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Treading a Path for Effective Renewable Energy Regulation in Nigeria: Lessons from Brazil

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Abstract

Rising temperatures, rising sea levels, droughts and other climate change induced variants are mounting pressure on national governments to reassess their commitment to global climate change goals and their general approach to energy production and consumption within their territories. Renewable energy has become a recurring theme in the drive towards attaining clean energy and maintaining a sustainable culture. Failing to reconcile with this reality will result in negative environmental, as well as economic consequences on any nation, as less and less investment are being made in conventional energy sources. This paper aims to assess Nigeria's current attitude to renewable energy development from the perspective of the nation's regulatory framework. Using a comparative analysis methodology, it finds the presence of an indirect and inefficient regulatory regime on renewable energy in the country. It compares this to Brazil's regulatory regime where it finds a comprehensible and direct regulatory structure. It asserts that the success of the Brazilian renewable energy integration is attributable to the presence of a detailed energy licensing process, direct legislation, supported research and development scheme and adequate market strategy for renewable energy. Recommendations were made along this line for more efficient renewable energy regulation in Nigeria.

Keywords: Renewable Energy, Regulatory Framework, Brazil.

1.0 INTRODUCTION

The place of energy in the development of any nation cannot be underestimated. Energy use drives economic productivity and industrial growth and is pivotal to the operation of any modern economy.¹ Ayres and Warr noted that the fulfillment of this role is conditioned on the availability of cheaper and higher quality forms of energy input.² With a majority of the world's energy sourced from fossil fuels, it raises a concern for the quality of energy inputs, from an environmental perspective. The Intergovernmental Panel on Climate Change (IPCC) reports that the first major source of CO₂ in the atmosphere is the burning of fossil fuels, since four-fifth of global CO₂ emissions comes from energy production.³

While conventional fuels presently offer a cheaper form of energy, there is irrefutable scientific and physical evidence to prove their negative impact on the climate and environment. These detrimental conditions call for higher quality sources of energy as an alternative to the more carbon-based sources. As an alternative, renewable resources provide a cleaner, more sustainable source for energy production. Leveling the playing field for renewable resources would require a comprehensive system of laws and policies for effective regulation. This paper reviews the condition of renewable energy regulation in Nigeria and takes a comparative look at the efforts in Brazil. It concluded that there is need to adopt the Brazilian model.

2.0 THEORETICAL FRAMEWORK

Renewable energy, often referred to as clean energy, is generally referred to by scholars as energy that comes from natural sources or processes that are constantly replenished. For a long time, there was an absence of a specialized renewable energy agency in Nigeria. In August 2005, the Nigerian National

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¹ Ashgar Zahid, 'Energy-GDP Relationship: A Causal Analysis for the Five Countries of South Asia' [2008] (8)(1) *Applied Econometrics and International Development* 167.

² Ayres RU and Warr B, *The Economic Growth Engine: How Energy and Work Drive Material Prosperity* (Cheltenham: 2009) 1.

³ See Richard Black, 'A Brief History of Climate Change' [20 September 2013] <http://www.bbc.com/news/science-environment-15874560.html> accessed 17 April 2022.

Petroleum Corporation (NNPC) inaugurated a Renewable Energy Division in NNPC to develop a renewable energy initiative tasked with harnessing bio-fuel in Nigeria for the satisfaction of energy customers. However, the division has not been efficient in carrying out this task.⁴ It was only between 2013 and 2014 that the National Energy Policy (2013) and the Draft National Energy Master Plan (2014) created the National Renewable Energy Development Agency with the responsibility of making renewable energy a significant source of energy in Nigeria.⁵ Also, the Nigerian Electricity Reform Commission (NERC) was established by the Electric Power Sector Reform (EPSR) Act 2005 to initiate, promote, and preserve efficient energy market structures for optimal utilization of energy resources for electricity services.⁶ This plethora of institutions only amount to a miniature institutional framework of the sector rather than an effective institutional framework, which clogs the wheel of renewable energy regulation. This situation begs for a comprehensive approach for the regulation of renewable energy in Nigeria for the needed development.

3.0 RENEWABLE ENERGY IN NIGERIA

Nigeria is endowed with renewable energy sources that meet its present and future development requirements as well as complement its current oil-dependent economy.⁷ The country's potential for renewable energy was presented in its First National Communication under the United Nations Framework Convention on Climate Change (UNFCCC).⁸ The report recorded that the annual radiation level in Northern Nigeria is about 190 kilocalories while the level in the Southern Nigeria is 110 kilocalories, thus affording the country viable sources of solar energy. Studies show that these renewable energy sources have for a long time

⁴Olujobi O.J and Oyewunmi, OA, 'Annulment of Oil Licences in Nigeria's Upstream Petroleum Sector: A Legal Critique of the Costs and Benefits' [2017] (7) (3) *International Journal of Energy Economics and Policy* 364.

⁵Olusola Joshua Olujobi, 'The Legal Sustainability of Energy Substitution in Nigeria's Electric Power Sector: Renewable Energy as an Alternative: Protection of Modern Power Systems' (2020) <<https://doi.org/10.1186/s41601-020-00179-3> accessed 17 April 2022.

⁶Electric Power Sector Reform (EPSR) Act 2005, s 32.

⁷ Akuru UB and Okoro OI, 'Renewable Energy Investment in Nigeria: A Review of the Renewable Energy Master Plan, Energy Conference and Exhibition' [2014] *Journal of Energy in Southern Africa* (25) (3) 67.

⁸ Nigeria's First National Communication under the United Nation Framework Convention on Climate Change (2003) 22. See also, Nigeria's Second National Communication under the United Nation Framework Convention on Climate Change (2014).

contributed to Nigeria's energy mix, although primitively.⁹ Fuel wood is recorded to be the longest standing energy source for rural Nigeria. Also, large hydropower has also featured substantially as an energy source, providing about 32%¹⁰ of Nigeria's national electric grid supply.¹¹ However, other renewable sources in the country have remained underutilized.

Despite the abundance of these resources, not much has been done in terms of renewable energy regulation. What exist are incidental laws and vague policies on the subject. Till date, there is no single, exclusive legislation that regulates renewable energy development in Nigeria. So far, the following policies and plethora of legislations provide an outline of the legal framework for Nigeria's renewable energy market;

3.1 Electric Power Sector Reform Act¹² (EPSRA) 2005

The Electric Power Sector Reform Act (EPSRA) is the primary legislation for the electricity sector in Nigeria. It was enacted in the wake of the far-reaching reforms in the power sector at the time. The fundamental purpose was the privatization of the government-owned electricity company and the process towards a completely liberalized market.¹³ It provided for the formation of companies to take over the functions, assets, liabilities and staff of the National Electric Power Authority (NEPA), to develop competitive electricity markets, to establish the Nigeria Electricity Regulation Commission (NERC), among others.¹⁴ Under section 32 EPSRA, the NERC is saddled with the objective of creating, promoting and preserving efficient industry and market structures, and

⁹ Oluto Yahaya and Edith Nwabuogo, 'Renewable Energy Deployment as Climate Change Mitigation in Nigeria' [2016] *Global Journal of Human-Social Science Research* 378.

¹⁰ SECCP, 'Getting to Grips with Sustainable Energy' [2002] Publication of the Sustainable Energy and Climate Change Partnership (SECCP) 1.

¹¹ See also Dalberg Global Development Advisors, 'Improving Access to Electricity through Decentralized Renewable Energy: Policy Analysis from India, Nigeria, Senegal and Uganda' [2017]; where it was stated that hydropower provides the bulk of renewably sourced energy at an approximate of 20%, and that the exact percentage depends on whether or not megawatts (MW) from diesel generation are counted as part of the total or not.

¹² Act No. 6 2005, Cap E7, LFN 2010.

¹³ Ifeyinwa Ufodu and Ike Ibeku, The Legal Framework for Renewable Energy in Nigeria [23 September 2019] <http://www.lexology.com/library/detail.aspx> accessed 17 April 2022.

¹⁴ See Preamble to the EPSRA.

to ensure the *optimal utilization of resources*¹⁵ for the provision of electricity services.¹⁶ However, the Commission has been inefficient in optimizing utilization of all resources for electricity production, owing to a lack of adequate research, funding, political influences, and general lack of motivation within the commission resulting in incompetency. Consequently, the electricity needs of many communities remain unmet.

3.2 Environmental Impact Assessment (EIA) ACT 2004¹⁷

The EIA Act set out the procedures and methods to ensure prior consideration of environmental impact assessment on certain public or private projects.¹⁸ The objective of the Act is to evaluate the environmental impact of any project and to secure approval – before a decision is taken by any person, authority, corporate body or unincorporated body, including the Government of the Federation, State or Local government intending to undertake or authorize the undertaking of any activity. The rationale is to regulate significantly environmental effect on those activities and which must first be taken into account.¹⁹ The Act thereby restricts the undertaking or embarking on or authorizing of projects by the public or private sector without prior environmental consideration, at an early stage of the project.²⁰ The Schedule to the EIA Act sets out a list of activities for which a mandatory study is required. The industries deemed to be mandatory study activities under the Act include mining, petroleum, transmission activities and power generation.²¹ Despite this, infrastructural projects has shown that EIA is not done before the approval of most projects in Nigeria. Inadequacies and misinterpretations of various regulatory statutes delay and ultimately prevent EIA. This is because too many regulatory bodies cause duplication of functions

¹⁵ Emphasis mine.

¹⁶ Section 32 (1) (a) EPSRA.

¹⁷ Cap E12 LFN 2004.

¹⁸ See S Adebayo and G Arowolo, ‘The Efficacy of the Legal Framework for Combating Climate Change in Nigeria’ [2012] (3) *Journal of Private and Property Law* 83.

¹⁹ EIA Act, s 1(a).

²⁰ *Ibid.*, s 2(1).

²¹ Ekhaton Eghosa Osa, ‘Public Regulation of the Oil and Gas Industry in Nigeria: An Evaluation’ [2016] (21) (1) *Annual Survey of International & Comparative Law* 1, 41.

and overlapping responsibilities in processes and procedures guiding the execution of the various impact assessment tasks.²²

3.3 Nigerian Electricity Management Services Agency (NEMSA) Act²³

The Act established the Nigerian Electricity Management Services Agency to carry out the enforcement of technical standards and regulations, technical inspection, testing and certification of all categories of electrical installations, electricity meters and instruments to ensure the efficient production and delivery of safe, reliable and sustainable electricity power supply.²⁴ The Act further saddles the Agency with the responsibility of ensuring that power systems and networks are properly executed, prior to use to ensure that consumers have access to safe, reliable and sustainable supply of electricity.²⁵ Provision of renewable energy services together with other ancillary services for commercial opportunities is expected of the Agency,²⁶ though it is largely ignored.

3.4 Nigeria Electricity Regulatory Commission (NERC) Renewable Energy Feed-In Tariff Regulations (2015)

In exercise of its powers to make regulations pursuant to **Electric Power Sector Reform Act (EPSR Act)**, the NERC made the Regulations on Feed-In Tariff for Renewable Energy (REFIT).²⁷ The Regulations apply to renewable energy sourced from wind, hydro, biomass and solar PV with the capacity of between 1MW and 30MW that is connected to the grid of the distribution network.²⁸ The objectives set out by the Regulations include establishing a level-playing field for renewable and conventional electricity generation,²⁹ to encourage greater private sector participation in power generation from renewable energy technologies,³⁰ to develop, promote and harness the Renewable Energy (RE) resources of the

²² Abdullahi, Abdullateef Sani, Abbas Gado, Ali Ibrahim, Muhammad Said, Mustapha Zungum, Idris 'Environmental impact assessment in Nigeria-A review.' [2021] *World Journal of Advanced Research and Reviews*. 8. 10.

²³ Act No. 6 2015.

²⁴ NEMSA Act, preamble.

²⁵ *Ibid.*, s 6(d).

²⁶ *Ibid* s 6(n). See s 6 of the Act generally for the objectives and functions of the Agency.

²⁷ See Preamble to the REFIT, 2015.

²⁸ Schedule 1 to the REFIT, 2015.

²⁹ *Ibid.*, Paragraph 3(a).

³⁰ *Ibid.*, Paragraph 3(b).

country and incorporate all viable ones into the national energy mix,³¹ among others.³²

3.5 National Renewable Energy and Energy Efficient Policy (NREEEP) 2015

The National Renewable Energy and Energy Efficient Policy (NREEEP) was endorsed as a policy document by the Federal Executive Council on April 20, 2015. It is the first and only coordinated tool to drive renewable energy development and improve energy efficiency in Nigeria.³³ It has been described as a “high-level national policy that supersedes previous policies related to renewable energy and energy efficiency”.³⁴ The policy focuses on hydropower, biomass, solar, wind, geothermal, wave and tidal energy power plants and co-generation plants for energy production.³⁵ One of the purposes of the policy is to set out a framework for action to address Nigerians’ challenge on inclusive access to modern and clean energy resources, improved energy security and climate objectives.³⁶ It also proposes to broaden the definition of energy security to include renewable energy and energy efficiency as equally important indigenous sources of energy, in addition to oil and gas.³⁷ In addition to the above, there are also a good number of policies bearing on the Nigerian energy sector. One of such policies is the 2003 Energy Policy. It stresses the total thrust of energy policy by safeguarding the best method for the utilization of Nigeria’s energy resources for sustainable development of its energy industry. The draft Renewable Electricity Policy (2009), the Renewable Action Plan (2000) and Renewable Energy Master Plan (2012), together encompass plans for incorporating renewable energy in Nigeria’s economy.

³¹ *Ibid*, Paragraph 3(c).

³² See Paragraph 3 of the REFIT, 2015 generally for objectives of the Regulations.

³³ *Ibid*.

³⁴ Ley K and Gaines J and Ghatikar A, ‘The Nigerian Energy Sector: An Overview with Emphasis on Renewable Energy, Energy Efficiency and Rural Electrification [2015] *Gesellschaft für Internationale Zusammenarbeit (GIZ)* 1.

³⁵ NREEEP 2015.

³⁶ *Ibid*.

³⁷ *Ibid*.

4.0 ASSESSMENT OF THE LEGAL FRAMEWORK FOR NIGERIA'S RENEWABLE ENERGY

Despite this panoply of laws and policies, regulatory competence on energy – particularly renewable energy – remains significantly low. The reality remains that Nigeria's focus remains on oil and gas utilization. Testament to this was the signing of the Petroleum Industry Bill (PIB) into law by President Muhammadu Buhari on 16 August 2021. Hailed as a “game changer” for the Nigerian oil and gas scene, the key concern is whether the Petroleum Industry Act (PIA) can sustain the oil and gas sector of Nigeria, at a time of global transition to low carbon or clean energy.³⁸ Although sections 101, 102, 103(1)(2), and 106(1) of the Petroleum Industry Act 2021 advocate protection of the environment to some extents, none provide concrete approaches for creating and implementing plans for protection of the country's environment. Also, little was offered in terms of promoting renewable energy utilization. The PIA cannot sustain the Nigerian energy sector, neither can it lead it into the much-needed transition. It is important at this time that legislative focus in the Nigerian energy sector shifts to renewable energy.

5.0 RENEWABLE ENERGY DEVELOPMENT IN BRAZIL

Like Nigeria, Brazil is endowed with vast renewable energy resources, especially water.³⁹ It owns 12% of the Earth's surface fresh water with one of the largest river networks in the world.⁴⁰ Accordingly, hydropower is the highest contributor of the energy consumed in Brazil accounting for 33% of the nation's primary energy production and more than 90% power generating capacity.⁴¹ Brazil diversified its energy sources in order to meet its energy needs in the wake of 21st century and within two decades, renewable energy has grown to become the main source of energy in the country. In the meantime, 46% of Brazil energy mix

³⁸KPMG, Petroleum Industry Bill (PIB) 2021: A Game Changer? [July 2021] <http://home.kpmg/ng/en/home/insights/2021/06/petroleum-industry-bill-pib-2020.html> accessed 17 April 2022.

³⁹ Jorge Ben Joe, Tropical Country in Nana Tera, Brazil is a World Leaders in Renewable Energy Job Creation [Airswift, 14 January 2021] <https://www.google.com/amp/s/www.airswift.com/blog/renewable-energy-brazil%3fhs_amp=true> accessed 17 April 2022.

⁴⁰ Ibid.

⁴¹ 'Critical Issues in Brazil's Energy Sector' (The James a Baker III Institute for Public Policy, Rice University 2004).

comes from renewables.⁴² The renewable energy sources in Brazil include sugar cane derivatives (18%), firewood and charcoal(8.8%), wind(9%) and solar (1.5%). The government of Brazil in 2018 declared its target of moving its Compound Annual Growth Rate (CAGR) of 6% from 31GW to 60.8 GW by 2030 and this has informed a number of efforts taken by the government towards attaining the goal.⁴³ The landmark growth and achievements in the British renewable energy sector is traceable to a number of robust legal and effective institutional regulatory present and operative in the country. Generally, Brazil's renewable energy targets are embedded in its Ten-year energy expansion plans (PDEE).⁴⁴ The PDEE aims for renewable energy to account for 42.5% of the country's total primary energy supply by 2023 up from 42.1% in 2014 which are the basis for ordinary power capacity auctions.

However, the Paris Agreement⁴⁵ has greatly influenced renewable energy law in Brazil. It was domesticated through the Federal Decree No. 9, 073/2017. Despite the absence of a wholesome law on renewable energy, Brazil has through a number of laws implemented strategies that provide the right conditions for the growth of renewable energy. These strategies will be considered;

5.1. Threefold Licensing:

Environmental issues are a primary concern in Brazil's energy industry. These issues are given adequate consideration every attempt at energy regulation. In this vain, all power generating projects are subjected to a threefold licensing process. The first step of the process is gaining concession. Concession laws are set in place to regulate the construction and operation of energy generating facilities in the industry. These laws include Law No 9,074/1995, Law No 9,427/1996, Law No 9,648/1998, Law No 10,848/2004. They set out detailed rules for granting and extending concessions and permissions in the power sector and the conditions for

⁴² Stephanie Jamison and Roberto Bocca, Balancing Economic Growth and the Environment: Lessons from Brazil (World Economic Forum, 9 March 2021) <<https://www.weforum.org/agenda/2021/03/balancing-economic-growth-with-sustainability-lessons-from-brazil/>> accessed 17 April 2022.

⁴³ ESI Africa, Brazil Renewables Capacity to Grow at CAGR 6% to 2030 [2 July 2019] <<https://www.esi-africa.com/regional-news/brics/brazils-renewables-capacity-to-grow-at-cagr-6-to-2030/>> accessed 17 April 2022.

⁴⁴ IRENA, 'Renewable Energy Policies: Brazil' (June 2015) <<https://www.irena.org/Agency-PDF-Brazil-International-Renewable-Energy-Agency>> accessed 17 April 2022.

⁴⁵ Paris Agreement 2015

revocation. Concession may last up to 30 years and may be renewed at the discretion of the government.⁴⁶ Strict environmental considerations in granting concession for power projects ensure that mostly proven clean projects are granted concessions.

Following this, authorisations for power generation facilities may be granted by the National Electric Energy Agency (ANEEL) upon fulfilment of certain legal, technical and financial requirements pursuant to ANEEL Normative Resolutions No 395/1998 (small hydro), No 343/2008 (small hydro), No 390/2009 (thermo), No 391/2009 (wind), No 412/2010 (small hydro), No 673/2015 (small hydro), No 765/2017 (small hydro), and No 676/2015 (solar).⁴⁷

The whole process culminates in licensing. Generally, from greenfield to commercial operation, a company must apply and fulfil the applicable requirements for the issuance of: (a) a provisional licence, which will allow the company to continue the development of the project and demonstrate, when required (in power auctions, for instance), that the project is viable from an environmental standpoint; (b) an installation licence, which will authorise the construction of the generation project; and; (c) an operational licence authorising the commercial operation of the power plant.

5.2 Specific Legislation

There is no all-inclusive law on renewable energy in Brazil. However, the country has been able to enact laws focused on specific renewable resources. These laws are intended to encourage the development of those particular resources, which is necessary for the overall development of renewable energy. For instance, Law No. 9, 9433/1997 which creates the National Water Resources Policy and the National System of Water Resources Management. It provides details and manages the use of water for hydropower generation. A further example is Feed-in Tariff Law 2001 (PROEOLICA) that regulates the making and signing of Power Purchasing Agreements (PPAs) in Brazil. It applies specifically to wind power production, provided the wind power production has capacity up to 1005MW.

⁴⁶ Law No. 9.074/1995, art 4, para 4.

⁴⁷ *Ibid.*

5.3 Research and Development (R&D):

Brazil's renewable energy regulation supports Research and Development. Through government regulation, financial incentives are afforded for R&D in the field of renewable energy. By the Innovia Energia of 2013, the government provided funding to the tune of USD924 million and 90% subsidies for offsetting R&D project costs.⁴⁸ These costs must have been expended in R&D projects in smart grid systems and technology, hybrid vehicles, energy efficiency in transport and renewable energy generally.⁴⁹

Such funding incentivizes development in the renewable energy sector. By this, Brazil takes the step from being an importer of renewable energy technology and know-how to becoming a producer and exporter of the knowledge and technology. The result of this is an improvement in price competitiveness of renewable energy as against conventional energy.

5.4 Renewable Energy Certificates (RECs)

Renewable energy tracking has become a significant aspect of the drive for clean and efficient energy. The last few years have witnessed the development of various tracking methods by different countries, to promote and monitor renewable energy development and consumption. Renewable Energy Certificates (RECs), as one of such tracking methods, features in the Brazilian renewable energy market. RECs are non-tangible energy products, and are adopted in varying forms around the world, in order to demonstrate renewable energy consumption. These certificates can be traded on open markets with the end-buyer being the party which is able to demonstrate, through certificate redemption, that their consumption within a given period was sourced from respective generation criteria.

In Brazil, RECs were introduced by the Renewable Energy Certification Program "REC Brazil" in 2011. Its focus is to foster market growth for renewable sourced energy.⁵⁰ The REC is issued by the Totum Institute to the producer of the energy after it has been confirmed that the production device adheres to the REC Brazil

⁴⁸IRENA (2015), Renewable Energy Policy Brief: Brazil; IRENA, Abu Dhabi.

⁴⁹ An additional Fund of USD9.7 billion was provided in 2015 for private and public contribution to finance electricity generation in the Northeast region including 8 GW powers.

⁵⁰ Energyorigins.net, Certificate Schemes <http://energyorigins.net/certificate-schemes> accessed 17 April 2022.

Regulation. The certification process follows with an audit by a third-party organization accredited by the programme. After this on-site audit, the process is sent to a Certification Committee which makes the final determination based on the recommendations of the Audit Office. After this initial certification process, the production device starts receiving monthly issued RECs per MW/h. The producer may then market its RECs to other parties.⁵¹ The REC Brazil programme uses the I-REC global platform as a tracking system for the issuing process. The I-REC monitors the issuance of certificates to prevent cases of double certification or double claims for the same MW/h of energy.

Renewable energy tracking also forms a crucial part of EU member states renewable energy development. However, unlike the REC, the EU uses a Guarantee of Origin (GO). It is defined in the European legislation⁵² as an instrument that labels electricity from renewable sources and provides information to electricity customers on the source of their energy. While both the REC and GO guarantee that a given MW/h of electricity has been produced from a renewable energy source, a GO varies in terms of duration and scope. In terms of scope, a GO has been applied and issued for renewable, fossil and nuclear based technologies, howbeit not in every member state of the EU. The GO typically lasts for a period of one year, after which a new GO has to be issued. The Brazilian RECs is similar to that practiced in the USA, where they are also known as “Green tags”, “Renewable Energy Credits” or “Tradable Renewable Certificates” (TRCs).

The benefit of this tracking system is two-fold. On the one hand, it allows companies to purchase certificates or credits from renewable energy producers and grow their ESG (Environmental, Social and Governance) profile and fulfill global sustainable development goals. On the other hand, it provides a viable source of income for renewable energy generators to reinvest in their generation projects.⁵³ In the USA model, renewable energy credits may also be issued to renewable energy developers, other than electricity producers. In this case, these

⁵¹*Ibid.*

⁵²Directive 2009/28/EC

⁵³ Bnamericas, ‘Renewable Energy Certificates are Brazil’s ‘Next Big Thing’’ [30 March 2021] <http://www.bnamericas.com/en/interviews/renewable-energy-certificates-are-brazils-next-big-thing> accessed 17 April 2022.

credits are issued to companies or individuals who develop renewable energy technology, who may in turn sell them to other companies who need to meet government carbon mandates. For example, Tesla receives RECs for the development of Tesla electric cars. The more electric cars Tesla produces, the more credit it can sell for making them.⁵⁴ Between 2015 and 2017, Tesla sold other automakers 279,725 credits.⁵⁵ In its 2020 second quarter earnings report, the company reported sales of credits to the tune of \$428million.⁵⁶

6.0 ASSESSMENT OF THE LEGAL FRAMEWORK FOR BRAZIL'S RENEWABLE ENERGY

Generally, Brazil has adopted a direct approach to renewable energy regulation, the absence of an overarching law notwithstanding. The absence of such unified law isn't a case of legislative lapse but rather a consequence of the success of the present approach to regulation. Considering that water makes up the most of Brazil's renewable resources, most of the laws are focused on improving and optimizing that particular resource. In any case, specificity of this approach is more efficient than a vague, all round regulative approach.

7.0 COMPARING THE BRAZILIAN V NIGERIAN APPROACH TO RENEWABLE ENERGY

The lessons for Nigeria here are conspicuous. First, while it may be important to develop a framework for renewable energy regulation in the country, regulation must go beyond such framework. Like Brazil, it is important to consider renewable resources not just in terms of their overall capacity but in the usability of each resource taking into consideration geographical, political, social, environmental and other factors. An effective regulatory structure would be one that makes the most out of the renewable resource best suited for the peculiarities of Nigeria, whilst also developing other available, less suitable sources. In Nigeria, there is high potential for hydro energy and solar energy utilization, amongst others. The Sustainable Energy and Climate Change Partnership

⁵⁴ Tim Benson, 'Ending Elon Musk's Renewable Energy Credits Racket' [16 February 2021] http://www.realcleanenergy.org/articles/2021/02/16/ending_elon_musks_renewable_energy_credits_rackets_660585.amp.html accessed 17 April 2022.

⁵⁵*Ibid.*

⁵⁶*Ibid.*

(SECCP) presented a table to show the potential of Nigeria's renewable energy which has been designed for clean energy generation purposes;

Table 1.1: Potential of Nigeria's Renewable Energy

A table showing Nigeria's potential for renewable energy based on estimated reserve.

Source: Sustainable Energy and Climate Change Partnership (SECCP)⁵⁷

Energy Resources	Estimated Reserve
Large Hydropower	11,250 MW
Small Hydropower (< 30MW)	3500 MW
Fuel Wood	11 million hectares of forest and woodland
Municipal Waste	30 million tonnes/year
Animal Wastes	245 million assorted animals in 2001
Energy Crops and Agricultural Residue	72 million hectares of agricultural land
Solar Radiation	3.5-7.0 kW h/m ² /day
Wind	2-4 m/s at 10m height

Regulation must be tailored-towards these resources. Efforts must be made for both optimization and development. Through this approach to renewable energy regulation, there is certain to be evident development in the sector.

Another viable lesson to be learnt from the Brazil approach is the prioritizing of Research and Development. In Nigeria, little government funds are provided in support of research and development in renewable energy. The result is a dearth of local knowledge in the field. Instead, the country continues to import experts and technology to help maximize and develop its resources. One can imagine the impact this would have on the price of renewable energy. It is advised that more government funds be provided to foster research and development in renewable energy and grow a large band of local experts and technicians in various aspects of the market. The benefit of this also extends to creating more jobs and employment opportunities for Nigerians.

⁵⁷Sustainable Energy and Climate Change Partnership (SECCP) (n 7).

Finally, market strategies to boost renewable energy development and use should be adopted. Nigeria should look to adopt any of the renewable energy tracking systems. importantly, the choice of whatever system should consider the context-related issues, since one system may be successful in one jurisdiction and yet fail in another. The strategy to be adopted must have in contemplation our geographical difference, culture and socio-political differences.

8.0 CONCLUSION AND RECOMMENDATIONS

The success of any nation in developing renewable energy depend on an effective regulatory structure in place. For Nigeria, renewable energy regulation must go beyond an ordinary framework to a more detailed and particular approach, taking into consideration the peculiarities of our resources and other sociopolitical and environmental factors. The first step to achieving this is ensuring that environmental concerns are made a priority in any development projects. Like Brazil, a more detailed licensing process should be adopted which will ensure that only the cleanest and most environmental conscious projects are licensed. In this wise, a review of the Environmental Impact Assessment (EIA) Act would be necessary and possible improvements made by way of amendment. Such improvement should require a more stringent, yet fluid, process of licensing development project be adopted.

Again, efforts must be made at promoting research and development in renewable energy in Nigeria. Policies should be made that provide incentives and funding for these research projects. Development of fair and competitive renewable energy market to encourage investors to invest in the sector and make good returns on their investments. Also, bank should be encouraged to offer significant interest discount for loans for renewable energy R&D. Additionally, educational policies should be made that include renewable energy in school curriculum across the various institutions of education in the country, especially the tertiary institutions.

While it remains important to develop a regulatory framework for renewable energy in Nigeria, this paper proposes a step beyond that skeletal phase. It supports a more direct regulatory approach to renewable energy in Nigeria, such that meets the independent needs of each renewable resource in the country. This would ensure that each resource is well developed and grows at a steady pace for greater competitiveness of all renewable energy resources.