

A Review of the Legal Framework on Renewable Energy Development in Nigeria's Electricity Mix

Shamsu Yahaya*

Abstract

Electric energy is critical to industrialization of a nation. One of the current trends in the energy sector in many countries is the effort to integrate Renewable Energy into the electricity mix. This trend is necessitated by the need for energy security, development and concerns about climate change. Nigeria is rich in Renewable Energy resources such as wind, solar, biomass and hydro which can be tapped to meet its energy needs. However, the country barely focused on actively utilizing Renewable Energy sources in the electric power sector. The paper reviews the extant legal framework on Renewable Energy development in Nigeria's electricity mix, which includes, amongst others, the Electric Power Sector Reform Act, the Energy Commission of Nigeria Act and policies aimed at Renewable Energy Development in the electric power sector. The paper adopts the doctrinal method and relies on primary and secondary sources. The paper finds that the existing legal framework for the integration of Renewable Energy resources in Nigeria's electricity mix is inadequate. Accordingly, the paper identifies strategies for improving the situation using the context of cross-country experiences. The paper recommends, amongst others, the need to enact a Renewable Energy Act solely for the promotion and development of Renewable Energy as an important energy source in the electric power sector. The paper also advocates the development of mini-grids, controlled and licensed by state governments, to create greater access to electricity in the rural areas, most of which have poor access to the national grid system.

Keywords: electricity, legal framework, legislation, policy, renewable energy.

1.1 Introduction

Electric energy is essential to the development of a nation.¹ It is crucial to the provision of basic needs such as cooked food, a comfortable living temperature, lighting, the use of appliances, essential healthcare, communication and transport. It also fuels productive activities, including agriculture, commerce, industry and mining, amongst others.² One of the current trends in the energy sector is promoting

* LLB, BL, LLM, MLD, ChMC, Research Fellow, National Institute for Legislative and Democratic Studies, National Assembly, Abuja Nigeria. Email: sudeen09@yahoo.com. GSM: 08035867279

¹O.A. Odiase-Alegimenlen, J.O. Garuba, 'Compensation for Land and Access Right Acquisition in the Electric Power Sector: The Nigerian Perspective' [2015] (34) *The Journal of Private And Property Law, Faculty of Law, University of Lagos*.

²OsaretinAigbovo, EbitanOgbaka 'Electric Power Sector Reform Act 2005 and the Development of Renewable Energy in Nigeria' [2016] *Renewable Energy Law and Policy Review*, 20.

the integration of Renewable Energy in the electricity mix. This trend is necessitated by the need for energy security, development and concerns over climate change.³ Nigeria possesses significant Renewable Energy resource potential such as solar, hydropower, wind, geothermal and renewable fuel sources. These energy sources are infinite in nature and environmentally friendly in comparison with conventional sources of other energy such as coal, natural gas and oil⁴ which cause ozone layer depletion. However, the current contribution of Renewable Energy to Nigeria's electricity mix is insignificant.⁵ The current total contribution of Renewable Energy to the electricity mix in Nigeria is about 35 Megawatt (MW) comprising of 30MW small hydropower and 5MW solar photo voltaic.⁶

Consequently, apart from hydropower, Renewable Energy sources hardly feature in Nigeria's electricity mix.⁷ This is mainly because Renewable Energy has not been given adequate legislative attention in Nigeria. The result is that Nigeria has no steady supply of electricity, which is vital to economic growth.⁸ In contrast, many countries have enacted laws and made regulations to include Renewable Energy in their electricity mix.⁹ It is also worth noting that Nigeria is contributing to environmentally damaging activities, thereby increasing its share of Greenhouse Gas (GHG) emissions, due to the use of fossil fuel for electricity generation.¹⁰ Therefore, in order to meet its international obligations on reduction of GHG¹¹ and to ensure a

³ Adrian J. Bradbrook, 'The Development of Renewable Energy Technology and Energy Efficiency Measures through Public International Law', in Donald N Zillman (eds), *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, 2008), 109-112.

⁴ Oluseyi O. Ajayi, Oluwatoyin O. Ajayi, 'Nigeria's Energy Policy: Inferences, Analysis and Legal Ethics toward RE Development' [2013] (60) *Energy Policy*, 61.

⁵ Muhammed T. Ladan, 'Policy, Legislative and Regulatory Challenges in Promoting Efficient and Renewable Energy for Sustainable Development and Climate Change Mitigation in Nigeria' in R. Mwebaza and LJ Kotzé (eds), *Environmental Governance and Climate Change in Africa: Legal Perspectives* (Institute for Security Studies 2009), 104.

⁶ Ibid.

⁷ Peter Kayode Oniemola, 'Powering Nigeria through Renewable Electricity Investments: Legal Framework for Progressive Realisation' [2015] (6) *Journal of Sustainable Development Law and Policy*, 83.

⁸ Shehu Usman Yamusa, Abdul Haseeb Ansari, Renewable Energy Development in Two Selected African Countries: An Overview and Assessment [2013] (4) (2) *Renewable Energy Law and Policy Review*, 152.

⁹ Dilip Ahuja, Marika Tatsutani, 'Sustainable Energy for Developing Countries' <<https://journals.openedition.org/sapiens/823>> accessed 12 December, 2020.

¹⁰ P.B. Eregba, 'Sustainable Energy and Sustainable Development: Which Way Forward for Nigeria?' in A. Adenikinju, A. Iwayemi and W. Iledare, *Green Energy and Energy Security Options for Africa: Proceedings of the 2012 Conference of the Nigerian Association of Energy Economics* (Atlantis Books, 2012), 304.

¹¹ Nigeria has ratified the Paris Agreement and most recently the Doha Amendment to the Kyoto Protocol which are multilateral treaties aimed at address climate change and enhance reduction in emission of GHG by nations. See Climate change: Nigeria to cut emissions unconditionally by 20% <[Climate change: Nigeria to cut emissions unconditionally by 20% | The Guardian Nigeria](#)>

sustainable energy future, there is a need to diversify Nigeria's energy sources to include Renewable Energy.¹²

Apart from the inadequate laws for the promotion of Renewable Energy due to the lack of political will and support for Renewable Energy in Nigeria¹³; the fact that the attention of the political class remains on fossil fuels and earning foreign exchange from export of crude oil¹⁴, the energy sector in Nigeria is characterised by incompetence and lack of accountability in the management of various fossil fuel enterprises.¹⁵ The energy sector in Nigeria is also characterised by corruption¹⁶ which has a negative effect on the success of the sector. Consequently, despite global momentum towards development of Renewable Energy, Nigeria has made very little progress in this area. The question then arises as to why Renewable Energy has not been integrated into Nigeria's electricity mix. Against the backdrop of the foregoing, the paper reviews the legislative framework for the development of Renewable Energy in Nigeria's electric power sector. The paper consists of 6 sections. The next section is the conceptual framework which discusses Renewable Energy in electricity generation, highlighting its use in spreading greater access to electricity. In the third section, the existing legal framework on the use of Renewable Energy in Nigeria's electricity mix is discussed, highlighting the inadequacies of the current legal and policy frameworks. In the fourth section, a cross-country analysis is rendered on the uses of Renewable Energy in the electric power sector and lessons which Nigeria may learn from the practice in other countries. The fifth section presents the conclusion and recommendations.

1.2 Conceptual Clarification of Key Terms

It is important to understand the key concepts which form the background of the paper which include renewable energy, renewable energy in electricity generation and the importance of renewable energy. An understanding of these key concepts will contribute to an appreciation of the paper. These concepts are briefly discussed below:

[News - Nigeria and World NewsNigeria — The Guardian Nigeria News – Nigeria and World News](#) accessed 24 December, 2020.

¹²S.O. Oyedepo, 'On Energy for Sustainable Development in Nigeria' [2012] (16) *Renewable Energy and Sustainable Energy Reviews*, 2589.

¹³Peter KayodeOniemola, 'Integrating Renewable Energy into Nigeria's Energy Mix through the Law: Lessons from Germany' [2011] (2) (1) *Renewable Energy Law and Policy Review*, 34.

¹⁴Ibid.

¹⁵Emeka E. Okafor, 'Rethinking African Development: A Critical Overview of Recent Developments in the Petroleum Sub-Sector in Nigeria', [2007] (15) (1) *Journal of Social Science*, 88.

¹⁶YinkaOmorogbe, *Why We Have no Energy* (University of Ibadan Press, 2008), 60.

1.2.1 Renewable Energy

Renewable energy, often referred to as [clean energy](#), is derived from natural sources or processes that are constantly replenished.¹⁷ These include sunlight, geothermal heat, wind, tides, water and various forms of biomass. This form of energy cannot be exhausted and is constantly renewed.¹⁸

1.2.2 Renewable Energy in Electricity Generation

Renewable energy sources of electricity generation are energy sources from natural and persistent flow of energy happening in our immediate environment.¹⁹ They include:

1.2.3 Hydropower

Hydropower is an energy source harnessed from water moving from higher to lower elevation levels, primarily to turn turbines and generate electricity. Hydropower projects include Dam project with reservoirs, run-of-river and in-stream projects. The operation of hydropower reservoirs reflects their multiple uses, for example irrigation, drinking water and navigation.²⁰ The primary energy is provided by gravity and the height from which the water falls down on to the turbine. The reservoir level changes to some extent downwards when water is released and subsequently leads to electricity production. To achieve this, turbines are constructed for an optional flow of water.²¹ Hydropower discharges no particulate pollution and is capable of storing energy for many hours.²²

1.2.3.1 Bioenergy

Bioenergy is a renewable energy source derived from biological sources. It can be used for electricity generation, cooking and heating. Electricity from bioenergy can be derived from a variety of sources, including forest by-products such as wood residues, agricultural residues such as sugar cane waste and animal husbandry residue such as cow dung. Presently, global production of biofuels is comparatively low, but continuously increasing.²³

¹⁷ Lora Shinn, 'Renewable Energy: The Clean Facts' <<https://www.nrdc.org/stories/renewable-energy-clean-facts#sec-what-is>> accessed 14 January 2021.

¹⁸ Ibid.

¹⁹ [PhebeAsantewaaOwusu](#), [Samuel Asumadu-Sarkodie](#) 'A Review of Renewable Energy Sources, Sustainability Issues and Climate Change Mitigation' [2016] (3) (1) *Cogent Engineering*.

²⁰ Edenhofer, O. and others (eds) *Renewable Energy Sources and Climate Change Mitigation* (Cambridge University Press 2011).

²¹ Forsund, Finn R., *Hydropower Economics* (Springer 2015).

²² Andrew Hamann, 'Coordinated Predictive Control of a Hydropower Cascade' <https://www.hydrofoundation.org/uploads/3/7/6/1/37618667/hamann_final_research_findings.pdf>

accessed 14 January 2021.

²³ AmelaAjanovic, 'Biofuels versus Food Production: Does Biofuels Production Increase Food Prices' [2011] (36) (4), *Energy Journal*, 2070-2076.

1.2.3.2 Solar Energy

This form of electric energy is a form of renewable energy source technology that draws from the Sun's energy directly. Solar energy technology is obtained from solar irradiance to generate electricity using photovoltaic and concentrating solar power (CSP), to produce thermal energy, to meet direct lighting needs.²⁴

1.2.3.3 Geothermal Energy

Geothermal Energy is obtained naturally from the earth's interior as heat energy source. Geothermal gradient averages about 30 °C/km. There are areas of the earth's interior which are accessible by drilling and where the gradient is well above the average gradient.²⁵ Heat is mined from geothermal reservoirs using wells and other means. Once drawn to the surface, fluids of various temperatures can be used to generate electricity and other purposes that require the use of heat energy.²⁶

1.2.3.4 Wind Energy

Wind Energy is one of the important renewable sources globally. Wind exists in abundance everywhere in the world, with considerable density in some places. Wind energy harnesses kinetic energy from moving air. Wind turbines convert the energy of wind into electricity. Onshore and offshore wind energy technologies are being manufactured and deployed on large scale in many countries.²⁷

1.2.3.5 Ocean Energy (tide and wave)

Surface waves are created when wind passes over the ocean. The faster the wind speed, the longer the wind is sustained, the greater distance the wind travels and the greater the energy produced.²⁸ The ocean stores enough energy to meet the total worldwide demand for power many times over in the form of waves, tide, currents and heat.²⁹ There are presently four ways of obtaining energy from the ocean and sea areas, which include wind, tides, waves and thermal differences between deep and shallow sea water.³⁰

²⁴Owusu (n19).

²⁵Barbier, E. 'Geothermal Energy Technology and Current Status: An Overview' [2002] (6) *Renewable and Sustainable Energy Reviews* , 3–65.

²⁶Ibid.

²⁷Edenhofer (n20).

²⁸Jacobson, M. Z., Delucchi, M.A. 'Providing All Global Energy With Wind, Water, And Solar Power' [2011] (39) *Energy Policy*, 1154–1169.

²⁹Esteban, M., Leary, D. 'Current Developments and Future Prospects of Offshore Wind and Ocean Energy [2012] (90) *Applied Energy*, 128–136.

³⁰Ibid.

1.2.4 Advantages of Renewable Energy Technologies

1.2.4.1 Renewable Energy is Becoming Cheaper

The conventional sources of energy, especially coal and oil are well known for causing serious damage to the environment, increase GHG emissions³¹ and are also expensive. Therefore, Renewable Energy is a sustainable and in the long term, cost effective solution to the rising demand for energy.³² Except for biogas, Renewable Energy has no operating and maintenance cost. This is a significant advantage over energy derived from fossil fuels.³³

1.2.4.2 Renewable Energy is Renewable

Renewable Energy has an infinity of sustainability compared to other sources of energy like coal, oil and gas which will run out over time. Strong winds, geothermal heat, moving water, and the sun can provide a vast and constant energy supply.³⁴

1.2.4.3 Environmental Benefits

Renewable Energy is clean and results in little to no greenhouse and carbon emissions³⁵ thereby mitigating climate change. It will not deplete natural resources and have minimal, impacts on the environment, with no waste products of CO₂ and others.³⁶

1.2.4.4 Reliable and Secure Energy Source

The dependence of the world economy on fossil fuels has increased considerably in last few decades. The result is that security of nations continues to depend on fossil fuels that are vulnerable to political instabilities, trade disputes, wars, and high prices. However, solar and wind plants are distributed over large geographical area, and weather disruptions in one area do not cut off power to an entire region.

1.2.4.5 Security and Sustainability of Supply

Renewable Energy technologies offer increased energy security as fossil fuels make the global economy dependent on a few exporting countries. Furthermore, the localized nature of many Renewable Energy resources makes them attractive for decentralized systems that can be used in remote and rural areas that have no access to grid electricity. In rural areas, people pay higher prices for energy services delivery including the cost of kerosene or the cost of running diesel generators.³⁷

³¹ Mahesh Kumar, 'Social, Economic, and Environmental Impacts of Renewable Energy Resources' <<https://www.intechopen.com/books/wind-solar-hybrid-renewable-energy-system/social-economic-and-environmental-impacts-of-renewable-energy-resources>> accessed 29 December, 2020.

³² Alphonse Niyibizi. 'SWOT Analysis for Renewable Energy in Africa' [2015] (6) (4) *Renewable Energy Law & Policy Review*, 278.

³³ Ibid, 279.

³⁴ Ibid.

³⁵ Owusu (n17).

³⁶ Ibid.

³⁷ Niyibizi (n 32), 280.

1.3 Analysis of Existing Policy and Law on Renewable Energy Development in Nigeria

The International Energy Agency points out five fundamental principles renewable energy policy design should reflect³⁸, which include the removal of non-economic barriers, such as obstacles to grid access and poor electricity; the need for a transparent policy framework to attract investments; and the development and implementation of appropriate incentives guaranteeing exploitation of Renewable Energy technologies. Certainly, some of these measures can be achieved through the use of the law to promote the development of Renewable Energy. However, in Nigeria, there is no single law which governs Renewable Energy usage for electrification. Rather, the legal regime is governed by a variety of laws, policies, regulations and directives.³⁹ The laws and policies on Renewable Energy in Nigeria are analysed as follows:

1.3.1 Renewable Energy Policy 2003-2005

In 2003, the Energy Commission of Nigeria (ECN), pursuant to powers granted to it by section 5 of the Energy Commission of Nigeria Act,⁴⁰ produced a National Energy Master Plan for Nigeria, containing a National Energy Policy. The Master Plan was expected to ensure a guided implementation of the National Energy Policy and focused on all energy sources, energy utilisation, manpower development, energy financing, energy data bank, energy planning, amongst others.⁴¹ In 2005, the ECN drafted a Renewable Energy Master Plan (REMP) with the objective of developing and implementing strategies that will achieve clean reliable energy supply and establish a mechanism to develop the sector based on international practices to demonstrate viability for private sector participation. REMP targeted three levels of Renewable Energy according to the time frame of implementation: short term (2005-2007), medium term (2008-2015) and long term (2016-2025). It was expected that within the 20 years period Renewable Energy sources will be contributing 10% to the country's energy supply.⁴² However, no significant progress was made in achieving the objective of the REMP.⁴³ Hence, it has been argued that with the power sector reform introduced by EPSRA, such powers should be given to NERC which is the regulatory agency in the sector.⁴⁴ This is in view of the fact that

³⁸ International Energy Agency, *Deploying Renewables: Principles for Effective Policies* (OECD/IEA, 2008), 25.

³⁹ Andrea A. Ajibade, 'National Strategies to Promote Renewable Energy Development: Wither Nigeria?' [2019] (19 (1) *Journal of Sustainable Development Law and Policy*, 81

⁴⁰ ECN Act, CAP LFN 2004. See section 5 of the Act.

⁴¹ Temilade Sesan, 'Status of Renewable Energy Policy and Implementation in Nigeria'

<<http://www.gbengasesan.com/temidocs/REPStatusNigeria.pdf>>

accessed 23 December, 2020.

⁴² Ibid.

⁴³ Yemi Oke, *Nigerian Electricity Law and Regulation* (Law Lords Publication, 2013), 59.

⁴⁴ Aigbovo (n2), 24.

the ECN lacks regulatory powers and hence cannot be effective in achieving the objective of the REMP.

1.3.2 Renewable Energy Policy 2006

In 2006, the Federal Government released the Policy Guidelines on Renewable Energy, which stated that renewable electricity is a cost effective, modular and decentralized option for providing electricity and bringing development to rural areas.⁴⁵ The guidelines provided that the NERC shall:

- i. Develop simplified licensing procedures for Renewable Energy investments;
- ii. Develop a framework for power purchase agreement that ensures access to grid-based renewable electricity;
- iii. Ensure preferential prices for renewable electricity to cover cost due to size, technology, location and the intermittent nature of the particular renewable electricity base;
- iv. Lower licensing charges for renewable electricity licensees;
- v. Develop and maintain quality standards for renewable electricity equipment and installations;
- vi. Lessen the regulatory compliance and reporting burden;
- vii. Ensure that appropriate Environmental Impact Assessments are conducted prior to award of licenses; and
- viii. Report specifically on the status of the renewable electricity industry in its quarterly report to the President and National Assembly.⁴⁶

It should be noted that since the formulation of the policy and subsequent policies in relation to Renewable Energy, NERC has not implemented the directives of the policy because it has not provided electricity and development to rural areas. Besides, the Policy is inadequate to address the challenges of financing, legislation, and energy efficiency in relation to Renewable Energy development in the electric power sector.

1.3.3 National Renewable Energy and Energy Efficiency Policy 2015

The National Renewable Energy and Energy Efficiency Policy (NREEEP) aims to remove major economic and regulatory barriers to utilisation of Renewable Energy relative to other forms of energy in Nigeria.⁴⁷ The NREEEP is the most detailed policy in Nigeria on Renewable Energy development, years after the reform of the

⁴⁵YemiOke, Beyond Power Sector Reforms: The Need for Decentralised Energy Options (DEOP) for Electricity Governance in Nigeria <<https://www.scribd.com/document/197752848/Beyond-Power-Sector-Reforms-the-Need-for-Decentralised-Energy-Options-DEOPs-for-Electricity-Governance-in-Nigeria>> accessed 23 December, 2020.

⁴⁶Renewable Energy Policy Guidelines 2006, para 7.3.

⁴⁷National Renewable Energy and Energy Efficiency Policy 2015 (NREEEP), para 1.4.

Nigerian electricity sector. The policy addresses diverse issues such as renewable energy supply and utilisation, Renewable Energy pricing and financing, legislation, regulation and standards, energy efficiency and conservation, Renewable Energy project implementation issues, research and development, amongst other.⁴⁸

The policy includes an on-grid Renewable Energy agenda which is expected to further stimulate the development of large-scale renewable electricity projects. Immediate priority is given to having three major Renewable Energy projects, to include hydro, a large-scale wind, a large-scale PV solar power plant, biomass electricity generating plant and a Concentrated Solar Power (CSP) plant ready for final investment decision within 18 to 24 months.⁴⁹ The NREEP fails to identify the Renewable Energy Sources best suited for capturing Renewable Energy sources in Nigeria's electricity mix. Furthermore, it fails to make recommendations for decentralised Renewable Energy modalities and off-grid systems.⁵⁰ Hence, implementation of the policy has left much to be desired.

1.3.4 The National Renewable Energy Action Plan NREEAP (2015-2030)

The NREEAP represents the most recent efforts of the ministry of power to formulate a roadmap for the implementation of Renewable Energy policies for electrification.⁵¹ It forms part of the transit strategy that targets 30,000MW of electricity of which renewable will contribute 30 per cent by the year 2030. However, the policy and the National Renewable Energy and Energy Efficiency Policy 2015 discussed above are silent on how to mitigate or adapt to pressing issues of climate change through enhanced electrification. Furthermore, there is lack a concrete roadmap, which details ways in which to achieve the objectives or timelines for project and strategy implementation.⁵² Since the Plan intends to achieve 30% renewable energy in the country's electricity mix by year 2030, there is no indication of any successful Renewable Energy projects anywhere in Nigeria to suggest that the country is on track to achieve the 2030 target.

1.3.5 Electric Power Sector Reform Act, 2005⁵³ (EPSR Act)

The EPSR Act was enacted to be an all-encompassing law for the reform of the electric power sector in Nigeria. In relation to Renewable Energy, the relevant provision of the EPSRA concerning its the development, generation, transmission or sale is section 88(9), which provides that:

⁴⁸NREEEP, para 1.1.

⁴⁹NREEEP, para 2.6.1.

⁵⁰YemiOke, 'Beyond Power Sector Reforms: the Need for Decentralized Energy Options (DEOPs)' [2012] (18) (1) *Nigerian Journal of Contemporary Law*, 67.

⁵¹ The National Energy Efficiency Action Plans, Adopted by the Inter-Ministerial Committee on RE and Energy Efficiency and Approved by National Council on Power 14 July 2016 <https://www.se4allafrica.org/fileadmin/uploads/se4all/Documents/Country_PANER/Nigeria_National_Renewable_Energy_Action_Plans_.pdf> accessed 4 January, 2021.

⁵²Ajibade (n39), 91.

⁵³EPSR Act, 2005.

The Minister shall, once in a quarter, submit to the President reports, prepared in consultation with the Rural Electrification Agency and the Commission, on the progress and achievement of the Rural Electrification Strategy and Plan, which shall include information relating to:

- (a) the expansion of the main grid;
- (b) the development of isolated and mini-grid systems; and
- (c) Renewable Energy power generation.

The above provision linked the use and development of renewable electricity to rural electrification. This strategy is laudable as it recognises renewable electricity sources as suitable for improving the access to electricity in the rural areas and promoting decentralised electricity governance.⁵⁴ However, apart from this obligation to report progress made on rural electrification, which indirectly recommends Renewable Energy, the EPSR Act fails to provide a detailed plan for the development of Renewable Energy. This limited the development of renewable electricity energy sources in Nigeria. Indeed, it is essential that Renewable Energy be considered early in the design of power sector reforms not after the completion of the reform process.⁵⁵

Furthermore, the Act fails to articulate decisive Renewable Energy planning. For instance, in section 62, a license must be acquired for power projects that exceed 1 MW at one site; where any person or undertaking distributes electricity with a capacity not exceeding 100 kilowatts (KW) at one site; or in such other instances as the Nigerian Electricity Regulatory Commission (NERC) determines in the public interest. Generally, the EPSR Act fails to adequately provide for Renewable Energy promotion in Nigeria's electricity sector.⁵⁶

This writer has argued elsewhere that some provisions in the Act are an impediment to participation of state governments in electricity generation, transmission and distribution of electricity.⁵⁷ Indeed, the Constitution of the Federal Republic of Nigeria, 1999 (as altered) provides that State Governments may make laws for “establishment, within that state, of any authority for the promotion and management of electric power stations established by the state”⁵⁸. In this regard, a House of Assembly may make laws for the State with respect to electricity and the

⁵⁴Oke (n43), 320.

⁵⁵Xiaodong Wang, Legal and Policy Frameworks for Renewable Energy to Mitigate Climate Change [2007] (7) (2) *Journal of Sustainable Development Laws and Policy*, 72.

⁵⁶Ibid.

⁵⁷ShamsuYahaya, ‘Electric Power Sector Reform in Nigeria: Challenges and Prospects’ [2020] (2) (1) *Nile University Law Journal*, 42-43.

⁵⁸See Part II of the Second Schedule, paragraph 14 (c).

establishment of electric power stations; the generation, transmission and distribution of electricity to parts of the state not covered by a national grid system within that State.⁵⁹ From this provision, it is evident that State governments can play a role in power generation. However, state governments in Nigeria have not made laws in this regard, because the federal government has established the regulatory and licencing regime⁶⁰ on the electric power sector.⁶¹

1.3.6 Nigerian Electricity Regulatory Commission

The EPSR Act establishes the Nigerian Electricity Regulatory Commission (NERC) as the regulator of the electric power sector in Nigeria.⁶² Hence, NERC is one of the most significant agencies in Nigeria's electricity reform process.⁶³ NERC regulates electricity generation including Renewable Energy sources. NERC is charged with the responsibility to create, promote and preserve an efficient industry and market structures and guarantee the best possible utilization of resources for electricity through the promotion and facilitation of consumer connections to distribution systems across Nigeria.⁶⁴ The EPSR Act also grants powers to NERC to license and regulate persons engaged in electricity generation, transmission, system operation, distribution, and trading, which includes electricity generation through Renewable Energy sources. To encourage state governments' participation in the development of Renewable Energy sources in electricity generation, state governments should be granted powers to issue licences to Renewable Energy generators in order to facilitate access to electricity to states, especially to the rural areas.

1.3.7 The Energy Commission of Nigeria Act (ECN Act)

The Energy Commission of Nigeria Act establishes the ECN as the regulatory institution for energy in Nigeria.⁶⁵ The Act establishes the Commission to be responsible for coordinating and general surveillance over the systematic development of the various energy resources of Nigeria. The Commission also serves as a centre for gathering and dissemination of information relating to national policy in the field of energy development.⁶⁶ However, apart from establishing a department

⁵⁹ Conflicting laws keep Nigeria's electricity supply unreliable
<<https://theconversation.com/conflicting-laws-keep-nigerias-electricity-supply-unreliable-81393>>
accessed 09 January 2021.

⁶⁰ See section 62 of the EPSR Act, 2005. See also sections 32 (2) (d) of the Act, 2005 which grants powers to the Nigerian Electricity Regulatory Commission to license and regulate persons engaged in electricity generation, transmission, system operation, distribution, and trading.

⁶¹ Yahaya (n57).

⁶² See section 31 and 32 of the EPSR Act, 2005.

⁶³ See sections 32 of the EPSR Act, 2005.

⁶⁴ Ibid.

⁶⁵ ECN Act, CAP E10 LFN, 2004.

⁶⁶ See section 5(a) of the Act.

of Alternative and New and Renewable Energy Sources⁶⁷, the term ‘renewable energy’ does not appear anywhere in the Act. This indicates that the Act does not accord any prominence to Renewable Energy development.

It may be assumed that based on the numerous laws and policies highlighted above, Nigeria should not be witnessing an energy crisis. However, this is not the case as there is problem of poor and ineffective implementation due to lack of political will. It seems that these policies are routinely articulated without real planning on implementation strategies. Indeed the major hurdles to achieving the economic and environmental delivery targets of the national energy policies are corruption, budget diversion and abandoning of policies due to change of government. Energy policies are viewed from individual benefit perspective, rather than as supposed to be targeted at broad societal development, thereby making most planned policies short-lived or subject to easy changes once there is a change in the political leadership.⁶⁸ Against this background, the next section discusses cross-country experiences to distil lessons which Nigeria can learn in Renewable Energy development in its electricity mix.

1.4 Cross-country Experiences on Renewable Energy Inclusion in Electricity Mix

The countries selected for the cross-country analysis in this section include Germany, Kenya, Venezuela and the United States of America. Germany was selected because the country is one of the best examples of successful implementation of Renewable Energy development in electricity. The United States of America and Kenya were selected because they operate a federal system of government, similar to Nigeria. Venezuela was selected because the country is an oil rich country like Nigeria that has been able to achieve some success in Renewable Energy Development in its electricity mix.

1.4.1 Germany

Germany is a good example for the large-scale deployment of Renewable Energy. Renewable Energy policy in Germany began in the 1970s, after the first oil crisis.⁶⁹ During that period, Germany used a mixture of policies to reduce oil imports, which among others included increasing research and development for new energy technology, mainly renewables.⁷⁰ This deployment was based on a strong policy and

⁶⁷ See section 1(1)(b) of the Act.

⁶⁸ Musbaudeen O. Bamgbopa, [AbdallahDindi, AdetunjiAlabi](https://www.researchgate.net/publication/332118886_A_Review_of_Nigerian_energy_Policy_Implementation_and_Impact) ‘A Review of Nigerian energy Policy Implementation and Impact’ <https://www.researchgate.net/publication/332118886_A_Review_of_Nigerian_energy_Policy_Implementation_and_Impact> accessed 4 March 2021.

⁶⁹ Energy Information Administration, *Policies to Promote Nonhydro Renewable Energy in the United States and Selected Countries* (Energy Information Administration, 2005), 11.

⁷⁰ Ibid, 11-12.

regulatory support for renewables. Renewables have obtained significant shares of electricity production due to private sector project investment supported by government incentives.⁷¹ Consequently, the legal framework for Renewable Energy in Germany has resulted in years of growth in renewable installations. The jump in solar installations in Germany over the years follows an announcement of reduced future tariffs buttresses this point. Furthermore, the policy of fixed feed-in tariffs are the most effective instruments for the promotion of renewable electricity generation in the European Union.⁷² As a result of these deliberate policies, the Renewable Energy sector in Germany is one of the most successful worldwide. The success of the German Renewable Energy sector is not unconnected with pragmatic legislative and policy strategies that are reviewed and updated from time to time based on changed technological and fiscal circumstances.

In 1991, Germany's Electricity Feed-in Act⁷³ transformed the market conditions for renewable electricity producers by requiring utility companies to buy renewable electricity. The law also established fixed tariffs that renewable electricity producers would receive for electricity production differentiated by technology.⁷⁴ Before the enactment of the Act, the process of feeding electricity into German grids by independent generators had been regulated by an informal association agreement, which regulated the electricity feed-in from independent power operators.⁷⁵ The Law also provided for large subsidies and government loans to renewable power producers.⁷⁶ The German experience with the feed-in tariff indicates that private investment was driven by the creation of a market for renewable electricity; and the size of a guaranteed price paid to producers of renewable electricity, which was adequate to cover their long-term costs.⁷⁷

The Law was replaced by the Renewable Energy Sources Act⁷⁸ and renewed again through the Renewable Energy Sources Act⁷⁹; the purpose of the 2004 Act was to

⁷¹ Point Carbon, *Clean Energy Investment in the Former Soviet Union (Ukraine and Kazakhstan): The Domestic Context* (International Institute for Sustainable Development, 2008), 68.

⁷² Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, *The Renewable Energy Sources Act: The Success Story for Sustainable Policies for Germany* (BMU, 2007), 6.

⁷³ Electricity Feed-in Act, 1991.

⁷⁴ Jon Strand, *Energy Efficiency and Renewable Energy Supply for the G-7 Countries, with Emphasis on Germany* (Washington, DC: International Monetary Fund Working Paper, WP/07/299, 2007), 27.

⁷⁵ Andre Suck, 'Renewable Energy Policy in the United Kingdom and in Germany' <[Renewable Energy Policy in the United Kingdom and in Germany by Andre Suck :: SSRN](#)> accessed 20 December 2020.

⁷⁶ Ibid.

⁷⁷ Energy Information Administration (n69).

⁷⁸ Renewable Energy Sources Act 2000.

⁷⁹ Renewable Energy Sources Act 2004.

promote the further development of technologies for the generation of electricity from Renewable Energy sources.⁸⁰ The 2004 Act gave Renewable Energy priority access to the electricity grid, obliged grid operators to purchase renewable energy electricity, and established a new tariff for Renewable Energy electricity. The law therefore served as guarantor for the rapid expansion of renewable electricity in Germany since 2004. The country's strong policy and regulatory support for renewables, utilizing fixed tariffs to encourage private sector investment are good indicators for a country like Nigeria on how to integrate Renewable Energy in the electricity mix.

1.4.2 Kenya

Renewable Energy technology is given priority in Kenya's national development agenda.⁸¹ The installed capacity of generated electricity in Kenya includes 47 per cent geothermal energy, 39 percent hydropower and 1 percent wind power. Kenya also generates approximately 253.5 MW of thermal energy.⁸² Kenya's energy strategies, therefore indicates a commitment to the Renewable Energy development for electrification. Renewable Energy in Kenya makes up 70% of energy mix in 2018 and as high as 87% in 2020.⁸³ In March 2019, Kenya passed The Energy Act 2019, which sets out the laws relating to the production, transmission, distribution, and sale of energy, outlines the responsibilities of the various governmental bodies, and regulates the exploitation of Renewable Energy sources.⁸⁴ In Kenya, the adoption of Renewable Energy technologies has been made a national priority on every national development policy agenda.⁸⁵

1.4.3 Venezuela

Venezuela, being rich in revenue accrued from crude oil has successfully built a modern electricity system. The country has been able to construct hydroelectricity, which today has a capacity of about 15,000 MW and generates roughly 86,700 GWh, which accounts for 73.4 percent of total generated electricity.⁸⁶ However, due to technical, economical, financial, human and policy factors, electricity supply went

⁸⁰ See Article 1 of the Renewable Energy Sources Act, 2004.

⁸¹ YemiOke, 'A Comparative Appraisal of Renewable Energy Laws' [2014] (1) (1) *Ife Journal of International and Comparative Law*, 57.

⁸² Ajibade (n 39), 92.

⁸³ Roy Janho, 'Renewable Energy in Kenya: An Examination of the Legal Instruments and Institutional Changes that Successfully Attracted Foreign Investment' <<https://energycentral.com/c/pip/renewable-energy-kenya-examination-legal-instruments-and-institutional-changes>> accessed 11 January 2021.

⁸⁴ Ibid.

⁸⁵ Andrew KarugaMaina, Gladys Rotich, 'Determinants of Adoption of Domestic Renewable Energy in Kenya: A Case Solar Power in Kitui County' [2016] (3) (2) *The Strategic Journal of Business and Change Management*, 936-957.

⁸⁶ Centro Nacional de Gestión (cng), 'Informe Anual 2008', 27.

through a period of deep crisis in Venezuela. This led to interest in Renewable Energy sources in Venezuela which began in late 1970s which was not due to the shortage of oil, but rather as a way to invest oil windfalls.⁸⁷ In that period the government declared promotion of Renewable Energy as a state policy. In the 1990s, due to a combined effect of stagnating oil revenues and an international environmental movement for sustainable development, the government rekindled interest in Renewable Energy sources as an option in the electricity mix.⁸⁸ The government decided to accomplish most Renewable Energy projects without private sector participation. Since then, Renewable Energy projects have become even more ambitious. This sudden interest in Renewable Energy in Venezuela mirrors what happened during the 1970s in most oil exporting countries, with increased oil revenues giving impetus to the execution of industrial projects.⁸⁹

1.4.4 United States of America

In the United States, the Federal Government enacted the Public Utilities Regulatory Policy Act of 1978 to kick-start the era of modern Renewable Energy industry. The Act required electric utilities to purchase power from independent renewable energy generators.⁹⁰ This was the first use of a “feed-in” policy that offered electric utilities to purchase renewable electricity at the projected wholesale cost of conventional or fossil-fuel electricity, as incentive to the utilities.⁹¹ Several state governments also developed ‘standard offer’ contracts, long-term contracts at a fixed tariff open to renewable power plants. California, for instance, succeeded in developing its renewable energy industry through generous state and federal tax incentives.⁹² There was a significant increase in the overall number of policy instruments that state governments introduced for renewable energy development between 2001 and 2010. With support from the Federal Government for the Renewable Energy development, state governments have also provided a variety of financial incentives to renewable energy developers.⁹³

⁸⁷ German Massabie, ‘Why Would Oil Countries be in Renewables?—The Case of Venezuela’, [2011] (39) *Renewable Energy Law and Policy Review*, 48.

⁸⁸ Ibid.

⁸⁹ Alan Gelb, François Bourguignon, ‘Venezuela: Absorption without Growth’, in Alan Gelb (eds), *Oil Windfalls: Blessing or Curse?* (Oxford University Press, 1988), 289.

⁹⁰ Wiser R., Pickle S., and Goldman C., Renewable Energy Policy and Electricity Restructuring: a California Case Study [1998] (26) (6) *Energy Policy*, 465-475.

⁹¹ Sunjoo Park, ‘The Influence of State-Level Renewable Energy Policy Instruments on Electricity Generation in the United States: a Cross-Sectional Time Series <Analysis>’<https://engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?article=1230&context=etdarchive> accessed on 14 January 2021.

⁹² Ibid.

⁹³ Ibid (n88).

1.4.5 Lessons from Cross-Country Experiences

From the cross-country experiences discussed in this paper, lessons which Nigeria could gain to improve the legal framework on renewable energy include:

- i. Renewable Energy technologies have been made a national priority in countries that have succeeded in harnessing the energy source to improve electricity supply. In Germany for instance, a mixture of policies to reduce oil imports and a strong policy and regulatory support for renewables, using fixed feed-in tariffs to encourage private sector investment was discussed. Hence, it is evident that private sector investment supported by government incentives can propel Renewable Energy to obtain a significant share of electricity production. Fixed feed-in tariffs are the most effective instruments for the promotion of renewable electricity generation. Fixed tariffs enable renewable electricity producers to receive tariffs for electricity production adequate to cover their long-term costs. Furthermore, electric utilities are obliged to purchase power from renewable energy generators under this arrangement.
- ii. From the Venezuelan experience, it is evident that for oil rich countries, Renewable Energy is a viable avenue to invest revenue generated from oil windfalls. The stagnating oil revenues over the years and need for sustainable development acted as an impetus to the country to invest in Renewable Energy sources, with reasonable success.
- iii. The United States of America and Kenya experiences indicate that state governments and regional governments' participation has the potential to develop Renewable Energy in electricity generation through licensing and control of renewable energy projects within a state or region. Furthermore, Federal Government support to state governments on renewable energy development enables a variety of state and federal financial incentives to encourage renewable energy generators.

1.5 Conclusion

This paper reviewed the legal regime on Renewable Energy development in Nigeria's electricity mix. As indicated in the paper, Renewable Energy in a country's electricity mix is crucial to national development, as it has the potential to ensure access to electricity. Renewable energy resources therefore play an important role in the electricity mix of many developed countries in meeting energy needs. Furthermore, Renewable Energy technologies present enormous advantages in sustainability, flexibility and low environmental footprint compared to fossil fuel technologies such as coal or diesel fired power plants. Despite the fact that Nigeria is blessed with abundant renewable energy resources, these resources have not been utilised to meet the country's energy needs. Corruption, budget diversion and abandoning of policies due to change of government been identified as impediments to successful implementation of various policies on Renewable Energy development. Furthermore, it was argued that there is no adequate legal framework for the integration of Renewable Energy resources in Nigeria's electricity mix. Effective

legal framework on Renewable Energy would indeed improve electricity generation, enhance access to electricity to the citizens and mitigate climate change concerns. Unless the legal framework is improved, Nigeria will not realize its Renewable Energy potential.

It was also argued that introduction of Renewable Energy into the mix in Nigeria would bring an end to the energy crisis facing the country. Indeed, history teaches that industrialisation and economic growth of a country largely depends on availability of energy. The paper identified successful examples in the United States of America, Germany, Kenya and Venezuela in the area of commitment to the development of Renewable Energy sources and technology through a viable legal framework. Accordingly, the paper recommends as follows:

i) *Reviewing the Roles of Agencies Relevant to Renewable Energy*

One of the challenges discussed in this paper as hindering the success of Renewable Energy into the electricity market in Nigeria is the lack of synergy and clarity of roles of relevant agencies to the promotion of Renewable Energy. As indicated, there are many agencies playing varied and converging roles. There is a need for harmony among the agencies, with the roles of each of the agencies should be clearly spelt out. The role of the regulator, NERC should be strengthened in the implementation of incentives under the tariff scheme. The ECN would also have to be involved in the area of the enhancement of Renewable Energy generation programmes.⁹⁴

ii) *Fiscal Incentives*

There is a need for fiscal incentives through financial instruments to encourage private sector investments in Renewable Energy. These include taxation measures to steer specific activities in Renewable Energy development. Nigeria should formulate laws which provide for an exemption from tax payments on foreign loans.

iii) *Decentralized Energy Systems*

Decentralized energy systems in areas where the national grid does not extend can increase access to electricity. Continued support for mini-grids controlled and licensed by state governments in Nigeria is vital to creating access to electricity in the rural areas that are not covered by the national grid. Furthermore, if the mini-grid is to be successful, it must commit mini-grid developers to utilize Renewable Energy sources for electrification.⁹⁵ The main feature of a mini-grid networks is that it operates independently of a national grid. Therefore, the development of the mini-grid network is a form of decentralization of electricity generation, which has the potential to harness Renewable Energy technology and development.⁹⁶ The importance of mini-grid development becomes important considering the fact that Nigeria's national grid is dilapidated and needs significant investment to repair and modernize. A well-regulated mini grid system also has the benefit of providing electricity to rural areas in Nigeria, which experience limited or no access to

⁹⁴ Oniemola (n7), 102.

⁹⁵ Ajibade (n39), 101.

⁹⁶ Oke (n50), 67.

electricity.⁹⁷ In this regard, the EPSR Act should be amended to grant powers to state governments' to issue licences to Renewable Energy generators in order to facilitate access to electricity to states, especially to the rural areas.

iv) Renewable Energy Act

The enactment of legislation solely for the promotion and development of Renewable Energy is important for the development of Renewable Energy in electricity. As highlighted in this paper, the existing legal framework on Renewable Energy in Nigeria is inadequate. Licensing and permit processes are cumbersome. Furthermore, the overlapping functions of various ministerial departments and agencies has the potential to discourage investors. A single Act for Renewable Energy would address these challenges and provide sound guidance for interested parties to participate in Renewable Energy development in Nigeria.⁹⁸ It is recommended that the National Assembly may, in this regard, enact a Renewable Energy Act that will bring about the integration of the abundant Renewable Energy sources into the country's electricity mix. The Act would provide for a feed-in tariff with guaranteed, long-term contracts and uptake of renewable production. As indicated in this paper, Feed-in-tariffs are policy instruments that attract investments in Renewable Energy for long-term guaranteed purchase agreements to power producers to sell their electricity to the national grid. They are the most widely used mechanisms used to stimulate the use of Renewable Energy for electricity production in European Union states and African countries such as Kenya.⁹⁹ However, the tariffs will need to be subsidised through taxes or additional fees on electricity consumers.¹⁰⁰

⁹⁷ A. Ajibade, 'Power to the People! A Legal Examination of Electric Power Sector Development in Nigeria', in Edward Oyewo and AbiolaSanni (eds) *Commemorative Essays on 50th Anniversary Faculty of Law* (University of Lagos Press, 2015), 286.

⁹⁸ Ajibade (n39), 102.

⁹⁹ D. Jacobs, B. Sovacool, 'Feed-In Tariffs and Other Support Mechanisms for Solar PV Promotion'

<https://www.academia.edu/40232715/Feed_In_Tariffs_and_Other_Support_Mechanisms_for_Solar_PV_Promotion> accessed 2 January, 2021.

¹⁰⁰ Oniemola (n7), 38.