



**THE GLOBAL ENERGY TRANSITION: IMPACTS ON  
THE NIGERIAN POWER SECTOR**

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## THE GLOBAL ENERGY TRANSITION: IMPACTS ON THE NIGERIAN POWER SECTOR

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### I.0 INTRODUCTION

Globally, energy systems are undergoing transition to renewable energy. This is due to the adverse effect of conventional energy sources on the environment, energy security and the volatile nature of crude oil prices.<sup>1</sup>

This energy transition is a crucial enabler for the attainment of Sustainable Development Goals (SDGs), especially in relation to climate change - Goal 13.<sup>2</sup> The energy sector is currently the main emitter of greenhouse gas emissions, thus the need to address climate change is one of the major drivers for a transition from an energy sector dominated by fossil fuels to one based on renewable energy sources. To meet internationally set goals as laid out in various international instruments<sup>3</sup> as well as targets set out at the Conference of the Parties to the United Nations Climate Convention (COP) debates, the greenhouse gas emissions need to be reduced quickly and possibly eliminated.

In Nigeria, the need to support this transition is rooted in the deplorable state of Nigeria's electricity sector which is marred by problems such as electricity shortage, domination of fossil-fired systems, struggling power infrastructure, the need to diversify energy

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<sup>1</sup> U. Nwaneto, et al, "Economic Implications of Renewable Energy Transition in Nigeria", 2018 *International Conference on the Industrial and Commercial Use of Energy (ICUE)*.

<sup>2</sup> United Nations, "Theme Report on Energy Transition: Towards the Achievement of SDG 7 and Net-Zero Emissions", p. vi.

<sup>3</sup> UN General Assembly, "United Nations Framework Convention on Climate Change: Resolution / Adopted by the General Assembly", 20 January 1994, A/RES/48/189, available at <https://www.refworld.org/docid/3b00f2770.html> (accessed 20 July 2023); "Glasgow Climate Pact", available at [https://unfccc.int/sites/default/files/resource/cop26\\_auv\\_2f\\_cover\\_decision.pdf](https://unfccc.int/sites/default/files/resource/cop26_auv_2f_cover_decision.pdf) (accessed 20 July 2023).

sources and reduce the nation's dependence on crude oil, etc. Therefore, Nigeria needs to reassess long-standing assumptions and perceived barriers in relation to renewable energy and embrace the transition in order to promote resilient economies and societies for a more sustainable world. This paper aims to discuss the impact of the global energy transition on the Nigerian power sector.

## **2.0 AN EMERGING TREND: THE GLOBAL ENERGY TRANSITION**

The energy industry plays a major role within the world. It is an enormous contributor to the power and transport sectors, and a source of revenue for the government. It is however evolving and this change is driven by technology, scarcity of resources, government policies, etc.<sup>4</sup> Energy transition refers to the global energy sector's shift from fossil-based systems of energy production and consumption to renewable energy sources.<sup>5</sup> It is also the gradual shift from a specific pattern of energy provision to a new state of an energy system.<sup>6</sup> Simply put, it is a significant structural change in an energy system.

The energy industry has seen a number of transitions. In the pre-industrial period, there was reliance on charcoal, firewood, windmills, etc.<sup>7</sup> However, by the turn of the 18th century and the industrial revolution, the modern world witnessed the first energy transition.

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<sup>4</sup> N. Shialsuk, "Hidden in Plain Sight: Nigeria's Energy Transition", available at <https://www.seplatenergy.com/media/03gkdkju/hidden-in-plain-sight-final-summit-with.pdf> (accessed 3 March 2022).

<sup>5</sup> S & P Global, "What is Energy Transition", available at <https://www.spglobal.com/en/research-insights/articles/what-is-energy-transition#> (accessed 25 July, 2023).

<sup>6</sup> "The Regulation and Policy of Latin American Energy Transitions", 2020, available at <https://doi.org/10.1016/B978-0-12-819521-5.00018-8> (accessed 3 March 2022).

<sup>7</sup> World Economic Forum, "The 200-year history of mankind's energy transitions", available at <https://www.weforum.org/agenda/2022/04/visualizing-the-history-of-energy-transitions/> (accessed 25 July, 2023).

To meet the demands of industries and the rising population, the world turned to the use of coal.<sup>8</sup>

The discovery of oil in commercial quantities ushered the second energy transition;<sup>9</sup> a shift from the use of coal to oil. The use of energy sources based on fossil fuel has however had negative environmental consequences. The rise in fossil fuel consumption has led to an increase in carbon dioxide emissions, resulting in global warming. This environmental crisis led to the adoption of the United Nations Framework Convention on Climate Change, a legally binding international treaty in Paris in 1992, with a goal of limiting global warming to 1.5 - 2 degrees Celsius (°C) by the year 2050.<sup>10</sup>

This, therefore, sets the stage for the third and most pressing energy transition which intends a shift in government policies and investments from the use of fossil fuel to renewable energy sources in order to birth the non-fossil fuel era.

## **2.1 Is the Third Wave of the Energy Transition being embraced?**

In March 2021, Forbes reported<sup>11</sup> that at least one-fifth of the world's two thousand top companies have committed to the Net-Zero agenda. Total was one of such companies, as it announced the change of its name to Total Energies with a new logo launched to

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<sup>8</sup> R. Unger, "Energy Transitions in History: Global Cases of Continuity and Change", available at [https://www.environmentandsociety.org/sites/default/files/2013\\_i2\\_web.pdf](https://www.environmentandsociety.org/sites/default/files/2013_i2_web.pdf) (accessed 3 March 2022).

<sup>9</sup> *Supra* n. 8.

<sup>10</sup> UN General Assembly, "United Nations Framework Convention on Climate Change: Resolution / Adopted by the General Assembly", 20 January 1994, A/RES/48/189, available at <https://www.refworld.org/docid/3b00f2770.html> (accessed 3 March 2022).

<sup>11</sup> D. Shetty, "A Fifth of World's Largest Companies Committed to Net Zero Target", available at <https://www.forbes.com/sites/dishashetty/2021/03/24/a-fifth-of-worlds-largest-companies-committed-to-net-zero-target/?sh=32947a1662ff> (accessed 3 March 2022).

reinforce its commitment to reaching carbon neutrality by 2030.<sup>12</sup> British Petroleum (BP) Plc. also unveiled its plans to be a net zero company by 2050 or sooner, with focus on getting to net zero across its entire operations in oil and gas production.<sup>13</sup>

In Nigeria, Seplat Petroleum Plc. has unveiled plans to transition into a carbon neutral company starting with a name change to Seplat Energy and has acquired Mobil Producing Nigeria Unlimited.<sup>14</sup> Also, Shell Petroleum is in the process of divesting its onshore and offshore investments to become Shell Energy.<sup>15</sup> The goal for these companies is to go from International Oil Companies to International Energy Companies in tandem with the global sustainable energy goals.

### 3.0 THE NIGERIAN POWER SECTOR: AN OVERVIEW

The history of electricity in Nigeria dates back to 1896 under colonial rule when electricity was generated in Ijora, Lagos by the British colonial government.<sup>16</sup> In 1951, the Electricity Commission of Nigeria (ECN) was established to regulate and operate the power supply systems in Nigeria. Subsequently, the Niger Dam Authority (NDA) was established for the development of the Kanji Hydroelectric Dam. In 1972, in an attempt to fuse the generation and transmission of electricity, the ECN and the NDA were merged to form the Nigerian Electric Power Authority (NEPA).<sup>17</sup>

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<sup>12</sup> Total Energies, “Total is Transforming and Becoming TotalEnergies”, available at <https://totalenergies.com/media/news/press-releases/total-transforming-and-becoming-totalenergies> (accessed 3 March 2022).

<sup>13</sup> J. Ambrose, “BP sets net zero carbon target for 2050”, available at <https://www.theguardian.com/business/2020/feb/12/bp-sets-net-zero-carbon-target-for-2050> (accessed 3 March 2022).

<sup>14</sup> Seplat, “Seplat Energy to acquire ExxonMobil’s shallow water business in Nigeria”, available at <https://www.seplatenergy.com/news-insights/news/seplat-energy-to-acquire-exxonmobil-s-shallow-water-business-in-nigeria/> (accessed 3 March 2022).

<sup>15</sup> R. Olurounbi, “Nigeria in Talks With Shell Over Onshore Divestment Plans”, available at <https://www.bloomberg.com/news/articles/2021-05-18/nigeria-in-talks-with-shell-over-onshore-divestment-plans> (accessed 3 March 2022).

<sup>16</sup> Y. Oke, *Nigerian Electricity Law and Regulation*, (Law lords Publications, 2013).

<sup>17</sup> Aalex, “Nigeria: Power Sector Guide”, available at <https://www.mondaq.com/nigeria/renewables/1021224/power-sector-guide> (accessed 3 March 2022).

Due to the inefficiency of the established NEPA in improving the power sector, a reform was necessary. This led to the enactment of the Electric Power Sector Reform Act (EPSRA) 2005.<sup>18</sup> The Act established the Nigerian Electricity Regulatory Commission (NERC) with a mandate to facilitate electricity generation in Nigeria through conventional and renewable sources. One would have expected that the advent of the EPSRA and its laudable innovations would usher in relief to Nigerians, but their hope has been dashed as the desired changes and impact have yet to materialise over the last 18 years. This has led to further attempts to enable the sector to achieve the level of electrification needed in the country.

One of such attempts is the focus and development of renewable energy sources; perhaps this is the quickest way to achieve the level of electrification today.<sup>19</sup> This is also in line with global conversations on the need for cleaner sources of energy to allow for sustainable development. To actualise its renewable energy target, the Renewable Energy Master Plan was created and launched in 2011. It aimed at increasing the share of renewable energy in the country's energy mix by at least 13 per cent (13%) by 2015, 23 per cent (23%) by 2025, and 36 per cent (36%) by 2030. The National Renewable Energy and Energy Efficiency Policy (NREEEP) was also designed and it is geared at removing barriers that put renewable energy and energy efficiency at economic, regulatory, or institutional disadvantages and providing a conducive environment for investments in renewable energy.

Nigeria has also committed internationally to focus on renewable energy. At the COP26 in 2021, President Buhari committed Nigeria to delivering net zero emissions by 2060. He highlighted the problems being faced in Nigeria— desertification in the north,

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<sup>18</sup> Electric Power Sector Reform Act (EPSRA), 2005, Chapter E7 Laws of the Federation of Nigeria 2004. The Act has two essential goals, restructuring and privatisation. Its objective was to stimulate competition and promote financial accountability by unbundling the old structure under NEPA into three constituent segments: Generation, Distribution and Transmission.

<sup>19</sup> D. Faseemo, "Benefits of Renewable Energy Adoption in Nigeria Endless", available at <https://guardian.ng/interview/benefits-of-renewal-energy-adoption-in-nigeria-endless/> (accessed 3 March 2022).

drought in the centre, pollution in the coast, etc., as the driving force for his commitment. It is thus expected that with current focus on renewable energy, the country will see significant growth to meet some of its targets.<sup>20</sup>

Unfortunately, at the COP27, Nigeria announced that it lacked the financial capacity to fully achieve its targets. Despite this challenge, the country has taken some steps to pioneer innovative climate finance instruments such as debt for climate swaps<sup>21</sup> and leading the development of the African carbon market initiative.<sup>22</sup> Enabling policies and incentives have also been created to promote investments in areas such as the Renewable Solar Independent Power Plants (IPPs), Decentralised Renewable Energy (DRE) projects and Gas Flare commercialisation opportunities.

#### **4.0 THE GLOBAL ENERGY TRANSITION AND THE NIGERIAN POWER SECTOR: THE IMPLICATIONS**

The energy transition is not a uniform, one-size-fits-all process. Different countries will approach the process in various ways and will therefore have varying impacts. In Nigeria, the impact of the global energy transition on the power sector can be categorised into two; the positives and the negatives.

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<sup>20</sup> International Trade Administration, “Nigeria - Country Commercial Guide”, available at <https://www.trade.gov/country-commercial-guides/nigeria-electricity-and-power-systems> (accessed 10 March 2022).

<sup>21</sup> S. Olorunfemi, “COP27 and the Osinbajo Debt-for-Climate Swap Deal”, available at <https://www.premiumtimesng.com/opinion/565111-cop27-and-the-osinbajo-debt-for-climate-swap-deal-by-simbo-olorunfemi.html> (accessed 10 December 2022).

<sup>22</sup> Climate Champions, “Africa Carbon Markets Initiative Launched to Dramatically Expand Africa’s Participation in Voluntary Carbon Market”, available at <https://climatechampions.unfccc.int/africa-carbon-markets-initiative/> (accessed 10 December 2022).

## **4.1 The Positives: Why We Should Take Up This Process**

### **4.1.1 Reduction in Energy Poverty**

To be energy-poor is to rely on expensive, dangerous, and polluting energy alternatives such as candles, kerosene lamps, and noisy generating sets in place of cheaper, cleaner and less hazardous supply sources.<sup>23</sup> In Nigeria, the Rural Electrification Agency (REA) estimates that nearly 50 per cent (50%) of Nigerians do not have access to grid electricity, while millions of those connected to the grid have less than 12 hours of electricity every day.<sup>24</sup> The use of renewable energy provides households with the opportunity to become energy independent and combat the problem of energy poverty. This is because it will greatly contribute to electricity production thus reducing dependence on the expensive imported oil and reinforce energy security. The energy transition process will stimulate the expansion of new electricity generation companies, organised and structured around renewables. While the energy transition will allow for a reduction in the use of dangerous and polluting energy alternatives, it is important to note that this will not be an easy process. As efficient and clean as renewable energy is, it is not readily affordable especially to those in the rural areas. However, it is believed that the more adoption in urban centres, the easier it is for redistribution of electricity to the areas that are usually not covered.

### **4.1.2 Diversification**

The Nigerian power sector depends majorly on fossil fuel and crude oil for the production of power. The global energy transition seeks

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<sup>23</sup> I. Ogunrinola, "Tackling Energy Poverty in Nigeria", available at <https://businessday.ng/opinion/article/tackling-energy-poverty-in-nigeria/> (accessed 10 March 2022).

<sup>24</sup> A. Nwankwo, "Lighting Nigeria: Tackling Energy Poverty Despite Covid-19", available at <https://www.lightingglobal.org/news/nigeria-tackling-energy-poverty-during-covid-19/#:~:text=In%20Nigeria%2C%20the%20Rural%20Electrification,hours%20of%20electricity%20every%20day> (accessed 10 March 2022).



to drastically reduce the use of fossil fuels and crude oil. Therefore, this transition will force the hands of the government of Nigeria to diversify its sources of electricity generation.<sup>25</sup> The diversification of these sources will in turn assist the country in its attempt to diversify its sources of revenue generation.

#### **4.1.3 Environmental Benefits**

Renewable sources of energy are inexhaustible, clean, and do not generate costly-to-treat waste. This will help to reduce greenhouse gas emission and ensure sustainable development, which is a core reason for the global energy transition. This implies that embracing this transition will help in achieving public policy goals as it relates to climate change. A corollary point is that a cleaner environment will make a significant impact on human health.

#### **4.1.4 Avenue for Development & Job Creation**

The transition towards clean energy will require new technologies, equipment and various services which provide employment opportunities. New business sectors with the potential to generate jobs for the unemployed will emerge such as renewable energy sales businesses, technical/training colleges, renewable energy installation businesses, manufacturing businesses, etc. This also goes beyond the power sector as experts in legal matters, taxation, the environment, logistics, etc. will be able to create a niche for themselves in this new sector.

#### **4.1.5 Reduced Economic Susceptibility to Fluctuations in Energy Prices**

The energy industry in Nigeria is usually subject to the boom-and-bust effect of the international oil market. The implication of this is that the huge reliance impacts inflationary trends in the economy, government revenue and the Gross Domestic Product (GDP). In

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<sup>25</sup> Sunday Oyedepo, "Energy and Sustainable Development in Nigeria: The Way Forward", (2012) 15 *Energy Sustainability and Society* 2.

the boom season, government revenues are high and in the bust season, government revenues are low.

Thus, where energy sources are diversified and the government reduces reliance on crude oil, it reduces the economic reliance on the oil and gas sector and prevents the economy from being subject to the vagaries of the international oil market.

## **4.2. The Negatives: Some of the Roadblocks**

### **4.2.1. Economic Considerations**

In terms of economic considerations, all de-carbonization scenarios characteristically model a transition from energy systems based on high fuel and operational costs, to systems based on higher capital expenditure (CAPEX) and lower fuel costs.<sup>26</sup> Thus, the transition from non-renewable sources to renewable sources will no doubt require huge investment costs for the development and construction of renewable energy-based plants.<sup>27</sup> The problem, therefore, is affordability for a poor nation like Nigeria. Notwithstanding, these investments are expected to have returns. With the potential that renewable energy possesses, it is expected that it will generate enough revenue to make up for the high CAPEX needed to develop it.

### **4.2.2. Reduction in Export Revenue**

The global energy transition is a strategic issue for member countries of the Organisation of Petroleum Exporting Countries (OPEC) like Nigeria. This is because Nigeria depends heavily on oil and gas sales for revenue. Thus, a transition to renewable sources will have a negative impact on the country's GDP as a result of the reduction in revenues from export.<sup>28</sup> This reduction will be on a large scale, as

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<sup>26</sup> Ernst & Young et Associés, "Macro-economic impacts of the low carbon transition," 2014, available at [https://europeanclimate.org/wp-content/uploads/2014/06/EY\\_ECF\\_Macro-economic-impacts-of-the-low-carbon-transition\\_Report\\_2014-06-05.pdf](https://europeanclimate.org/wp-content/uploads/2014/06/EY_ECF_Macro-economic-impacts-of-the-low-carbon-transition_Report_2014-06-05.pdf) (accessed 10 March 2022).

<sup>27</sup> *Supra*, n. 1.

<sup>28</sup> *Ibid.*

countries around the world are also embracing the energy transition therefore leaving little or no room for the crude oil market to thrive. The GDP will also be affected by local sale of petroleum products as consumers of electricity will also be moving to renewable sources of energy. However, should Nigeria be able to increase its capacity in renewable energy generation, a balance can be found by supplying energy to neighbouring countries. Also, the abundance of biomass materials in the country makes it easy to produce a large quantity of biogas for export purposes and should have positive effects on revenue generation.

#### **4.2.3. Budget Financing**

Fossil fuel and crude oil export are a major source of revenue generation. Therefore, as a result of the loss in revenue due to a likelihood of the reduction in export of fossil fuel and crude oil, budget financing may become difficult. Most of the money used to finance different sectors such as agriculture, health, education, etc come from crude oil exports. Therefore, until the country is able to develop its capacity and start generating revenue from renewable energy, the amount allocated to different sectors will take a hit.

#### **4.2.4 Loss of Jobs and Cost of Retraining**

The use of renewable energy is relatively new in Nigeria. Therefore, competence in the area is at a low rate. In order to maximise the potential of renewable energy, the government will be required to carry out training, en masse to build competence and capacity. This will be capital intensive as there will be the need to set up vocational schools, apprenticeship programs, etc. Oil companies transitioning to energy companies may also have to retrain staff in order to meet new operational objectives. In addition, the country might find itself in a situation where those in the non-renewable energy source sector are without jobs as a result of reduction in usage of non-renewable energy sources.

#### **4 CONCLUSION**

The global energy transition is fundamental in today's world. It is important because there is an urgent need to start producing cleaner energy and reduce the emission of greenhouse gases for a sustainable environment. The transition provides both positive and negative impacts for Nigeria. Luckily, the positives outweigh the negatives. It is thus important to embrace the transition as it is advantageous to Nigeria's economy and also has tremendous societal benefits.