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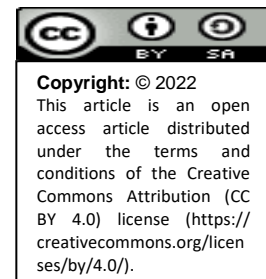
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## Renewable Energy and its Instrumentality to Sustainable Development in Nigeria

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### Abstract

*Steering sustainability with the use and development of renewable energy is undoubtedly a contemporary subject in Nigeria and just as it is all over the world. It means therefore that constant research is inevitable if indeed the country is determined to drive the achievement of sustainable goals with renewable energy. This paper examines the concept of renewable energy, its features and perceived line of difference between renewable and sustainable energy. Also within review are the emergence of sustainable development and its elevation into concept status. In view of this dimension as to status, the paper examines the concept's fundamentals, its operative principles and how Nigeria can key into all these principles to achieve sustainable goals. The significance of renewable energy to the achievement of sustainable goals in the country's economy is also examined by this paper. In line with this trend, the paper demonstrates how renewable energy could be engaged to strengthen the three pillars of sustainability concept. Finally, this paper reviews the imperatives of legislation to the use and development of renewable energy in Nigeria.*

**Keywords:** Sustainability, Energy Security, Climate mitigation, Health impacts, Greenhouse gases Emission.

## 1. Introduction

Energy consumption in any country all over the world, and not just only in Nigeria, is an attestation that the country's economy is gaining rapid development.<sup>1</sup> There is hardly any sector of the country's economy that does not depend on energy to thrive. Industries, communication, health, education, transportation and domestic sectors are all driven by energy.<sup>2</sup> In other words, energy drives industrial, commercial as well as domestic sectors of the economy in Nigeria.<sup>3</sup> In view of the importance attached to the use of energy, it is appropriate to state that Nigeria's economy and its development would depend on availability and security of energy.<sup>4</sup>

Although the use of energy is synonymous with economic development of every country, the question to ask is; if the present energy system in Nigeria could drive sustainability and achievement of its goals? For a start, sustainable development as a concept is anchored on three major pillars. These are environment, social and economic development.<sup>5</sup> Over the years and up till now, Nigeria energy system is mainly based on fossil fuel energy. Even though the country is richly blessed with renewable energy resources, conventional energy source, otherwise fossil fuel, has been the main energy which the country rely on to develop its economy.<sup>6</sup> The use and development of renewable energy is yet to gain traction in the country and its energy sector is yet to take concrete steps to yield development of the resources.<sup>7</sup>

Fossil fuel or conventional energy is antithesis to sustainable development and the concept's principles. In its characteristics, fossil fuel can in a variety of ways be described as follow:

- (a) Fossil fuel source is naturally finite hence the enjoyment or use of the energy over a lengthy period of time to enable requisite developmental plan is threatened.<sup>8</sup>

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<sup>1</sup> Sathaye, Oswald Lucon, Atiq Rahman, J. Christensen, F. Donton, J. Fujino, G. Heath, M. Mizra, H. Rudmick and A. Schlaepfer, 'Renewable Energy in the Context of Sustainable Development' (2011) Physics Faculty Publications 710

<sup>2</sup> O. Olatunji Stephen, A. Akinlabi, Oluseyi Olanrewaju Ajayi, Abiodun Abioye, Felix Ishola, P. M. Mashinini and Nkosinathi Madushele, 'Electric Power Crisis in Nigeria: A strategic call for change of focus to Renewable Sources' (2018) IOP Conference Series: Materials, Science and Engineering

<sup>3</sup> Ibid

<sup>4</sup> Chinedu Umeh, Ochuba Chinedu Daniel and Ugwo Callistus Ezekwe, 'Impact of Energy Consumption on Economic Growth in Nigeria: An Approach of Time Series Econometric Model' (2019) 8(2) International Journal of Academic Research in Economics and Management Sciences. Doi:10.6007/IJREMS/v8-i2/6203

<sup>5</sup> Tomislav Klarin, 'The Concept of Sustainable Development: From its Beginning to the Contemporary Issues' (2018) 21(1) Zagreb International Review of Economics & Business 69

<sup>6</sup> Olusola J. Olujobi, 'Nigeria Renewable Energy as Alternative Sources of Energy: Impacts and Potentials' (2021) 50(25) Environmental Policy and Law 1-12. Doi:10.3233/EPL-200246

<sup>7</sup> A.S. Aliyu, Joseph O. Dada and I.K. Adam, 'Current Status and Future Prospects of Renewable Energy in Nigeria' (2015) Renewable and Sustainable Energy Reviews

<sup>8</sup> N. Abas, A. Kalair and N. Khan, 'Review of Fossil Fuels and Future Energy Technologies', (2015) 69 Futures 38

(b) The energy is not friendly to the environment. Its continuous use promotes emission of greenhouse gases which heavily contributes to global warming.<sup>9</sup>

(c) Its effects on human health have negatively wrought several challenges or diseases like bronchitis, pneumomal, cancer and heart attack.<sup>10</sup>

In all instances above mentioned, it is evidently cleared that sustainability will be pretty difficult to achieve in Nigeria if the present energy system do not give way to a clean and modern energy system.

At the moment, the prevailing situation in Nigeria is a bit tasking because its energy system as earlier stated is more in favour of fossil fuels. Besides this fact, energy poverty in Nigeria has reached an alarming proportion which has thus resulted in decline of industrial activities. The cost of energy is becoming unaffordable hence the relocation of many industries to other countries where energy services and its costs are more favourable.<sup>11</sup> As it is, social and economic development is abysmal low, poverty rates have become high while the standard of living among the citizen has drastically dropped.<sup>12</sup> In the midst of energy poverty or dearth of same is the country's ever growing population. Energy demands are higher whenever the population of the country increases.<sup>13</sup> Nigeria population in 2020 is estimated to be 214,028,302 with further projection that by 2022 it would have hit 215,662, 316.<sup>14</sup> The implication here is that if the government refuses to take urgent steps at remedying the palpable situation, the country might be thrown into economic crisis sooner or later.<sup>15</sup>

In view of the foregoing, it is obvious that sustainability in Nigeria is in dire need of energy system which sources are clean and renewable. In other words, Nigeria has to rely or hang on an unbounded or illimitable energy source if it has the intent to achieve sustainable goals in development of its economy. Although scholars like Oyewo and others,<sup>16</sup> Shaaban and Petirin,<sup>17</sup> Akuru and

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<sup>9</sup> Intergovernmental Panel on Climate Change (IPCC), 'Impact of Global Warming-Summary for Policy Makers' (IPCC, Switzerland, 2018) 6

<sup>10</sup> J. Kotcher, Edward Maibach and Wen-Tsing Choi, 'Fossil Fuels are harming our Brains: Identifying Key Messages about the Health Effects of Air Pollution from Fossil Fuels' (2019) 19 BMC Public Health Journal

<sup>11</sup> O. Olatunji Stephen, A. Akinlabi, Oluseyi Olanrewaju Ajayi, Abiodun Abioye, Felix Ishola, P. M. Mashinini and Nkosinathi Madushele, 'Electric Power Crisis in Nigeria: A strategic call for change of focus to Renewable Sources' (2018) IOP Conference Series: Materials, Science and Engineering

<sup>12</sup> A.O. Koginam and E. Ekiye, 'Determinants of Imports and the Nigerian Economy: 1981-2018' (2020) 3(2) Confluence Journal of Economic and Allied Science 190

<sup>13</sup> Kelvin J. Warner and Glenn A. Jones 'Energy and Population in Sub-Saharan Africa: Energy for Four Billion?' (2018) 5(10) Environments 107, 108

<sup>14</sup> CIA, 'Nigeria: The World Facts Book' (Central Intelligence Agency 25<sup>th</sup> February, 2021) <<https://www.cia.gov/library/publications> >

<sup>15</sup> S.O. Oyedepo, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2012) 2(15) Energy, Sustainability and society 7

<sup>16</sup> A.S. Oyewo, Arman Aghahosseini, Dmitri Bogdano and Christian Brayer, 'Pathways to Fully Sustainable Electricity Supply for Nigeria in the Mid-term Future' (2018) 178 Energy Conversion and Management 44, 64

<sup>17</sup> M.O. Shaaban and J.O. Petinrin, 'Renewable Energy Potentials in Nigeria: Meeting Rural Energy Needs' (2014) 29 Renewable and Sustainable Energy Reviews 72, 84

the rest<sup>18</sup> disagree or contend otherwise. They are of the opinion that even though renewable energy has to be integrated into the energy mix; it has to be done along with conventional energy. Without being immodest, this paper respectfully disagrees with these scholars. Fossil fuel system cannot co-exist with renewable energy and at the same time drive sustainable development in the country. It seems that the respected scholars are after an uptake in the electricity generation only and not in any event interested in the solution to the general challenges in the energy sector.

It has earlier been stated that fossil fuel poses a threat to the environment and human health; therefore it could not have been the energy to drive sustainability.<sup>19</sup> This paper contends that for Nigeria to achieve sustainable goals in the development of its economy, it has to shift from the present fossil fuel based energy system to a renewable system. Renewable energy is mostly sought as a model for sustainability in Nigeria because of its impacts which are all in accord with the tenets of sustainable development. These impacts are briefly expressed as follow:

- (a) Energy needs of future and present generations are by no means secured.<sup>20</sup>
- (b) Clean and affordable energy will become accessible to people in every parts of the country.<sup>21</sup>
- (c) Availability of renewable resources in all nooks and crannies of the country.<sup>22</sup>
- (d) Renewable technologies are easier to manage than the fossil fuels technologies.<sup>23</sup>
- (e) Renewable energy sources are clean, illimitable, natural and environmental friendly.<sup>24</sup>
- (f) Employment opportunities and cutback or alleviation of poverty are hallmarks of renewable energy.<sup>25</sup>

All over the world, the urge to achieve sustainable goals in the development of the nation's economy is the ambition of every country.<sup>26</sup> In its

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<sup>18</sup> U.B. Akuru, I.E. Onukwube, O.I. Okoro and E.S. Obea, 'Towards 100% Renewable Energy in Nigeria' (2015) 71 *Renewable and Sustainable Energy Reviews* 943, 953

<sup>19</sup> Xu Jianzhong, Albina Assenova and Vasili Erokhin, 'Renewable Energy and Sustainable Development in a Resource Abundant Country: Challenges of Wind Power Generation in Khazakhstan' (2018) 10(9) *Sustainability*

<sup>20</sup> S.O. Oyedepo, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2012) 2(15) *Energy, Sustainability and Society*

<sup>21</sup> O. Yahaya, D.S. Aweh, O. Omoniyi and M. Abudu, 'Development of Renewable Energy Resources for Sustainable Energy use in Nigeria' (2017) 18(3) *Applied Science Reports*

<sup>22</sup> P.A. Owusu and S. Asumadu- Sarakodie, 'A Review of Renewable Energy Sources, Sustainability Issue and Climate Change Mitigation (2016) 3(1) *Cogent Engineering* 4

<sup>23</sup> Xu Jianzhong, Albina Assenova and Vasili Erokhin, 'Renewable Energy and Sustainable Development in a Resource Abundant Country: Challenges of Wind Power Generation in Khazakhstan' (2018) 10(9) *Sustainability*

<sup>24</sup> S.O. Oyedepo, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2012) 2(15) *Energy, Sustainability and Society*

<sup>25</sup> *Ibid*

<sup>26</sup> M. Mukhtar, S. Obiora, N. Yimen, Z. Quixin, O. Bamisile, P. Jidele and Y. I. Irivboje, 'Effect of Inadequate Electrification on Nigeria's Economic Development and Environmental Sustainability' (2021) 13 *Sustainability* 2

report to the United Nations (UN) in 1987, the World Commission of Environment and Development (WCED) defines sustainable development concept as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. This means sustainable concept presupposes that activities of the present generation over the natural resources must not obstruct the chances of those coming behind on the use and enjoyment of the same resources.<sup>27</sup>

Sustainable goals are achieved when an energy source is infinite or limitless. Assurance is created that given some period of time; there would have been adequate planning over the use and development of renewable energy.<sup>28</sup> Nigeria is greatly endowed with renewable resources and which can be exploited for sustainability causes and objectives.<sup>29</sup> Even though the government has over some periods of time made some policies to show its commitment to renewable development, the country is yet to harness the energy for any sustainable purposes. At the moment, hydro-energy is the only renewable resource that is partially and not fully exploited by the government.<sup>30</sup> All other renewable resources have not yet gained government’s attention till date. It is against the foregoing background that this paper seeks to interrogate the potentials of renewable energy and its nexus with the concept of sustainable development. This paper will also examine the extent to which renewable energy can be engaged to drive the achievement of sustainable development goals. This paper is structured into six sections. In respective order, the first section this introduction part while the second section discusses the brief overview of renewable energy and its features. The third section reviews the comparison between renewable energy and sustainable energy. The fourth section examines the coming to light of the concept of sustainable development while the fifth section reviews the significance of renewable energy to the accomplishment of sustainable goals. Finally, the sixth section examines the crucial essence of legislation to the development of renewable energy in Nigeria.

## **2. Brief Overview of Renewable Energy and its Features**

In the definition offered by the International Energy Agency (IEA), renewable energy is said to be a product of natural evolution.<sup>31</sup> Accordingly, the sources credited to this energy are solar, bio-fuels, ocean, hydropower, sun, heat emanating from the earth, wind, geothermal and hydrogen.<sup>32</sup> Renewable energy in Nigeria context can be defined in accordance with the provisions of the country’s policy documents on renewable energy. The Nigeria’s Renewable Electricity Policy Guidelines (REPG), states that renewable energy is derived

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<sup>27</sup> K.M. Anwarul Islam and Umme Salma, ‘The Renewable Energy and Sustainable Development: A Case Study of Bangladesh’ (2016) 2(4) International Journal of Finance and Banking 136, 146

<sup>28</sup> E.O. Teles, M.S. Silva, F. Gaudencio, M. Freires and E.A. Torres, ‘Energy Analysis and Proposal for Sustainability from the Energy Transition’ (2015) 6(2) Low Carbon Economy 21, 29

<sup>29</sup> Agaptus Nwozor, Jacob Audu and Joseph I. Adama, ‘The Political Economy of Hydrocarbon Pollution: Assessing, Socio-Ecological Sustainability of Nigeria’s Niger Delta Region’ (2019) International Journal of Energy, Economic and Policy

<sup>30</sup> Central Intelligence Agency (CIA), ‘Africa: Nigeria-The World Fact Book’ (CIA, 29<sup>th</sup> June, 2019) <<https://www.CIA.gov/the-world-factbook/countries/Nigeria>> accessed 3rd April, 2022

<sup>31</sup> IEA, ‘Sustainable Energy for All (Renewable Energy Working Party of the IEA, 2002) Cap 4.

<sup>32</sup> Ibid

from sources that are not harmful to the planet during exploration process.<sup>33</sup> In a similar vein, the National Renewable Energy and Energy Efficiency Policy (NREEEP) states that renewable energy is derived from sources which exploitative process and the technology deployed for the purpose will not lead to exhaustion of earth's resources.<sup>34</sup>

Considering the provisions of the two cited policies, a source of energy would be deemed renewable if its exploitation process will have no impact on the environment. However, IEA in its definition is much reserved or reticent on impacts of processing renewable energy. What this translates is that exploitation process of every source of energy comes with impacts, no matter how little it is. A case in point is the processing of the biomass and hydro power sources of energy. The higher the scale of technology deployed in the processing of these sources, the higher are the impacts on the environment.<sup>35</sup> It will also appear that dam extraction while processing hydropower source may lead to loss of settlement or farmland which in every sense is obliteration of natural habitat. Furthermore, ecosystem is often distorted and dearth of food imminent if there is persistent processing of biomass energy with felling of trees and garnering of other agric produce.<sup>36</sup>

Aside from the definitions offered by the afore-cited Nigerian Policy documents and IEA, some writers and researchers have also provided in their respective opinions what they believe is the concept's definitions. Munasinghe posits that when exploitation of an energy source is inexhaustible for a long period of time then it is renewable.<sup>37</sup> Worika believes it is an energy which gives hope to the present and future generations of meeting their energy needs.<sup>38</sup> Oyedepo Submits that energy is renewable if its use and development satisfies both present and future needs without occasioning any harm to the environment.<sup>39</sup> The World Energy Assessment (WEA) defines the energy to mean a source relied upon by the society to plan ahead for its environment, social and economic development.<sup>40</sup>

In all the foregoing definitions and/or illustrations, three fundamental features become noticeable as the pillars that hold the concept of renewable

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<sup>33</sup> Federal Ministry of Power and Steel, 'Renewable Energy Policy Guidelines' (Federal Republic of Nigeria, 2006)

<sup>34</sup> Federal Ministry of Power, 'National Renewable Energy and Energy Efficiency Policy' (Federal Republic of Nigeria, 2015)

<sup>35</sup> Ingunn Gunnarsdottir, Brynhildur Davisdottir, Ernst Worrell and Silla Sigurgeirsdottir, 'Review of Indicators for Sustainable Energy Development' (2020) 133 *Renewable and Sustainable Energy Review*

<sup>36</sup> J.C. Ogbonna, Nakao Nomura and Hideki Aoyagi, 'Bioenergy Production and Food Security in Africa' (2013) 12(52) *African Journal of Bio Technology*

<sup>37</sup> Mohan Munasinghe, 'Sustainable Development: Basic Concepts and Application to Energy' (2004) 6 *Encyclopedia of Energy*

<sup>38</sup> Ibibia Worika, 'Energy Development and Utilization in Africa' in Adrian J. Bradbrook, Rosemary Lyster, Richard L. Ottinger and Wang Xi (eds), *The Law of Energy for Sustainable Development*, (Cambridge University Press, 2005)

<sup>39</sup> S.O. Oyedepo, 'Towards Achieving Energy for Sustainable Development in Nigeria' (2014) 34 *Renewable and Sustainable Energy Review* 112

<sup>40</sup> United Nations Development Programme (UNDP), 'World Energy Assessment: Energy are the Challenge of Sustainability' (UNDP 2000) <<https://digitalibrary.un.org/records>> accessed 2<sup>nd</sup> April, 2022

energy. These are energy security, environment protection and inexhaustible use of energy.<sup>41</sup> These characteristics are hereinafter discussed fully.

## 2.1 Energy Security

While not disputing that energy security is synonymous with the concept of renewable energy, it is of course necessary to emphasize that the context of the term varies from one jurisdiction to another.<sup>42</sup> Energy Security as a notion is much dependent on the source of energy which is available in a particular country.<sup>43</sup> As it is, there has not been any precise definition that is universally acclaimed as the definition of the concept of energy security. In the broader or more general sense, one can assert that the might of energy security connotes the continuous production of energy without stoppage.<sup>44</sup> It goes to show that the energy's chain of supply is reliable, always available and also flexible.<sup>45</sup> In summary, the notion of energy security is always expressed with four 'As', meaning affordability, availability, accessibility and acceptability.<sup>46</sup>

Energy security is achieved when there is a source of energy which availability thereof suffers no interruption and which price is also affordable.<sup>47</sup> Energy is also secured when there are various sources to its supply and at a considerable cost.<sup>48</sup> The words 'availability' and 'reliability' is the main frame of security hence the words are used to explain the strategy of uninterrupted supply of energy.<sup>49</sup> With reference to Nigeria, energy security would be achieved if there is regulatory mechanism on ground to guide and control energy generation. There must be several local sources of clean energy and by no stretch should there be importation of any source of energy.<sup>50</sup> In summary, the

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<sup>41</sup> Raphael J. Heffron, *Energy Law: An Introduction* (1<sup>st</sup> Springer International Publishers 2005)

<sup>42</sup> I. Gunnarsdottir, B. Davidsdottir, E. Worrell and S. Sigurgeirsdottir, 'Sustainable Energy Development: History of the Concept and Emerging Themes' (2021) 141 (80) *Renewable and Sustainable Energy Review* 26

<sup>43</sup> Abdelrahman Azzuni and Christian Breyer, 'Definitions and Dimensions of Energy Security: A Literature Review' (2018) 7 *Wiley Interdisciplinary Reviews: Energy and Environment* <<https://doi.org/10.1002/wene268>>

<sup>44</sup> J. Sathaye, Oswald Lucon, Atiq Rahman, J. Christensen, F. Donton, J. Fujino, G. Heath, M. Mizra, H. Rudmick and A. Schlaepfer, 'Renewable Energy in the Context of Sustainable Development' (2011) *Physics Faculty Publications* 756

<sup>45</sup> *Ibid*

<sup>46</sup> I. Gunnarsdottir, B. Davidsdottir, E. Worrell and S. Sigurgeirsdottir, 'Sustainable Energy Development: History of the Concept and Emerging Themes' (2021) 141 (80) *Renewable and Sustainable Energy Review* 26

<sup>47</sup> International Energy Agency (IEA): *What is Energy Security?* (IEA, 2022)

<<https://www.iea.org/topics/energy/whatisenergysecurity/>> last accessed 2<sup>nd</sup> April, 2022

<sup>48</sup> UNDP, *World Energy Assessment: Energy and the challenge of Sustainability*' (UNDP, 2000) <<https://digitallibrary.un.org/records>>

<sup>49</sup> Ottmar Edenhofer, Ramon Pichs-Madruga, Yonba Sokona, Kristin Seyboth, Patrick Matschoss, Sussane Kadnner, Tim Zirickel, Patrick Erekeimeier, Gerrit Hanson, Steffen Schloemer, Christovon Stechow (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the IPCC* (Cambridge University Press, 2011) 191

<sup>50</sup> See UNGA Doc A/CONF 199/20 which endorses World Summit on Sustainable Development (WSSD) Declaration No. 5

regulatory mechanism must guide against energy wastage and also assist in promotion of reasonable use of energy.<sup>51</sup>

## 2.2 Energy Equity

Equity in energy is when there is availability of energy for the use and enjoyment of the present and future generation.<sup>52</sup> In another stretch, this concept implies that equity in the context of modern energy must be cross-generational and intergenerational equity. The former which is also called multigenerational equity, connotes that generations yet unborn will at all times have clean or modern energy sufficient enough to meet their needs. In the latter case, that is intergenerational, distribution of energy among the present group of people must be done with fairness and sincerity.<sup>53</sup> Energy equity and whatever challenges woven around it would be addressed in Nigeria if there are legal and policy frameworks which are modeled to control the consumption of energy in the country.<sup>54</sup> There are some practices which are not sustainable considering the ways and manners people subject the use of energy. These practices must be discouraged through education and orientation of the populace.

## 2.3 Developed Environment

Ability to lower and decrease the rate of greenhouse gases (GHG) emission and any other obnoxious substances which affects the climate is right step in the development of the environment.<sup>55</sup> It is necessary that Nigeria shift from the present energy system which is fossil fuel based and transit to energy system which is devoid of carbon in the attempt to develop its environment.<sup>56</sup> In this wise and to be able to do this effectively, the country should open up several energy sources that are not harmful to the environment. Nigeria presently has hydropower source of energy which is not producing at the expected capacity. It is advisable that efforts be increased by the government to develop other sources of clean energy. The government can also keep alive the strategy of funding purchase of machinery to aid development and use of renewable resources.<sup>57</sup>

Over all, for renewable energy system to reign in Nigeria, there must be energy equity, energy security and sustainable environment. Renewable in the context of energy suggests there is energy source which naturally reload and top up itself despite constant uses over a long period of time.<sup>58</sup> Access on the other

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<sup>51</sup> S.O. Oyedepo, 'Towards Achieving Energy for Sustainable Development in Nigeria' (2014) 34 *Renewable and Sustainable Energy Reviews* 112

<sup>52</sup> Julia Tomel, Danielle Grant and Emma Wilson (eds.), *Equity and the Energy Trilemma: Delivering Sustainable Access in Low Income Communities* (International Institute for Environment and Development, 2015) 70, 72

<sup>53</sup> F. Mormann, 'Clean Energy Equity' (2019) 2(2) *Utah Law Review* 335, 381

<sup>54</sup> See UN Agenda 21 of 1992, Chapter 4

<sup>55</sup> J. Sathaye, Oswald Lucon, Atiq Rahman, J. Christensen, F. Donton, J. Fujino, G. Heath, M. Mizra, H. Rudmick and A. Schlaepfer, 'Renewable Energy in the Context of Sustainable Development' (2011) *Physics Faculty Publications* 756

<sup>56</sup> Oliver Wyman, 'World Energy Trilemma: Time to Get Real: The Case for Sustainable Energy Investment' (World Energy Council, 2013) 7

<sup>57</sup> P.K. Oniemola, 'Why should Oil Rich Nigeria make a Law for the Promotion of Renewable Energy in the Power Sector' (2016) 6(1) *Journal of African Law* 29, 55

<sup>58</sup> Tomislav Klarin, 'The Concept of Sustainable Development from its Beginning to the Contemporary Issues' (2018) 21(1) *Zagreb International Review of Economics & Business* 69



hand is an indication that energy is available to a greater number of people and as well affordable.<sup>59</sup>

### 3. Comparison Between Renewable Energy and Sustainable Energy

If a source of clean energy is continuously used over a long period of time, it may lead to exhaustion and therefore not sustainable. If on the other hand the same source of energy can sufficiently be put to use and enjoyment for a lengthy period of time, then it is sustainable.<sup>60</sup> In the attempts to draw a line of difference between renewable and sustainable energy, opinions of scholars have gone to show that even though a source of energy is sustainable, it may not be renewable. Donev *et al*, are of the opinion that wind and sun are sustainable energies which sources are inexhaustible but are never replenished or renewed. These scholars further assert that biomass, hydropower and geothermal are energies from renewable sources which the planet can naturally reproduce.<sup>61</sup>

In another stretch, some other scholars submit that the test of difference should be taken from the point of impact which an energy source has on the environment. These scholars are of the view that renewable sources have impact on the environment because wastes generated from those sources are pollutions. On the other hand, the scholars insist that if exploitation processes of the resources are not impactful on the environment then the energy is sustainable.<sup>62</sup> Energy source in Philip's opinion is sustainable in so far as the present and future energy needs of people are met without stoppage.<sup>63</sup> Finally, the view is expressed that if energy source can stand the test of time without exhaustion, then it is both renewable and sustainable energy.<sup>64</sup>

Given a careful consideration of the foregoing opinions of scholars, one can safely conclude that no reasonable purpose would be served in trying to distill differences between renewable and sustainable energy. It is important to stress the point that efforts being made by various countries of the world, including Nigeria, to shift from conventional energy to another preferable source has brought up the usage of the words "alternative source of energy". What this indicates is the urge of the country to transit from fossil fuels based energy

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<sup>59</sup> S.C. Bhattacharyya, 'Energy Access and Development in Andreas Goldthan (ed), The Handbook of Global Energy Policy (John Wiley & Sons, 2013) 227

<sup>60</sup> I. Gunnarsdottir, B. Davidsdottir, E. Worrell and S. Sigurgeirsdottir, 'Sustainable Energy Development: History of the Concept and Emerging Themes' (2021) 141 (80) *Renewable and Sustainable Energy Review* 26

<sup>61</sup> Jason Donev, Ellen L.Loyd... Brodie Yelland, 'Energy Education; Renewable & Sustainable Energy' (Energy Education 2020) <<https://energyeducation.ca/encyclopaedia/renewableandsustainableenergy>> accessed 2nd April, 2022

<sup>62</sup> J. Testher, E.M. Drake, M.J. Driscoll, M.W. Golay and W.A. Peters (eds.), *Sustainable Energy: Choosing Among Options* (2<sup>nd</sup> Edition, Massachusetts Institute of Technology Press, 2012) 307, 309

<sup>63</sup> Atul Philip, 'The Thin Line of Difference Between Renewable and Sustainable Energy' (Smart Sustain, 29<sup>th</sup> August 2020) <<https://smartsustainable.inthethinline>> last accessed 2<sup>nd</sup> April, 2022

<sup>64</sup> I. Gunnarsdottir, B. Davidsdottir, E. Worrell and S. Sigurgeirsdottir, 'Sustainable Energy Development: History of the Concept and Emerging Themes' (2021) 141 (80) *Renewable and Sustainable Energy Review* 26

system into a clean source of energy which is less harmful to the environment.<sup>65</sup> According to Cambridge dictionary, alternative energy is sourced from fumes in animal wastes, sun, wind, and water.<sup>66</sup> Going by this definition, it is without doubt that what has either been termed as sources of renewable or sustainable energy are all alternative energy.

*Ipsa facto*, classification of energy sources is either sources harmful to the environment or sources which are environmental friendly. Harmful sources are the fossil fuel or conventional energy while the environmental friendly sources are the alternative or renewable energy. In effect, it does not matter if any energy source is categorized as renewable or sustainable, the fact remains that those sources are simply alternative sources of energy.

#### 4. Origination of Sustainable Development

Sustainable concept started gaining traction during the first conference ever organised by the United Nations (UN) for the protection of environment at Stockholm in Sweden between the 5<sup>th</sup> and 6<sup>th</sup> of June, 1972. The conference reviewed human activities as it affects the environment. In summary, its deliberation however dwelt on suitable method or best practice to the development of environment.<sup>67</sup> However, the conference came up with declaration stressing that nature and its resources must henceforth be protected and preserved for the benefits of both present and future generations.<sup>68</sup>

In trying to build on the footing and substructure set down by the 1972 conference, World Commission of Environment and Development (WCED) was established by the UN in 1983. This commission is saddled with formulation of policies which in its opinion would assist sustainability in the administration of the environment.<sup>69</sup> The report of this commission was presented by its chairman in 1987, that is, Gro Harlem Brundtland. In the words of this report, sustainability as a concept is clearly expressed as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.<sup>70</sup>

Some criticisms have however trailed the definition credited to sustainable development in the WCED report. Lamb in opposition holds the view that the same phrase can be used to describe or express any subject of interest.<sup>71</sup> Oniemola and Tasie are of the view that no specific point of interest is addressed by this definition and neither is it in tandem with purpose establishing the

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<sup>65</sup> P.K. Oniemola, ‘Why should Oil Rich Nigeria Make a Law for the Promotion of Renewable Energy in the Power Sector’ (2016) 6(1) Journal of African Law

<sup>66</sup> See Cambridge Dictionary, (2021 ed. Cambridge University Press, 2021)

<<https://dictionary.cambridge.org>>

<sup>67</sup> UN Conference Report A/CONF 48/14 Rev 1, 1972 <<https://www.orgconferences>> last assessed 2<sup>nd</sup> April, 2022

<sup>68</sup> Ibid 3,4

<sup>69</sup> United Nations General Assembly (UNGA) Resolution 38/161, 1983

<sup>70</sup> UNGA Doc A/42/427, 1987

<sup>71</sup> G. Lamb, ‘What is Sustainable Development: Growth Versus Environment on a Finite Planet’ (Medium, 27 July, 2020) <<https://median.com/age-of-awareness/what-is-sustainable-development-growth-versus-ecology-on-a-fmille-planet-9c356a55c437>> last accessed 1st April, 2022

commission.<sup>72</sup> Abubakar in his opinion states that it is not only environment that is synonymous with the definition but every field of development.<sup>73</sup>

In spite of these shades of criticisms, it is beyond censure that the purpose of setting up of WCED is to formulate policies to drive sustainable development of the environment. In the course of performing its task, the commission came up with what in its view is the definition of sustainability concept. It would be difficult to accept Oniemola and Tasie's argument that WCED's definition of sustainable development is not aligning with any specific subject or purpose. It is the contention of this paper that the commission's usage of the word 'development' is in all material particulars pointing to development of all natural resources. These are resources in respect of which the Conference on Human Environment declared are objects of preservation and protection.<sup>74</sup>

However, other summits which were subsequently organised by UN have left no one in doubt that the concept of sustainability and the definition ascribed to it has come to stay. These are Rio Earth Summit which is otherwise referred to as the United Nations Conference on Environment and Development (UNCED)<sup>75</sup> and the World Summit on Sustainable Development (WSSD) which is otherwise known as Rio+10.<sup>76</sup> UNCED put in place the mechanism by which the standards and goals of sustainable development can be driven.<sup>77</sup> Its Agenda 21 is solely built on framework which will align development policies of the least developed member states with the tenets of sustainability.<sup>78</sup>

WSSD in its declaration states that economic, social and environmental principles are the precepts to drive sustainability concept.<sup>79</sup> The implication of this declaration therefore is that in Nigeria, sustainability concept and its directive principles as declared by WSSD shall form the bedrock of any regulatory mechanism on sustainable development in the country.<sup>80</sup>

## **5. Significance of Renewable Energy to Realization of Sustainable Development Goals**

Energy security is the first foundation to be laid by any country, including Nigeria, towards the achievement of sustainable goals.<sup>81</sup> This then mean that Nigeria can contain the challenges of energy security if its efforts are geared towards adoption of clean energy system as opposed to the present fossil fuels

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<sup>72</sup> P.K. Oniemola and O.C. Tasie, 'Towards Concrete Legislative Measures for sustainable Development in Nigeria' (2019) 5(2) Commonwealth Law Bulletin 323, 324

<sup>73</sup> I.R. Abubakar, 'Access to Sanitation Facilities Among Nigerian Households: Determinants and Sustainability Implications' (2017) 9(4) Sustainability 547

<sup>74</sup> UN Conference Report A/CONF 48/14 Rev 1, 1972

<sup>75</sup> The Conference was held in Rio de Janeiro, Brazil Between the 3<sup>rd</sup> and 4<sup>th</sup> June, 1992

<sup>76</sup> The Summit was Held at Johannesburg, South Africa Between the 26<sup>th</sup> August and 4<sup>th</sup> September, 2002

<sup>77</sup> UNGA Resolution A/RES/44/228 and UNGA/CONF. 151/26/Rev 1(1), 1992

<sup>78</sup> UN DOC EB91/INF/15 of 12<sup>th</sup> November, 1992, PP. 3-4; Agenda 21 Chapter 2

<sup>79</sup> UNGA DOC A/CONF/199/20

<sup>80</sup> J. Sathaye Oswald Lucon, Atiq Rahman, J. Christensen, F. Donton, J. Fujino, G. Heath, M. Mizra, H. Rudmick and A. Schlaepfer, 'Renewable Energy in the Context of Sustainable Development' (2011) Physics Faculty Publications 756

<sup>81</sup> Tomislav Klarin, 'The Concept of Sustainable Development: From its Beginning to the Contemporary Issues' (2018) 21(1) Zagreb International Review of Economics & Business 69

energy system.<sup>82</sup> Arising from the Intergovernmental Panel on Climate Change (IPCC) report is that renewable energy is the only energy which can drive sustainability. It is the contention of IPCC that the concept and precepts of sustainability must rest on three pillars which are; social, economic and environment.<sup>83</sup> It is noteworthy to state that WSSD had long before IPCC report made declaration to the effect that the foregoing three pillars must be made to drive sustainability.<sup>84</sup> However, it is apposite to use these pillars now to demonstrate the importance of renewable energy to the success of sustainable development and the achievement of its goals as follow:

### 5.1 Influence of Energy Access and Security

Analogous to the philosophy of energy access is the content of the UN Sustainable Development Goal (SDG) No. 7. It is through this goal that member states, including Nigeria, are now compelled to ensure that on or before 2030, the citizens must have access to reliable, sustainable, affordable and modern energy.<sup>85</sup>

Before the advent of goal 7 of the SDG, the UN had earlier instructed that aspiration of its policy, that is, Sustainable Energy for All (SE4ALL) is to see that the three core areas of functional energy are improved upon worldwide. These areas are building capacity for higher use and enjoyment of renewable energy, keeping the tempo of efficiency on energy supply and provision of access to renewable energy services.<sup>86</sup> In a nutshell, what would be the summary of the UN's policy aspiration is that having unlimited connection to modern and clean sources of energy by the greatest number of people is a manifestation of sustainable development.<sup>87</sup>

The issue of access to energy is nebulous; it differs from one jurisdiction to the other. At best it will have to be determined by what a particular jurisdiction precisely consider as access.<sup>88</sup> An instance is the service of electricity energy in Nigeria which over the years have been epileptic or in most cases always not available. According to Nigeria Demograph Health Survey, the total number of people having access to electricity supply in the country in 2015 is made up of 49.3% of the whole population. It is also part of the survey report that out of the said 49.3% only 28.2% had access to modern energy and technology in the course of meeting their domestic needs.<sup>89</sup> In essence, interpretation of this report is

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<sup>82</sup> IEA, 'Developing Renewable 2011: Best and future Policy Practice, Markets & Policies' (IEA 2011) <<https://www.iea.org/publication/freepublications/deployingrenewables2011.pdf>> last accessed on the 4<sup>th</sup> April, 2022

<sup>83</sup> IPCC, 'Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN), (Cambridge University Press 2011) <<https://srren.ipcc.org3.de/report/ipcc-SRREN-full-Report>>

<sup>84</sup> UNGA DOC A/CONF 199/20

<sup>85</sup> UNGA, 'Transforming our World: The 2030 Agenda for Sustainable Development (UNGA 21<sup>st</sup> October, 2015)

<sup>86</sup> UN DOC A/42/427, 1987

<sup>87</sup> P.K. Oniemola, 'Why should Oil Rich Nigeria Make a Law for the Promotion of Renewable Energy in the Power Sector' (2016) 6(1) Journal of African Law 324

<sup>88</sup> Phebe Asantewaa Owusu and Samuel Asumadu-Sarokodie, 'A Review of Renewable Energy Sources, Sustainability Issues and Climate Change Mitigation' (2016) 3(1) Cogent Engineering

<sup>89</sup> NBS, 'Nigeria: SDGs Indicator Baseline Reports 2016' (National Bureau of Statistics, 2017) <[www.ng.undp.org.ndg](http://www.ng.undp.org.ndg)> last accessed on the 4<sup>th</sup> April, 2022

that in Nigeria, access to clean and affordable energy is noticeably low. To overcome challenges to energy access in Nigeria, modern and clean energy have to be made available to both rural and urban areas of the country. All sectors of the economy will have unrestricted access to modern and renewable energy. The government must be prepared to integrate renewable energy to the rural areas and put in place regulatory frameworks that will attract investor's participation in the renewable industry.<sup>90</sup> For energy security to also play any significant role on sustainability, the energy source, aside from being clean, must not also suffer threat of stoppage or an abrupt termination.<sup>91</sup> Furthermore, equity must be seen to have rubbed on distribution, availability and enjoyment of the energy. The future generation must equally have access and opportunity of enjoying the same source of energy.<sup>92</sup> Over all, stability in steady supply of clean energy is an indication that a country is on the right track of sustainable development.<sup>93</sup>

## 5.2 Economic and Social Development

Hardly is there any sector of the Nigerian economy that does not need energy to survive. Development of the country's economy is highly synonymous with availability of energy.<sup>94</sup> Adequate planning and effective control of the nation's economic and social sectors are possible if there is stability in the production and supply of modern energy.<sup>95</sup> Besides, stability as a factor in the country's energy system always creates new wealth as well as preserves the existing ones. An example is the yearly report of International Renewable Energy Agency (IRENA) which puts the number of jobs created worldwide through deployment of renewable energy in 2020 at 11.5 million. It is also the projection of this report that by 2020 to 2030, additional 5.5 million jobs would have been created along with the existing ones.<sup>96</sup>

Having a brief analysis of this report, it is shown that both rural and urban areas benefited immensely from the job creation through deployment of renewable energy. The jobs created through installation of solar photovoltaic are stated to be 3.8 millions in the areas of health services particularly in the rural set-up, food processing and intensive farming. Biomass engagement recorded 3.6

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<sup>90</sup> Advisory Group on Energy and Climate Change, 'UN Energy for Sustainable Future' (Advisory Group on Energy and Climate Change, New York, 28<sup>th</sup> April, 2010) <<https://www.un.org/pdf>> last accessed on the 4<sup>th</sup> April, 2022

<sup>91</sup> B.W Ebenhack and D.M. Martinez, *The Path to more Sustainable Energy System: How Do We Get There From Here?* (Momentum Press, 2013)

<sup>92</sup> J. Sathaye, Oswald Lucon, Atiq Rahman, J. Christensen, F. Donton, J. Fujino, G. Heath, M. Mizra, H. Rudmick and A. Schlaepfer, 'Renewable Energy in the Context of Sustainable Development' (2011) Physics Faculty Publications 756

<sup>93</sup> Phebe Asantewaa Owusu and Samuel Asumadu-Sarokodie, 'A Review of Renewable Energy Sources, Sustainability Issues and Climate Change Mitigation' (2016) 3(1) Cogent Engineering

<sup>94</sup> Chinedu Umeh, Ochuba C. Daniel and Ugwo C. Ezekwe, 'Impact Energy Consumption on Economic Growth in Nigeria: An Approach of Time Series Econometric Model' (2019) 8(2) International Journal of Academic Research in Economic and Management Science

<sup>95</sup> J.L. Sawin and F. Sverrisons, 'Renewable Energy and Sustainable Development' (World Future Council, 2016) 7 <https://www.worldfuturecouncil.org.pdf> last accessed 4<sup>th</sup> April, 2022

<sup>96</sup> IRENA, *Renewable Energy and Jobs: Annual Review 2020* (IRENA, Abu Dhabi: 2020) <<https://www.Irena.org>> last accessed 4<sup>th</sup> April, 2022

million jobs while 1.2 million jobs are created through integration of wind energy.<sup>97</sup>

A remarkable point which has been exhibited by this report is how renewable energy has been effectively engaged to drive development of the world's economy. Nigeria stands eligible to be counted among the leading world economies if it has on ground an ambitious regulatory mechanism to control the use and development of its renewable resources.<sup>98</sup>

### 5.3 Environmental Development

Emission of greenhouse gases (GHG) is rated high in Nigeria.<sup>99</sup> Considering the uncontrollable increase in the country's population every day, the tendency for climate distortion becomes inevitable if nothing is urgently done.<sup>100</sup> As it is, tornado, earthquake, hurricane, droughts, desertifications are all classes of natural disasters which distortion in climate do wreck on human health and the environment.<sup>101</sup> The threat of natural disaster to the environment would be contained in Nigeria if government can redouble its efforts on the use and development of renewable energy.<sup>102</sup> IRENA's report gives account of the importance of renewable energy to mitigation of climate distortion. According to IRENA, the whole world was saved from 20% impact of carbon emission when hydropower energy was engaged in the generation of electricity in 2012.<sup>103</sup> Nigerian government in a policy statement made as of recent promised to address the problem of emission on or before 2030. It is reckoned that this statement aside from being a policy statement has not fully informed the public about the process on ground to ease the reduction of gases emission.<sup>104</sup> It is the contention of this paper that if there is no legislation to give backing to government policies, enforcement of those policies will become difficult. A country like Germany has in place legislation that makes the enforcement of policy on carbon reduction possible.<sup>105</sup> It is important that Nigeria adopt this approach if it intends to deploy energy in driving sustainable development and

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<sup>97</sup> Ibid

<sup>98</sup> J.L. Sawin and F. Sverrisons, 'Renewable Energy and Sustainable Development' (World Future Council, 2016) 7 <<https://www.worldfuturecouncil.org.pdf>> last accessed 4<sup>th</sup> April, 2022

<sup>99</sup> Daisy Dunne, 'Carbon Brief Profile: Nigeria' (Carbon Brief Clear on Climate, 21<sup>st</sup> August, 2020) <<https://www.carbonbrief.org>>

<sup>100</sup> A. Oladeji and O. Adewunmi, 'Between Climate Change Narratives and Policy Actions: The choice of Developing a Sustainable Agenda for Nigeria' (2015) 3(3) Basic Research Journals of Social and Political Science 37, 38 <<https://www.basicresearchjournals.org>> last accessed 4<sup>th</sup> April, 2022

<sup>101</sup> Ibid

<sup>102</sup> Kyoto Protocol to the United Nations Framework Convention on Climate Change, 1997, United Nations Treaty Series (UNTS) 162

<sup>103</sup> IRENA, Rethinking Energy: Renewable Energy and Climate Change (IRENA 2015) 11 <<https://www.irena.org/rethinking/irena%20-Rethink-energy-2ndreport-2015pdf>> last accessed 3<sup>rd</sup> April, 2022

<sup>104</sup> Peter Hanson, 'Nigeria Has not yet committed to Becoming Carbon Neutral' (Climate Score, 10<sup>th</sup> July, 2021) <<https://www.climatecard.org>> last accessed 4<sup>th</sup> April, 2022

<sup>105</sup> Germany: Federal Ministry for the Environment, 'Nature Conservation, Building and Nuclear Safety' (Climate Action Report, 2016) <<https://www.bmub.bumd.de/fileadmin/daten-Bmu/Pools/Broschueren/Kilmaschutz-bericht-2016-en-bf.pdf>> accessed 4<sup>th</sup> April, 2022

the achievement of its goals.<sup>106</sup> Furthermore, government regulatory frameworks should be designed to promote the use and development of renewable energy so as to drive sustainability.<sup>107</sup>

## **6. Importance of Legislation to the Attainment of Renewable Energy Development in Nigeria**

Earlier than now, the belief had been created over the years that the purpose of legislation in the energy industry was to regulate the exploratory activities of the sector and nothing more.<sup>108</sup> Events of recent years in the energy sector have now broadened people's perception. It is now understood that many diverse acts in the energy industry and in particular the use of renewable energy and sustainable development of the sector revolves around a sound legal footing or vibrant legislation.<sup>109</sup> Instances like motivation of investors to participate in the development of renewable industry and preference for modern energy in line with global trends would always call for legal framework in the industry.<sup>110</sup>

Aside from the foregoing, the fundamental core areas calling in aid of legislation to the development of renewable energy in Nigeria are simply reviewed as follow:

### **6.1 Enforcement of Energy Policies**

Policy and legislation are different concepts. The force of policy is actually felt if there is legal backing for its enforcement otherwise it remains passive.<sup>111</sup> Renewable energy policies can at best be described as catalogues of government plans over certain aspect of activities in the industry. Legislation on the other hand is the instrument which gives binding effect to the policy statements. In other words, policy will always depend on legislation if its provisions are to make any meaningful impact.<sup>112</sup>

### **6.2 Dynamics of Energy Market and Regulatory Guide**

In as much as energy transmission in Nigeria is through a single grid for both fossil fuels and renewable source, there will always be unfair competition at the energy market. In addition, modern day technology has made it imperative for renewable energy to be transmitted on a mini grid, standalone or smart grids. It is necessary to bring in legislation to regulate the activities of energy providers or investors who may wish to engage the services of these technologies for energy

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<sup>106</sup> Energy Commission of Nigeria (ECN) 'National Energy Policy 2003 (ECN 2003) 8

<sup>107</sup> S.O. Oyedepo, 'Energy and Sustainable Development in Nigeria: The Way Forward' (2012) 2(15) Energy, Sustainability and Society

<sup>108</sup> Raphael J. Heffron and Kim Talus, 'The Development of Energy Law in the 21<sup>st</sup> Century: Paradigm Shift' (2016) 9(3) Journal of World Energy Law and Business 189, 202

<sup>109</sup> Ibid

<sup>110</sup> Adrian J. Bradbook, 'The Development of Renewable Energy Technologies and Energy Efficiency Measures Through Public International Law' in D. Zillman (ed.), *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, 2008) 109

<sup>111</sup> Yinka O. Omorogbe, 'The Role of Law in Promoting Renewable Energies in Africa, in O.C. Ruppel and B. Althusman (eds.), *Perspective on Energy and Renewable Energies in Sub-Saharan Africa: Practical Opportunities and Regulatory Challenges* (Second Revised and Expanded Edition, Macmillan Education, Namibia, 2016) 215

<sup>112</sup> Ibid

transmission.<sup>113</sup> It is also necessary that government provide guidelines on the use of those technologies because of the impacts it may have on the environment.<sup>114</sup> Most of the times, there are always uncertainties in the energy market owing to various unforeseen circumstances beyond the control of energy providers. In that instance, it will be unreasonable to allow market forces to dictate the trend of events in the market. It is of course desirable that legislation be made to regulate whatever discrepancies that unforeseen contingencies might have thrown up in the energy market.<sup>115</sup>

### **6.3 Development of Viable Renewable Resources and Legislative Control**

Economic viability of renewable resources often determines if exploitation is feasible.<sup>116</sup> An example is Germany's approach to the development of viable renewable resources. The country always legislates to control exploitation if it has reason to believe that a particular resource commands higher economic value in an area above others.<sup>117</sup> Besides economic consideration, legislation becomes necessary so as to prevent a situation where the financial benefit does not affect environmental protection.<sup>118</sup>

### **6.4 Legislation is needed to Control Finance and Investment in the Renewable Industry**

Renewable energy is capital intensive industry. Government alone cannot shoulder its development and responsibilities hence the move to ease off its hold of monopoly on the sector. As it were, participants and investors in renewable industry will have to plough or inject capital into the business. It is necessary that government guide or regulate the investment out lay with requisite legislation. For example, activities in the renewable industry are sometimes controlled by Renewable Energy Feed-in-Tariff (REFiT) mechanisms to encourage rapid development of the sector. REFiT mechanism is a process which is often administered by legislation and not just policy.<sup>119</sup> There is need to put a legal framework in place to regulate the renewable equipment or technologies to be deployed by investors. Also worthy of regulations are the energy generation, its method of transmission and the funds secured for the development of the sector.<sup>120</sup>

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<sup>113</sup> H. Wiseman, L. Grisamer and E.N. Sounders, 'Formulating a Law of Sustainable Energy: The Renewable Component' (2011) 28 Pace Environmental Law Review 827, 829

<sup>114</sup> Thomas V. Danwitz, 'Regulation and Liberalization of the European Electricity Market – A German View' (2006) 27 Energy Law Journal 432

<sup>115</sup> Allan E. Bollard and Michael Pickford, 'New Zealand's Light Headed Approach to Utility Regulation' (1995) 2(4) A Journal of Policy Analysis and Reforms (1994-2017) 411, 422

<sup>116</sup> Adrian J. Bradbrook, 'Sustainable Energy Law: The Past and the Future' (2012) 30 Journal of Energy and Natural Resources Law 511

<sup>117</sup> Germany: Off-Shore Wind Energy Act 2017

<sup>118</sup> Adrian J. Bradbrook, 'Energy and Sustainable Development' (1999) 4 Asia Pacific Journal of Environmental Law 311

<sup>119</sup> European Commission (EU), 'Investment Challenges in Energy, Transport & Digital Market: A Forward Looking Perspective' (European Economy Institutional Paper 041, November, 2016) 3 <<https://ec.europa.eu/info/sites-import/ip041-em-2>> last accessed 4th April, 2022

<sup>120</sup> Ibid



Not many investors enjoy unprotected business. There must be laws in place to regulate the business affairs and in particular the rights and obligations available to all participants.<sup>121</sup> There are some financial measures and fiscal processes in the renewable industry which are better expressed through legislation and not policies.<sup>122</sup> In such instance, it would be easier to enforce the letters of those financial measures or fiscal processes than it would have been left to be guided by policy.<sup>123</sup>

### **6.5 Legislation Drives Sustainability**

It is through legislation that the principles of sustainable concepts are spelt out. The pillars holding the concept are intricate pillars which go to the firmament of the nation or the very existence of the nation. For example the economic and social development of the country is controlled by fiscal process or budgetary allocations. These are processes that cannot be left for policy to control but statutory instruments.

### **Conclusion**

This paper has reviewed the significance of renewable energy to the development of the nation's economy and in particular how the energy can be made to drive the attainment of sustainable goals. In the course of review, this paper has shed more light on the nature of renewable energy and what the country stand to benefit if the energy is developed. However, one golden thread that runs through the gamut of driving sustainable development with renewable energy is for the country to put in place a standard regulatory framework. There is need for legislation which will specifically address renewable energy and its influence on sustainable development. It is important that government review its regulatory mechanism so as to make its policies on renewable energy align with the laws. Nigeria has the wherewithal to develop the renewable industry and considering a standard regulatory framework, the energy can successfully drive sustainable development in the country.<sup>124</sup>

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<sup>121</sup> G.R. Timilsina and K.U. Shad, 'Filling the Gaps: Policy Support and Intervention for Scaling up Renewable Energy Development in a Small Island Developing States' (2016) 98 Energy Policy 659, 660

<sup>122</sup> Y.O. Omorogbe, 'Promoting Sustainable Development through the use of Renewable Energy: The Role of the Law in D.N. Zillmam (ed.), Beyond Carbon Economy: Energy Law in Transition (Oxford University Press, 2008) 45

<sup>123</sup> Yinka O. Omorogbe, 'The Role of Law in Promoting Renewable Energies in Africa, in O.C. Ruppel and B. Althusman (eds.), Perspective on Energy and Renewable Energies in Sub-Saharan Africa: Practical Opportunities and Regulatory Challenges (Second Revised and Expanded Edition, Macmillan Education Namibia, 2016) 215

<sup>124</sup> United Nations Department of Economic and Social Affairs (UNDESA), Improving Sustainable Energy Access for Rural Areas (UNDESA, 8<sup>th</sup> January, 2014) <<https://www.un.org/en/development/iesa/news/sustainable/rural-energy-access.html>> accessed 4th April, 2022