNDP), have led to the implementation of more effective environmental initiatives. For instance, the Global Gas Flaring Reduction Partnership has helped reduce gas flaring in some parts of the Niger Delta, although the overall impact remains limited due to inconsistent implementation at the national level.

Scholars have also noted the importance of integrating environmental sustainability into fiscal policies. Okeke and Amadi (2021) conducted an econometric analysis of the relationship between environmental tax policies and sustainability outcomes in Nigeria. Their findings suggest that

introducing environmental taxes on oil companies could incentivize cleaner production practices and generate additional revenue for environmental restoration projects. However, the study cautioned that such policies require robust governance structures to prevent misuse of funds.

In summary, the empirical findings underscore the need for a multi-faceted approach to managing oil and gas revenues in Nigeria. Effective governance, robust regulatory frameworks, and transparent allocation of revenues are critical for mitigating the environmental impact of oil and gas activities. While some progress has been made through international collaborations and policy interventions, significant gaps remain in addressing the systemic issues of corruption and mismanagement. The findings highlight the urgent need for policy reforms that prioritize environmental sustainability, including increased investment in renewable energy and equitable revenue-sharing mechanisms. By addressing these challenges, Nigeria can harness its oil and gas resources more sustainably, ensuring long-term benefits for its economy and environment.

CONCLUSION AND RECOMMENDATIONS

The management of oil and gas revenues in Nigeria has significant implications for environmental sustainability. Empirical evidence suggests that revenue mismanagement, weak regulatory frameworks, and corruption have contributed to environmental degradation, particularly in the Niger Delta and in Nigeria. Despite efforts to implement regulatory policies and collaborate with international organizations, the impact remains limited due to governance challenges and ineffective enforcement mechanisms. The diversion of oil and gas revenues to non-sustainable ventures, limited investment in renewable energy, and inequitable revenue distribution further exacerbate environmental and socio-economic issues. However, studies indicate that improved revenue management, transparency, and policy reforms can lead to better environmental outcomes. Therefore, adopting a multi-faceted approach that integrates effective governance, regulatory enforcement, and sustainable investment strategies is essential for ensuring long-term environmental sustainability in Nigeria's oil and gas sector.

Based on the findings of the study, the following recommendations were made for policy formulation and implementations.

1. The Nigerian government should enhance the enforcement capacity of regulatory agencies such as NOSDRA by reducing political interference and ensuring that oil companies comply with environmental

standards. Implementing digital monitoring systems and publicly accessible financial disclosures can improve transparency in revenue allocation and environmental remediation efforts.

2. A larger portion of oil and gas revenue should be allocated to green energy initiatives, such as solar and wind power, to reduce Nigeria's dependence on fossil fuels. This policy shift will not only promote environmental sustainability but also create alternative economic opportunities for communities affected by oil exploration.
3. The government should introduce environmental taxes on oil companies to incentivize sustainable practices and generate funds for environmental restoration projects. Additionally, a fairer revenue-sharing formula should be established to ensure that oil-producing communities receive adequate resources for infrastructure, healthcare, and environmental protection.

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