

NATIONAL STRATEGIES TO PROMOTE RENEWABLE ENERGY DEVELOPMENT: WHITHER NIGERIA?

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ABSTRACT

Renewable energy (RE) development enhances electrification, mitigates climate change and aids energy efficiency. Kenya, South Africa and Ghana, among other states within sub-Saharan Africa, have established legal regimes to integrate renewable energy into their energy mix. Through defined legal strategies for RE deployment, these states have committed to the promotion, development and utilization of RE. Despite the momentum towards renewable energy development across the region, Nigeria's efforts fall short of establishing effective legal strategies. As Africa's most populous nation it must do more to make RE part of its energy mix in order to impact electrification rates, mitigate climate change and aid socio-economic conditions. This article appraises the legal strategies for RE development in Kenya, South Africa and Ghana. Against this appraisal, it critically evaluates Nigeria's legal strategies to promote and develop RE. It recommends legal reforms that are necessary to better integrate RE into Nigeria's energy mix. The methodological approach of this article is doctrinal and library-based. It includes primary and secondary sources. Primary sources include laws, statutes, legal documents, conventions and statistics. Secondary sources include journal articles, internet sources and newspaper articles. All sources are subject to content analysis. It is expected that the article will be useful to policy and lawmakers across various tiers of government in Nigeria.

Keywords: Renewable Energy Development, Electrification, Energy Efficiency, National Strategies.

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1. INTRODUCTION

Legal strategies within and outside Sub-Sahara Africa have done little to influence Nigeria's approach to renewable energy (RE) development.¹ The failure of RE sources to significantly feature in Nigeria's electrification profile is due to a legal framework which is wholly inadequate. It reflects a legal framework which has continually struggled to boost electricity capacity and alleviate social, economic and environmental suffering.² Energy consumers continue to rely heavily on fuelwood to meet daily energy needs.³ For example, in Katsina State, fuelwood consumption is four times more than the state produces.⁴ Apart from the devastation caused to Nigeria's forest stock, the burning of firewood on a mass scale creates considerable carbon emissions, which exacerbate climate change and pose a risk to human health.⁵

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- 1 Oliver C. Ruppel and Katharina Ruppel-Schlichting, "Comparative Legal Aspects of the Potential of Renewable Energies to Promote Energy Security, Sustainable Development and Climate Change Mitigation: Germany, South Africa and Namibia", (eds Ruppel and Althusmann) *Perspectives on Energy Security and Renewable Energies in Sub-Saharan Africa: Practical Opportunities and Regulatory Challenges* (Second Revised and Expanded Edition, Macmillan Namibia 2016) chapter 7 at 117.
 - 2 Y. Omorogbe, "The Role of Law in Promoting Renewable Energies in Africa", (eds Ruppel and Althusmann) *Perspectives on Energy Security and Renewable Energies in Sub-Saharan Africa: Practical Opportunities and Regulatory Challenges* (Second Revised and Expanded Edition, Macmillan Namibia 2016) chapter 10, p. 207. N. Wamukonya, "Power Sector Reform in Developing Countries: Mismatched Agendas", (ed Wamukonya) *Electricity Reform: Social and Environmental Challenges* UNEP (Riso Centre, Roskilde, Denmark 2003) <<http://gold.unepdtu.org/SectorReform/ElectricReformChallenges.pdf>> accessed 21 August 2018.
 - 3 International Centre for Energy Environment and Development (ICEED) "Improving the Fuel wood Balance in Seven Local Government Areas in Katsina State" (2015). <<http://iceednigeria.org/ic/programmes/improving-the-fuel-wood-balance/>> accessed 17 November 2018.
 - 4 Katsina is a major city in northern Nigeria where the majority of the people are farmers and cattle rearers. It covers a total land mass of 24,192 km< <http://www.nigeria.gov.ng/index.php/2016-04-06-08-39-54/north-west/katsina-state>> accessed 18 December 2018.
 - 5 U.B. Akuru and others, "Impact of Renewable Energy Deployment on Climate Change in Nigeria" Conference Paper Presented at AFRICON 2013, Pointe-Aux-Piments Mauritius 9-12 September 2013.

International, regional and national findings confirm the impact of conventional energy sources on the natural environment.⁶ Among other things, these findings urge the promotion and development of policies for RE sources for electricity development as a form of mitigating climate change. For example, the RE Directive (RED) of the European Parliament⁷ targets 20 per cent of its total energy needs with renewables by 2020 through the national targets of member states. However, following agreement among EU states, the target will be increased to 32 per cent and amendments of the RED will follow.⁸ Meanwhile, the Africa Renewable Energy Initiative (AREI) is a commitment of the African Union (AU) Commission to support initiatives aimed at developing RE and other modern energy sources in Africa. It targets 10 GW and 300 GW of RE capacity to the African energy sector by 2020 and 2030 respectively.⁹ These are ambitious targets in which Nigeria must play a significant role.

However, Nigeria's presence at the 21st Conference of Parties to the United Nations Climate Change Convention (COP21) and its celebratory signing of the Paris Accord and commitment to achieve sustainable energy for all in Africa with African Partners, has failed to

6 The Intergovernmental Panel on Climate Change is the UN body for assessing the science related to climate change. It provides policymakers with scientific assessments regarding the implications and risks of climate change and also recommends adaptation and mitigation methods. IPCC assessment reports provide governments at all levels with scientific information necessary for them to develop climate policies.

7 Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. The RE directive establishes an overall policy for the production and promotion of energy from RE sources in the EU. It requires the EU to fulfil at least 20% of its total energy needs with renewable by 2020 to be achieved through the attainment of individual national targets. < <https://ec.europa.eu/energy/en/topics/renewable-energy-directive> > accessed 10 November 2018.

8 Katharina Pausch-Homble, "Renewable energy: Council confirms deal reached with European Parliament" (Council of the European Union) <<https://www.consilium.europa.eu/en/press/press-releases/2018/06/27/renewable-energy-council-confirms-deal-reached-with-the-european-parliament/#>> accessed 23 November 2018.

9 The Africa Renewable Energy Initiative, organized by the International Renewable Energy Agency (IRENA) and Sustainable Energy for All, was launched at a Session during the High-Level Meeting on "Lima-Paris Action Agenda: Focus on Energy" on 07 December 2015 at the COP21.

translate into a meaningful legal framework for RE.¹⁰ Furthermore, a call to diversify its energy mix through the development of RE in its electricity sector appears to have fallen on deaf ears. Fellow AU member states have taken strides in the formulation of sound legal regimes or strategies for RE development. Ghana, South Africa and Kenya have made efforts to diversify their energy regimes and boost electrification from the integration of RE sources.¹¹ They appreciate the urgent need to ease dependence on carbon fuels such as coal and petroleum, which cause devastation to the natural environment. Furthermore, they recognize the role RE deployment plays in the socio-economic development of their governments.

Despite global momentum towards RE development, Nigeria has made very little progress in terms of formulating and implementing a clear RE development agenda. In the midst of this momentum, the article asks, whither Nigeria? Following analysis of Nigeria's legal regime and strategy for RE development, it considers those of others within sub-Saharan Africa. From this analysis, the article identifies solutions to benefit and improve Nigeria's legal regime for RE development for electrification.

This article is arranged in parts. Section 1 is the introduction while section 2 presents a brief overview of energy development. Section 3 presents an overview of Nigeria's Energy Profile. Analyses of legal regimes and strategies for RE development in Nigeria and selected states within sub-Saharan Africa make up sections 4 and 5. Section 6 makes recommendations for improving Nigeria's legal framework for RE while section 7 concludes the article. The methodological approach of the article is doctrinal and relies on primary and secondary sources of data.

10 A. Ajibade, "The Case for a Coherent Legal Framework for Renewable Energy in Nigeria" [2017] BUALJ 100.

11 World Energy Outlook, "Energy Access Outlook 2017: From Poverty to Prosperity" *Energizing Development in sub-Saharan Africa*, (2017) chapter 4. <https://www.iea.org/publications/freepublications/publication/WEO2017SpecialReport_EnergyAccessOutlook.pdf> accessed 12 December 2018.

2. ENERGY DEVELOPMENT: TRANSITION, TECHNOLOGY AND INNOVATION

Energy transition from fossil fuel sources to renewable energy sources is driven by the devastating effects of greenhouse gas emissions on the atmosphere, which causes climate change and raises other environmental-related concerns. Lucas and Thompson observe the considerable evidence that states are shifting towards economies based on renewable and alternative energy.¹² For example, the European Union RE Directive set targets for the overall share of energy from RE in the final consumption of energy.¹³ EU member states are required to establish a national action plan and ensure that at least 20 per cent of their electricity production is generated from RE sources. Lucas and Thompson list the following factors as being critical for the energy transition:¹⁴

1. The availability of innovative technology, capital and policy;
2. The availability of relatively cheap hydrocarbon fuels;
3. The relative cost of energy sources, production, and storage, particularly renewable and alternative energy;
4. The relative risk associated with alternative energy sources and technologies;
5. The challenges of international law and the relative commitment of governments to moving towards low-carbon energy.

Accordingly, energy transition and efforts to achieve carbon-free economies require technological and legal innovation, which is essential for energy development. While energy innovation facilitates transformation, fundamental to the process is the support of strong legal frameworks.¹⁵ There is a consensus among prominent energy authors such as Zillman and others that we live in an era of accelerating

12 Alastair R. Lucas and Chidinma B. Thompson, “Transition to a Low-Carbon Economy: The Legal Agenda” (eds Donald Zillman and others) *Innovation in Energy Law and Technology: Dynamic Solutions for Energy Transitions* (Oxford University Press, 2018) chapter 3, p. 61.

13 Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion and use of energy from renewable sources.

14 *Ibid* Lucas and Thompson: 62

15 IEA, “Energy Technology Perspectives 2017: Catalysing Energy Technology Transformations” (Report, 2017), p. 7.

change which is transforming the field of energy law. Zillman and others rightly observe that any change to established energy sources, supply, distribution and energy access is driven by legal innovation, which includes, legislation and associated markets, and financial measures. Such innovation is designed to reduce greenhouse gas (GHG) emissions, determine air pollution regulations and agreements, including renewable energy tariffs and tax policies.¹⁶

Legal and technology innovation is observed in sub-Saharan African states of Kenya, South Africa and, to some extent, Ghana. By comparison, legal innovation to support essential RE technology in Nigeria continues to lag behind these African states. Nigeria's present legal framework for RE development fails to encourage and promote well-needed investment for RE promotion and development. A lack of legal innovation means Nigeria is unlikely to enjoy the benefits that come with RE advancement.¹⁷ Examination of legal frameworks for RE in other African states prompt questions about Nigeria's commitment to RE development. The reason being that Nigeria has failed to make meaningful progress in this area despite several policies for RE development.¹⁸

3. NIGERIA'S ENERGY PROFILE

Nigeria is the largest petroleum exporter in Africa with an abundance of untapped gas reserves.¹⁹ Its RE resource capabilities include wind, solar (photovoltaic and CSP) biomass, and small hydropower resources.

16 Donald Zillman and others, "Introduction: How Technological and Legal Innovation Are Transforming Energy Law" (eds Donald Zillman and others) *Innovation in Energy Law and Technology: Dynamic Solutions for Energy Transitions* (Oxford University Press, 2018) chapter 1, p. 14.

17 P Oniemola "Powering Nigeria through Renewable Electricity Investments: Legal Framework for Progressive Realization" (2015) 6(1) *Journal of Sustainable Development Law and Policy*, p. 84.

18 P Oniemola "Why Should Oil Rich Nigeria Make a Law for the Promotion of Renewable Energy in the Power Sector?" (2016) 60(1) *Journal of African Law*, p. 29.

19 IEA, *Key World Energy Statistics 2017* <<https://www.iea.org/publications/freepublications/publication/KeyWorld2017.pdf>> accessed 12 September 2018. See also, E Duruigbo, "The Global Energy Challenge and Nigeria's Emergence as a Major Gas Power: Promise, Peril or Paradox of Plenty" (2009) 21 *Geo. Int'l Envtl. L. Rev.* 395; S Oyedepo, "Energy and Sustainable Development in Nigeria: The Way Forward" (2012) 2(15) *Energy, Sustainability and Society* 1.

Approximately 80 per cent electricity generation is sourced from thermal resources, namely, fossil fuels; while the remainder is sourced from hydro.²⁰ Nigeria's oil and gas industry account for high levels of carbon emissions.²¹ Gas flaring continues to rage against the skies of host communities and emit greenhouse gases into the atmosphere while the sector itself is fraught with long-standing socio-economic and political challenges that exacerbate an already bad situation.²² In the last decade or so, the oil and gas producing region of the Niger Delta has suffered disruption to facilities, rise in militant groups and criminal activities, such as kidnapping and murder of oil company staff, and increased rates of vandalism to oil installations.²³

Despite an endowment of energy resources, electrification rates in Nigeria have remained consistently poor over several decades.²⁴ An electrification rate of 45 per cent is made up of 55 per cent urban and 35 per cent rural electrification.²⁵ Consequently, half of Nigeria's population struggle to meet energy needs. Poor electrification rates mean that industrial, residential and commercial sectors each rely on different energy sources to meet daily energy needs. Whereas the commercial and industrial sectors depend largely on diesel and petrol to run their generators, the residential sector relies on a combination

20 Federal Ministry for Economic Affairs and Energy, Berlin Germany, "Wind Energy in Kenya: Potential, Opportunities and Challenges" <https://www.german-energy-solutions.de/GES/Redaktion/DE/Publikationen/Kurzinformationen/2015/ki_fs-kenia-wind.pdf?_blob=publicationFile&v=6> accessed 12 October 2017.

21 *Ibid* Oyedepo at note 20.

22 L. Aladeitan, "Ownership and Control of Oil, Gas, and Mineral Resources in Nigeria: Between Legality and Legitimacy" (2013) Vol. 38 Thurgood Marshall Law Review 159.

23 J. S. Omotola, "From the OMPADEC to the NDDC: An assessment of State responses to environmental insecurity in the Niger Delta", <<http://www.worldcat.org/title/from-the-ompadec-to-the-nddc-an-assessment-of-state-responses-to-environmental-insecurity-in-the-niger-delta-nigeria/oclc/775030015>> accessed 14 September 2018.

24 C. Orazulike, "Energy Crisis: The Bane of Nigeria's Development" (2012), <<http://www.nigerianoilgas.com/energy-crisis-the-bane-of-nigerias-development/pdf>> accessed 21 November 2018.

25 Federal Ministry of Power and The Nigeria Energy Support Programme (NESP) and GOPA International Energy Consultants, *The Nigerian Energy Sector: An Overview with a Special Emphasis on Renewable Energy, Energy Efficiency and Rural Electrification*, <<https://www.giz.de/en/downloads/giz2015-en-nigerian-energy-sector.pdf>> accessed 15 October 2018.

of charcoal, wood and crude forms of biomass to meet their daily energy needs.²⁶ Firewood is the most commonly sourced energy form in the residential sector.²⁷ Nigeria's huge reliance on carbon-emitting energy sources and its diverse energy endowment means there is little justification for its poor electrification rates and RE development.

Benefits of RE technological development for electrification are multifarious. The obvious benefits include energy efficiency, reduced firewood dependency and protection of Nigeria's forests. Social and economic conditions will improve; human death from smoke inhalation will reduce and public awareness and appreciation for clean energy practices will develop and grow over time. Enhanced rural electrification will make rural areas comfortable places to live, work and settle in. En masse internal rural-to-urban migration will reduce, making Nigeria's major cities, such as Lagos and Abuja, less crowded, and thus reducing energy demand among other services.²⁸

It is well established that RE technology for electrification is a way of lowering carbon emissions and mitigating climate change.²⁹ Besides improving electrification rates, the integration of RE technology in Nigeria's electric power sector would reduce levels of carbon emissions from the oil and gas sector and preserve Nigeria's forest stock. However, the best way to introduce electrification from RE sources is through a robust legal regime, which is currently far from what it ought to be.

4. NIGERIA'S LEGAL REGIME FOR RE

No single law governs RE development and usage for electrification purposes in Nigeria.³⁰ Rather, the legal regime is governed by an array

26 N. Murtagh and others, "20:60:20: Differences in Energy Behaviour and Conservation between and within Households with Electricity Monitors" <<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0092019>> accessed 21 December 2018.

27 UNICEF, *Clean the Air for Children: The Impact of Air Pollution on Children* (2016). <https://www.unicef.org/publications/files/UNICEF_Clear_the_Air_for_Children_30_Oct_2016.pdf> accessed 13 November 2018.

28 The World Bank, *Foundations for Urban Development in Africa: The Legacy of Akin Mabogunje* <<http://documents.worldbank.org/curated/en/482851468202163524/pdf/481540WP0urban10Box338889B01PUBLIC1.pdf>> accessed 12 December 2018.

29 Ibid Donald Zillman and others at note 17.

30 Damilola Olawuyi, "Power Generation through Renewable Energy Sources: An

of policies, regulations and directives articulated across various tiers of government ministries and departments. Although government recognizes the potential RE for improved electrification, carbon reduction and climate change mitigation exist, no significant impact from RE sources or technological development has been achieved.³¹

Nigeria's existing regulatory framework for RE development fails to set out clear and defined requirements to harness, generate and distribute electricity from RE sources and technologies.³² An analysis of its regulatory framework reveal gaps in legislation deemed essential for RE development. RE policies, the Electric Power Sector Reform Act, and the Nigerian Electricity Regulatory Commission alone cannot enable RE development. Laws which address technology transfer and acquisition, technology innovation, fiscal and tax requirements are vital for the realization of RE development in Nigeria.

For example, Olawuyi has highlighted existing barriers to technology transfer in Nigeria by drawing attention to the lack of provision for this in the National Office for Technology and Promotion Act (NOTAPA), which governs the acquisition of foreign technologies.³³ Furthermore, in the recent Revised Guidelines on the Acquisition of Foreign Technology, NOTAPA fails to classify modern environmental sustainable technologies, recognize RE technologies or specify the procedures for transferring technologies into Nigeria.³⁴

Regarding energy investment, Oniemola draws attention to the need for adequate fiscal and tax incentives to attract private investors.³⁵ Despite the capital-intensive nature of electric power sector development which limits the entrance of private investors into the market, Nigeria must properly address the financial and technological

Analysis of the Legal Barriers and Potentials in Nigeria" (2013) 10 (2) *Journal of Resources, Energy and Development* 105.

31 Ajibade at note 7.

32 Ibid P Oniemola at note 18.

33 See Damilola Olawuyi, "Renewable Energy Sources: Legal Barriers and Potential" (n. 44) 233; also Damilola Olawuyi, "From Technology Transfer to Technology Absorption: Addressing Climate Technology Gaps in Africa" (2018) 36 (1) *Journal of Energy & Natural Resources Law* 61-84.

34 National Office for Technology Acquisition and Promotion Act, (NOTAPA) *Laws of the Federation of Nigeria* Cap. N62 2004. Also, National Office for Technology Acquisition and Promotion, Revised Guidelines for Registration and Monitoring of Technology Transfer Agreements in Nigeria April 2018.

35 P. Oniemola at note 19.

challenges impeding the progress of development of RE in the country. The huge potentials in RE make it difficult to understand what Nigeria's true intentions are for its development. Apart from the urgent need to develop and use RE to reduce carbon emissions and mitigate climate change, the danger in Nigeria's piecemeal approach to RE regulation is that it will remain insignificant and ineffectual to the country's pressing social and economic development needs.³⁶

Nigeria's National Renewable Energy and Energy Efficiency Plan 2015 and the National Energy Efficiency Action Plans (2015-2030) are the most recent initiatives to promote the development of RE sources in Nigeria.³⁷ Past initiatives include the Draft National Energy Master Plan 2014³⁸ (NEMP); the National Energy Policy 2013,³⁹ the Renewable Energy Master Plan 2012,⁴⁰ the Draft Renewable Energy Electricity Policy 2006 and regulations of the Nigerian Electricity Regulatory Commission (NERC).

The REEP 2006 and 2010 initiated by the National Policy and Guidelines on RE and the Rural Electrification Strategy and Implementation Plan 2006 which culminated in the Rural Electrification Strategy and Plan add further to the bulk of policy ideas for RE in Nigeria. Despite all these efforts, however, Nigeria's legal framework for RE remains largely incoherent. It is difficult to grasp precisely what inroads have been made in RE development. Individually, some of these

36 For example enhanced electrification is essential to meet Nigeria's growing population which the UN project will exceed 300 million by 2050 to become the third largest in the world.

37 Federal Ministry of Power Works and Housing *National Energy Efficiency Action Plans (2015-2030)*; <<http://www.power.gov.ng/Press%20Release/NATIONAL%20ENERGY%20EFFICIENCY%20ACTION%20PLANS.pdf>> accessed 16 December 2018; Federal Ministry of Power (now defunct), (*NREEEP 2015*) <<http://www.power.gov.ng/download/NREEEP%20POLICY%202015-%20FEC%20APPROVED%20COPY.pdf>> accessed 21 January 2019.

38 C. Uwaegbulam, "Why We Are Reviewing National Energy Masterplan, by ECN" 2 February 2015; <http://www.energy.gov.ng/index.php?option=com_content&view=article&id=122%3Awhy-we-are-reviewing-national-energy-masterplan-by-ecn&catid=1%3Alatest-news&Itemid=1> accessed 12 January 2019.

39 A Draft NEP had earlier been developed by the Energy Commission of Nigeria in 1993. The Federal Executive Council of Nigeria approved NEP in 2003 and launched it in 2005. The 2013 NEP document is a revised draft of 2003 NEP document.

40 This is a review of the 2005 Draft REMP.

policies could boost RE development and kickstart the much-needed electrification development and expansion.

4.1 Electric Power Sector Reform Act

The Electric Power Sector Reform Act (EPSRA) 2005⁴¹ is the primary legislation that governs the electric power sector, including generation, transmission and distribution, supply and trading of electricity in Nigeria. EPSRA altered the landscape of Nigeria's electric power sector. The liberalization and enhanced development of Nigeria's electric power sector rests with the enactment of the EPSRA which ultimately targets improved electricity generation, distribution and transmission sub-sectors from all energy sources.⁴²

Notwithstanding the liberating effect of the EPSRA on Nigeria's electricity sector, it similarly represents a missed opportunity for decisive RE planning. For example, under section 62, a license must be acquired: (i) for power projects that exceed 1 megawatt (MW) in aggregate at one site; (ii) where any person or undertaking distributes electricity with a capacity not exceeding 100 kilowatts (KW) in aggregate at a site; or (iii) in such other instances as the NERC determines in the public interest. These restrictions though essential for the regulation and control of electricity generation stifle investments in large scale power projects.⁴³ Olawuyi rightly observes that section 62 is cumbersome and the licensing process tedious. A shift from 1 MW projects to large-scale capacity RE projects will greatly enhance electricity development and access.⁴⁴ Once achieved, this will bring succour to electric power consumers. Overall, the EPSRA fails to adequately provide for RE promotion and the advancement of Nigeria's electricity sector. Although the passing of EPSRA Bill into an Act is noteworthy, nevertheless by the powers of the Nigerian Electricity Regulatory Commission (NERC), EPSRA ought to have been mandated

41 The EPSRA was signed into law on 11 March 2004.

42 It unbundled a government monopolized sector which suffered poor infrastructure, near dilapidation, stagnant growth, neglect and poor service delivery.

43 Damilola Olawuyi, "Renewable Energy Sources: Legal Barriers and Potential" 43 *Environmental Policy & Law* [2013] 233.

44 The mini-grid regulation is indication that NERC is beginning to appreciate the need to shift focus from the licensing requirement for 1 MW. The Mini-grid regulation is discussed in the following section.

to produce a standard requirement of electricity to be generated from RE sources. This move would have set Nigeria firmly on its way to electricity generation and supply from RE sources. An opportunity to set targets that would capture RE in Nigeria's electricity markets through defined legislation was thus missed. However, it is possible that the omission was due to the indiscernible nature of Nigeria's legal, regulatory and institutional frameworks.⁴⁵

4.2 Nigerian Electric Regulatory Commission (NERC)⁴⁶

The establishment of the NERC is one of the most significant outcomes of Nigeria's electricity reform process.⁴⁷ NERC is charged with power sector governance. It regulates electricity generation from conventional and RE sources. Responsibilities of the NERC include duties 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. NERC has the potential to create wide-sweeping changes in Nigeria's RE development process.

4.3 Mini-Grid Regulation

The World Bank defines mini-grids as small, privately owned and operated systems with a generation of up to 10MW capacities and a network, which distributes power to several customers.⁴⁸ Mini-grid systems ought to appeal to developing countries determined to scale up their electrification rates precisely because, they are off-grid electricity

45 It is noted that as far back as 1993 the potential for RE was documented in Nigeria's Draft National Energy Policy. This potential continues to be documented in subsequent policy documents. See, Nigeria's National Energy Policy 2003 <http://wacee.net/getattachment/21cca4e4-ef1b-4c59-8501-98b3e8624b88/National_Energy_Policy_Nigeria.pdf.aspx> accessed 21 October 2018.

46 For the establishment, functions and powers of NERC see Electric Power Sector Reform Act 2005 ss 31-61.

47 Under s 96(1) NERC is empowered to make e-regulations for the electric power sector.

48 World Bank 2017 "Mini-grids in Kenya: A Case Study of a Market at a Turning Point" Energy Sector Management Assistance Program (ESMAP) Washington DC: World Bank Group. <<http://documents.worldbank.org/curated/en/792001512392701402/Mini-grids-in-Kenya-a-case-study-of-a-market-at-a-turning-point>> accessed 12 December 2018.

distribution networks, which operate small-scale electricity generation. Central to the mini-grid network is that it operates independently of a national grid. Development of the mini-grid network is a form of decentralization, which finds support from proponents of RE technology and development.⁴⁹ Reasons for this include the fact that Nigeria's national grid is dilapidated and requires substantial investment to repair and modernize.

Nigeria's post-privatization period has failed to achieve the desired outcome for investors and stakeholders generally. Rather, the period has been overshadowed with persistent challenges and barriers that continue to stunt rapid electricity advancement. These challenges and barriers are complex. They include inadequate gas supply, unfavourable tariff regime, the uncertainty of government policy, poor transmission infrastructure, government bureaucracy, foreign exchange and currency issues, vandalism of power installations and poor infrastructure.⁵⁰

Nigeria's mini-grid regulation (MGR)⁵¹ is the most recent initiative in an attempt to accelerate electrification rates. It is defined as:

An electricity supply system with its own power generation capacity, supplying electricity to more than one customer and which can operate in isolation or be connected to a Distribution Licensees Network. The term applies to any isolated or interconnected mini-grid between 0kW and 1 MW of generation capacity in Nigeria.⁵²

The MGRs define a regime for the development and operation of mini-grids throughout Nigeria.⁵³ The initiative attempts to shield mini-grid developers from challenges experienced by Independent Power Producers (IPPs) and private investors in Nigeria's on-grid electricity

49 Yemi Oke, "Beyond Power Sector Reforms: the Need for Decentralized Energy Options (DEOPs)" (2012) 18:1 *Nigerian Journal of Contemporary Law*, p. 67.

50 G Schwerhoff and S Mouhamadou, "Financing Renewable Energy in Africa – Key Challenge of the Sustainable Development Goals" (2017) Volume 75 *Renewable and Sustainable Energy Reviews* 393. <https://ac.els-cdn.com/S136403211630778X/1-s2.0-S136403211630778X-main.pdf?_tid=dd5d8998-1299-4f39-b8e6-881ecffee16b&acdnat=1520326264_0222b6ae1fc7b719fe31cfa2f91cb36d> accessed 12 January 2019.

51 NERC Regulation for Mini-Grids 2016 <https://www.iea.org/media/pams/nigeria/Nigeria_PAMS_NERCMiniGridRegulation_2016.pdf> accessed 22 November 2018.

52 NERC MGR s 3.

53 *Ibid* at note 52.

market.⁵⁴ Crafting of the MGR is intended to accelerate electrification across Nigeria. It should benefit rural areas most where electrification rates are low and rural dwellers have limited or no access to electricity.⁵⁵

The focus of MGR is to establish mini-grids in areas which are underserved or unserved by a distribution system.⁵⁶ The MGR provides a framework for engagement between existing distribution companies and mini-grid developers. It also moderates private retail tariff arrangements for certain operators and compensation for developers in the event of operational expansion by the distribution company licensee.⁵⁷ The MGRs apply to owners, developers and users of mini-grids with a 1MW generating capacity, which therefore exempts them from the licensing regime of the EPSRA.⁵⁸ However, the MGRs extend to public and private stakeholders, including distribution licensees, federal and state institutions or agencies that may interact with mini-grid developers, owners or users in Nigeria.⁵⁹

There is a quiet expectation that the MGR will boost RE development and use. However, it fails to specifically target RE or commit mini-grid developers to utilize RE sources for electrification. Furthermore, a general provision for environmental protection which states that *all mini-grid operators shall comply with the existing environmental legislation* is disappointing.⁶⁰ The provision lacks

54 The EPSRA period of post-privatization has failed to achieve the desired outcome for investors who have experienced various challenges and barriers. These are complex and include inadequate gas supply, unfavourable tariff regime, uncertainty of government policy, poor transmission infrastructure, government bureaucracy, foreign exchange and currency issues, vandalism of power installations and infrastructure.

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

56 An *underserved* area is defined as one within a Distribution Licensee Network with an existing but poorly supplied or non-functional distribution system; whereas *unserved* refers to an area without a distribution or mini-grid system.

57 MGR s 3 defines a distribution licensee or DisCo as; "holders of a distribution license who operate a Distribution Network that is connected to the transmission system operated by the Systems Operations Licensee".

58 Under MGR s 5 a mini-grid is either isolated or interconnected and the nature of the mini-grid will determine whether a Mini-Grid developer may operate under a permit, an approved contract or simple registration. Each of these arrangements has their own implication.

59 MGR s 4.

60 MGR s 17.

meaningful guidance for prospective mini-grid operators embarking on the establishment or construction of a mini-grid.

4.4 Feed-In-Tariff⁶¹

Feed-In-Tariffs (FITs) are policy instruments that attract investments in RE for long-term guaranteed purchase agreements to power producers to sell their electricity to the national grid. They are the most widely used mechanisms across developed and developing states to stimulate the use of RE for electricity production.⁶² FITs have proved a successful mechanism for the promotion of electricity production from solar photovoltaic energy in EU states and other African states such as Kenya.⁶³

The objective of the FIT mechanism often differs between developed and developing states.⁶⁴ Generally, the FIT is recognized as being the most effective way of increasing the production of RE. It is deployed by developed states to specifically reduce carbon emissions and mitigate climate change.⁶⁵ For developing countries, the sole purpose of deploying the FIT system is often to increase energy supply.⁶⁶

Climate change mitigation is generally implied in RE policies and regulations for RE development. Thus, Nigeria's FIT regulation is no different. Rather, the FIT objectives include enhancing national targets

61 FIT mechanisms may offer long-term contracts to RE producers to supply electricity to the grid.

62 A Saed and others, "Efficient Feed-in-Tariff Policies for Renewable Energy Technologies," (2016) *Operations Research* 64 52.

63 D. Jacobs and B. Sovacool, "Feed-In Tariffs and Other Support Mechanisms for Solar PV Promotion" (2012) <https://www.researchgate.net/publication/282069856_Feed-In_Tariffs_and_Other_Support_Mechanisms_for_Solar_PV_Promotion> accessed 13 November 2018.

64 G. Erbach, "Promotion of Renewable Energy Sources in the EU: EU Policies and Member State Approaches: In Depth Analysis" (2016) *European Parliamentary Research Service* <http://www.europarl.europa.eu/RegData/etudes/IDAN/2016/583810/EPRS_IDA%282016%29583810_EN.pdf> accessed 14 January 2019.

65 S. Alizamir and others "Efficient Feed-in-Tariff Policies for Renewable Energy Technologies," (2016) *Oper. Res.* 64 52 <<https://faculty.fuqua.duke.edu/~psun/bio/FIT.pdf>> accessed 17 January 2019.

66 R Boampong and M A Phillips, "Renewable Energy Incentives in Kenya: Feed-in Tariffs and Rural Expansion" (2016) <http://warrington.ufl.edu/centers/purc/purcdocs/papers/1610_Boampong_Renewable%20energy%20incentives%20in%20Kenya.pdf> accessed 21 December 2018.

for RE sourced electricity⁶⁷ and encouraging greater private sector participation in power generation from RE sources,⁶⁸ a priority provision for RE produced electricity to access Nigeria's electricity grid.⁶⁹ Other objectives include an obligation to purchase power generated from qualified RE sources, the establishment of a competitive market for RE generated electricity alongside conventional fossil fuels.⁷⁰

Numerous and complex challenges can be linked to FIT developments, which include government uncertainty, foreign exchange fluctuations, and security of installations.⁷¹ A decade ago, some energy experts considered the FIT system to be too complicated to manage.⁷² Over time, the myths of insurmountable challenges associated with the system have been overcome.⁷³ A successful FIT must balance costs for the consumer and secure electricity prices for the investor. Also, it must attract stakeholders to quicken the pace for the enhancement and development of RE. Countries with developed RE capacity for FITs commonly include payments on electricity generators for the power they generate in excess of their own needs, which they feed-into the national grid. Unfortunately, such an option is unlikely in Nigeria because the national grid is fragile, dilapidated and fails to extend to all geographical areas, especially the northern part of the country.⁷⁴

The FIT regulation has proved disappointing because tariffs for RE are uncompetitive and best suited for large businesses, which can afford

67 FIT Reg. para 3b.

68 FIT Reg. para 3c

69 FIT Reg. para 3g.

70 FIT Reg. paras 3h and 3i respectively.

71 D. Jacobs, "Policy invention as evolutionary tinkering and codification: the emergence of FITs for Renewable Electricity", 2014, *Environmental Politics* 23(5).

72 Miguel Mendonca, David Jacobs and Benjamin Sovacool, *Powering the Green Economy: The Feed-In Tariff Handbook*, (1st edn, Earthscan) ch 7.

73 For example, according to Mendonca, Jacobs and Sovacool in interview, the director of a prestigious research institute in the US reportedly expressed a view that *forcing renewables to operate as reliably as conventional fossil fuel or nuclear units – trying to devise renewable systems that could overcome their variability – was like "trying to make a pig fly: you won't succeed and you will only make the pig unhappier"*

74 T Owolabi "Nigerian power grid shut-down goes unnoticed in parts of the country" Reuters, Abuja 3 January 2018 <<https://www.reuters.com/article/us-nigeria-electricity/nigerian-power-grid-shut-down-goes-unnoticed-in-parts-of-country-idUSKBN1ESOPX>> accessed 12 January 2019.

the capital outlay. It has failed completely to boost electrification from RE use in Nigeria. To enhance the potential of FIT in Nigeria, policymakers must reconstruct the legal framework for RE for electrification. It must specifically identify RE sources for generation optimizing geographical location, provide tax incentives for investors, as well as tax holidays and tax exemptions for imports of essential RE equipment.

4.5 National Energy Policy

Revised in 2013,⁷⁵ the main goal of Nigeria's NEP is the attainment of energy security through a vigorous structure of energy diversification and supply. It highlights the need for effective and efficient use of energy, which is consistent with the sustainable energy ethos proclaimed by the UN Secretary-General.⁷⁶ The NEP declares that the attainment of energy efficiency and conservation are important for residential, industrial, transportation, services, commercial, agricultural and building sectors. It is 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".⁷⁷

The NEP suggests short-, medium- and long-term implementation strategies.⁷⁸ Some of these include the promotion of education, information and public awareness campaigns on energy efficiency and conservation best practices; establishment of Energy Service Companies (ESCOs); provision of economic, fiscal and financial incentives to

75 National Energy Policy; Draft Revised Edition (NEP) (2013) Energy Commission of Nigeria (ECN). Abuja: Federal Republic of Nigeria.

76 "UN Decade of Sustainable Energy for All: Report of the Secretary General" September 2014 New York also, UN General Assembly Resolution A/69/395 <<https://www.seforall.org/sites/default/files/1/2015/08/A-69-395-2014-Report-of-the-Secretary-General-to-the-General-Assembly-on-the-Decade-of-Sustainable-Energy-for-All.pdf>> accessed 21 December 2018.

77 National Energy Policy (NEP) (2003). Energy Commission of Nigeria (ECN). Abuja: Federal Republic of Nigeria. <<http://www.energy.gov.ng>> accessed 12 November 2018.

78 Short-term strategies include the strengthening of existing institutional and legal framework for the promotion of energy efficiency and conservation as well as national, regional and international collaboration(s) on energy efficiency and conservation. See, NEP 2013 paragraphs a) and b).

promote energy efficiency in all sectors of the economy; and promotion of research, development and adaptation of internationally available energy-efficient technologies and measures.⁷⁹ The NEP aims to increase the share of green electricity by 1 per cent every year on Year-To-Date basis compared to 2012 levels. It is also set to enforce targets about energy efficiency and conservation and establish necessary guidelines and regulation on energy efficiency, conservation, consumption, technology, fuel mix, information gathering, and so on.⁸⁰

NEP's medium-term strategy aims, among other things, to establish an appropriate, energy-efficiency regulatory and legislative framework while the long-term strategy expects by 2025 to reduce energy-related greenhouse gas emissions by 15 per cent compared to the 2013 levels.⁸¹ NEP recognizes the need to use RE sources to achieve energy efficiency for sustainability across short-, medium- and long-term strategies.⁸²

4.6 Nigeria's National Renewable Energy and Energy Efficiency Plan 2015 (NREEEP)

The NREEEP approved for the electricity sector in 2015 promotes RE for electricity utilization. It is one of the most recent policy statements on RE and energy efficiency. The policy includes chapters on renewable energy, energy efficiency, and other energy issues (namely research development and training and bilateral and regional cooperation). Of course, it also includes planning and implementation.

Approved by the Federal Executive Council of Nigeria in May 2015, the objectives of NREEEP are to ensure the prudent exploitation of Nigeria's energy resources, enhance energy security and self-reliance, reduce the production cost of energy-dependent goods and services, reduce adverse impacts of energy utilization on the environment, and eliminate avoidable investments in energy supply infrastructure. Despite its obvious focus, the NREEEP fails to identify the RE source(s) best suited for Nigeria or establish specific timeframes for capturing RE into Nigeria's electricity mix. It articulates little toward meaningful prospect for the development or capture of RE for electrification. Furthermore, it fails to make recommendations for decentralized renewable energy

79 NEP 2013 paras f) g) i) and j).

80 NEP 2013 para l) m) and n).

81 NEP 2013 para e).

82 NEP 2013 para a) and r).

options or off-grid solutions.⁸³ Rather, the NREEEP adopts a general approach to timelines and implementation of various strategies and action plans. Compared to earlier policy documents, NREEEP performs badly. Unearthing any value-added or purpose of NREEEP is arduous particularly as its overall content is void of innovative solutions regarding Nigeria's RE development agenda.

4.7 The National Renewable Energy Action Plan (2015-2030)

The NREEAP represents the most recent efforts of the ministry of power to formulate a roadmap for the implementation of RE policies for RE electrification.⁸⁴ It forms part of the transition efforts that target 30,000MW of electricity of which RE will contribute 30 per cent by the year 2030.⁸⁵ The Electricity Vision 30:30:30 replaced the Vision 2020 in which the environmental objective targeted the sustainable management of Nigeria's natural resources by 2020.

A common factor of these policies is that they are limited to recognizing the potential of RE to reduce carbon emissions. They are generally silent on the intention to mitigate or adapt to pressing issues of climate change through enhanced electrification. Furthermore, they lack a concrete roadmap, which details ways in which the limited objectives will be achieved or stipulate specific methods or timelines for project and strategy implementation.

5. NATIONAL STRATEGIES FOR RE DEVELOPMENT

Strategies for the development and use of RE is already entrenched in the legislative architecture of other states within Africa. Ghana, South

83 Yemi Oke "Beyond Power Sector Reforms: The Need for Decentralized Energy Options (DEOPS) for Electricity Governance in Nigeria" (2012) 18:1 *The Nigerian Journal of Contemporary Law*, p.67.

84 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 <<http://www.power.gov.ng/Press%20Release/NATIONAL%20ENERGY%20EFFICIENCY%20ACTION%20PLANS.pdf>> accessed 05 September 2018.

85 Federal Republic of Nigeria, "Sustainable Energy For All: Action Agenda (SE4All-AA)" Adopted by Inter-Ministerial Committee on Energy and Energy Efficiency (ICREEE) July 2016 <https://www.seforall.org/sites/default/files/NIGERIA_SE4ALL_ACTION_AGENDA_FINAL.pdf> accessed 22 September 2018.

Africa and Kenya are among leading African countries noted for RE development with established legal regimes and or policies to address the establishment of sustainable energy systems through RE sources.

5.1 Kenya

The development and use of RE technologies is a national priority in Kenya's national development agenda.⁸⁶ Electricity constitutes 9 per cent of Kenya's energy source.⁸⁷ The installed capacity of generated electricity includes 47 per cent geothermal, 39 per cent hydropower and 1 per cent wind.⁸⁸ This translates to about 923 MW geothermal, 819 MW of hydroelectricity and 25.7MW of wind. Kenya also generates approximately 253.5 MW of thermal energy.⁸⁹ Kenya's energy strategies outlined below illustrate a commitment to the RE development for electrification.⁹⁰

Regulatory measures in Kenya's legal regime for RE use are progressive and beneficial for electricity consumers of today and tomorrow.⁹¹ For example, the Energy (Solar Water Heating) Regulations 2012 stipulate, that all buildings that consume in excess of 100 litres of water daily within the jurisdiction of the local authority, must install

86 Yemi Oke, "A Comparative Appraisal of Renewable Energy Laws" (2014) Vol.1 No. 1 *Ife Journal of International and Comparative Law*, p.57.

87 Government of Kenya, "Supporting the Mainstreaming of Climate Change into Kenya's Medium Term Plan III: Final Report" 2017 <<https://africaledspartnership.org/wp-content/uploads/2017/10/Mainstreaming-climate-change-into-Kenyas-Medium-Term-Plan-III.pdf>> accessed 18 January 2019.

88 G. Obulutsa, "Kenya's KenGen says to add extra 1,745 MW to grid by 2025" Reuters February 2018 <<https://www.reuters.com/article/kenya-electricity/kenyas-kengen-says-to-add-extra-1745-mw-to-grid-by-2025-idUSL8N1Q928Z>> accessed 14 September 2018.

89 Federal Ministry for Economic Affairs and Energy, Berlin Germany, "Wind Energy in Kenya: Potential, Opportunities and Challenges" <https://www.german-energy-solutions.de/GES/Redaktion/DE/Publikationen/Kurzinformationen/2015/ki_fs-kenia-wind.pdf?__blob=publicationFile&v=6> accessed 22 October 2018.

90 RE development was further boosted with a Memorandum of Understanding between Kenya's Electricity Generating Company (KenGen) and the French Development Agency with Euros 60 million to fund the Meru 80 MW wind project <<https://www.kengen.co.uk>> accessed 22 September 2018.

91 The use, development and management of RE sources are managed by Kenya's Energy Regulatory Commission.

solar water heaters. The regulations extend to old, new and future buildings. The regulation requires all premises to install solar water heaters within five years.⁹²

Kenya's Sessional Paper No.4 2004 on Energy, is significant for several reasons. One, it introduced the FIT, which spearheaded the promotion of renewable electricity,⁹³ just as it launched a public-private partnership model for unbundling of Kenya's electricity market. The 2010 Constitution of Kenya (enacted on 27 August 2010) is instructive because it provides for a devolved government structure, which mandates county government authorities to govern and manage the energy sector at local levels.⁹⁴ Underlying the principle of devolution is citizen empowerment and participation in decision-making, which creates awareness and education about energy choices. This is a step in the right direction as the adoption of devolution in the energy sector will bring local government within easy reach of consumers and encourage participation in electricity decision-making.

Kenya's Draft National Energy and Petroleum Policy (Draft NEPP), Energy Bill 2015 and Petroleum (Exploration Development and Production) Bill align with a current regulatory framework to decentralize government structures as outlined in Kenya's Constitution. These strategies will positively impact energy efficiency and aid climate change mitigation and further reduce carbon emissions in Kenya.⁹⁵ The Draft NEPP builds on Sessional Paper No.4, 2004 to "facilitate provision of clean sustainable affordable, competitive, reliable and secure energy

92 Regulations <<http://www.renewableenergy.go.ke/index.php/news/3>> accessed 17 December 2018.

93 Kenya's first FIT Policy was enacted in 2008 by the Ministry of Energy.

94 Fourth Schedule, 2010 Constitution; also note over sixty-seven per cent of voters approved the 2010 Constitution in a referendum.

95 "National Climate Change Action Plan: Mainstreaming Kenya's National Climate Change Action Plan into the Devolved Government Structures". Government of Kenya (Sponsored by the International Institute for Sustainable Development and Climate Care) <<https://www.google.co.za/search?q=National+Climate+Change+Action+Plan%3A+Mainstreaming+Kenya%E2%80%99s+National+Climate+Change+Action+Plan+into+the+Devolved+Government+Structures%E2%80%99&oq=National+Climate+Change+Action+Plan%3A+Mainstreaming+Kenya%E2%80%99s+National+Climate+Change+Action+Plan+into+the+Devolved+Government+Structures%E2%80%99&aqs=chrome..69i57.1574j0j7&sourceid=chrome&ie=UTF-8>> accessed 21 September 2018.

services at least cost while protecting the environment”.⁹⁶ It provides for the review of FIT policy and the upward adjustment of tariffs to enable sustainable returns on energy projects.⁹⁷ The FIT policy forms part of an ambitious electrification policy, which aims to guarantee electricity access to the majority of consumers. Kenya’s FIT policy adopts a long-term approach to RE development and mandates a power purchase agreement for a minimum of 20 years.⁹⁸ The FIT policy will aid the reduction of greenhouse gases, enhance economic competitiveness, boost investor interest and create jobs in Kenya’s RE sector.

Financial instruments are valuable tools that may be used to motivate investors. They may be introduced as taxation measures to adopt or promote RE expansion. Financial instruments represent a form of incentive to steer specific activities, in this case, RE advancement.⁹⁹ In 2015, through a flurry of instruments to enhance investor interest in the RE sector, the Kenyan government adopted a number of fiscal incentives. These include Legal Notice 91, which exempts withholding tax on payments of interest on loans from foreign lenders; Legal Notice 106, which provides for the exemption from stamp duty instruments executed on transactions involving loans from foreign sources received by investors. Lastly, Legal Notice 165, which provides for the exemption of withholding tax on payments made to a non-resident for services rendered under a Power Purchase Agreement.¹⁰⁰

Kenya’s legislative framework portrays a coordinated effort to diversify energy options and increase electrification from RE sources.

96 Energy Regulatory Commission <http://www.erc.go.ke/images/docs/National_Energy_Petroleum_Policy_August_2015.pdf> accessed January 2019.

97 Sessional Paper No.4, 2004 on Energy, an instrumental piece of legislation introduced the FIT, the promotion of RE and the introduction of PPP framework.

98 1 World Bank Group, “Power Purchase Agreements and Energy Purchase Agreements’ Public-Private Partnership in Infrastructure Resource Centre; <<https://ppp.worldbank.org/public-private-partnership/sector/energy/energy-power-agreements/power-purchase-agreements>> accessed 12 January 2019.

99 Yanko Marcus de Alencar Xavier and Anderson Souza da Silva Lanzillo, “Financing Renewable Energy in Brazil: Challenges of Climate Change and Innovation” Donald Zillman and others (ed), *Innovation in Energy Law and Technology: Dynamic Solutions for Energy Transition* (Oxford University Press 2018).

100 Legal Notice 165 August 2015.

Features of the framework considered essential for success include well-defined objectives, resources and technologies, energy market reform and contextual frameworks.¹⁰¹ Consequently, electrification rates across government sectors have been significantly enhanced.

5.2 Ghana

Ghana's Energy Commission and the Ministry of Energy are responsible for energy policy and planning. The Strategic National Energy Plan (2006-2020),¹⁰² and the Energy Sector Strategy and Development Plan (ESSDP) initiated by the Ministry of Energy in 2010 laid the foundation for Ghana's Renewable Energy Act (Act 832). Major objectives of the ESSDP include enhancement of RE in Ghana's energy mix to 10 per cent by 2020. Ultimately, the deployment of Ghana's strategies will create a buoyant environment for investors. For example, the SNEP endeavours to create incentives for private sector investment such as access to loans, financial instruments, government guarantees and or grants for infrastructure investment.¹⁰³

Act 832 demonstrates clear government commitment to the progress of RE in Ghana. Its' objectives include provision for the development, management and utilization of RE sources for the production of power in an efficient and environmentally sustainable manner.¹⁰⁴ It provides for the introduction of FIT for pricing strategies and¹⁰⁵ RE purchase obligation, which mandates power producers to place a specific percentage of RE sourced-electricity on the national grid.¹⁰⁶ For Ghana, inadequate electricity planning appears to be a thing

101 Karl Mallon *Renewable Energy Policy and Politics: A Handbook for Decision-Making*, (Earthscan 2010).

102 Strategic National Energy Plan <<http://www.energycom.gov.gh/files/snep/MAIN%20REPORT%20final%20PD.pdf>> accessed 22 January 2018.

1-3 K. Kaygusuz, "Energy for Sustainable Development: A case of Developing Countries", (2012) *Renewable and Sustainable Energy Reviews* 116.

104 Act 832 s 1.

105 Act 832 s 51 defines the FIT as a fixed guaranteed price at which Power Producers are required to sell RE into the electric power system. The provision creates strict , government control over pricing which determines exactly the price at which a Power Producer may sell their generated RE electricity

106 Act 832 s 26 the RE Pricing Obligation mandates electricity producers to put a required percentage of RE Sourced Electricity on the grid or pay a determined premium.

of the past.¹⁰⁷ Sound electricity planning has been helped along through community awareness and stakeholder pressure to address poor electricity levels.¹⁰⁸ Stakeholders include government agencies,¹⁰⁹ citizens, development partners and industry experts, which push the government to expand Ghana's electricity grid and embrace off-grid options.¹¹⁰

Act 832 is an effective means for the advancement and sustained deployment of Ghana's RE sources¹¹¹ and provides a workable and viable market for investors to thrive.¹¹² Momentum for this has been helped along by sound financial planning and, the establishment of a Renewable Energy Fund. Benefits from the Fund may be used for the promotion of scientific, technological and innovative research into RE and the production or fabrication of equipment for the development and utilization of RE in Ghana.¹¹³ Far from perfect, Ghana's regime must address criticisms linked to integrity, capacity and qualification of public and private stakeholders.¹¹⁴ For example, the poor performance of the Energy Commission and major distribution companies have raised questions about the inadequate endowment of Ghana's RE Fund which may have hindered RE progress.¹¹⁵

107 M. E. Eshun and J. Amaoko-Tuffour, "A Review of the Trends in Ghana's Power Sector", in *Energy, Sustainability and Society* (2016) 6:9, Springer Open; <<https://energysustainsoc.springeropen.com/articles/10.1186/s13705-016-0075-y#Fn4>> accessed 16 September 2018.

108 J. D. Quartey, "Energy Poverty and Climate Change Mitigation in Ghana: An Economic Assessment", (2014) *Journal of Economics and Sustainable Development*, Vol. 5 No.8, 72.

109 For example, Ghana's Environmental Protection Agency urged government to address energy problems when it cautioned against high levels of carbon emissions. Ghana's GHG emissions represented about 0.5% of total global emissions. It ranked 108 globally and was the 21st most GHG-emitting country in Africa; EPA Report 2010.

110 N. A. Mohammed and I. Ackah, "Analysing the Utility of Ghana's Renewable Energy Act as Catalyst for Switching on the Lights for National Development" (2015) <<http://dx.doi.org/10.2139/ssrn.2681030>> accessed 27 September 2018.

111 Act 832 s 25.

112 J. N. Ashong "How Effectively Has Ghana Implemented Its Policy for Large-Scale Renewable Electricity Deployment: A Qualitative Assessment" (2016) *Renewable Energy Law and Policy* 2.

113 Act 832 s 32 (1) ss 31 and 32(3) (a)(iii) respectively.

114 *Ibid* Ashong.

115 *Ibid* Ashong.

5.3 South Africa

In 2009, a RE FIT policy for South Africa was successfully introduced but later rejected by the government in favour of a public bidding process. This sudden change in direction was due to political, administrative and economic factors. Government ability to sustain a RE FIT policy, the administrative capacity to process applications from IPPs in a timely manner, the threat of overload to the national power grid and technical capacity influenced a sudden shift in policy direction.¹¹⁶ However, this change in policy direction did not affect government's commitment to driving RE development. Rather, it stimulated government initiatives and development plans and policies in a more beneficial and effective direction.¹¹⁷

SA's National Development Plan stipulates the need to develop additional electricity capacity from RE sources.¹¹⁸ While electricity regulations on New Generation Capacity (New Generation Regulations) fall under the Electricity Regulation Act (ERA),¹¹⁹ that is, under the new capacity determinations, RE sources account for 6,925 MW of the total 10,000MW desired. The ERA opened the market for the introduction of IPPs to generate most of the targeted capacity determinations of 10,000MW and their progress continues unabated.

In alignment with national development targets, the IPPs and Procurement Programmes Unit (established through the collaboration of the Department of Energy, National Treasury and National Bank of South Africa) is mandated to:¹²⁰

116 B. Rennkampa and others, "Competing coalitions: The politics of renewable energy and fossil fuels in Mexico, South Africa and Thailand" (2017) *Energy Research and Social Science* 34 214 <https://ac.els-cdn.com/S2214629617302360/1-s2.0-S2214629617302360-main.pdf?_tid=b141aa9b-c7a7-41fb-8771-c537b8d6a4f7&acdnat=1522656945_e1eb14720ca39ee4b3430d8363a31f9e> accessed 21 January 2019.

117 A publication of the Ministry of Energy, National Treasury and Development Bank of South Africa, *Independent Power Producer Procurement Programme: An Overview as at 31 March 2015*.

118 H Zarenda, South Africa's National Development Plan and its Implication for Regional Development, June (2013) Trade Law Centre.

119 Government Gazette No.34262, 4 May 2011.

120 Independent Power Producers Procurement Programme (IPPPP): An Overview, (March 2015).

Reduce the country's reliance on fossil fuels, stimulate an indigenous RE industry and contribute to socio-economic development and environmentally sustainable growth. The IPPPP has been designed not only to procure energy but to contribute to broader national development objectives such as job creation, social upliftment and broadening of economic ownership.

The office of the IPPPP provides professional advisory services, procurement management services, as well as monitoring, evaluation and contract management services. It has three interrelated focus areas. First, it is a key procurement vehicle for delivering on the national RE capacity building objectives. Second, it is responsible for securing electricity capacity from IPPs for non-RE sources, as stipulated by the Minister of Energy. Third, it provides advisory services related to programme and project planning, development, delivery and financing focused on creating an enabling and stable market environment for IPPs.¹²¹

To achieve the twin goals of clean and sustainable energy, SA introduced the REIPPP in 2011. It is praised for its robust regulatory framework, a specific focus on socio-economic development and community ownership with sound local content requirements. For example, every bidding company must possess a minimum of 40 per cent South African ownership, a minimum of 12 per cent of the company's shareholders must be black and a minimum of 2.5 per cent of the company must be owned by communities living within a 50-kilometre radius of the project. The REIPPPP was designed to attract, develop and sustain private investment in RE.

The IPPs constituting the first tranche of successful bidders achieved commercial operation in November 2013 and added 1,709MW of RE production to SA's grid up till March 2015.¹²² Ninety-two per cent of the IPPs reached commercial operation on time and consistently delivered capacity from 2013 to 2015.¹²³ In 2014, the IPPs projects generated 6,327 MW made up of 53 per cent wind, 36 per cent solar photovoltaic and 10 per cent concentrated solar. Its competitive market led to a fall in tariffs within three years by as much as 42 per cent for wind and 68 per cent for solar.¹²⁴ The success of RE development

121 Ibid at note 120.

122 Ibid at note 120.

123 Ibid at note 120.

124 Ibid.

positions SA in the global top 10 for RE investments.¹²⁵

Benefits of the REIPPP include a transparent process tailored to meet national targets for RE development. It attracts global and national investors and its local content provisions protect the national interests of SA citizens. One investor characterized REIPPP as the most successful public-private partnership in Africa in the last twenty years,¹²⁶ SA's regulatory approach to RE development through the REIPPPP has been made possible due to acceptable standards of good governance, transparency and accountability. These are critical features for the survival and success of any RE market. In addition, transparency, well-defined objectives, resources and technologies, appropriately applied incentives, adequacy, stability, contextual frameworks, energy market reform and equalizing community risk and cost-benefit distribution have also been met.¹²⁷

All these notwithstanding, there are shortcomings of the REIPPPP which cut across almost all aspects of the process from the point of bidding to delivery of electricity. These include persistent controversial allegations from local bidders who claim that some contractors have circumvented local content requirements¹²⁸ and assertions of conflict of interest between developers and eventual project owners.¹²⁹ Other shortcomings relate to programme design like an overestimation of market readiness, high transaction costs, and bias against small and medium enterprises.¹³⁰ Such criticisms may be explained away as being unforeseen advantages towards larger foreign investors. Nonetheless, the circumstances will sometimes create difficulty for smaller companies to compete.

The success of the REIPPPP does not mean failure of FITs. Although SA's REIPPPP is proving successful with timely project delivery in RE enhancement, the model is best suited where principles of good

125 T. Murombo, "Legal and Policy Barriers to Renewable and Sustainable Energy Sources in South Africa" (2016) (9) *Journal of World Energy Law and Business*, 142.

126 *Ibid.*

127 *Ibid* Mallon at note 103 81.

128 R. Ettmayr and H. Lloyd, "Local content requirements and the impact on the South African renewable energy sector: a survey- based analysis"; <<http://www.sajems.org/index.php/sajems/article/view/1538/887>> accessed 22 December 2018.

129 *Ibid.*

130 *Ibid.*

governance and rule of law abound. Issues of cost and financing are key to energy development and must be sufficiently managed for projects to triumph.

6. RECOMMENDATIONS

Nigeria's readiness for RE innovation is questionable. To embark on that goal, technical, political, administrative cultural and social concerns which hinder RE innovation must first be addressed. For example, government ministries, departments and agencies must become more efficient to avoid tedious and cumbersome licensing and permit processes. Improvements in administrative areas alone would create an investor-friendly environment for RE. A structured and skilled workforce would address technical capacity while stakeholder awareness and participation from the grassroots upwards would establish and encourage ownership of RE projects.

Ultimately, the establishment of mini-grids to advance RE development in Nigeria is preferred. This is largely due to the dilapidated state of Nigeria's national grid and the extensive electricity deficit in the country which largely affects rural dwellers. Accordingly, this article recommends that Nigeria integrate into its legal framework the following approaches, principles and legal instruments adopted in Kenya, South Africa and Ghana.

6.1 RE: A National Priority

Like the Kenyan approach, Nigeria must make the development and use of RE technologies a national priority and integrate this into the country's national development agenda. Such an approach demonstrates inclusiveness, commitment, and determination toward the establishment of an effective RE sector.

6.2 Devolution

In Kenya, the principle of devolution is applied to develop citizen empowerment and participation in the decision-making of Kenya's RE development. The success of devolution and public participation in the sector is a proven success. The involvement of local stakeholders at the grassroots level has been a longstanding issue in Nigeria's oil

and gas sector, especially in the Niger Delta.¹³¹ Women, youth and non-governmental organizations have routinely been excluded from the decision-making processes of the oil and gas projects. Advancement of the RE sector provides an opportunity for Nigeria to apply decades of experience in the oil and gas sector and get the right RE governance. This will help circumvent challenges related to stakeholder exclusion, which have for decades plagued its oil and gas sector. Hopefully, Nigeria will learn from the principle of devolution, which forms part of Kenya's RE growth and placed it at the forefront of RE technology and development in Africa.

6.3 Fiscal Incentives

There is a need for fiscal incentives through financial instruments which finance RE related activities of private investors. For example, financial instruments must include taxation measures to steer specific activities in RE development. Efforts to incentivize private investors to the RE sector would create much-needed development in the RE sector. Nigeria must formulate laws like Kenya's which introduce an exemption from tax payments on foreign loans. This has proved to be a significant factor in Kenya's RE development as private investors are more willing to take risks in business environments where their interests are protected, and investments respected.

6.4 Decentralized Energy Systems

Decentralized energy systems in areas where the national grid does not extend or where the cost of connection is too expensive, has added to Kenya's RE success. Continued support for mini-grids in Nigeria is vital to creating access to electricity in poor and rural areas that are not served by Nigeria's national grid. Nigeria would be wise to remain focused on its most recent initiative, which supports mini-grid development. Furthermore, if the mini-grid is to yield success, it must commit mini-grid developers to utilize RE sources for electrification.

131 Damilola S. Olawuyi, "The Increasing Relevance of Rights-Based Approaches to Resource Governance in Africa: Shifting from Regional Aspiration to Local Realization", (2015) 11 *McGill International Journal of Sustainable Development Law and Policy*, pp.293-301.

6.5 A Renewable Energy Act for Nigeria

The enactment of legislation solely for the promotion and development of RE validates government responsibility and dedication to establish a sound RE sector. Ghana's Act 832 demonstrates such commitment. Nigeria's existing legal framework is disjointed and incoherent. Licensing and permit processes are cumbersome and tedious. Furthermore, the overlapping functions of various ministerial departments and agencies discourage investors. A single Act for RE would address these challenges and provide sound guidance for all stakeholders and interested parties to participate in Nigeria's RE sector.

6.6 Renewable Energy Independent Power Producer and Procurement Programme and Initiative

South Africa's Independent Power Producers and Procurement Programmes Unit, the central procurement vehicle for the achievement of national RE capacity, is a collaboration of the Department of Energy, National Treasury and National Bank of South Africa. The RE Independent Power Producer Programme on socio-economic development, community ownership with sound local content requirements demonstrates specific tailoring of RE development to the country's needs. These entities are designed to ensure transparency in the processes designed to attract local and foreign investors. The programmes are commendable particularly as they stipulate that only companies with a minimum percentage of South African ownership qualify for the bidding rounds. Coordination and collaboration among key entities in the RE development process are essential. Hence, this article recommends the creation of a designated national body to vet investors and protect national interests in its RE development process.

7. CONCLUSION

Nigeria's RE potential cannot be realized until it improves upon poor existing legal and institutional frameworks. Energy conditions are unlikely to change unless Nigeria introduces fiscal incentives, creates public awareness, enhances stakeholder participation, and improves on appropriate and essential laws, which increase technology and innovation. Borrowing from the national strategies of Ghana, Kenya and South Africa would enrich Nigeria's existing legal and institutional frameworks. Innovation and implementation of well-thought-out

strategies are essential for RE advancement in Nigeria which will secure well-needed solutions to long-standing electricity deficit. Effective legal strategies would expand electricity generation, improve socio-economic conditions and positively impact climate change mitigation and adaptation. A revised and robust legal framework, stronger institutions to ease essential processes for RE projects, stakeholders and private investors would position Nigeria as a leader of RE advancement across Africa. With these efforts, Nigeria would honour national commitments and demonstrate a wider commitment to the Paris Agreement. This would bring to an end doubts about Nigeria's intentions regarding RE development and put to rest the question, whether Nigeria?