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Peace Amayo Ogbodo-Nathaniel, Olusola Joshua Olujobi, and Vera Bidemi Monehin

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AN EXAMINATION OF THE LEGAL, POLICY, AND INSTITUTIONAL FRAMEWORK FOR PROMOTING RENEWABLE ENERGY PROJECTS AS PANACEAS FOR SUSTAINABLE DEVELOPMENT IN NIGERIA

Peace Amayo Ogbodo-Nathaniel*Olusola Joshua Olujobi **Vera Bidemi Monehin **

ABSTRACT

Over the years, electricity shortage has been a persistent problem in the socio-economic development of Nigeria. Although the country's primary source of energy has been non-renewable energy sources such as natural gas, crude oil, coal and lignite, these sources have negatively impacted our climate, through pollution and greenhouse gas emissions among others. As the world is rapidly shifting from non-renewable fuel sources to renewable energy sources such as: hydropower; solar; biomass; geothermal; and wind which are environmentally friendly to combat climate change, and provide energy security. Nigeria should not be left behind in this global shift. This article seeks to examine the laws, policies and institutional frameworks that promotes renewable energy in Nigeria while identifying the critical challenges that hinders its implementation and discussing the significance of promoting renewable energy for sustainable development. The finding reveals that Nigeria is yet to maximize the benefits of renewable energy sources despite the numerous frameworks that Nigeria has due to barriers militating against its implementation such as absence of a cogent and specific legal framework on renewable energy. Adopting a doctrinal legal research methodology, the study made some recommendations among others, the enactment of a comprehensive, specific and coherent legal framework on renewable energy in Nigeria which is of utmost importance, as well as strengthening the existing policies to enhancing the capacity of energy regulatory bodies.

Keywords: Renewable Energy Projects; Policies; Legal; Institutional Framework; Sustainable Development; Nigeria.

1. INTRODUCTION

Nigeria endowed with vast natural resources, faces significant challenges in its energy sector, including inadequate electricity supply, heavy reliance on

fossil fuels, and high levels of energy poverty.[1]The World Resource Institute, (WRI), states that over 85 million Nigerians do not have access to electricity, making Nigeria the country with the highest number of citizens living without electricity[2]. This predicament underscores Nigeria's underserved burgeoning population, which continually aspires for socio-economic progress. To bolster the well-being of Nigerians and elevate per capita income, the demand for energy is certain to surge in the coming years, necessitating the pursuit of alternative and sustainable energy sources.[3] The introduction of renewable energy resources offers a promising solution to address the persistent problems of frequent power outages and energy poverty, and it is vital for sustainable development in Nigeria.

Renewable energy is power obtained from natural processes like sunlight, water flow, wind, ocean waves, tides, biomass, and geothermal heat, all of which are continuously replenished by nature. These energy sources are replenished naturally and sustainably, making them environmentally friendly alternatives to fossil fuels. Common types of renewable energy include; solar energy derived from sunlight through photovoltaic cells or solar thermal technologies; wind energy generated from wind turbines that convert the kinetic energy of wind into electrical power; hydropower generated from flowing or falling water, typically through dams or run-of-river systems; biomass energy produced from organic materials such as wood, agricultural residues, or municipal solid waste through combustion, fermentation, or other processes; geothermal energy**,** utilized from heat stored beneath the

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* Ph.D Candidate (ABUAD), Lecturer, Department of Public and International Law, College of Law, Afe Babalola University, Ado-Ekiti, Nigeria. Email: ogbodo-nathanielpeace@abuad.edu.ng, ORCID ID: 0009-0001-0950-0963

** Associate Professor, Department of Public and International Law, College of Law, Afe Babalola University, Ado Ekiti, Ekiti State ,Nigeria. Email: olujobi.olusola@abuad.edu.ng

*** Ph.D Candidate (ABUAD), Lecturer, Department of Public and International Law, College of Law, Afe Babalola University, Ado-Ekiti, Nigeria. Email: monehinvb@abuad.edu.ng, ORCID ID: 0000-0002-0940-1535

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

2 Elebeke Emmanuel, 'Over 85m Nigerians have no Access to Electricity' Vanguard (Nigeria, 2024) <https://www.vanguardngr.com/2024/05/over-85m-nigerians-have-no-access-to-electricity/#:~:text=The%20World%20Resource%20Institute%2C%20WRI,citizens%20living%20without%20electricity%20provision> accessed 14 June 2024.

3 Oyedepo (n.1).

Earth's surface, often through geothermal power plants or direct-use applications like heating, and ocean energy which includes tidal, wave, and ocean thermal energy conversion (OTEC), which harness energy from the movement of ocean water or temperature differences.[4]

Renewable energy provides a clean, sustainable, and reliable alternative to the energy challenges in Nigeria, and it is crucial for sustainable development for several reasons.[5] It offers an environmentally friendly and sustainable alternative to fossil fuels, which contribute to environmental degradation and greenhouse gas emissions.[6] By reducing reliance on fossil fuels, renewable energy can help mitigate climate change and its associated impacts.[7] Renewable energy enhances energy security by diversifying the energy mix and decreasing dependence on imported fuels.[8] This is particularly important for Nigeria, which experiences frequent energy shortages and supply disruptions despite being a major oil producer. With its abundant sunlight, wind resources, biomass, hydro, and other renewable potentials, Nigeria has a distinctive opportunity to diversify its energy portfolio and enhance energy security through renewable energy. However, the successful deployment and integration of renewable energy projects require comprehensive legal frameworks, effective governance, and strategic policy mechanisms. This article explores the legal frameworks, policy mechanisms, and governance structures essential for promoting renewable energy projects in Nigeria to achieve sustainable development.

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4 Naveen Kumar K.A., and Vigneshwaran A., 'Renewable Energy Resources and Their Types' in AI Techniques for Renewable Source Integration and Battery Charging Methods in Electric Vehicle Applications (IGI Global, 2023) 116-135.

5 Elum Z., and Momodu A., 'Climate Change Mitigation and Renewable Energy for Sustainable Development in Nigeria: A Discourse Approach' (2017) 76 Renewable and Sustainable Energy Reviews 72-80 https://doi.org/10.1016/j.rser.2017.03.040.

6 Olujobi, O.J., 'Nigeria's Climate Change Act 2021: A Pathway to Net-Zero Carbon Emission, Energy Security and Sustainability' Environmental Science and Pollution Research,(2024),<.DOI10.1007/s11356-024-33347-1, accessed August 11, 2024.

7 Olujobi O.J., & et al 'Sustainable Development and National Integration: A Catalyst for Enhancing Legal Compliance, Environmental Protection, and Sustainability in Nigeria' Environmental Policy and Law,), 53, 6 issues, pp.1-15.<DOI: 10.3233/EPL-230050.http://environmentalpolicyandlaw.com> accessed April 6, 2024.

8 Oyedepo S.O., 'Towards Achieving Energy for Sustainable Development in Nigeria' (2014) 34 Renewable and Sustainable Energy Reviews 255-272 https://doi.org/10.1016/j.rser.2014.03.019.

This article is divided into five parts. Part one is the introduction, which sets out the agenda for the study. Part two examines the legal, policy, and institutional framework of the study. Specifically, this section discusses international and national laws. Part three discusses the significance of promoting renewable energy projects for sustainable development in Nigeria. The challenges and recommendations for the promotion of renewable energy will be addressed in part four. Part five concludes the study.

1.1 Literature Review

Nigeria, like many other countries, faces significant energy challenges, including persistent power outages, energy poverty, environmental degradation and climate change. Renewable energy projects have been identified as a panacea for sustainable development, but their development has been hindered by weak legal, policy and institutional framework. This study reviews literatures of several authors who have written on the need for promoting renewable energy projects as a necessity for sustainable development in Nigeria. Oyedepo[9] in his article stated that a wide spread use of renewable energy is important for achieving sustainable development in Nigeria, as renewable energy plays an important role in meeting future energy needs in both rural and urban areas. Olujobi[10]argued that renewable energy contribute to sustainable development in Nigeria by reducing greenhouse gas emissions. Omorogbe[11] examined the role of the legal framework in promoting increased access to energy services. In particular, it considers the use of renewable energy as a catalyst for sustainable development. It also considers the role of the legal framework in promoting the use of renewable energy to eradicate extreme poverty.[12] In supporting renewable energy projects as a panacea for sustainable development, the place of a clear and consistent legal framework must not be lacking. Furthermore, Oke,[13] observed that the major problem with the regulation and governance framework in Nigeria is over centralization of the management, responsibility and administrative structure of the power sector rather than being decentralized which has helped many countries to overcome electricity

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9 Oyedepo, (n.1).

10 Olujobi, (n.6).

11 Omorogbe, Y. 'Promoting Sustainable Development through the use of Renewable Energy: The Role of the Law' in Beyond the Carbon Economy Energy Law in Transition; Zillman, D., Redgwell, C., Omorogbe, Y., Barrer-Hernandez, LK, Eds, (2008) 39-60.

12 Ibid.

13 Oke, Y., Essays on Nigerian Electricity Law (Princeton and Associate Publishing Co. Ltd. 2016) 93-113.

challenges through off-grid renewable electricity generation, transmission, distribution for rapid rural electrification for social and economic growth. According to Onwubuaariri,[14] policies on renewable energy are too many, repetitive, wordy and overlapping. A repetitious and un-harmonized policy framework creates uncertainty for both regulator and regulated.[15] The inconsistencies and lack of coordination of policies on renewable energy in Nigeria has further weakened the development of renewable energy projects in Nigeria. There is need for a stable and coherent policy framework to promote the growth and utilisation of renewable energy in Nigeria. Similarly, Baluma & Nchi[16] argued that the incoherent and fragmented nature of the existing legal, policy and institutional framework constitute a major barrier to the promotion of investment in renewable energy. The study concludes that there is a need for a robust and coherent legal, policy, and institutional framework on renewable energy in order to promote its deployment and utilisation in Nigeria. However, the studies fail to consider comprehensively the legal, policy, and institutional framework for promoting renewable energy projects as panaceas for sustainable development in Nigeria. This is a gap in the existing knowledge that intends to fill as contribution to knowledge in the field of energy law.

1.2 Theoretical Framework

Governance theory was developed in the 1980s, by researchers like Robert Keohane and Joseph Nye, drawing on the findings of political scientists and experts in international relations[17]. The theory provides an important framework in the context of promoting renewable energy projects for sustainable development in Nigeria. The significance of effective institutions, accountability, and government's involvement in renewable energy projects are vital for the development and utilisation of renewable energy in Nigeria. In other words, the theoretical framework for accomplishing sustainable development is informed by governance theory, which highlights the

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[14] Jama Onwubuaariri, 'Reviewing the Legal Framework for Renewable Energy Projects in Nigeria' (2014) <https://www.academia.edu/12116036/Reviewing_the_Legal_Framework_for_Renewable_Energy_Projects_in_Nigeria>accessed 10 June, 2024.

[15] Ibid.

[16] Bulama, B.B., and Nchi S.N., 'Examination of the Legal, Policy and Institutional Framework for the Promotion of Renewable Energy in Nigeria' (2023) 7(01) African Journal of International Energy & Environmental Law 14-28.

[17] Robert Keohane, After Hegemony <https://www.britannica.com/topic/After-Hegemony-by-Keohane> Accessed 26 June, 2024.

significance of accountability, transparency, and involvement.[18] Clear and transparent policies, laws and regulations are essential for promoting renewable energy projects. Transparency ensures that stakeholder understand the framework and can make informed decisions on renewable energy projects. More so, those responsible for implementing renewable energy policies and projects must be held accountable for their actions. Governance theory emphasizes the importance of effective legal frameworks, regulatory agencies, and institutional structures in ensuring fair access to clean energy and sustainable development. International collaboration and multilevel governance are crucial for advancing renewable energy projects and sustainable development in Nigeria. The flaw of the theory is that poor governance often occasioned lack of transparency in the decision-making processes, poor financial reporting, and poor communication with stakeholders such as the host communities, regulatory authorities and energy firms among others.

Besides the governance theory discussed above, is the sustainable development theory. This 1987 developed theory highlights how the social, economic, and environmental facets of development are interdependent. According to the sustainable development theory, development must address current needs without jeopardizing the capacity of future generations to address their own.[19] In this context, renewable energy projects can contribute to sustainable development in Nigeria by reducing greenhouse gas emissions.[20] Renewable energy can mitigate climate change and promote environmental sustainability. Also, renewable energy can improve energy access and create jobs. Renewable energy has the capacity to stimulate local economies, and reduce dependence on fossil fuels, promoting economic development in Nigeria. By applying these theories, Nigeria can ensure that renewable energy projects contribute to sustainable development. One of the fundamental flaws of sustainable development theory is that it can be costly. The initial investment prerequisite to execute sustainable energy system such as green energy infrastructure and renewable energy sources can be excessive.

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[18] Michael Johnston, 'Good Governance: Rule of Law, Transparency and Accountability' <https://etico.iiep.unesco.org/sites/default/files/2017-09/unpan010 193.pdf >Accessed 16 July, 2024.

[19] United Nations Brundtland Commission Report 1987, Definition of 'Sustainable Development' <https://www.un.org/en/academicimpact/sustainability#:~:text=In%201987%2C%20the%20United%20Nations,development%20needs%2C%20but%20with%20the> accessed 16 July, 2024.

[20] Olujobi, (n.6).

This can discourages some energy firms and individuals from adopting renewable energy sources which is sustainable and environmentally friendly.

2. AN EXAMINATION OF THE LEGAL, POLICY, AND INSTITUTIONAL FRAMEWORK FOR PROMOTING RENEWABLE ENERGY IN NIGERIA

2.1 Legal Framework (An International and National Perspective)

Nigeria is a signatory to several international agreements on climate change mitigation and sustainable energy development. These agreements indirectly promote renewable energy in Nigeria. One of such Convention is the United Nations Framework Convention on Climate Change (UNFCCC) 1992 whose aim is to address climate change menaces. Its primary objective, as stated in Article 2, is to stabilise greenhouse gas concentrations to prevent dangerous human-induced interference with the climate system.[21] This stabilisation is to ensure that ecosystems adapt naturally, ensure food production is not threatened, and to enable sustainable economic development.

There is also the Kyoto Protocol which was adopted in 1997 as an addendum to the UNFCCC 1992, and its aim is to reduce greenhouse gas emissions contributing to global warming. The protocol set targets for 41 countries plus the European Union to reduce emissions of greenhouse gases to 5.2% below levels.[22] To achieve these targets, it provided mechanisms like the Clean Development Mechanism (CDM) and emissions trading. The protocol also encouraged the use of natural processes, such as tree planting, to remove greenhouse gases from the atmosphere. The CDM incentivized developed countries to invest in emission reduction projects in less-developed nations.

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[21] Lukas Hermwille, 'UNFCCC Before and After Paris: What is Necessary for an Effective Climate Regime?' (2017) 17 Climate Policy 2, 130-170. <https://epub.wupperinst.org/frontdoor/deliver/index/docId/6104/file/6104_Hermwille.pdf> accessed 12 June 2024.

[22] Breidenich, C., MagrawD, RowleyA., and Rubin J.W., 'The Kyoto Protocol to the United Nations Framework Convention on Climate Change' (1998) 92(2) American Journal of International Law 315-331.

The protocol was amended in 2012 to establish a second commitment period, with Nigeria as a signatory.[23]

Also another agreement was designed to supplement and replace the Kyoto Protocol, called the Paris Agreement, which was adopted in December 2015. It aims to reduce greenhouse gas emissions globally and it came into force on November 4, 2016, and has been signed by 195 countries and ratified by 190 countries[24]. During the 2015 UN Climate Change Conference in France, representatives from 196 countries aimed to reach a universal agreement to limit global temperature rise to below 2°C above pre-industrial levels.[25] Countries submitted plans, known as Intended Nationally Determined Contributions (INDCs), detailing how they intended to reduce emissions by 2025 or 2030.The agreement has spurred countries like Japan, China, and the EU to set carbon neutrality and net zero targets, leading to substantial emission reductions.[26] It has inspired global environmental responsibility and fostered a collaborative community of nations. For example, the United States and EU member states have taken collective action against climate change, which has been crucial in advancing the agreement's objectives.[27]

Nigeria also adopted the United Nations Sustainable Development Goals (SDGs) 2015, a global objectives aimed at achieving a sustainable future. SDG 7 specifically focuses on ensuring access to affordable, reliable, sustainable, and modern energy. Transitioning to renewable energy is crucial for achieving this goal. Another International framework governing renewable energy is the International Renewable Energy Agency (IRENA) 2009, this agency supports the global adoption and sustainable utilisation of all renewable energy forms. IRENA boasts nearly 160 full member countries,

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23 Anwadike, Benjamin, 'Kyoto Protocol and the Challenges of Implementation in Nigeria' (2017) 13(1) Journal of Geography, Environment and Earth Science International 1-9.

24 Huang, J., 'Climate justice: Climate justice and the Paris agreement' (2017) 9 J. Animal &Envtl. L. 23.

25 Pattberg, P.H., and Widerberg, O.E., 'The Climate Change Regime' in Oxford Research Encyclopedia of Climate Science (The Oxford University Press, 2017) 1-35.

26 Sachs, Noah M., 'The Paris Agreement in the 2020s: Breakdown or Breakup' (2019) 46 Ecology Law Quarterly 865.

27 VoglerJ., and Bretherton, C, 'The European Union as a Protagonist to the United States on Climate Change' (2006) 7(1) International Studies Perspectives 1-22.

with an additional 24 states at various stages of accession[28]. Nigeria holds membership in the IRENA Council, while the EU, a founding member, actively engages in IRENA's diverse work programs.[29] IRENA's activities include the publications and development of databases with the latest information, statistics, policies and cost data on renewable energy on its resource platform, to support project development, global resource data, and the financing of renewable energy projects. IRENA also engages in regional initiatives to support renewable energy development.

Lastly, there is the Extractive Industries Transparency Initiative (EITI) which was launched in 2003. It aims to enhance transparency and accountability in the oil, gas, and mining sectors.[30] It was initiated by then-UK Prime Minister Tony Blair at the World Summit on Sustainable Development in response to concerns about mismanagement and corruption in natural resource extraction, particularly in developing countries.[31] EITI establishes a voluntary framework for disclosing financial flows related to extractive activities, requiring participating countries to report payments from extractive companies to governments and revenues received. This transparency aims to curb corruption, improve accountability, and foster public debate. These are some of the international legal frameworks to regulate renewable energy development and utilisation.

In Nigeria, the 1999 Constitution of the Federal Republic of Nigeria (as amended) is the grundnorm of other legislation in Nigeria, as all other laws derive their validity from it. The Constitution places electricity generation, transmission, and distribution on the Concurrent Legislative List, thereby bringing power generation within the competence of both the Federal and State governments.[32] This demonstrates the strong nexus between energy and the economy. Nigeria's renewable energy policy is primarily established at the national level; however, states are permitted to explore other energy sources to meet the needs of their rural communities. In this regard, the

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28 International Renewable Energy Agency <https://energy.ec.europa.eu/topics/international-cooperation/international-organisations-and-initiatives/international-renewable-energy-agency_en > accessed 10 June, 2024.

29 Ibid.

30 Nadibaidze T., and Maisuradze D., 'Extractive Industries Transparency Initiative (EITI)' (2016) Institute for Development of Freedom of Information 12, 1-21.

31 Cust J., 'The Role of Governance and International Norms in Managing Natural Resources' (2018) Extractive Industries 395.

32 Part II, Paragraphs 13-14 of the Constitution of the Federal Republic of Nigeria 1999 (as amended) Cap C 23 LFN 2004.

Kaduna State government signed a Memorandum of Understanding in 2018 with a Clean Energy Development Company to develop a 30MW photovoltaic plant.[33]

Secondly, there is the Electricity Act 2023 (as amended 2024) which is the main regulation guiding renewable energy in Nigeria. The Act replaces the Electric Power Sector Reform Act 2005 which governs electricity generation, transmission, and distribution[34]. The Act[35]establishes the Nigerian Electricity Regulatory Commission (NERC) which regulates the electricity sector in Nigeria. The Act governs the development, financing, operation, and sale of power in Nigeria. The Act also liberalized the power sector by enabling private sector participation across the entire value chain of electricity generation, distribution, and associated services. Sections 165, 166, and 167 of the Electricity Act provide for the development, utilization of renewable energy, commercial activities related to renewable energy, incentives, and standards for renewable energy. The Electricity Act 2023 underscores the significance of renewable energy in electricity generation. It mandates the Nigerian Electricity Regulatory Commission (NERC) and the Independent System Operator (ISO) to actively promote electricity generation from renewable sources. The Act also introduces mechanisms to incentivize investment in renewable energy projects, including feed-in tariffs, which guarantee a fixed price for renewable electricity fed into the grid, and tax incentives. The Act also stipulates that the Ministry of Finance shall introduce tax incentives to promote and facilitate the generation and consumption of energy from renewable energy sources. The Act represents a positive step towards advancing renewable energy in Nigeria.

Furthermore, is the Renewable Energy Feed-In Tariff (REFIT) Regulations of 2015 established by the Nigerian Electricity Regulatory Commission (NERC), which aims to promote investment in renewable energy in Nigeria.[36] The REFIT provides a special tariff regime to attract private investors, ensuring that energy generated from renewable sources and supplied through the national grid is given priority. NERC mandates that the

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[33] Nigeria Investment Promotion Commission, 'Kaduna State to Develop 30MW Solar PV Plant' <https://www.nipc.gov.ng/2018/12/12/kaduna-state-to-develop-30mw-solar-pv-plant/> accessed 10 June, 2024.

[34'] Renewable Energy Laws and Regulations Report 2024 Nigeria' ICLG.com <https://iclg.com/practice-areas/renewable-energy-laws-and-regulations/nigeria> accessed 5 June 2024.

[35] Electricity Act 2023 Cap E7 LFN.

[36] Bulama and Nchi (n.16).

Nigerian Bulk Electricity Trading (NBET) and electricity distribution companies purchase 50% of the renewable energy capacity limit established by the regulations.[37] The tariff is designed to stabilize income for investors by guaranteeing prices for electricity generated from renewables for a fixed period, with a capacity range of 1 MW to 30 MW, thereby boosting Nigeria's power supply with an estimated 1000 MW from renewable energy sources.

Another Regulation is the Mini-Grid Regulations of 2016, also issued by NERC. It creates a framework for the establishment and operation of mini-grids in Nigeria, targeting areas with generation capacities of up to 1 MW. Mini-grids are electricity supply systems that can operate independently or connect to a distribution network, supplying electricity to multiple customers. The regulations aim to accelerate electrification in unserved and underserved areas by simplifying the process for establishing mini-grids, allowing developers to register with NERC instead of obtaining a license. A compensation mechanism is also in place for developers if the national grid expands to cover their areas.[38] Although the Mini-Grid Regulations apply to all types of projects, they are more commonly associated with renewable energy projects due to various technical and commercial reasons, making them crucial for Nigeria's renewable energy landscape.

Also, there is the Energy Commission of Nigeria (ECN) Act No. 62, initially enacted in 1979 (amended in 1988 and 1989). It established the ECN to oversee national energy policy planning and coordination. The ECN, as the top government body for energy sector planning, is tasked with promotion of energy diversification, including the development of alternative energy sources renewable energy sources such as solar, wind, biomass, and nuclear energy.[39] The Act aligns government policy with the development and optimal utilization of renewable energy resources while protecting the environment from the adverse effects of fossil fuels. Although the Act does not specifically mention renewable energy, the ECN has developed the

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[37] Aguda O.O., 'Constitutional and Institutional Governance of Electricity Sector in Nigeria' (2023) 14(4) Journal of Energy Research and Reviews 32-44.

[38] Alabi K.T., 'Evaluation of Mini-Grid Technology, Policy and Regulatory Framework in Nigeria' (2020) 11th International Conference on Energy and Power Systems Operation and Planning (ICEPSOP 2020) with Workshop on Empowering Microgrid with Smart Grid Attributes Development in United States of America 120

[39] Aigbovo, Osaretin, and EbitonOgboka. 'Electric Power Sector Reform Act 2005 and the Development of Renewable Energy in Nigeria' Renewable Energy Law and Policy Review 7, No. 1 (2016): 20-29.

National Energy Master Plan and the Renewable Energy Master Plan to guide Nigeria toward its renewable energy utilisation.

Finally, The Environmental Impact Assessment (EIA) Act 1992 mandates comprehensive environmental impact assessments for renewable energy projects to evaluate and mitigate potential environmental and social impacts. Section 2 of the Act[40] requires power developers planning renewable energy projects to register with the Federal Ministry of Environment for an EIA. This ensures that projects likely to have significant environmental impacts are thoroughly assessed before proceeding, adhering to stringent environmental and sustainability standards. The EIA Act and the 2017 EIA Guidelines stipulate that power generation projects must submit their EIA reports to the Federal Ministry of Environment and obtain permission before commencement; the aim is to prevent negative environmental impacts from energy extraction and power generation activities.[41]

2.2 Policy

Notwithstanding the legal frameworks discussed above, it is pertinent to state that there exist policies on renewable energy. The Federal Government of Nigeria realising this significance of energy, formulated energy policies on renewable energy to ensure energy security in Nigeria. However, these policies are not comprehensive enough to encourage investment, promotion, and utilisation of renewable energy sources in Nigeria. These policies are briefly examined below; they include the National Energy Policy (NEP) 2003, Renewable Energy Master Plan (REMP) 2005, Renewable Electricity Policy Guidelines (REPG) 2006, Nigerian Biofuel Policy and Incentives (NBPI) 2007 and the National Renewable Energy and Energy Efficiency Policy (NREEP) 2015 among others. The National Energy Policy (NEP) 2003 was approved by the Federal Government of Nigeria in 2003 and reviewed in 2006 and 2013. This policy was developed by the Energy Commission of Nigeria[42]. Before the Federal Government of Nigeria approved the policy in 2003, there was no comprehensive renewable energy efficiency policy. The existing policies in the energy sector have been those of separate energy sub-sectors like electricity, oil and gas, and solid minerals. The National Energy Policy (NEP) sets out government policy on the

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40 Environmental Impact Assessment Act 1992 Cap E12 LFN 2004.

41 Tijani, Elizabeth E., 'Evaluating the Impact of Environmental Laws and Policies in Achieving a Sustainable Environment in Nigeria' (2021) SSRN https://ssrn.com /abstract=3970252 or http://dx.doi.org/10.2139/ssrn.3970252.

42 Energy Commission of Nigeria, National Energy Policy (NEP) 2003.

production, supply and consumption of energy reflecting the perspective of its overall needs and options.[43] The National Energy Policy articulates the sustainable exploitation of the entire nation's viable energy resources and hinges mainly on a private sector-driven environment. The National Energy Policy (NEP) came to serve as a blueprint for sustainable development, supply, and utilisation of energy resources within the economy and for the use of resources in international trade and co-operation[44]. The policy acknowledges alternative energy from renewable sources. In other words, the National Energy Policy outlines a plan to diversify the energy sector and pursue renewable energy sources for sustainability. The main goal of this policy is to create energy security through a robust energy supply mix by diversifying the energy supply and energy carriers based on the principle of "an energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout Nigeria, thus contributing to sustainable development and environmental conservation".[45]

Secondly, there is the Renewable Energy Master Plan (REMP) which was developed by the Energy Commission of Nigeria (ECN) with the support of the United Nations Development Programme (UNDP) in November 2005. It was further revised in 2012 as the 'Draft Renewable Energy Master Plan' 2012. This document provides a roadmap for Nigeria's vision in increasing the role of renewable energy in achieving sustainable development. In other words, it provides a roadmap for the effective implementation of the renewable energy component of National Energy Policy 2003 and forms part of the National Energy Master Plan (NEMP). The Renewable Energy Master Plan (REMP) highlight the need for integration of renewables in buildings, electricity grids and for off grid electrical systems. It further emphasizes the importance of solar power in the country's energy mix or agenda.[46]The objective of the Renewable Energy Master Plan (REMP) includes among others: expanding access to energy services and raising the standard of living, especially in the rural areas; stimulating economic growth, employment and

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[43] Nnaemeka Vincent Emodi, Nebedum Ekene Ebele, 'Policies Enhancing Renewable Energy Development and Implications for Nigeria' (2016) 4(1) Sustainable Energy 7-16, <https://pubs.sciepub.com/rse/4/1/2/> accessed 11 June 2024.

[44] National Energy Policy 2003,<https://rea.gov.ng/wp-content/uploads/2017/09/National_Energy_Policy_Nigeria>pdf accessed 11 June 2024.

[45] Energy Commission of Nigeria, National Energy Policy 2003.

[46] Energy Commission of Nigeria (ECN) and United Nations Development Programme (UNDP), Renewable Energy Master Plan (REMP) 2012.

empowerment; increasing the scope and quality of rural services, including schools, health services, water supply, information, entertainment and stemming the migration to urban areas; reducing environmental degradation and health risks, particularly to vulnerable groups such as women and children; improving learning, capacity-building and research and development on various renewable energy technologies in the country and providing a road map for achieving the renewable energy share of the national energy supply mix.[47] The Renewable Energy Master Plan (REMP) 2005 maintains the phasing of development goals into short, medium and long term as in the National Energy Policy 2003. The Renewable Energy Master Plan 2005 has timeline for energy programmes ranging from 2005-2007, 2008-2015 and 2016-2025. From the foregoing, it is evident that the timeline for the short and medium term outlined in 2005 master plan have lapsed with no tangible progress made. However, the timeline for the development of these goals were revised in the Draft Master Plan 2012 to cover periods from 2013-2015, 2016-2020 and 2021-2030.[48]According to the Renewable Energy Master Plan (REMP), Nigeria intends to increase the supply of renewable electricity from 13% of total electricity generation in 2015 to 23% in 2025 and 36% by 2030. Renewable electricity would account for 10% of Nigeria's total energy consumption by 2025.[49] The renewable energy master plan contains roadmaps to translate the policy into implementable projects, activities and programmes.

There is also the Renewable Electricity Policy Guidelines (REPG) 2006, developed by the Federal Ministry of Power and Steel in 2006 to introduce the Federal Government's plan, strategies, vision and policies for promoting renewable energy in Nigerian power sector. The policy was to ensure that Nigeria has a sufficient and dependable supply of electricity. The policy aims to direct and accelerate the power sector projects for generation, transmission and distribution as well as to facilitate the establishment of a private sector for a competitive and effective energy industry. The Renewable Electricity Policy Guidelines (REPG) mandated the Nigerian government on the

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47 Energy Commission of Nigeria (ECN) and United Nations Development Programme (UNDP), Renewable Energy Master Plan (REMP) 2005.

48 Mbajiorgu Kenechukwu, 'Reviewing the Legislative Framework for Renewable Energy in Nigeria' (2017) NIALS Journal of Environmental Law (NJEL) 2276-755X.

49 Nnaemeka Vincent Emodi, Nebedum Ekene Ebele, 'Policies Enhancing Renewable Energy Development and Implications for Nigeria' Sustainable Energy Vol. 4, No. 1, (2016) p 7-16 <http://pubs.sciepub.com/rse/4/1/2> accessed 11 June 2024.

expansion of electricity generation from renewable to at least 5% of the total electricity generated and a minimum of 5TWH of electricity generation in the country.[50]The overall objective of this Policy Guideline is to expand the role of renewable electricity in sustainable development through effective promotional and regulatory instruments. The policy guideline seeks to achieve the following specific objectives; expand electricity generating capacity to meet national economic and social development goals; encourage the diversification of sources of electricity supply through renewable energy, and as such improve the energy security of the country; increase access to electricity services nationwide, especially in rural areas; stimulate growth in employment generation through an expanded renewable electricity industry; enhance technological development through increased domestic manufacturing of renewable electricity components; stimulate competition in the delivery of renewable electricity; promote rapid expansion of renewable-based electricity market through cost- reducing supply side and demand side incentives; develop regulatory procedures that are sensitive to the peculiarities of renewable energy-based power supply; create stable and predictable investment climate in renewable electricity market; provide effective protection of electricity consumers through effective regulation and reduce household and outdoor air pollution as well as contribute to the abatement of greenhouse gas emissions, and thus contribute to improved health and overall social development.[51]The Renewable Electricity Policy Guidelines 2006 focuses on the use of small-scale renewable for rural electrification. It also launched the Renewable Electricity Action Programme (REAP) 2006 operationalising the guidelines. The Renewable Electricity Action Programme (REAP) sets out a roadmap for the implementation of the Renewable Electricity Policy Guidelines (REPG) 2006. The Renewable Energy Action Programme presents an overview of the Nigerian electricity sector and relates to renewable energy development. The document also review government's targets and provides strategies for renewable energy development such as levelling the playing field for renewable electricity producers, multi sector partnerships, demonstration projects, supply chain initiatives among others.[52]

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50 Federal Ministry of Power and Steel, Federal Republic of Nigeria, Renewable Electricity Policy Guidelines (REPG) 2006.

51 Ibid.

52 Federal Ministry of Power and Steel, Federal Republic of Nigeria, Renewable Electricity Action Programme (REAP) 2006.

Another policy is the Nigerian Biofuel Policy and Incentives (NBPI) 2007 established in line with the Presidential directive issued to the defunct Nigeria National Petroleum Corporation (NNPC) in 2005 to explore the development of renewable in Nigeria. The goal of the policy was to develop and promote the domestic fuel ethanol industry through the utilisation of agricultural products. The policy further aimed at gradual reduction of nation's dependence on imported gasoline, reduction in environmental pollution, while at the same time creating a commercially viable industry that can precipitate sustainable domestic jobs.[53]The benefit of this policy was to create additional tax revenue, provision of jobs to reduce poverty, boost economy development and empower those in the rural areas, improve agricultural activities, energy and environmental benefits through the reduction of fossil fuel related greenhouse gas emissions in the transport sector.[54]The input of the policy to renewable energy regulating environment includes the establishment of a Bio-fuels Commission, Issuance of a bio-fuel regulation by the Minister of Petroleum Resources, establishment of a bio-fuels research agency, funding of research and development in bio-fuels development and incentives scheme for participants in the bio-fuels development subsector.[55]By this directive, the defunct NNPC was mandated to create an environment for the take-off of the ethanol industry in the Nigerian National Petroleum Corporation (NNPC) (now NNPC Ltd by virtue of section 54 (1-5) of the Petroleum Industry Act 2021) through this policy, it has promoted the production and importation of bio-fuels such as biodiesel and fuel-ethanol to be blended with Premium Motor Spirit (PMS) or petrol with a view of reducing carbon emission discharge.

Finally, there is the National Renewable Energy and Energy Efficiency Policy 2015 which provide a general regulatory framework for renewable energy in Nigeria. The Policy defines renewable energy in clause 3.1 as "energy obtained from energy sources whose utilisation does not result in the depletion of the earth's resources. These sources of energy would usually include solar energy, wind, biomass, small and medium hydro, geothermal, tide and wave energy".[56] The National Renewable Energy and Energy

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[53] Nnaemeka Vincent Emodi, Nebedum Ekene Ebele, Policies Enhancing Renewable Energy Development and Implications for Nigeria. Sustainable Energy Vol. 4, No. 1, (2016) p 7-16. <http://pubs.sciepub.com/rse/4/1/2> accessed 11June 2024.

[54] Nigerian National Petroleum Corporation (NNPC) Nigerian Bio-fuel Policy and Incentives, Nigerian National Petroleum Corporation, Abuja 2007

[55] Ibid.

[56] National Renewable Energy and Energy Efficiency Policy 2015

Efficiency Policy outline the global thrust of the policies and measures for the promotion of renewable energy and energy efficiency in Nigeria. This policy was developed and drafted by the Energy Commission of Nigeria to address the inadequacies of the previous energy policies. The energy efficiency elements will ensure that Nigerians are optimally judicious in their energy utilisation and conservation. The National Renewable Energy and Energy Efficiency Policy (NREEEP) provide various incentives for promoting renewable energy. These incentives include customs duty exemptions on imported equipment and materials used in renewable energy projects, tax holidays for manufacturers engaged in renewable energy production, soft loans and low-interest loans specifically dedicated to supporting renewable energy projects. This financial support facilitates access to affordable financing for renewable energy initiatives. The overall objective of this policy is to ensure the development of the nation's energy resources, with diversified energy resources option, for the achievement of national energy security and efficient energy delivery system with an optimal energy resource mix among other things.

2.3 Institutional Framework

The Federal Executive Council provides overall direction for the development of the electricity industry in Nigeria, ensuring that electric power policy is consistent with other national policies and international obligations, particularly regarding climate change.[57] The Council enacts necessary laws, regulations, and measures to support these policy guidelines. Additionally, there is the Federal Ministry of Power and Steel which is responsible for formulating electric power policy, including renewable electricity. Its functions include proposing policy options to the Federal Government, monitoring policy implementation and performance, increasing rural electricity access, coordinating activities among Federal agencies, ensuring policy alignment with international obligations, and liaising with the National Assembly on renewable electricity matters.[58]

There is also the Energy Commission of Nigeria (ECN), established by Act 62 of 1979 and amended by Acts 32 of 1988 and 19 of 1989, which is responsible for strategic planning and coordination of national energy policies. The ECN's objectives include increasing the energy sector's

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[57] Bulama and Nchi (n.16).

[58] Olujobi,O.J., 'The Legal Sustainability of Energy Substitution in Nigeria's Electric Power Sector; Renewable Energy as an Alternative' (2020) Protection and Control of Modern Power System 5:32, 1-12 https://doi.org/10.1186/s41601-020-00179-3

contribution to the economy, ensuring a sustainable energy supply, promoting efficient energy consumption, fostering indigenous technology and expertise, and encouraging private sector investment. The ECN ensures policies are harmonized with the National Energy Policy and coordinates renewable electricity efforts within the broader energy sector.[59]

The Nigerian Electricity Regulatory Commission (NERC) is another institution, established in 2005 under the Electricity Act 2023 (as amended 2024), which serves as the primary regulatory authority for Nigeria's electricity sector. NERC issues license, sets and reviews tariffs, promotes competition, and protects consumer interests. Its mission is to create an investor-friendly industry and ensure a reliable electricity supply through transparent, fair, and accountable processes. NERC has significantly expanded its capacity and network through licensing, developing industry codes and standards, and fostering a stable electricity market.[60]Another body is the Rural Electrification Agency (REA), established under the Electricity Act 2023 (as amended 2024), which aims to provide electricity to rural and underserved communities. REA promotes rural electrification, coordinates programms, and administers the Rural Electrification Fund (REF). It has developed initiatives like the Off-Grid Electrification Strategy, Energizing Economies Initiative, Energizing Education Programme, Interconnected Mini-Grid Acceleration Scheme, Solar Hybrid Mini Grid Fund, and Nigeria Electrification Programme (NEP) to enhance rural electricity access and support renewable energy projects.

Moreover, the agency known as the National Environmental Standards and Regulations Enforcement Agency (NESREA), is established by the NESREA Act of 2007, is the apex regulatory agency for environmental protection, biodiversity conservation, and sustainable development. NESREA enforces environmental laws and standards, issuing permits for electrical and electronic equipment manufacturing, processing, recycling, and power generation. Its regulations aim to minimize pollution and promote energy efficiency.

The Nigerian Electricity Management Services Agency (NEMSA), established by the Nigerian Electricity Management Services Agency Act of

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59 Bulama and Nchi (n.16).

60 Ogugbara C.J.P., 'Critical Evaluation of the Institutional Regulatory Frameworks for Electricity Regulation and Investments in Nigeria' (2024) 20(1) Unizik Law Journal.

2015, is an agency that enforces technical standards and regulations, conducts inspections, and certifies electrical installations, meters, and instruments. NEMSA ensures the efficient and safe production and delivery of electricity, safeguarding lives and property. Likewise, the Nigerian Bulk Electricity Trading Plc (NBET), also known as the Bulk Trader, is a government-owned company incorporated in 2010. NBET purchases and resells electricity from independent power producers and generation companies to distribution companies. Its mission is to catalyze private sector investment in Nigeria's electricity industry by entering into power purchase agreements and fostering a stable energy market environment.

Furthermore, the Transmission Company of Nigeria (TCN) manages the transmission network within Nigeria's electricity value chain, evacuating electricity from power producers to distribution companies. TCN, licensed for transmission and system operations, performs market operator, system operator, and transmission service provider functions. Finally, the Standards Organisation of Nigeria (SON), established in 1971 and governed by the Standards Organisation of Nigeria Act No. 14, 2015, sets the standards for products and equipment in Nigeria. SON ensures that electrical and electronic products meet quality standards and collaborates with the Nigerian Electricity Management Services (NEMSA) under the Nigerian Energy Support Programme (NESP) to advance renewable energy standards.

3. SIGNIFICANCE OF PROMOTING RENEWABLE ENERGY PROJECTS FORSUSTAINABLE DEVELOPMENT IN NIGERIA

3.1 Environmental Sustainability

Renewable energy projects are vital for climate change mitigation in Nigeria, as they reduce greenhouse gas emissions by replacing fossil fuels with cleaner energy sources such as solar, wind, and hydropower. This transition is crucial for mitigating the adverse effects of climate change on Nigeria's environment. Additionally, sustainable energy practices help conserve finite natural resources by reducing dependence on non-renewable resources like coal, oil, and natural gas, preserving these for future generations. Moreover, renewable energy projects contribute to lower air and water pollution levels, thereby improving public health and the environment. Cleaner air and water benefit both ecosystems and human health directly.

3.2 Economic Development

The renewable energy sector has substantial potential to create jobs in manufacturing, installation, maintenance, and research and development, which can help reduce unemployment and stimulate economic growth. Diversifying energy sources through renewable projects also reduces Nigeria's vulnerability to global oil price fluctuations and enhances energy security, providing stability crucial for economic planning and industrial development. Furthermore, clear legal frameworks and supportive policy mechanisms create a favorable environment for both local and international investors, potentially increasing foreign direct investment (FDI) in the renewable energy sector.

3.2 Social Development

Renewable energy projects, especially off-grid and mini-grid solutions, can provide electricity to remote and underserved areas, improving the quality of life by supporting education, healthcare, and economic activities in rural communities. Expanding renewable energy access helps alleviate energy poverty, ensuring that more Nigerians have reliable and affordable energy for their daily needs, which is essential for achieving social equity and inclusion. Additionally, reducing reliance on traditional biomass and kerosene for cooking and lighting improves indoor air quality, thereby reducing respiratory and other health issues associated with pollution.

3.3 Institutional and Governance Strengthening

Developing comprehensive governance structures and legal frameworks ensures that renewable energy policies are integrated into broader national development plans, which is vital for effective implementation and monitoring. Establishing strong governance and legal frameworks also necessitates capacity building within institutions responsible for renewable energy, including training personnel, enhancing technical expertise, and improving institutional efficiency. Furthermore, clear legal frameworks and policies promote transparency and accountability in the renewable energy sector, building trust among stakeholders, reducing corruption, and ensuring that projects are implemented effectively and ethically.

3.4 Alignment with Global Goals

Promoting renewable energy aligns with several Sustainable Development Goals (SDGs), particularly Goal 7 (Affordable and Clean Energy), Goal 13 (Climate Action), and Goal 8 (Decent Work and Economic Growth). By focusing on renewable energy, Nigeria can contribute to global efforts towards sustainability and climate resilience. Additionally, developing

renewable energy projects supports Nigeria's commitments under the Paris Agreement to reduce carbon emissions and enhance climate resilience. Effective governance and policy frameworks are essential for meeting these international obligations and ensuring that Nigeria contributes to global climate goals.

4. THE CHALLENGES AND PROPOSAL FOR PROMOTING RENEWABLE ENERGY PROJECTS IN NIGERIA

4.1 The Challenges of Renewable Energy in Nigeria

The power sector problem in Nigeria is a complex and long-standing issue with profound implications for the country's development, economy, and the daily lives of its citizens. Characterized by frequent power outages, inadequate energy supply, and widespread energy poverty, the sector's challenges stem from a combination of factors.

One of the major drawbacks to the development of renewable energy in Nigeria is that of insufficient public awareness in the area of renewable energy in Nigeria. It is germane to state that many Nigerians are not aware of the environmental and economic benefits of the use of renewable energy sources. The Global Environmental Facility (GEF) recognised that information on potential sites as well as public awareness are lacking on renewable energy in Nigeria[61]. The country lacks sufficient data and information on renewable energy[62]. More so, the energy statistics in Nigeria are not up to date or accurate.[63] The general perception is that renewable energy technologies are not yet mature technologies, hence, are only suited for niche markets and as such will require heavy subsidy to make it work.[64] Creating some levels of public awareness on the importance of renewable

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61 Global Environmental Facility (GEF), 'Scaling up Small Hydro power (SHP) in Nigeria' http://www.thegef.org/gef/project_details?projID=5375 accessed 10 June 2024.

62 Cervigni R., Rogers J., and Henrion, M (eds.), Low-carbon Development Opportunity for Nigeria (World Bank, 2013) 103-104.

63 Yamusa, S.U. II, and Anasari, A.H, 'Renewable Energy Development in Two Selected African Countries: An Overview and Assessment' (2013) 2 Renewable Energy Law and Policy Review 151, 1531.

64 Oghogho I., 'Solar Energy Potential and Its Development for Sustainable Energy Generation in Nigeria: A Road Map to Achieving this Feat' (2014) 5(2) International Journal for Engineering and Management Sciences 61, 67.

energy in Nigeria will rebut the wrong dogma and will enhance the development and promotion of renewable energy in Nigeria.[65]

Furthermore, one of the challenges of maximising the potential of renewable energy is the lack of technical capacity and innovation required to tap, utilize and manage renewable energy sources[66]. With regards to technological barriers, the National Renewable Energy Master Plan supplies and services for renewable electricity projects are not readily available in Nigeria. Therefore, potential Independent Power Producers (IPPs) may face significant logistical challenges in procuring equipment, in securing maintenance support or services for renewable electricity projects[67].More so; the expensive technology needed is a drawback in the development of renewable energy in Nigeria[68]. The up-front capital cost for renewable energy technology is higher than the conventional energy projects[69]. It is worthy of note to state that there are several reasons for higher cost in this technology. For instance, the mechanisms for storing the energy sources due to their variability in supply are also expensive[70]. Investors in Nigeria will have to arrange for such storage batteries which will result in an increase in the unit cost of electricity generation[71].

Another fundamental challenge which has constituted a formidable barrier to the growth of renewable energy is the lack of sectorial legislation regulating

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65 Mohammed Y.S, Mustafa M.U, Bashir N. and Mokhtar A.S, 'Renewable Energy Resources for Distributed Power Generation in Nigeria: A Review of the Potentials' (2013) 22 Renewable and Sustainable Energy Reviews 257, 266.

66 Akinbami J.F.K., 'Renewable Energy Resources and Technologies in Nigeria: Present Situations, Future Prospect, and Policy Framework, Mitigation and Adaption Strategies for Global Changes' (2001) 6(2) 155-182 https://www.researchgate.net/publication/226181366_Renewable_energy_resources_and_technologies_in_Nigeria_Present_situation_future_prospects_and_policy_framework accessed 10 June 2024.

67 Olujobi O.J, Nigerian Petroleum, Energy and Gas Resource Law (Princeton & Associate Publishing Co Ltd, 2022) 213-214.

68 Sam Amadi, 'Ethics and Values in Sustainable Development' https://nerc.gov.ng/wp-content/uploads/2014/04/Ethics%20and%20Values%20in%20Sustainable%20 Development,%20September%2024-25,%202012.pdf accessed 10 June 2024.

69 National Planning Commission Report of the vision 2020 National Technical Working Group on Energy Sector (NPC, 2009) 57.

70 Farquhar N., 'Energy, Security, Climate: Converging Solutions' (2009) 29(1) Journal of Land, Resources and Environmental Law 1, 10-11.

71 Adaramola M.S., 'Viability of Grid Connected Solar PV Energy System in Jos, Nigeria' (2014) 61 Electrical Power and Energy System, 64.

renewable energy in Nigeria. Besides, the Electricity Act 2023 (as amended 2024) which governs the development, financing, operation and sale of power in Nigeria, Nigeria is lacking in specific tailored sectorial laws for the promotion of renewable energy in Nigeria. Although National Energy Policy exists that encourages the exploitation of renewable energy resources and its integration into the nation's energy supply mix for sustainable national development through private sector participation. However, this provision has not been implemented and this is due to the lethargic approach of the Federal Government. Achieving adequate energy supply where renewables play a role necessitates the formulation of appropriate policy framework of legal, fiscal and regulatory instruments that would attract domestic and international investment to the country's energy sector[72].

Additionally, policy reversals and inconsistencies in Nigeria's energy sector, exacerbated by the absence of a comprehensive energy law, pose significant challenges to the development of renewable energy. The proliferation of diverse policies and action plans aimed at promoting renewable energy underscores a fragmented and uncoordinated policy framework, which generates uncertainty for both regulators and those being regulated. In Nigeria, there is a notable trend where government-developed policies may either not be adopted or, if adopted, face challenges in implementation. This highlights the critical need for a unified and stable policy environment to effectively drive the growth of renewable energy initiatives in the country. The inconsistency in policies, where each administration issues its own directives, has turned Nigeria into a potential investment risk[73]. Moreover, the risk of discontinuity in government incentives, particularly in the absence of legislative backing or sustenance, promotes investment uncertainty and reluctance.[74] This environment underscores the critical need for stable, coherent policies with enduring legislative backing to foster confidence and attract sustained investment in Nigeria's energy sector, particularly in renewable energy.

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[72] Chineke C.,Nwachukwu R., Nwafor O., Ugboma E., and Ndukwu O., 'Much Ado about Little: Renewable Energy and Policy' (2015) 9 Journal of International Scientific Publications.

[73] Jama Onwubuariri, 'Reviewing the Legal Framework for Renewable Energy Projects in Nigeria' (2014) https://www.academia.edu/12116036/Reviewing_the_Legal_Framework_for_Renewable_Energy_Projects_in_Nigeria accessed 10 June 2024.

[74] Ibid.

Another significant constraint hindering the development of renewable energy in Nigeria lies within the realm of politics. The interference of corrupt political leaders poses a substantial obstacle, as their actions often manipulate the content and quality of policies during their formulation stages. Frequently, policies are formulated to serve the egotistical interests of political figures and garnering public approval and attention rather than effectively addressing pertinent issues of ensuring stringent implementation. This dynamic undermines the efficacy and reliability of renewable energy policies, impeding progress in the sector despite the country's ample potential for renewable energy development[75]

The absence of a comprehensive framework for financing renewable energy is a significant obstacle to the development of renewable energy projects in Nigeria[76]. Notably, the country's energy policies on financial incentives predominantly focus on conventional energy sources rather than renewable ones, hindering the growth of the renewable energy sector. However, increasing financial incentives for the renewable energy sector could expedite its development. In a capital-constrained economy like Nigeria, where there is intense competition for scarce resources, funding renewable energy projects poses a considerable challenge[77]. Investors are often reluctant to invest in renewable energy sources, knowing that the high start-up capital requirements may impede their ability to generate profit. Therefore, establishing a robust financing framework and offering more financial incentives are crucial steps toward fostering the growth of renewable energy in Nigeria.

Inadequate research and development pose significant challenges to promoting renewable energy in Nigeria. The advancement of renewable energy technologies necessitates support across all stages, from research and

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[75] Ugwuanyi B. Ikechukwu and Emma Chukwuemeka, 'The Obstacles to Effective Policy Implementation by the Public Bureaucracy in Developing Nations: The Case of Nigeria' (2013) 1(8) Singaporean Journal of Business, Economics and Mana gement Studies.

[76] Omojolaibi J.A., 'Financing the Alternative: Renewable Energy in the Nigerian Economy' in Adenikinju, Iwayemi and Iladare, Green Energy and Energy Security Options for Africa: Proceedings of the 2012 Conference of the Nigerian Association Energy Economics (Ibadan, Atlantis Books 2012) 304.

[77] National Planning Commission (NPC) Report of the Vision 2020 National Technical Working Group of Energy Sector (NPC, 2009) 57.

demonstration to full-scale deployment, to foster a robust local industry[78]. Providing comprehensive information to key stakeholder groups, such as investors, is essential for mobilizing the financial resources necessary to support renewable energy technology projects[79].

Likewise, the process of obtaining licenses for renewable energy projects presents a significant challenge to their development in Nigeria, primarily due to bureaucratic hurdles, unclear regulations, and inconsistent enforcement. Delays in securing licenses can disrupt project timelines and discourage potential investors. Furthermore, the complexity of the licensing process may pose daunting challenges for smaller renewable energy developers, thereby restricting their ability to participate effectively in the energy market. Addressing these issues is crucial for fostering a more conducive environment for renewable energy investments in Nigeria. Streamlining the licensing procedures, providing clear and transparent regulations, and ensuring consistent enforcement would not only facilitate smoother project implementation but also encourage broader participation and growth within the renewable energy sector. Such reforms are essential to harnessing Nigeria's renewable energy potential and advancing its energy transition goals effectively[80].

4.2 Recommendations

Based on the identified challenges inhibiting renewable energy development in Nigeria, several key recommendations are proposed to foster growth and adoption of renewable energy technologies. Firstly, public awareness campaigns are crucial. Educating the public about the benefits of renewable energy can encourage wider adoption and create a supportive environment. Disseminating information about the availability, benefits, and opportunities of renewable energy sources is essential to raise public awareness and generate development activities. Building public confidence and acceptance of renewable energy technology in Nigeria requires a concerted effort to inform

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78 Sagar A.,Gallagher K.S., 'Energy Technology Demonstration and Deployment. Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges' [2004] 117.

79 Efurumibe E.L., 'Barriers to the Development of Renewable in Nigeria' (2013) 2 Scholarly Journal of Biotechnology 11, 13.

80 Olujobi, O.J., et al, '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)05120-4accessed 5 July 2024.

and engage communities, highlighting both the environmental and economic advantages of renewable energy.

Secondly, technology transfer is vital for addressing logistical challenges faced by Independent Power Producers (IPPs) in procuring equipment and securing maintenance support for renewable electricity projects. The Federal Government and renewable energy developers should facilitate knowledge transfer from international companies through joint ventures or technology agreements. Additionally, amending the Customs and Excise Tariff, (Consolidation) Act to facilitate the importation of renewable energy technology and equipment is necessary. Creating specific provisions within this Act to make renewable energy technology imports duty-free or subsidized will encourage investors and promote renewable energy development.

Another critical recommendation is the development of a comprehensive and coherent legal framework for renewable energy. Additionally, strengthening policy implementation by enhancing the capacity of relevant regulatory bodies, such as the Nigerian Electricity Regulatory Commission (NERC) and the Rural Electrification Agency (REA), is essential for effective enforcement of renewable energy policies and regulations.

Lastly, financial incentives and government support are crucial for stimulating investment and research in renewable energy. Offering tax incentives, subsidies, and low-interest loans can encourage businesses and individuals to invest in renewable energy technologies. Furthermore, increasing funding for national research and development institutions and universities focused on renewable energy technologies suitable for Nigeria's context will foster innovation and adaptation. Overcoming licensing challenges by streamlining procedures for renewable energy projects, utilizing online platforms, and building capacity within licensing agencies will create a more predictable and efficient environment for renewable energy development in Nigeria. These measures, collectively, can significantly bring changes to renewable energy projects in Nigeria.

5. CONCLUSION

Nigeria holds immense potential for renewable energy development, yet its progress is impeded by substantial challenges despite supportive international and national frameworks. This study provides an in-depth analysis of the

legal, policy, and institutional frameworks that support renewable energy. Despite covering pertinent legislation, these frameworks are hindered by fragmentation and insufficient implementation. Overcoming these obstacles demands a comprehensive strategy. The study also underscores the importance of renewable energy as a solution to Nigeria's energy crisis and environmental issues and highlights the significance of renewable energy projects in promoting sustainable development in Nigeria. Given the unreliable electricity supply in Nigeria and the limited power availability in rural areas, the urgency for alternative energy sources is paramount. Key challenges identified include political interference, lack of comprehensive financing frameworks, inadequate research and development, and bureaucratic hurdles in obtaining licenses. Recommendations to overcome these challenges include public awareness campaigns, technology transfer, developing a comprehensive and coherent legal framework, enhancing the capacity of regulatory bodies, and providing financial incentives and government support for renewable energy projects. Moreover, attracting investment via stable policies and addressing infrastructure constraints are imperative. Learning from global best practices and fostering collaborative partnerships among stakeholders are fundamental in unlocking the Nigeria's s renewable energy potential.

In conclusion, the articles call for a concerted effort to promote renewable energy in Nigeria through robust legal and policy frameworks, public engagement, and strategic investments. By addressing these challenges and leveraging on its renewable energy potential, Nigeria can achieve sustainable development, enhance energy security, and contribute to global climate goals.