



ASSESSING NIGERIA'S PETROLEUM INDUSTRY ACT 2021: IMPLICATIONS FOR THE GLOBAL ENERGY TRANSITION

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The escalating impacts of climate change over recent decades have necessitated urgent action from nations heavily reliant on oil and gas to mitigate environmental harm and advance the global energy transition agenda. Despite Nigeria's commitment particularly evidenced by the enactment of the Petroleum Industry Act (PIA) 2021 aimed in part at reducing gas flaring, significant challenges persist. Central among these is how Nigeria can reconcile revenue generation from its substantial oil reserves with its obligations toward energy transition. This study evaluates the PIA 2021's regulatory framework in light of Nigeria's pursuit of a sustainable energy future and its commitments under the Nationally Determined Contributions (NDCs) submitted in July 2021. Adopting a doctrinal legal research methodology and analysing both primary sources such as the PIA 2021 and secondary literature, the study finds that while the PIA represents progress, critical gaps remain. Notably, it highlights the need for the establishment of a Future Energy Fund to support renewable initiatives and calls for amendments to key provisions, such as Section 104, which confer excessive discretionary powers on regulatory authorities. The study concludes that targeted legal reforms are essential to develop a comprehensive regulatory framework capable of ensuring country's effective transition to a sustainable energy economy.

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1. INTRODUCTION

The global energy sector is undergoing a transformative shift, compelled by the imperative need to combat climate change, promote sustainability, and transition towards renewable energy sources. The urgency in the reform presented a critical discourse in the 29th United Nations Climate Change Conference (COP) 29 convened in Baku on the 11th to 22nd November, 2024.¹ Most of the resolutions reached during the conference reinforced the need for accelerated just energy transitions and strategies in tackling climate change.²

Nigeria, being one of the major players in the global oil industry, holds the potential and responsibility of promoting global energy transition and sustainable energy.³ The country's fundamental task in the international energy transition stems from the fact that its major economy is heavily dependent on crude oil exports and the domestic consumption of petroleum products.⁴ For instance, a report by the Extractive Industries Transparent Initiative (EITI) 2023 reveals that oil and gas contributes approximately 65% of government income and over 85% of aggregate exports.⁵ Also, studies show that the Nigerian economy is deeply dependent on the oil and gas industry, as approximately 5.8% of the country's real GDP in 2019 was contributed by the oil and gas industry, which also engendered 95% of the country's foreign exchange income and 80% of its budget revenue.⁶ Essentially, the oil and gas industry remains

¹ United Nations Climate Change, 'UN Climate Change Conference Baku - November 2024' <https://unfccc.int/cop29> accessed 1 April 2025.

² *ibid*.

³ RC Ndong, 'Defining the Roadmap for the Future of Nigeria's Upstream Sector' (2023) 9 Upstream Gaze Magazine 8.

⁴ A Ibrahim and O Zeydler, 'Here's how Nigeria is tackling the Barriers to its Green Energy Transition' (2023) <https://www.weforum.org/stories/2023/05/how-nigeria-is-tackling-barriers-to-its-green-energy-transition/> accessed 1 April 2025.

⁵ Extractive Industries Transparent Initiative (EITI), 'Overview and the Role of EITI' (2023) <https://eiti.org/countries/nigeria> accessed 5 April 2025.

⁶ K Nwuke, 'Nigeria's Petroleum Industry Act: Addressing Old Problems, Creating New Ones' <<https://www.brookings.edu/blog/africa-in-focus/2021/11/24/nigerias-petroleum-industry-act-addressing-old-problems-creating-new-ones/>> accessed 3 April 2025. AS Aliyu, JO Dada, IK Adam, 'Current Status and Future Prospects of Renewable Energy in Nigeria' *Renew. Sustain. Energy Rev.* (2015) 48, 336–346.

critical to the global economy, offering energy for electricity generation and haulage among others.⁷ Therefore, it is evident that for a developing nation such as Nigeria whose economy relies heavily on oil and gas, a reasonable and equitable energy transition method is required.⁸ Although oil and gas generates heavy revenues for Nigeria, It is widely regarded as the leading driver of global climate change, responsible for more than three-quarters of greenhouse gas emissions and close to 90% of all carbon dioxide released into the atmosphere.⁹ For example, Shapaolova identifies that oil is responsible for about 34% of global CO₂ emissions from fossil fuels.¹⁰ In a finding by International Energy Agency, the oil and gas industry is responsible for 45% of human-induced greenhouse gas emissions globally.¹¹ This significant contribution of oil and gas to greenhouse gaseous emissions calls for an increasing need for decarbonisation by National Oil Companies, along with international oil and gas companies. Invariably, this reinforces the need for Nigeria's active engagement in climate policy, sustainability and promotion of environmental health.

Despite Nigeria's significant contribution to greenhouse gaseous emissions, it has made some commendable strides towards reduction of fossil fuels although these strides may not have promoted enough sustainability for global energy transition.¹² For example, the Petroleum

⁷ Prismecs, 'Oil and Gas Industry in the age of Renewable Energy' <<https://prismecs.com/blog/oil-and-gas-industry-in-the-age-of-renewable-energy>> accessed 18 April 2025.

⁸ I Koffi and I Bassey, 'Assessment of Nigeria's Role in the Global Energy Transition and Maintaining Economic Stability' (Paper Presented at the Society of Petroleum Engineers Nigerian Annual International Conference and Exhibition, Lagos, Nigeria 2022).

⁹ United Nations, 'Causes and Effects of Climate Change' <https://www.un.org/en/climatechange/science/causes-effects-climate-change> accessed 1 April 2025.

¹⁰ D Shapaolova, 'Climate Change and Oil and Gas Production Regulation: An Impossible Reconciliation' (2023) 26(4) Journal of International Economic Law 817-835.

¹¹ A Pandey, J Thomas and A Harneja, 'How the Oil and Gas Industry turn Climate Change Ambition into Action' <https://www.strategyand.pwc.com/m1/en/strategic-foresight/sector-strategies/energy-chemical-utility-management/climate-change-ambition.html> accessed 3 April 2025.

¹² D Okusami and I Alli, 'Energy Transition and Nigeria's Quest for Sustainable Energy' (2023) <<https://serac.app/?link=https%3A%2F%2Fwww%2Etemplars%2Dlaw%2Ecom%2Fapp>>

Industry Act (PIA) 2021 is a quintessential legislative effort in reforming the country's oil and gas sector. Nigeria enacted its Petroleum Industry Act (PIA) in August 16, 2021 to offer, statutory regulation, the legal and revenue governance structure guiding Nigeria's petroleum sector, notwithstanding its lofty aspirations; it institutionalises fossil fuel dependence rather than truly enabling transition to renewable energy sources. The PIA contains provisions such as sections 52, 104, and 318. These provisions' relevance to carbon emissions reduction, environmental sustainability, and renewable energy support aid in the reduction of carbon dioxide emissions, as well as energy transition to low carbon sources of energy with no stringent sanctions for non-compliance. This Act¹³ seeks to attract investment, enhance transparency, and ensure environmental sustainability while adapting to the realities of a changing energy environment but with slow result.¹⁴

In addition, Nigeria is one of the nations that ratified both the Kyoto Protocol 1997 and the Paris Climate Agreement 2015. Under the Paris Agreement, countries were required to submit their national climate action strategies known as 'Nationally Determined Contributions (NDCs)'.¹⁵ The NDCs indicate actions that various countries adopts towards reducing their greenhouse gas emissions with the aim of reaching the goals established in the Paris Agreement 2015 and build resilience to tackle the impact of climate change.¹⁶ On 30th July 2021, Nigeria

%2Fuploads52F2023%2F10%2FEnergy%2DTransition%2Dand52DNigerians%2DQuest%2Dfor%2DSustainable%2DEnergy%2DPart%2DPart%2D1%2Epdf&utm_campaign=57165%2Dor%2Ddigacx%2Dweb%2Dshrbtn%2Diga%2Dsharing7utm_source=igadi%2Cigatpdi%2Csh%2Gx%2Fgs%2Fm252F5> accessed 1 April 2025.

¹³ Petroleum Industry Act 2021

¹⁴ OJ Olujobi, 'Nigeria's Climate Change Act 2021: A Pathway to Net-Zero Carbon Emission, Energy Security and Sustainability' (2024) Environmental Science and Pollution Research https://trebuchet.public.springernature.app/get_content/9526d5b6-f51b-4fad-b8e67ffcf85461?utm_source=rct_congratemail&utm_medium=email&utm_campaign=nonoa_20240517&utm_content=10.1007/s11356-024-33347-1 accessed 29 March 2025.

¹⁵ JR Tonlagha, 'Oil and Gas Industry in Nigeria and the Quest for Energy Transition' (Paper Presented at the NES 2022 NUPRC Conference, 2022) [https://www.energy.gov.ng/papers/NES%202022%20NUPRC%20_Oil%20and%20Gas%20Industry%20\(Nigeria\)%20Quest%20for%20Energy%20Transition.pdf](https://www.energy.gov.ng/papers/NES%202022%20NUPRC%20_Oil%20and%20Gas%20Industry%20(Nigeria)%20Quest%20for%20Energy%20Transition.pdf) accessed 1 March 2025.

¹⁶ *ibid.*

submitted its second NDCs as obliged under the United Nations Framework Convention on Climate Change (UNFCCC) 1992. In the NDCs, Nigeria committed to reducing its carbon emission by 20% in 2030 or by 40% if there was international aid, and to attain net-zero emission (a state where the emission of GHG through human activities is balanced with the efforts to remove the GHG in the atmosphere) through energy transition to low carbon sources of energy by 2060.¹⁷

The report of the Nigerian Upstream Petroleum Regulatory Commission revealed on 1 January 2024, Nigeria currently has 37.50 billion barrels of proven crude oil and condensate reserves, 209.26 trillion cubic feet reserves of associated and non-associated gas¹⁸ and an estimated 2.5 billion tonnes of coal reserves.¹⁹ Hence, Nigeria is one of the major countries on the global fossil energy landscape. Additionally, Nigeria is a member of the Organisation of the Petroleum Exporting Countries (OPEC) and also a part of three blocs (groups of countries with specific interests, policies and targets)²⁰ on international climate ambition. According to the IPCC's 2021 Sixth Assessment report, from 1850–1900, human emissions of heat-trapping gases have already triggered the climate to surge by

¹⁷CG Ogbonna and others, 'Understanding Nigeria's Transition Pathway to Carbon Neutrality Using the Multilevel Perspective' [2023] (2)(24) <https://doi.org/10.1007/s43979-023-00065-5> accessed 1 April 2025; D Dunne, 'The Carbon Brief Profile: Nigeria' (2023) <https://www.carbonbrief.org/the-carbon-brief-profile-nigeria/#:~:text=Nigeria%20has%20pledged%20to%20reduce%20its> accessed 12 April 2025.

¹⁸Nigerian Upstream Petroleum Regulatory Commission, 'Nigeria's Oil and Gas Reserves Soar: NUPRC Unveils Impressive Figures' (2024) <<https://www.nuprc.gov.ng/nigerias-oil-and-gas-reserves-soar-nuprc-unveils-impressivefigures/#:~:text=Engr%20Komolafe%20revealed%20that%20as%20of%20Janu>ary%201%2C,Gas%20stood%20at%20209.26%20trillion%20cubic%20feet%20%28TCF%29> assessed 15 April 2025.

¹⁹ FB Fatoye and YB Gideon, 'Coal Deposits in Nigeria: A Review' (2013) 20(1) *Africa Geoscience Review* 40; I Anogu, 'COP26: Nigeria's Coal Deposits Get 2030 Final Development Deadline' (2021) <https://earthjournalism.net/stories/cop26-nigerias-coal-deposits-get-2030-final-development-deadline#:~:text=Some%20experts%20say%20Nigeria%20holds%20over%202.8%20billi>on,states%2C%20much%20of%20which%20may%20never%20be%20tapped accessed 15 April 2025.

²⁰J Gupta, 'Explained: The Negotiating Blocs that will Steer COP26' (2021) <https://dialogue.earth/en/climate/explained-the-negotiating-blocs-that-will-steer-cop26/> accessed 14 October 2024.

approximately 2 degrees Fahrenheit (1.1 degrees Celsius). In the coming decades, projections suggest that the Earth's average temperature could reach or exceed 1.5°C-equivalent to approximately 3°F.²¹ As a result, no region of the world will remain unaffected by these changes. Accordingly, the extent to which climate change impacts humanity will largely depend on the actions taken by humans moving forward. Thus, it is highly significant that countries begin to strategize towards achieving global energy transition and sustainable energy development goals.²²

In this connection, Nigeria still falls short in the drive on global energy transition. In 2021, Nigeria emitted 334 million metric tonnes of carbon dioxide, accounting for 0.71% of global greenhouse gas emissions and ranking Nigeria as the 25th largest emitter worldwide and the 4th largest in Africa.²³ This represents 1.8% increase from Nigeria's emissions in 2020. Cumulatively, between 1990 and 2021, Nigeria emitted approximately 0.17 billion metric tonnes of carbon dioxide, contributing 0.76% of global emissions over that period. This positions Nigeria as the 27th largest emitter of greenhouse gases emission since 1990.²⁴ In 2021, the existing data revealed that the sector is accountable for the highest greenhouse gas discharges in Nigeria is the energy industry, which produced 209 million metric tonnes of greenhouse gases, accounting for 62.4% of the country's total emissions that year.²⁵ Also, 65.7 million metric

²¹Explore, 'The Effects of Climate Change' (2023) <<https://science.nasa.gov/climate-change/effects/>> accessed 1 April 2025.

²²*ibid.*

²³R Boyle, 'Greenhouse Gas Emissions in Nigeria' (2024) <https://www.emission-index.com/countries/nigeria#:~:text=Nigeria%20produced%200.71%%20of%20global%20greenhouse> accessed 15 October 2024; Statista, 'Africa: CO2 emissions by country 2021' (2022) <https://www.statista.com/statistics/1268395/production-based-co2-emissions-in-africa-by-country/#:~:text=South%20Africa%20was%20the%20most%20polluting> accessed 15 April 2025.

²⁴*ibid.*

²⁵OJ Olujobi, 'Nigeria's Climate Change Act 2021: A Pathway to Net-Zero Carbon Emission, Energy Security and Sustainability' (2024) Environmental Science and Pollution Research https://trebuchet.public.springernature.app/get_content/9526d5b6-f51b-4fad-8e67ffcf85461?utm_source=rct_congratemail&utm_medium=email&utm_campaign=noa_20240517&utm_content=10.1007/s11356-024-33347-1 accessed 11 April 2025.

tonnes were attributed to fugitive emissions within the energy industry, representing 19.6% of the sector's aggregate emissions.²⁶

From the high rate of emissions, no doubt, the gas flares and emissions from the oil and gas operations pose a devastating threat to the country's economy, infrastructure and energy outlook.²⁷ It is therefore clear that any effort to reduce Nigeria's carbon footprint must place emphasis on the country's oil and gas industry. As Nigeria confronts the challenges of climate change and the global demand for cleaner energy, the PIA 2021 provides a fundamental framework for aligning the country's petroleum industry with the contemporary or global energy policies and practices in the Paris Agreement 2015, the United Nations Framework Convention on Climate Change (UNFCCC) 1992 and the Sustainable Development Goals (SDGs) 2030.²⁸

The article will critically analyse the significant sections of the Petroleum Act 2021, assess its implications for the petroleum industry, the environment, and host or local communities in Nigeria. By analyzing the PIA in alignment with the global energy transition or ambition, this study aims to examine the opportunities and challenges besetting Nigeria as the nation navigates its path for a more environmental and robust energy future. This study therefore evaluates the PIA in a bid to determine its adequacy to promote net-zero energy drive or energy transition in Nigeria in contribution to the global efforts at combating the harmful consequences of man engendered climate change. For clarity and ease of understanding, this study is structured into five sections, as follows: Section One provides the introduction; Section two presents the framework for energy and energy transition, including the theoretical framework for this article. Section three provides an analysis of the provisions and challenges of the PIA in relation to global energy

²⁶ibid.

²⁷ Department of Climate Change, Federal Ministry of Environment, Nigeria, *2050 Long-Term Vision for Nigeria* (LTV-2050, 2021).

²⁸ OJ Olujobi and IS Odogbo, 'Strategic Evaluation of the 2021 Nigeria Climate Change Act: Surmounting Challenges, Paving the Way for Success, and Envisioning Future Trajectories' (2024) 10 Social Sciences & Humanities Open 100928.

transitioning; and section four examines the implication of PIA to energy transitioning in Nigeria.

2. CONCEPTUAL FRAMEWORK

The conceptual framework establishes important distinctions regarding energy transition, drawing from multiple institutional definitions. This approach creates a foundation for the analysis or contextualizes Nigeria's position within global climate governance structures, considering the country key participation in international agreements.

Energy and Energy Transition: Energy is a strategic element of the 21st century life and a catalyst of sustainable development (SD). It has been advocated that no country can combat the problems of fiscal growth and combat indigence in the deficiency of enormous utilisation of energy.²⁹ Nigeria regards the environmental friendly utilisation of energy bases as crucial to the development of its sustainable objectives.³⁰ Crude oil has been a significant source of foreign revenue and the backbone of Nigeria's economy since it was discovered in large quantities in 1956.³¹ Coal, which was the prevailing energy basis until the early 1960s, mainly in the viable, rail and electrical generation industries, ended with the discovery of crude oil.³² The United Nations posits that achieving uncontaminated and reasonably priced energy should be a top priority for any nation.

Energy Resources: This includes fossil fuels energy based for instance coal, oil, and natural gas, and renewable energy sources such as wind and solar energy. These are turned into energy carriers, such as electricity or gasoline. The carriers are then delivered to power converters, for instance, a compressed fluorescent light bulb or an automobile, and which are

²⁹ SO Oyedepo, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2012) 2(1) *Energy Sustainability and Society* 1-17.

³⁰ Energy Commission of Nigeria (ECN), *National Energy Masterplan* (Draft Revised Edition, 2014) 1.

³¹ DA Idiege, 'Politics of Energy Exploitation and Environmental Degradation in the Niger-Delta Region of Nigeria' (2017) 5(2)1 *Journal of Pollution Effects & Control*; EK Dike, SN Udeh and IO Onwuka, 'Resolving Nigeria's Dependency on Oil – The Derivation Model' (2015) 7(1) *Journal of African Studies and Development* 2.

³² *ibid.*

eventually utilised to offer energy services such as lighting or haulage.³³ An energy transition is a meticulous or substantial change to the configurations of energy utilisation in a society. It can affect any step in this chain, and will often affect multiple steps. Energy transition is a momentous part of the global undertakings to decrease the amount of the emission of GHGs into the stratosphere and the endeavour to tackle the damaging effects of climate change.³⁴ The European Parliament (EU)³⁵ describes energy transition as a procedure through which the society and economy shift towards attaining the climate and ecological objectives stated in the European Green Deal. It fundamentally requires an important change in how energy is generated and utilised, progressively substituting fossil fuels with low carbon and renewable energy sources.

Also, the World Bank³⁶ considers energy transition as the transformation that must happen in the manner energy is generated and utilised globally to curtail emissions, achieve the world's boosting energy demand, and provide the world's impoverished or indigent populaces access to energy. The IRENA³⁷ envisions that decreasing energy-related CO₂ discharges to abate climate change and regulate global temperatures to 1.5° of pre-industrial levels by second half of this century is essential for the success of the energy transition.

Saraji and Streimikiene³⁸ postulate that energy transition is the socio-technical revolution to decrease carbon emanations, which includes

³³ PA O'Connor, 'Energy Transitions' <https://www.bu.edu/pardee/files/2010/11/12-PP-Nov2010.pdf> accessed 5 April 2025.

³⁴ F Berkhout, P Marcotullio and T Hanaoka, 'Understanding energy transitions' (2012) 7 Sustainability Science 109–111.

³⁵ European Parliament, 'Energy Transition in the EU: Think Tank' (2023) <[https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI\(2023\)754623](https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)754623)> accessed 5 April 2025

³⁶ World Bank, 'Energy Transition and Universal Access' (2021) <<https://thedocs.worldbank.org/en/doc/e7fbd4099b9a93ff2d775e0f38aaa98-002001/original/COP26-ClimateBriefs-EnergyTransition-Final-2610.pdf>> accessed 5 April 2025

³⁷ International Renewable Energy Agency-IRENA, 'World Energy Transition Outlook' (2023) <<https://www.irena.org/Energy-Transition/Outlook>> accessed 5 April 2023

³⁸ M Saraji and D Streimikiene, 'Challenges to the Low Carbon Energy Transition: A Systematic Literature Review and Research Agenda' (2023) 49 Energy Strategy Reviews 101163.

surmounting hurdles and challenges at five levels: institutional, social, economic, environmental and technical.

From the above explanations, the research embraces the description of Saraji and Striemikieme which focus on social, fiscal, ecological, technological and institutional barriers that must be overcome to reduce carbon emissions and create viable energy. Nonetheless, majority of the learned explanations on energy transition as a durable scheme or programme, with the protection of the ecosystem, carbon secretions and climate change as concerns.

The necessity to tackle climate change is the principal concern for transition from conventional energy sources to cleaner energy substitutions. Energy transition is to overhaul the energy sector by transforming or substituting the prevailing fossil fuels energy based sources with cleaner renewable energy bases for instance solar, wind, nuclear, and thermal.³⁹ Also, it underlines the necessity for groundbreaking methodologies or system in satisfying global energy necessities and maintained investment in renewable energy technologies boost or promote renewable energy implementation, adoption and promotion of sustainable and cost-effective energy utilisation in the country. A report by the United Nations in 2021 exhibits that the energy industry is crucial to climate change mitigation or prevention scheme since fossil fuel energy sources are now the principal greenhouse gas emitters, with approximately 65 percent of greenhouse gases in the environment, hence the necessity to shift to cleaner sources of energy which is cost-effective and less deleterious energy sources.⁴⁰

Energy Transition: This provides global prospects to tackle the conundrum of climate change by significantly averting and diminishing the secretion of greenhouse gases into the environment via sectional, domestic, and mutual, multiparty responsibilities or task to decrease

³⁹ Shell Plc (2020) 'Shell Sustainability Report 2020' <https://reports.shell.com/sustainability-report/2020/servicepages/downloads/files/achieving-net-zero-emissions-shell-sr20.pdf> accessed 28 March 2025.

⁴⁰ United Nations, 'Theme Report on Energy Transition: Towards the Achievement of SDG 7 And Net-zero Emissions' <https://www.un.org/sites/un2.un.org/files/2021-twg_2-062321.pdf> accessed 25 March 2025

emissions and act to alleviate the harmful effects of climate change.⁴¹ Furthermore, Energy transition presents chances or possibilities for sustainable fiscal growth, social inclusion, energy security, enhanced health, employment creation, and other social advantages if strategically designed and meticulously executed.⁴² More so, it suffices to say that such opportunities will be achieved only if the transition is implemented impartially and all-encompassing. The World Economic Forum defined “just transition” as a paradigm shift from fossil fuel energy sources to cleaner renewable bases implemented in a way that addresses not only environmental sustainability but also provides decent work, enhances social cohesion, and helps to eradicate poverty.⁴³

2.2 Research Methodology

The study adopts a doctrinal legal research methodology, focusing on the analysis of the existing legal instruments governing Nigeria’s petroleum sector, particularly the Petroleum Industry Act (PIA) 2021. Primary sources including statutes, treaties, regulations, and case law were systematically analyzed to understand the regulatory framework’s compatibility with Nigeria’s global energy transition obligations. Secondary sources such as textbooks, scholarly articles, policy reports, and official publications were consulted to offer perspective, critique, and comparative outlooks. A qualitative content analysis was employed to evaluate the PIA’s provisions against international climate commitments, notably the Paris Agreement 2015 and Nigeria’s Nationally Determined Contributions (NDCs). Furthermore, a comparative legal analysis was undertaken, drawing insights from global best practices on energy transition legislation. The selection criteria for legislative provisions are explicitly or implicitly based on relevance to energy transition objectives such as decarbonization targets, regulatory support for renewable energy, and environmental governance principles.

⁴¹ *ibid*

⁴²Energy Commission of Nigeria, ‘National Energy Policy’ <http://rea.gov.ng/wp-content/uploads/2017/09/National_Energy_Policy_Nigeria.pdf> accessed 27 March 2025

⁴³ World Economic Forum, ‘Fostering Effective Energy Transition- 2021 Report’ <https://www3.weforum.org/docs/WEF_Fostering_Effective_Energy_Transition_2021.pdf> accessed March 28, 2025.

The study also developed a hybrid legal-policy model to bridge identified gaps and proposes legislative reforms aimed at aligning Nigeria's petroleum governance with Sustainable Development Goals 2015.

2.3 Theoretical Framework

The theoretical framework will employ two theories in achieving the aim of the study. The theories are Sustainable Development theory and Energy Justice Theory.

The Sustainable Development theory: The concept of Sustainable development is found in many environment and development literatures and thus, has become progressively accepted in the modern-day world.⁴⁴ Russell⁴⁵ highlights that 'the word sustainability has a variety of implications. Possibly the most frequent use of the word today is in the perspective of sustainable growth. This sustainable development theory was advocated by the Brundtland Commission in 1987 via its milestone report 'Our Common Future'.⁴⁶ In that report, sustainable development was described as a model of enhancement that satisfies the necessities of the current devoid of hampering the capacity of imminent generations to satisfy their specific necessities.⁴⁷ It stresses the inevitability for preserving or upholding stability or balance between financial or fiscal necessities, environmental safeguard or protection and host community interest.⁴⁸ These basics are largely designated as the 'triple bottom line'.⁴⁹ For a nation to attain development that satisfies the prerequisites as being viable,

⁴⁴ A Jibril, 'The Concept and Principles of Sustainable Development Goals' (2011) Climate Change and Sustainable Development https://www.academia.edu/38915797/The_Concept_and_Principles_of_Sustainable_Development accessed 5 April 2025.

⁴⁵ IS Russell, 'The Sustainability Principle in Sustainable Energy' (2013) 44(1) *Tulsa Law Review* 121.

⁴⁶ Report of the World Commission on Environment and Development: Our Common Future <<https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>> accessed 5 April 2025

⁴⁷ International Institute for Sustainable Development, 'The Sustainable use of Natural Resources, Governance and Challenge' <<https://www.iisd.org/articles/deep-divide/sustainable-use-natural-resources-governance-challenge>> accessed 15 April 2025.

⁴⁸ *ibid.*

⁴⁹ R Emas, *The Concept of Sustainable Development: Definition and Defining Principles* (Brief for GSDR, 2015) 2

these three rudiments are essentials. Similarly, governments should encourage the sustainability of the necessities of the people by expunging any disparity in the current utilisation of energy resources, which may prejudice the absolute rights of upcoming generations.

The term sustainable development has plethora of varied definitions. Most of the definitions stress that sustainability requires making decisions that recognize the connections between actions and their impacts on the atmosphere, fiscal and society. Brundtland report states that sustainable development includes:⁵⁰

- a.) The concept of needs, in particular the essential needs of the world's poor, to which overriding priority should be given; and
- b.) The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

From the above, it is trite to posit that sustainable development, involves using environmental resources in a manner which does not eliminate or downgrade them, or otherwise diminish their usefulness for future generations. It involves a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development and institutional change are all in harmony and enhance both current and future potentials to meet human needs and aspirations. Therefore, development plans, according to the concept, have to ensure sustainable and equitable use of resources in order to meet the needs of the present and future generations without causing damage to the environment.

While many of the environmental management principles embodied in the concept of sustainable development are derived from this ecological perspective, the social aspects are now also accepted to be of equal concern alongside economic issues, emphasizing that development should occasion ecological safeguards among others.

⁵⁰ Ibid.

This study relies on the resource-resilient world theory of sustainable development.⁵¹ This theory accentuates that the accessible natural resources which are exhausted currently are the same resources that will be vital to combat the internal and peripheral shocks or menaces militating against the world currently and in the time to come.⁵² This implies the necessity to safeguard these extractive deposits and use sustainably to build shields or reservoir against current and future economic shocks. The theory posits that the global system inherently possesses the requisite resources to endure and swiftly recover from both internal disruptions and external shocks. It advocates for a collective responsibility among resource custodians and stakeholders to conserve existing assets and develop robust, resource-centric strategies aimed at resilience and recovery. The rationale for invoking this theoretical framework lies in its pertinence to pressing global concerns such as resource exhaustion and socio-economic disparity. Importantly, the theory contributes meaningfully to the evolution of international policy paradigms, notably influencing instruments like the United Nations Sustainable Development Goals (SDGs) 2015, and advancing sustainable practices across governance, commerce, and environmental stewardship.

Energy Justice Theory: Theory was advocated by Benjamin K. Sovacool in 2013.⁵³ Energy justice is a model that projects price or value concern in the utilisation of energy resources, in a modus that would integrate the concern of different interested party.⁵⁴

⁵¹ PK Ozili, 'Theories of Sustainable Theory' <https://www.researchgate.net/publication/384037567_Theories_of_Sustainable_Development> accessed on 5 April 2025

⁵² *ibid*.

⁵³ BK Sovacool and others, 'New Frontiers and Conceptual Frameworks for Energy Justice' (2017) 105(c) *Energy Policy* 677-691.

⁵⁴ MM Cabre and J Vega-Araujo, *Considerations for a Just and Equitable Energy Transition* (Stockholm Environment Institute, 2022) <https://www.sei.org/wp-content/uploads/2022/05/energy-transitions-stockholm50-background-paper.pdf> accessed 5 April 2025; D Dalabajan and others, *Towards a Just Energy Transition: Implication for Communities in Lower- and middle- Income Countries* (Oxford Research Report, 2022) <https://oxfamlibrary.openrepository.com/bitstream/10546/621455/1/rr-just-energy-transition-071222-en.pdf> accessed 5 April 2025.

Energy justice is a complicated, human-focused theoretical approach in tackling prejudice and inequality in the energy industry.⁵⁵ It underlines unbiased approach to energy resources, impartial distribution of energy-related gains or burdens, and inclusivity in decision-making processes.⁵⁶ Grounded in tenets of distributional, procedural, and perception of justice, it addresses socio-economic inequalities and environmental impacts of energy systems.⁵⁷ In order to expose and lessen energy injustices, the study's central emphasis on energy justice is to assess:⁵⁸

- (a) where inequalities occur ?,
- (b) That impacted segments of society are disregarded, and
- (c) What procedures are in place for their correction?

The framework of energy justice encompasses the following: procedures to guarantee that energy policies respects and adhere to due procedure and complaint; liabilities, risks, expenditures, and spillover effects of the energy scheme are dispersed throughout society; benefits, or how access to contemporary energy systems and services recognised the vulnerable or marginalised.⁵⁹ Lately, legislators have begun to stress the importance of transition from a fossil fuel-based energy system to low-carbon energy. This presents problems such as the forfeiture of fossil fuel industry employments, the wane of industrial societies, and the influence on individual personalities and relations histories in conventional productions such as coal or oil.⁶⁰ To address these numerous concerns, energy justice can be utilized as a strategy instrument to ascertain

⁵⁵ University of Sussex, 'What is Energy Justice?' <<https://study-online.sussex.ac.uk/news-and-events/what-is-energy-justice/>> accessed on 5 April 2025.

⁵⁶ *ibid.*

⁵⁷ K Jenkins and others, 'Energy Justice: A Conceptual Review' (2016) 11 *Energy Research and Social Science* 174–182 <https://doi.org/10.1016/j.erss.2015.10.004> accessed 5 April 2025.

⁵⁸ K Jenkins and others, 'Energy Justice: A Conceptual Review' (2016) *Energy Research Social Science* <https://www.sciencedirect.com/science/article/abs/pii/S0301421517301441> accessed 5 April 2025.

⁵⁹ K Jenkins and others, 'Energy Justice: A Conceptual Review' (2016) *Energy Research and Social Science* <https://www.sciencedirect.com/science/article/abs/pii/S0301421517301441> accessed 5 April 2025.

⁶⁰ JM Wittmayer, A Dankowska and S Hielscher, 'Social movements in energy transitions: The politics of fossil fuel energy pathways in the United Kingdom, the Netherlands and Poland' (2022) 10 *The Extractive Industry and Society* 101073.

problems and remedy for individuals who are being hurt or deprived owing to energy transition.⁶¹

The justification for the theory is that it promotes sustainable energy transitions while safeguarding the rights of marginalized communities affected by energy projects. It is relevant to this study because it promotes fairness, reduces energy poverty, and mitigates climate change impacts. In countries like Nigeria, energy and climate justice is crucial for addressing environmental degradation in oil-producing regions and ensuring equitable benefits for affected communities through promotion of sustainable energy practices. Current and pertinent literature will be reviewed in the study.

3. OVERVIEW OF THE PETROLEUM INDUSTRY ACT 2021

In order to put an end to the long debates, and negotiations concerning the Petroleum Industry Bill, former president Muhammadu Buhari under his administration officially signed the Petroleum Industry Bill into law on 16 August 2021.⁶² The Act set up a platform for efficient control, regulatory, legal, and financial instruments to promote effortless operation of the oil and gas sector in addition to the development of communities where the Petroleum is explored.⁶³

The Petroleum Industry Act (PIA) 2021 represents a significant reform in Nigeria's oil and gas sector, aiming to address various challenges facing the industry, while also positioning Nigeria towards a more sustainable energy future.⁶⁴ Given the increasing global emphasis on energy transition, the PIA plays a vital role in guiding Nigeria's shift from fossil fuels towards

⁶¹ University of Sussex (n 55).

⁶² Alliance for Law Firm, 'President Buhari signs the Petroleum Industry Bill into Law' <<https://alliancelawfirm.ng/president-buhari-signs-the-petroleum-industry-bill-into-law>> accessed 5 April 2025.

⁶³ TV Ede, 'The Fall and Rise of Nigerian Petroleum Governance Bill' (2021) 9(7) *Global Journal of Politics and Law* 30-46.

⁶⁴ K Nwuke, 'Nigeria's Petroleum Industry Act: Addressing Old Problems and Creating New Ones' <https://www.brookings.edu/articles/nigerias-petroleum-industry-act-addressing-old-problems-creating-new-ones/> accessed 10 April 2022.

more sustainable and cleaner energy sources.⁶⁵ The PIA was enacted in 2021 wherein it establishes a framework for the regulation and administration of the oil and gas sector in the country. This legislation consolidates various laws and introduces several reforms intended to increase transparency, attract investments, and promote downstream development within the sector. Specifically, the PIA comprises of strategic provisions aimed at increasing operational efficiency while embracing environmental considerations, which are essential for facilitating an energy transition.⁶⁶ Although the PIA is anticipated to promote investment in Nigerian oil and gas sector and to function as a promoter of progress however, its provisions are limited on energy transition and its expected influence on the industry and its perspective. Some of the key provisions of the PIA and Challenges related to energy transition include:

a.) Formation of the Nigerian Upstream Petroleum Regulatory Commission (NUPRC)⁶⁷

The NUPRC is tasked with promoting sustainable development in the industry, as established in Section 4 of the PIA. The commission is responsible for ensuring compliance with regulations that safeguard the ecosystem and encourage ecological friendly operations in oil exploration and production. This regulatory oversight is crucial for managing the environmental impacts of petroleum activities, ultimately facilitating Nigeria's transition to greener energy sources.⁶⁸

b.) Recognition of Gas as a Transition Fuel

The PIA recognises natural gas as a vital transition fuel in achieving energy security and sustainability. The Act emphasizes the promotion of gas utilization and infrastructural development.⁶⁹ By encouraging investments in gas infrastructure, Nigeria can leverage its significant natural gas

⁶⁵ O J Olujobi, *Nigerian Petroleum, Energy and Gas Resources Law (Legal Theories, Cases and Practice)* (Princeton & Associates Publishing Co Ltd Lagos 2022)

⁶⁶ E Nwankwo, 'Understanding the Petroleum Industry Act 2021: Implications for the Nigerian Oil and Gas Sector' (2021) 12(1) *Nigerian Law Journal* 5-20.

⁶⁷ PIA, s.4

⁶⁸ J Akinyemi and Y Ogbe, 'Navigating Regulatory Challenges in the Nigerian Oil and Gas Sector' (2022) (8)4 *Energy Regulatory Review* 78-95.

⁶⁹ PIA, s.33(q)

reserves while reducing reliance on oil. This strategic pivot towards gas aligns with global energy transition strategies that advocate for a gradual shift from oil to cleaner energy sources.⁷⁰

c.) Promotion of Renewable Energy

A pivotal aspect of the PIA is its provision for renewable energy development. The Act encourages diversification of the energy mix and the inclusion of alternative energy bases.⁷¹ The Act requires the NNPC Limited to participate in the growth of renewable energy resources in healthy commercial or business competition with private energy financiers.⁷² This legal acknowledgment of renewable energy as part of the national energy policy encourages investments in solar, wind, and other renewable projects, aiding Nigeria's commitment to achieving a sustainable energy landscape.⁷³ Conversely, the country is obliged to do more through the provision of energy infrastructure, sound regulatory framework to encourage investment in modern renewable energy technologies to promote energy transition. This is however currently not in place.

d.) The Establishment of a Frontier Exploration Fund

The Act provides for the establishment of a Frontier Exploration Fund⁷⁴ to be sustained for the exploration of unallocated frontier acreages in the country. The Frontier Exploration Fund shall be financed by 10% of rents on petroleum prospecting licenses, 10% rent on petroleum mining leases; and 30% of NNPC Limited's revenue on gas in the Production Sharing, and Risk Service Contracts. The frontier exploration fund escrow account,

⁷⁰ G Ezeah, 'Natural Gas and the Future of Nigeria's Energy Policy' (2021) 32(3) *Global Energy Journal* 230-245.

⁷¹ Section 64(h).

⁷² PIA, s.64

⁷³ A Ojatunji, 'Renewable Energy Policy in Nigeria: The Role of the Petroleum Industry Act' (2021) (15)2 *Energy Sustainability Journal* 50-70.

⁷⁴ Frontier basins are those sedimentary basins that are generally considered high-risk and under-explored and on which only scanty data are available. In Nigeria, these basins comprise deep and ultra-deep offshore Niger Delta, and the intracratonic inland sedimentary basins embracing the Anambra Basin, Benue Trough, Bida Basin, Chad Basin, Dahomey Basin and Sokoto Basin.

which is solely for the development of frontier acreages will receive 30% of NNPC limited oil and gas profits. Exploration is a high -risk undertaking. In addition, boosting the desirable finance for the growth, production and removal from the frontier basins might be a tall order as investors are avoiding exorbitant emission-prone assets. Hence, the need for ambitious and ecofriendly projects like gas, hydrogen, solar and wind. While the Frontier Exploration Fund has enormous prospective for the oil and gas industry, Nigeria should initiate a “Future Energy Fund”.⁷⁵ The sum or aggregates designate in the PIA for the Frontier Exploration Fund can be utilised for financing the promotion of Nigeria’s future energy potentials to meet the global energy transition agenda. The finance can be utilised to bankroll the development secretion reduction technologies to promote carbon neutrality. Nwuke,⁷⁶ maintains that Frontier Exploration Fund is not a necessity for the country but Science, Technology and Innovation (STI) Fund for the development of new energy sources to mitigate climate change and to enhance net-zero emissions targets⁷⁷.

In addition, the Act,⁷⁸ directs NNPC Ltd to deduct 30% of its Front Exploration Fund from its profit before remitting its profit to the federation account. The provisions of Section 64(c)⁷⁹ appear to be in conflict with Section 162 (1) of the Constitution,⁸⁰ which provides that all revenue collected by the federal government need be deposited to the federation account.⁸¹ The court has taken judicial notice of the conflict; the Supreme Court held that it is unconstitutional to deduct NNPC cash

⁷⁵ E Agbeyi, A Akingbade and A Odunlami, ‘Energy Transition and the Future of Energy’ (2021) <https://pwc-nigeria.typepad.com/files/the-petroleum-industry-act-insights-series_august-2021.pdf> accessed 5 April 2025

⁷⁶ K Nwuke, ‘Nigeria Petroleum Industry Act: Addressing Old Problems, Creating New Ones’ <<https://www.brookings.edu/articles/nigerias-petroleum-industry-act-addressing-old-problems-creating-new-ones/>> accessed 5 April 2025

⁷⁷ OJ Olujobi and IS Odogbo, ‘Strategic Evaluation of the 2021 Nigeria Climate Change Act: Surmounting Challenges, Paving the Way for Success, and Envisioning Future Trajectories’ (2024) 10 Social Sciences & Humanities Open, 100928.

⁷⁸ PIA, s.64(c).

⁷⁹ *ibid.*

⁸⁰ Constitution of the Federal Republic of Nigeria 1999 (as amended)

⁸¹ O Sipasi, J Idoko and T Adetona, ‘Funds Created Under the PIA (Part 1)’ (Aelex, 2021) 2 <<https://www.aelex.com/wp-content/uploads/2021/09/aelex-petroleum-industry-articles-series-funds-created-under-the-pia-part-1-pdf>> accessed 5 April 2025

call obligation as first line charge.⁸² This invariably signifies that the apex court in Nigeria has affixed its judicial seal to this constitutional provision. Also, in *A G Rivers State v A G Federation & 3 Ors*,⁸³ the court held that the income in the Federation Account cannot be deducted unequivocally from the said savings account for the advantage of any group or organisation. Going by the above judicial precedent, it is debatable that Section 64 (c) of the PIA 2021 may be pronounced unlawful if such issue emerges and occasion litigation.

e.) Environmental Stewardship and Social Responsibility

The PIA places considerable emphasis on environmental health and safety standards mandating operators to develop Environmental Management Plans.⁸⁴ The Act made provisions for penalty for gas flaring.⁸⁵ Gas flaring is prohibited under the Act except in cases of emergency, an exception approved by the commission or an appropriate safety procedure under recognized principles.⁸⁶ Sections 102-104 ensure that the operations in the petroleum sector adhere to sustainable practices that mitigate environmental degradation and enhance corporate social responsibility, thus supporting the energy transition narrative.⁸⁷

With section 104(1) and (2) of the PIA, it is trite to state that the provisions open a floodgate for the international oil firms to persist the act of gas flaring instead of compelling compliance. The exception created by the Act for oil companies to flare gas and pay fines to the Midstream Gas Infrastructure Fund, is an indirect call for the continuation of gas flaring. Atsegbua⁸⁸ in his work, concludes that laws on gas flaring have not been operational and responsive as a result of the lacuna in the Act that makes it easy to flare gas as opposed to embarking on re-injection project which is usually seen as capital intensive and technologically driven. The study

⁸² *A G Federation v. A G Abia State and Ors* (2002) 6 NWLR (Pt. 764) 542

⁸³ FHC/ABJ/CS/511/2020 (Unreported Case)

⁸⁴ PIA, s.102-104.

⁸⁵ PIA, s.108

⁸⁶ PIA, s.104

⁸⁷ A Adewale and B Ogunnowo, 'The Role of Environmental Regulations in Nigeria's Energy Sector' (2022) 15(1) *Journal of Nigerian Energy Studies* 45-59.

⁸⁸ L Atsegbua, *Oil and Gas Law in Nigeria, Theory and Practice* (4th edition, Benin Four Pillars Publishers 2021) 307

advocates that the main challenge to the effective amelioration of gas flaring in Nigeria is weak national legislation on gas flaring and low enforcement of existing law. Therefore, strict enforcement of adequate sanctions or penalties are sacrosanct in ending gas flaring in Nigeria. In the words of Olusola, the penalties enshrined under the Act to be paid by oil companies in breach of the laws on gas flaring, are insignificant to address the menace and act as deterrence.⁸⁹

f.) Local Content Development

The Act underscores the need for local content development, which aims to foster indigenous capacity and technology transfer within the energy sector.⁹⁰ By promoting local content, Nigeria can enhance its energy security through the development of local industries, which is crucial for advancing energy transition initiatives. This local capacity building also makes it possible to expand the economy away from crude oil reliance.⁹¹

3.1 Critical Analysis of the PIA 2021 in the Context of Global Energy Transition

The Petroleum Industry Act (PIA) of Nigeria, which was signed into law in 2021, has broad implications for the country's energy transition, particularly as global energy systems shift toward more sustainable and low-carbon sources. While the PIA predominantly emphasizes on restructuring the oil and gas industry, its influence on the energy transition is multifaceted. Here are some key points of consideration:

- i.) **Investment Attraction:** The PIA aims at regulatory and fiscal incentives to attract both domestic and foreign investments into the oil and gas sector, while ensuring that the investments are aligned with sustainable practices. By creating a conducive regulatory environment, the PIA is anticipated to facilitate the influx of capital necessary for technological advancement in

⁸⁹ OJ Olusola, "The Appraisal of the Legal Framework Regulating Gas Flaring in Nigeria Upstream Petroleum Sector: How Effective? 10(3) International Journal of Advanced Research in Engineering and Technology 235.

⁹⁰ Sections 234 and 235.

⁹¹ *ibid.*

renewable energy.⁹² For instance, section 52 (7) (a) of the PIA initiates the Midstream and Downstream Gas Infrastructure fund from 0.5% of both oil and natural gas traded in wholesale. Basically, the revenue are allocated as equity investment in midstream and downstream activities aims at increasing domestic use of gas in the country.

- ii.) **Technology Transfer and Capacity Building:** The PIA's provisions for local content can also enhance technology transfer and strengthen local expertise. A focus on innovation and modernization of equipment used in energy production will contribute significantly to the evolution of Nigeria's energy sector.⁹³
- iii.) **Diversification of Energy Sources:** By acknowledging gas and renewable energy, the PIA helps lay the groundwork for a diversified energy sector. This diversification will ultimately enhance energy security and decrease the volatility linked to oil prices, as well as contributing to environmental sustainability goals.⁹⁴
- iv.) **Strengthening Regulatory Frameworks:** The Nigerian Upstream Petroleum Regulatory Commission (NURC) and other regulatory bodies⁹⁵ under the PIA will play a crucial role in promoting conformity with safety and ecological benchmarks. This regulatory framework not only promotes sustainability but also builds trust among stakeholders, including local communities.⁹⁶

⁹² R Adesina, 'Attracting Investments in Nigeria's Energy Sector: The Role of Policy Reform' (2022) 10(2) Nigerian Journal of Policy Analysis 12-30.

⁹³ *ibid.*

⁹⁴ PIA, s.64, s167(1)

⁹⁵ Section 29 establishes the Nigerian Midstream and Downstream Petroleum Regulatory Authority while the Nigerian National Petroleum Company Limited is established under section 53.

⁹⁶ T Ojo, 'Enhancing Corporate Social Responsibility in the Nigerian Petroleum Sector' (2021) 17(1) Social Responsibility Journal 104-117.

3.2 A Hybrid Legal-Policy Model for Nigeria's Energy Transition Post-PIA 2021

A Hybrid Legal-Policy Model for Nigeria's Energy Transition Post-PIA 2021 proposes an integrated framework combining law and policy to drive sustainable energy reforms following the enactment of the Petroleum Industry Act 2021.

S/N	Hybrid Strategy	Descriptions	Remarks
1.	Statutory Amendment	Review or overhaul section 104 of the PIA to restrain discretion and necessitate or oblige renewable energy investment benchmarks in Nigeria.	This will boost the energy transition, energy diversification or energy mix agenda and promote clean sources of energy in Nigeria
2.	Strengthening of regulatory agencies or restructuring and overhauling	Establishment of a specialized regulatory arm under the (NUPRC) focusing only on renewable energy projects development and promotion. Such agency would be financed by petroleum revenue.	Strengthening of regulatory agencies or overhauling with energy transition skills to promote the global energy transition agenda seamlessly.
3.	Incentive-Based Approach	Legal provisions offering tax breaks, holidays or incentives or reduced royalties to companies that invest in renewables technologies in Nigeria.	The provision of tax incentives and the reduction of royalties are essential measures for promoting and encouraging both

			local and foreign investment in renewable energy technologies in Nigeria
4.	All stakeholders' engagement	Mandatory participation of local or host communities and renewable sector experts in PIA policy reforms.	This will promote inclusiveness, foster a sense of ownership and partnership among host communities, protect their interests, and result in the development of practical and workable legal documents.

Sources: Authors

3.2 Table 2: Comparison of PIA 2021 Provisions and Global Best Practices for Energy Transition

Table 2 presents a comparative analysis of the Petroleum Industry Act 2021 provisions against global best practices for achieving a successful energy Transition in Nigeria:

S/ N	Legal Provisions	Red Flags or Flaws	Compliance with Paris Agreement and SDG Obligations	Recommendations
	Section 104 PIA 2021 on penalties	Discretionary penalties and wide discretionary	• Partial alignment	• Establishment of precise

		power to impose fines. No specified renewable reinvestment of fines.	• Lacks transparency measures.	and quantifiable criteria for the imposition of penalties, • Allocation of proceeds from such fines to the development of renewable energy initiatives. • Definition of unambiguous benchmarks for fines and linking of
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				consequent income s to the Renewable Energy Fund.
2.	Host Community Development Fund	• Revenue allocation to host communities is meager . • The benefit from oil operations is low. • Ignores renewable energy development for host communities	Low/ limited alignment thus focusing on oil benefits)	There is a need to upsurge the fund to promote rural or host community-based renewable energy technologies projects.

3.	Gas Flaring Regulations (under PIA) 2021	Lacks aggressive timelines and renewable energy as alternatives	Moderate alignment	• Strengthening of gas flaring monetization schemes and secured renewable energy investment. • Seeking of the reduction of gas flaring.
4.	Upstream Fiscal Provisions	• Revenue-concentrated on royalties. • Continues incentives for oil exploration activities in	Misaligned	Introduction of tax or fiscal incentives for renewable energy investments in Nigeria.

		contra ventio n of the Paris Agree ment 2015 and SDG 7 and 13.		
5.	No Dedicate d Renewab le Energy Funding	No structural financing for renewable energy projects.	Creates a "Future Energy Fund" sourced from petroleum revenues and fines in conformity with the Paris Agreement aim.	Provision of sustainable funding for renewable projects.
6.	Licensin g Provisio ns	No renewable energy licensing incentives	Inserts tax reductions for oil companies that invest in renewables in Nigeria.	Encouragement of energy diversification and corporate investment in green energy sources.

Sources: Authors

Comparative CO₂ Emissions Data (2023) Nigeria, Angola, Algeria and Venezuela

Country	Total Emissions (Mt)	CO ₂ Per Capita Emissions (t/person)	CO ₂ per DP (kg)	CO ₂ Emissions per \$1,000
Nigeria	127.94	0.58	0.10	
Angola	28.23	0.78	0.11	
Algeria	177.08	3.89	Data available	not
Venezuela	84.60	2.47	0.32	

Source: Authors

In the comparative assessment of carbon dioxide emissions for 2023, Algeria emerges as the country with the highest total CO₂ emissions among the selected petroleum-producing nations, with Venezuela and Angola following respectively. Nigeria’s aggregate emissions, while significant, fall below those of Algeria and Venezuela but exceed those recorded by Angola.

From a per capita perspective, Algeria also demonstrates the highest emission rates, a trend likely attributable to its industrialization levels and energy consumption patterns⁹⁷. Venezuela ranks second in per capita emissions, whereas Angola and Nigeria report comparatively lower per capita figures, highlighting disparities in national energy use and population dynamics⁹⁸.

An examination of emissions relative to economic output reveals that Venezuela experiences the greatest emissions per \$1,000 of GDP, suggesting a lower degree of carbon efficiency within its economy. In

⁹⁷ C Habimana Simbi, F Yao, and J Zhang, ‘Sustainable Development in Africa: A Comprehensive Analysis of GDP, CO2 Emissions, and Socio-Economic Factors’ (2025) 17 Sustainability 679 <https://doi.org/10.3390/su17020679>.

⁹⁸ PA Orebiyi, UE Effiong and J Udemé, ‘Economic Growth and Carbon Emissions Nexus: Evidence from Nigeria’ (2024) 5(2) Journal of International Money, Banking and Finance 77-108.

contrast, Nigeria exhibits slightly better performance than Angola in this regard, reflecting a comparatively more carbon-efficient economic structure.

Positioning Nigeria within this comparative framework offers critical insights. Although its per capita emissions remain modest relative to Algeria and Venezuela, the country's overall emissions are considerable, driven principally by its large demographic profile and heavy dependence on fossil fuels. Encouragingly, Nigeria's lower emissions intensity per GDP unit suggests a measure of efficiency in balancing economic activity with carbon output.⁹⁹

Nevertheless, in light of escalating global commitments to the energy transition and carbon neutrality, Nigeria must accelerate the development and implementation of comprehensive policy reforms¹⁰⁰. Emphasis should be placed on advancing low-carbon technologies, improving regulatory frameworks, and fostering cleaner industrial and energy practices to meaningfully reduce emissions while sustaining economic growth¹⁰¹.

3.3 Comparatives Case Studies: Legal and Policy Approaches in Norway, Qatar and Lessons for Nigeria

Global energy transition strategies necessitate comparative legal and policy frameworks in petroleum dependent nations that have successfully navigated the delicate balance between continued hydrocarbon exploitation and progressive renewable energy initiatives. The case studies

⁹⁹ International Energy Agency, 'How Much CO₂ Does Nigeria Emit? What are the Main Sources of CO₂ Emissions in Nigeria?' (2022) <https://www.iea.org/countries/nigeria/emissions#how-much-co2-does-nigeria-emit> accessed 28 April 2025.

¹⁰⁰ OJ Olujobi, 'Nigeria's Climate Change Act 2021: A Pathway to Net-Zero Carbon Emission, Energy Security and Sustainability' (2024) *Environmental Science and Pollution Research* <https://doi.org/10.1007/s11356-024-33347-1> accessed 28 April 2025.

¹⁰¹ OJ Olujobi, UE Okorie, ES Olarinde and ADA Aina-Pelemo, 'Legal Responses to Energy Security and Sustainability in Nigeria's Power Sector Amidst Fossil Fuel Disruptions and Low Carbon Energy Transition' (2023) 9(7) *Heliyon* e17912 [https://www.cell.com/heliyon/fulltext/S2405-8440\(23\)05120-4](https://www.cell.com/heliyon/fulltext/S2405-8440(23)05120-4) accessed 27 April 2025.

countries are Norway and Qatar, whose experiences offer valuable lessons for resource-rich economies like Nigeria.

Norway's Approach: Governance through the Petroleum Fund and Renewable Transition

Norway stands as a model of prudent legal and policy stewardship over natural resources. Through the establishment of the Government Pension Fund Global (popularly referred to as the Petroleum Fund), Norway has codified a framework that directs petroleum revenues into long-term savings for future generations, thereby insulating its economy from commodity or crude oil price volatility. The management of this Fund is grounded in strict legal framework emphasizing transparency, ethical investment, and fiscal responsibility, ensuring that resource wealth supports sustainable development objectives rather than short-term political expediencies.

Norway's legal architecture promotes an aggressive shift toward renewable energy. The Energy Act and subsequent regulatory instruments create clear obligations for the incorporation of renewable sources, predominantly hydropower and offshore wind. Public-private partnerships are incentivized through supportive legislation, while environmental and climate targets are legally binding. Thus, Norway exemplifies how legal mechanisms can facilitate both efficient hydrocarbon resource management and a robust renewable energy transition¹⁰².

Qatar's Strategy: Balancing Hydrocarbon Dominance with Renewable Aspirations

Qatar offers another distinctive illustration. While its economy remains heavily reliant on hydrocarbons, Qatar has begun to articulate a transition strategy within its legal and policy frameworks. The Qatar National

¹⁰² OJ Olujobi, SI Oshobugie and O Odjugo, 'Petroleum Laws, Regulations, And Sustainable Development: Oil and Gas Perspectives From Nigeria, Norway, And Saudi Arabia' (2025) 16(3) *The Journal of Sustainable Development, Law and Policy* 22-47 <https://doi.org/10.4314/jsdlp.v16i3.2>.

Vision 2030 and the associated National Development Strategies incorporate sustainability goals, mandating the diversification of energy sources.

Legal reforms have encouraged investment in solar energy, exemplified by the Al Kharsaah Solar Power Plant, which was developed through regulatory incentives and government support mechanisms. Additionally, Qatar's environmental laws have been progressively restructured to impose stricter emission controls on hydrocarbon operations, thereby fostering an incremental yet deliberate alignment with global energy transition targets.

Unlike Norway's more advanced and institutionalized transition mechanisms, Qatar's legal and policy measures reflect an adaptive strategy one that seeks to reconcile the enduring centrality of hydrocarbons with emerging renewable ambitions. Notably, the legal frameworks recognize the geopolitical and economic imperatives that necessitate gradualism rather than abrupt shifts.

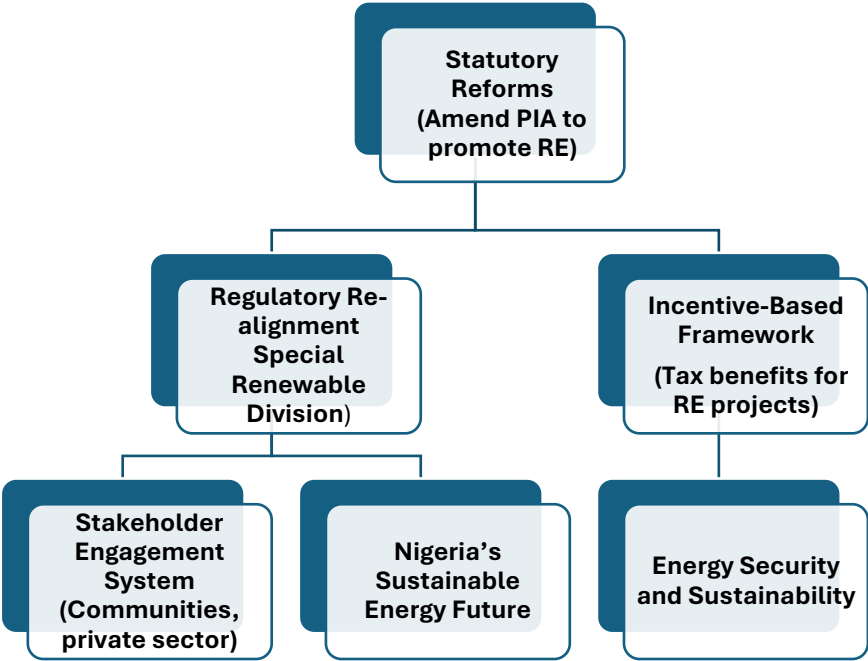
Lessons for Nigeria

These comparative experiences underscore the critical role of coherent legal frameworks and consistent policy application in managing the energy transition. Nigeria, similarly endowed with vast hydrocarbon resources, can draw valuable lessons in crafting legislation that simultaneously secures hydrocarbon revenues for sustainable development and mandates a phased but definitive transition toward renewable energy. Key elements would include establishing a sovereign wealth fund governed by strict legal standards, enacting binding renewable energy obligations, and ensuring that environmental sustainability is embedded within all resource governance legal instruments¹⁰³.

¹⁰³ OJ Olujobi, ES Olarinde, TE Yebisi, and UE Okorie, 'COVID-19 Pandemic: The Impacts of Crude Oil Price Shock on Nigeria's Economy, Legal and Policy Options' (2022) 14(18) *Sustainability* 11166 <https://doi.org/10.3390/su141811166>.

Figure 1 Proposed Hybrid Model for Nigeria’s Energy Transition

Figure 1 illustrates the proposed Hybrid Legal-Policy Model designed to facilitate Nigeria’s energy transition.



4. ADVANCING NIGERIA’S ENERGY TRANSITION AMBITION THROUGH PIA: RECOMMENDATIONS

From the foregoing analyses, stronger legislative mandates for renewable energy integration are evidently required to enhance environmental enforcement mechanisms. Second, fiscal incentives targeted at clean energy investments, and institutional restructuring to ensure coherent governance of the energy transition. Third, although the PIA mandates

penalties for gas flaring, the exceptions provided within the Act, particularly the lacuna that presupposes continuous flaring, undermines the objective of curbing gas emissions. In order to address this, the PIA also needs to implement more stringent enforcement mechanisms and ensure that penalties are substantial enough to act as deterrence. Also, there is need for amendment of section 104 of the PIA that gives wide discretionary powers on the commission to impose fine on violators.

The potential conflict between Section 64(c) of the PIA and Section 162(1) of the Nigerian Constitution regarding deductions from the Federation Account must be addressed. A thorough review should be undertaken to ensure that the Frontier Exploration Fund or any similar initiatives do not violate the constitutional mandate that all revenues should be deposited into the Federation Account. The government may need to seek a constitutional amendment or judicial clarification to avoid legal challenges.

Given Nigeria's commitment to achieving net-zero emissions, the government should prioritize funding and incentivizing research in carbon capture, utilization, storage and other carbon abatement technologies. These innovations are crucial for mitigating emissions from the oil and gas sector while positioning Nigeria at the forefront in global energy transitioning in Africa.

Finally, statutory reform, regulatory restructuring, multi-stakeholder governance, continuous engagement and energy market-driven incentives must be initiated to drive Nigeria's shift from fossil fuel to renewable energy sources.

5. CONCLUSION

The Petroleum Industry Act 2021 represents a fundamental development in Nigeria's petroleum governance framework; however, its capacity to drive a genuine energy transition remains limited. While the PIA introduces modest environmental safeguards, it largely perpetuates Nigeria's dependency on fossil fuels, contrary to the imperatives of the

Paris Agreement 2015 and the Sustainable Development Goals 2015. This study reveals critical legislative gaps, notably the absence of a dedicated renewable energy funding mechanism and regulatory incentives for green energy investment. It proposes the establishment of a Future Energy Fund and the amendment of discretionary regulatory powers to foster transparency, predictability, and environmental accountability. The proposed hybrid legal-policy model offers a pathway to balance economic, environmental, and social objectives, positioning Nigeria for a just and sustainable energy transition. Achieving these reforms is crucial not only for enhancing Nigeria's international credibility but also for ensuring long-term energy security, economic resilience, and environmental sustainability.

While the Act provides foundational support for cleaner energy and local content development, it falls short in certain areas such as gas flaring regulation, alignment with global sustainability goals, and regulation for infrastructure advancement for renewables. With the modification of the Frontier Exploration Fund, amendment of gas flaring penalties, and support for broader energy diversification, Nigeria can position itself as a prime contributor in the global energy transition in conformity with the COP28 resolutions, SDG 7, 13, ESG, Nigeria's Climate Change Act 2021, Africa's energy reforms agenda 2063 and the UN Global Stock take on climate change necessitate a call to action for immediate roadmap for Nigeria to amend the PIA and align its energy law with global standards.