Information Management and Business Review (ISSN 2220-3796)
Vol. 13, No. 3, pp. 14-29, September 2021

Global Energy Poverty: Nigeria as a Case Study

Aladejuyigbe Oluwafemi[1] & Olawumi Dele Awolusi[2]
[1]Department of Business Administration, the Business School, University of Roehampton, London, UK
[2]Department of Accounting and Finance, College of Economics and Management, Kampala International University, Kampala, Uganda
oluwafemi.aladejuyigbe@roehampton-online.ac.uk, awolusi.olawumi@kiu.ac.ug

Abstract: The deplorable condition of energy supply and distribution, generally called vitality neediness has been distinguished as one noteworthy failure militating against the satisfaction of Nigeria's objective of achieving financial improvement. The objectives of this study are to identify the challenges that limit the development and accentuate the stagnancy and near decline in Nigeria's energy sector. AmartyaSen's Capability approach was the theory that provided the framework for the study. The comfort examining the system, the purposive inspecting procedure and the arbitrary determination method were utilized. The purposive examining strategy was utilized to choose five (5) respondents from the best administration staff of the power segment for the inside and out meetings, while the random sampling technique was utilized in selecting discussants for the Focus Group Discussions. Findings revealed that that the pervading challenges that impede the development of the electricity sector in the country are the insufficient financial capacity to purchase huge power generating sets or maintain the existing ones, the commercial unavailability of the electricity sector that renders it unattractive to prospective investors, consumers' unwillingness to pay for electricity units at cost-reflective prices. In conclusion, the findings of this research indicate that energy poverty possesses an adverse effect on both the individual and economic well-being of the nation. The study recommends that more funding, both from private individuals and government is required to enhance electricity generation, transmission and distribution in the country. It also recommends a revitalization of the country's electricity sector, to make it more commercially viable and attractive to an investor.

Keywords: *Energy poverty, Capability Theory, purposive sampling technique, electricity, power, energy, in-depth interviews.*

1. Introduction

Energy or fuel poverty is one of the many problems bedeviling many countries worldwide. This is despite the speedy technological growth that the contemporary era is witnessing (Lefkothea and Dimitris, 2018: 1). Humans' lives and their quality appear not to be at par with the technological growth that is currently being witnessed as many families encounter problems with their electricity requirements, caused by their inability to fund their power fees or limitations on the accessibility to electricity or power (Olayisade & Awolusi, 2021; Awolusi, 2021). This situation occurs particularly because of insufficient finances, exorbitant prices of electricity or power insufficiency (Legendre and Ricci, 2015; IEA, 2011). Numerous schools of thought believe that energy powers and sustain the universe. Undoubtedly, considering the role that energy plays with regards to the infrastructural and socio-economic growth of any nation, one can easily submit that energy is indispensable to human survival. However, the energy poverty level affecting the globe seems to be on an incremental path with population explosion, especially in a country like Nigeria, which happens to be the study subject of this research work.

In a study conducted by the Nigerian Bureau of Statistics in collaboration with Nigeria's apex bank, CBN and Nigerian Communications Commission, it was revealed that citizens encounter the worst cases of electricity deprivation worldwide. This is partly because, despite the increment of the country's population size, very minimal developmental strides have been recorded in the country's energy sector. According to (Eleri, Ogwu, and Onuvae, 2012), about 15.3 million families are deprived of an electricity connection; while people with access witness unstable power. It is worthy to note that some essential daily activities are hinged on the availability of energy, for example, cooking food, maintaining an average temperature accommodation, running sewages, utilizing household types of equipment, functioning of basic health and medicinal services, correspondence and transport (Oladejo & Awolusi, 2017). Energy is also required to run productive activities, which include businesses, agriculture, production and industries. Hence, it can be inferred that a lack or deficiency of power increases poverty, economic downturn and inflation.

At this juncture, it must be clarified that energy or power as used in this research does not only mean electricity because there exist numerous power sources, some of which are; charcoal, gas, solar and petrol all of which are available in abundant quantities in some countries, Nigeria inclusively. However, despite this abundance, Nigeria remains under-developed. Scholars such as Jean and Marc, (2007) calculated that the increasing requirement of power keeps raising attention from pundits that opine that considering power consumption currently, exploitable fuel will last only about four (4) decades for oil, six (6) decades for gas, while charcoal will last for a little beyond two centuries. Despite Nigeria's role as Africa's frontline producer of petroleum, her capacity to produce and supply energy is still grossly insufficient for her population (Awolusi and Atiku, 2019). International Energy Agency, (2007) states that "a people's accessibility to power leads to an improvement in lives' quality and is a requirement for the growth of the economy." The country thus encounters electricity poverty because there is no sustained growth in power development. In 2016, a World Bank document revealed that Nigerians experience an averagely of about 33 power cuts and electricity rationing monthly because of insufficient power supply and obsolete technology.

The major challenges that Nigerians undergo are governments and their agencies' inability to provide, uninterrupted, reliable and stable electricity and also corruption practices in government and its agencies. In a document released in 2013 by Transparency International, Nigeria ranked 144 out of 177 most corrupt nations worldwide. It is noteworthy to state that in estimating power or energy poverty there exists a continuum of numerous debates in the academic communities. These debates are about the different procedures of estimating poverty in power and energy, (DECC, 2015). In addition, the methodologies proposed for the identification of poverty of power as well as its affected persons vary. While there exist subjective systems predicated on individual beliefs about electricity and its usage, there also exist other systems that are estimated with objective variables. These variegated systems have witnessed theoretical scrutiny and criticisms say (Fahmy, 2011; Heindl, 2015; Schuessler, 2014). However, there exists a lacuna in the empirical comparative analysis that takes into consideration the measurement of a realistic case study, examining the consequences of the limitations that exist in these theories. Against this backdrop of the factors cited above, one can fathom that the challenges of energy poverty, alongside.

Its connected complex nature can be solved utilizing concerted efforts and policies, which require adequate examination and grasp of energy or power poverty (Nussabaumer et al., 2012). It is on this premise that this study seeks to employ the case study method to investigate the effects of Nigeria's energy poverty on the socio-economic life of individuals as well as the economy as a whole, about the observed retarded developmental growth of the country. The deficient state of energy supply and distribution, otherwise called energy poverty has been identified as one major debacle militating against the fulfillment of Nigeria's goal to become a part of the foremost countries in the year 2020. This is connected to the adverse effects that energy poverty has had on family units' financial sufficiency and other socio-economic pointers such as the rate of joblessness (Road map for Energy Sector Reform in Nigeria, 2010). Krizanic (2007) stated that the arrangement of energy is now tilted towards becoming as important as feeding. This served as one of the reasons that informed the decision of energy poverty for this investigation. Furthermore, the significance of power or electricity not just for individual sustenance, but also for the social and economic growth and development of any country cannot be discarded.

Mbisiogu (2013) revealed that due to power instability, almost 834 manufacturing companies out of about 2,400 companies moved out of the country to surrounding nations such as Togo, Ghana and Benin Republic in the last five years. Thus, power can be deemed as the main factor that drives both individual growth and the national growth of an economy. In the last decade, the government of Nigeria made huge financial investments into the power sector with billions of US dollars, aimed towards improving the generation, transmission and distribution of electricity (Awolusi, Pelser, and Adelekan, 2016). In addition, the government also made similar investments into flammable gas supply frameworks; however, none of these interventions seems to be yielding the desired result of improved availability of energy to the nation's citizens. The significance of electricity to the eight Sustainable Development Goals, erstwhile called the Millennium Development Goals is evident because the goals will not be fulfilled until a major alteration is achieved to boost the administration and availability of power (UNDP, 2010). Therefore, it is against this backdrop that this research studies the energy poverty situation of Nigeria.

In a bid to qualitatively scrutinize the current status quo in the country's energy sector while simultaneously identifying the challenges necessitating the current state of affairs. This research also highlights the adverse effects of energy poverty, not just at the level of an individual, but also at the level of its socio-economic impact on the nation. In addition, this study will also examine measures that can be employed to boost electricity generation and transmission in the country. Consequently, the broad objective of this study is to analyze Nigeria's electricity sector, while concomitantly highlighting the nexus between power or energy and its effects on both human advancement and a larger scale, financial and socio-economic development. Other specific objectives include the following:

- Identifying the challenges that impede the development and accentuate the stagnancy and near decline in Nigeria's energy sector.
- Enumerating various strategies and measures that can be employed to solve Nigeria's energy challenges.
- Highlighting the effects of energy poverty on the economic growth of the country.

To analyze the above objectives, the following research questions were contrived:

- What are the challenges that militate against the growth of power generation in the electricity sector of the country?
- What strategies or models can be used to improve power generation and distribution in Nigeria?
- What are the effects of energy poverty on the economic growth of the country?

Despite the initiative of past governments to improve the energy sectors, especially increasing electricity power generation, the country on the contrary seems to be recording an even lesser electricity supply. After studying countries that have undergone energy crises in the past and the strategies employed in tackling the energy challenge, this research work will serve as resourceful material in proffering practical steps to solving the energy poverty challenge in Nigeria. This research work also exposes the challenges that impede the development of the energy sector despite the enormous resources that are constantly injected into the sector of the economy. Through this research work's suggestions and recommendations, other researchers and scholars can get insight into new vistas of energy researches. Government agencies can also employ the suggestions and recommendations of this research work to improve the energy/power sector of the nation. However, this present study is on 'Global Energy Poverty, with a specific spotlight on the Nigerian energy situation. It is pertinent to indicate that of the entire energy source available, particular emphasis will be laid on electricity no other forms of energy sources. This study will try to portray the correlation that exists between energy and the economic growth and development of a nation. The study also understudied the complete structure of the Nigerian electricity sector, from the generation stations, the transmission companies, the electricity distributors, to the users of electricity.

2. Review of Related Literature

Conceptual Review: Nigeria suffers from a high level of electricity poverty, especially acute inaccessibility and insufficiency of electricity; this status quo exists despite the gigantic availability of minerals and other sources of power. Scholars such as Sanusi and Owoyele (2016: 1) reveal that inordinate attention is cast on electricity generated from water, while electricity remains insufficient and other sources of power draw minimal attention and remain untapped. Just as it is with many other fields, the idea of energy insufficiency or poverty lacks a universally acceptable description. Different authors and scholars have used the term in various contexts to suit their discussion and especially their locale or country of review. However, among these very many definitions, and interpretations of the term 'energy poverty, some certain features and descriptions pervade many of the definitions. According to (Sher et al., 2014), the World Economic Forum sees the term as 'insufficient accessibility to power or electricity sources.'

That is, living in conditions devoid of access to constantly available and affordable electricity. In the words of Bazilian et al. (2014), energy poverty was conventionally employed in the description of challenges of insufficient access to electricity, particularly in third-world countries. The challenges always brought to the fore during the consideration of the term include economic, infrastructural, health, educational and social problems. Sadath and Acharya (2017) posit the existing tradition in the definition of energy poverty is to

encapsulate the unavailability of energy in advanced nations with ideas of poverty of fuel, while in third-world nations, with ideas of poverty of energy. Therefore, insufficient fuel for heating purposes in advanced nations and insufficiency of electricity in third-world nations symbolizes electricity poverty, which possesses adverse effects for the economy of a country. Another scholar, Day et al. (2016), suggests that insufficient electricity necessitates incapacitation because of the limitation to pocket-friendly and available electricity as well as other services that come with the availability of electricity.

Energy Poverty in Nigeria: Over the years, the trends of pricing of fuel and other forms of energy have led to the increment of electricity and other forms of power poverty in the nation. As proven by the constant increment in the pump price of petroleum, individuals are forced to pay more money to pay for energy, thereby using up a large percentage of their emolument to buy the required energy needed for ease of their lives. With these increments in prices of power caused by insufficient energy supply, it is a contributory variable for the nation's economic backwardness, even with the contrasting availability of energy resources. In the words of the most indigent families in the country make about 1 to 2 US Dollars per day but spend an average of 0.40 US dollars daily for power requirements. Families and corporate entities expend over 10% of their finance to fulfill their electricity needs, while the consequence of electricity poverty.

As encountered in the nation is increments of tariffs charged by telecommunications firms, transportation prices and increments in the prices of energy to power blocks of buildings, all of which will skyrocket because of the influence of the high price of powering activities of economic importance (Odoko et al., 2003). Odoko et al. (2003) therefore posited that surges in prices and instability of power or electricity are the foundations for energy poverty. They also added that other causes of energy poverty in the country include; Nigerian ports' ability to contain larger ships, pipeline vandalism, adequate, depots, constant strike actions by tankers drivers, corruption, militancy and kidnappings. It is therefore imperative to discuss the reasons for the current under-exploitation and usage of sustainable power sources and the methodologies to help openness to power in the nation. It is also important to examine the policy lapses that impede the shift from hydroelectricity to renewable electricity. They include the following:

Lack of Appropriate Legal Framework: Most of the country's energy policies lack legal enforcement, therefore limiting the sanctions for persons that flout the laws. In addition, successive tenures of government come with recurring alteration of programs and policies as well as tardiness in challenging certain institutions notorious for breaking energy laws. A particular instance is the reforms of the Electric Power Sector Reform Act of 2005, which is devoid of the ability to bring about the availability of electricity to uncountable indigent Nigerian citizens that lack connection to the national electricity source.

Adequate Financing: Nigeria's electricity system needs urgent capital investment to be able to perform optimally. The International Centre for Energy Environment and Development in a report published in 2011 estimated that about 200billion US$ is the requirement to achieve optimal electricity generation, transport and distribution. In addition to the amount mentioned above, the private sector arm of the economy also needs to pour their investment to augment the required financial resources required to achieve accessibility to electricity.

Research and Development: The major players in the nation's electricity sector are not up to date in their knowledge of renewable electricity sources, thus continuing to make policies and decisions based on outdated mechanisms of electricity generation utilizing the hydro-turbine system. Therefore, for the energy sector to witness a considerable leap in production, distribution and transmission, there has to be adequate funding for research and development, both of which are very necessary for discoveries and developmental growth to be attained in Nigeria's energy distribution.

Institutional Arrangements: Inefficient coordination that exists in the agencies and organizations that coordinate the nation's electricity sector leads to more challenges and complications in the process of the implementation of electricity objectives. In addition, contempt, rivalries and unclear description of functions and duties that exist among the arms of the electricity sector gives prospective investors a negative impression about the nation's electricity sector.

Establishing Green Jobs in Nigeria: To destroy the ill-luck of electricity poverty, which portends high levels of unemployment and other social vices, in the nation, there has to be the provision of financial grants and aids that will boost support and research into renewable electricity generation in the country. The International Centre for Energy, Environment and Development in a 2010 report revealed that a system that possesses low carbon can create about 600,000 new employments in the electricity and the gas energy sectors. In addition, efficient gas utilization, coupled with complete stoppage of gas flaring has the capacity of improving production industrially, thereby boosting income made from exportation. This study's scope of energy is restricted to family requirements, but also admits that numerous sources of power or energy are required to attain economic growth. Popular electricity-enabled services as required by families include; cooking purposes, home heating or cooling, for lighting, studying, and operating gadgets such as air conditioners, fans, et cetera.

Theoretical and Empirical Reviews: The core significance of electricity in enabling family and social wellbeing proposes that the idea of intensity or vitality destitution has the right to be inspected in an increasingly comprehensive methodology devoid of reduction to mere variables such as the price of power or energy or the volume of the energy utilized. Therefore, this approach as propounded by AmartyaSen is especially important in grasping the causes of energy poverty, or in this context, electricity poverty and the strategies to solve the challenges. This approach sheds a spotlight on the results and wellbeing instead of the process of attaining such wellbeing. Furthermore, accessibility to green and healthy electricity is connected to AmartyaSen's approach of the capability to develop, particularly through economic facilities — which is part of the five important freedoms mentioned by AmartyaSen, as aiding in the advancement of the overall individual capability (Sen, 2014). She further claims that an individual's ability to reach power sources, such as electricity is a necessary tool that families require; hence its unavailability suggests incapacitation. Therefore, conventional approaches in the conceptualization and measurement of accessibility to pocket-friendly sources of energy via income or expenditure variables are grossly restrictive and can result in the wrong information. Therefore, when a person's freedom of choice is taken away, such a person is denied a capability and can be deemed an example of underdevelopment.

Thus, as this study examines power, energy or electricity poverty in this approach, it becomes conspicuous that insufficient accessibility or the unaffordability of electricity diminishes life's quality for numerous Nigerian citizens. In summary, for this study, energy poverty shall be examined via AmartyaSen's Capability approach because of the poverty of electricity. For example, a report by the World Health Organization, released in 2016 revealed that about 4.3 million persons are lost every year as a result of sicknesses connected to air pollution in families that utilize solid fuels, such as coal and wood while making meals. As a result of the harm necessitated by energy poverty, Sen (2014) made an observation that considerations should be made in a bid to ease the production of energy that is healthier for both the environment and humans, while also ensuring efficiency of use. From the foregoing, it can be gleaned that energy poverty can be comprehensively examined employing the Capability approach as propounded by Amartya Sen. Therefore, the challenge of energy poverty in Nigeria, in this study, shall be examined with this comprehensive approach, to reveal the depth of social and economic harm that energy poverty constitutes on the lives and the economy of Nigeria and Nigerians. Energy poverty and its impact on the economic and social welfare of nations has been an interesting area of interest among researchers and scholars especially in advanced nations in Europe.

There have been concerted efforts directed at understanding the consequences or effects of energy poverty on economic cum social wellbeing and development of societies. In this section of this research work, we shall attempt to briefly review several empirical studies about energy poverty and its effects on societies and nations. In a study conducted by (Pachauri et al., 2012), there was proof of reduction of energy poverty amid energy-deprived Indian citizens. The study discovered that an increment in the accessibility to energy led to appreciable socio-economic advantages for energy-deprived persons. Furthermore, (Pereira et al., 2011) announced synonymous implications in Brazil via sustained action of the authorities in the expansion of dependable electricity. Another group of scholars (Andadari, Mulder and Reitveld, 2014) revealed that from the Asian country of Indonesia, via programs aimed at spreading the distribution of affordable LPG to families, there were recorded improvements in living standards and social wellbeing. Another detailed research work by (Wang, Wang and Wei, 2015) discovered proof of a decrement in China's power poverty as a result of a boost in power servicing availability and pocket-friendliness as well as power effectiveness. In

another related study by Tang and Liao, (2014) they asseverated that, despite the popularity of massive energy empowerment, in terms of mass connection to electricity and decrement of energy poverty.
Rural China's reliance on harmful solid fuels remained on the high side, thus indicating peculiarities of the countryside. Research work on the significance of renewable energy in the reduction of worldwide power insufficiency was conducted by the duo of González and Eguino (2015). In addition, in another research that highlighted the greater social and economic effects of energy poverty as conducted by Szakonyi and Urpelainen (2015), they mentioned the presence of widespread power insufficiency among traders in Patna, India. They suggested that attacking the power insufficiency with constant lighting could boost their sales and increase their living standards. In a similar vein, (Sovacool, 2013) aired the opinion that specially designed general and individual actions were required in diminishing energy insufficiency in the country of Myanmar, which holds the record of a paltry 13% of families connected to power. Therefore, the empirical studies discussed above are a few among the several other studies, suggesting that efforts have been made by scholars to investigate the effects and consequences of energy poverty on the economic cum social well-being of nations. A summary of all the reviewed work shows that energy and its accessibility have huge significance in the growth and development of nations and societies.

It also contributes immensely to the quality of life of individuals and a large extent, especially for clean renewable energy, contributes to a healthy environmental configuration. It is therefore against all of these forgoing that this study seeks to contribute to the existing body of work by studying energy poverty, with Nigeria as its case study. Research into the area of energy poverty is greatly limited by the scarcity of information in terms of the fact that both quantitative and qualitative data are almost not available or patchy at best. In addition, the design and implementation of policies and programs to diminish power insufficiency and make it a thing of the past in the nearest future requires input that is realistic and surpasses abstraction or conjecture. Thus, the challenge of energy poverty has long ago been in existence. However, without concerted actions, the energy situation might worsen, thereby increasing the causalities who are adversely affected by their inaccessibility to electricity in some parts of the world, particularly, sub-Saharan Africa, (IEA, UNDP and UNIDO, 2010). Furthermore, while numerous pieces of literature exist on the topic of energy poverty globally significant analytical gaps remain. Therefore this research aims at contributing to the body of knowledge connected to the area of energy poverty and measures to create sustainable energy development.

3. Methodology

The main aim of this study was to examine Nigeria's energy sector, while simultaneously portraying the connection between electricity and its effects on both human advancement and the financial and socio-economic development of the nation. In other words, this study sought to understand the effects of energy poverty on both the individual and societal development of the nation. Therefore, because this is research that deals with human reality and how some certain unquantifiable variables affect their daily lives, the qualitative method of research was adopted. The purpose of employing this research method was to elicit information from respondents, especially from members of staff of the country's electricity sector. This study also made use of in-depth interviews and Focus Group Discussions as part of the research design. The methods employed were considered suitable to answer this study's research questions. The population for this study comprised the entire machinery of the energy sector of the country (Nigeria), with specific emphasis on the staff of the electricity sector of the country. This includes five (5) managerial staff in the power generation, transmission and distribution companies.

As well as a cross-section of Nigerian citizens who will shed light on the power generation in the country. For ease of conducting this research, only four (4) states among the 36 states and the Federal Capital Territory of the country were visited in the course of conducting this research work. The states include the Southwestern states of Oyo, Ogun, Lagos and Osun. A total of (50) randomly selected Nigerians, that is, (10) from each of the states visited and (10) from the FCT were also interviewed to get their thoughts and opinion about the energy situation in the country, its relationship with human and national development and probable strategies of improving the nation's energy situation. In the course of conducting this research, the convenience sampling technique, the purposive sampling technique and the random selection technique were employed (Odunlami, Awosusi, and Awolusi, 2017). The purposive sampling technique was used to select five (5) respondents from top management staff of the electricity sector for the in-depth interviews, while the random sampling

technique was utilized in selecting discussants for Focus Group Discussions. The purpose of this was to gather authoritative information from senior and managerial personnel and not just personnel in the junior cadres. It should be stated that the four states and the Federal Capital Territory chose for this study were selected using the convenience sampling technique because it afforded the researcher easy access to respondents and was also cost-effective. The instruments of data gathering employed for this study are in-depth interviews and Focus Groups Discussions. The Focus Group Discussion Guide (FGDG) was used to guide the discussions with the selected Nigerian citizens about the energy poverty situation of the country. The guide also ensured that all the discussions made in the focus group discussion achieved the objectives of the study. In addition, the interview guide was used as a tool during the conduct of the in-depth interviews on key players of the energy sector. The interview guide enabled the researcher to ensure that all the important areas were covered and that questions revolved around the research questions. The draft copies of the In-depth Interview Guide and Focus Group Discussion Guide were submitted to the project supervisor for necessary corrections, additions and amendments. This helped the researcher improve upon the research instrument and enhance the validity of data (Awosusi and Awolusi, 2014). Data were collected using the In-depth Interview Guide and Focus Group Discussion guide as guides.

For the conduct of the interviews and the focus group discussions which were conducted on the staff of power agencies in the chosen locations- Oyo, Ogun, Lagos, Osun and the Federal Capital Territory. The researcher without the aid of any research assistant conducted all of the scenarios of data collection because the number of a respondent interviewed or spoken within the focus group discussion were not many and there was sufficient time to conduct all of the interviews and focus group discussions. Furthermore, the researcher with the aid of the interview guide gathered supplementary information about citizens' thoughts and opinions about the current energy poverty in the nation. Each of the one-on-one interviews with selected respondents is expected to span between 30 to 45 minutes. For every interview session, the researcher made use of a recording device to record interviews and discussions. Data gathered were grouped, analyzed and interpreted by extracting data from tape-recorded responses of the interviewed personnel of power agencies as well as the (50) randomly chosen citizen respondents. The same method was conducted on the tape-recorded audio excerpts of the focus group discussions all of which were discussed against the various research questions which the interview or discussion treated. This was done by extracting relevant quotations to back up presented data where deemed appropriate.

4. Results and Discussion of Findings

Demographic Analysis: Certain demographic information was considered vital in choosing the respondents who answered and discussed the questions and issues raised in the fieldwork of this study. Some of the features that were apparent in most of the respondents and discussants were that they were personnel working in any of the three arms that constitute the Nigerian electricity structure- which include the power generation companies, the transmission companies and the distribution companies. In-depth interviews were specifically directed at key decision-makers and personnel in the various states' power offices that were visited for this study. These include the Head of the Technical Department of the Ibadan Electricity Distribution Company, Ibadan, the Assistant General Manager of Ibadan Electricity Transmission Office, Ibadan, the Assistant General Manager of the National Electricity Transmission Company, Osun state, and the General Manager of the Ikeja Electricity Distribution Company, Ikeja, Lagos state. Others that were also visited include the Assistant General Manager of the Abuja Electricity Distribution Company, the Federal Capital Territory, Abuja. It is worth stating at this juncture that in the course of this study, it was discovered that Ogun state is supplied electricity from the Ibadan Electricity Distribution Company, thus they fall under the aegis of the Ibadan Distribution Company. Thus, the interviews conducted for personnel in Ibadan, Oyo state also represents that for Ogun state. Consequently, each research question is succinctly and discussed and answered in the subsequent paragraphs, about the opinions of the respondents and discussants about each of the research questions.

Research Question One: What are the Challenges that Militate Against the Growth of Power Generation in the Electricity Sector of the Country: An interview session with the Head of the Technical Department of the Ibadan Electricity Distribution Company, Ibadan revealed this: The Nigerian electricity structure is divided into three arms, that is, the generation, the transmission and the distribution

organizations, with each of these organizations encountering different forms of challenges. But in the generation arm of the Nigeria electricity structure, the cost of power generation is so huge and the generation arm is currently encountering insufficient financial capabilities to purchase huge power generating sets or maintain the existing ones. He further added that another challenge that the overall electricity system in the nation is currently encountering, a challenge that makes the system incapable of performing optimally are the losses known in the technical parlance as the (ATC & C) Aggregate Technical Commercial or Collection Losses. These are the total losses that the electricity system witnesses in the course of supplying electricity. In his attempt to explain the term ATC & C losses, he explained that technical losses occur in the area of electricity transmission, where the transmission companies shoot out a particular volume of electricity, while the end-user receives a decreased volume of electricity due to the distance the voltage has traveled, this voltage drop consequently leads to a reduction in the quantity of power that reaches the end-user. This loss is especially higher in Nigeria because of the obsolete transmission lines that the transmission companies utilize.

The collection losses however occur when consumers pay a fraction of their electricity bills, causing their debts to continually increase and consequently taking adverse tolls on all of the arms of the nation's electricity structure as the distribution companies serve as the revenue collector on behalf of both the power generation companies and the transmission companies. Therefore, in his estimation, the challenges that are currently acting as deterrents to the progress of power generation in the electricity sector of the country are the insufficient financial capacity to build more power generation plants and maintain existing ones, the unattractive nature of the nation's electricity sector caused by the commercial unavailability of the sector and finally, the low cost of selling units of electricity as well as consumers' indebtedness that deprives the system sufficient resources to successfully perform its operations. In another interview with the Assistant General Manager of Ibadan Electricity Transmission Office, Ibadan, he stated that: The challenges bedeviling the transmission arm of the electricity sector are numerous. He enumerated them as the challenges of outdated equipment and transmission lines, vandalism and theft of transmission equipment at transmission stations and the inability to collect funds directly from electricity consumers and the inability of the distribution arm of the electricity sector to accurately remit funds due to the transmission company.

He explained that the current transmission poles and lines are very obsolete and require very urgent overhauling to avoid danger to lives and property and further revealed that most of the transmission lines and poles have been in use for over five decades. He also added that due to the overuse of this equipment, there were frequent occurrences of national grid shutdown and constant loss of electricity units from the point of transmission to the point of consumption. Furthermore, he added that destruction and theft of transmission poles, lines and other related equipment, especially in the Niger-Delta region also contribute adversely to the development of the electricity sector in the nation. In the aspect of the inability to collect direct funds from consumers, he revealed that the electricity distribution companies were the only arms allowed to collect funds for the three arms of the nation’s energy sector. He however revealed that on frequent occasions, personnel in the distribution companies tampered with the funds or failed to make appropriate remunerations to the transmission companies. A situation, which he was quick to state, was very bad for them as it continually affects their ability to perform optimally, thereby negatively affecting power transmission in the nation. In another in-depth interview conducted on the Assistant General Manager of the National Electricity Transmission Company, Osun state.

He revealed that the Headquarters of the National Transmission Grid, located in Osun state is home to, numerous uneducated people and a largely agrarian population that utilizes electricity mainly for domestic and residential purposes. He also gave this insightful professional opinion saying: I believe that the location of this national transmission grid in this state is a big mistake. I mean, the distance from the source of power generation to this place is just too enormous. Kanji Dam is in Niger state and this is Osun state. Can you imagine the distance that energy travels before getting to this place, and then subsequently transmitted to other parts of the country? In his opinion, the national transmission grid should have been sited either in Niger state or very close to the source of power generation, while other smaller transmission stations are constructed in other parts of the nation. Moving over to Lagos state, in an interview conducted with the General Manager of the Ikeja Electricity Distribution Company, Lagos State, he revealed challenges peculiar to his state, alongside relating these challenges to the factors that militate against the progress or growth of the electricity sector in Nigeria. In his revelation: Lagos State is a very industrialized state the most industrialized

state in West Africa and some of the challenges that we constantly encounter are: Insufficiency of electricity units supplied to us from the power generating company.

This insufficiency is largely due to the huge volumes of customers in this state – both residential and industrial customers alike. On a final note, the interaction with the Assistant General Manager of the Abuja Electricity Distribution Company indicated that the challenges that reduce the pace of growth in the sector include: The unwillingness of consumers to pay for their energy consumption, the inadequate knowledge of the electricity sector and how it works, the poor financial capacity of a large segment of Nigerian citizens and a couple of other long-standing technical challenges. From the findings of this research question, it is evident that the pervading challenges that stand in the way of the development of the electricity sector in the country are the insufficient financial capacity to purchase huge power generating sets or maintain the existing ones, the business and commercial unavailability of the electricity sector that makes it unattractive to investors, consumers' unwillingness to pay for electricity units at cost-reflective prices. Other challenges include the theft and vandalism of transmission equipment, outdated equipment and transmission lines, insufficiency of electricity units that leads to constant power outages, inadequate consumers' knowledge of the electricity sector and how it functions and very importantly, the widespread poverty in the nation that makes it difficult for consumers to pay for their electric utility bills and explains their reluctance to pay for electricity.

Research Question Two: What Strategies or Models can be Used to Improve Power Generation and Distribution in Nigeria: In similar order as the previous research question, the Head of the Technical Department of the Ibadan Electricity Distribution Company, Ibadan opined that the nation's electricity sector requires restructuring to be made more commercially attractive to investors. In his opinion, the restructuring requires well-coordinated and in-depth education of electricity consumers and stakeholders so that they can grasp the inner workings of the nation's electricity system and understand the significance of their choice to pay or to not pay for their electric utility bills. This education will also inform consumers of the urgent need to increase the unit cost of electricity, to make the system more efficient and cause a win-win situation for both the consumers and the three arms that make up the nation's electricity system. Furthermore, he suggested decentralization of the national grid; that is a situation where each region, state or geopolitical zone in the country owns a grid. This is unlike the current situation in the country where there is a single national grid located in Osun state that monitors all the activities of electricity transmission in the country. Adding that the obsolete and ill-functioning conductors and lines are replaced and locations.

He highlighted that the disadvantage of this single-structure national grid system is that whenever there is a system failure or system collapse, it shuts down power transmission to every part of the nation due to its central nature, therefore affecting the total economic wellbeing of the country. However, in a situation where the national grid is decentralized, such system collapse will have minimal adverse impact assuming the grid is decentralized into states or regions. He further added that there are other sources of electricity that can be utilized to shed load off the nation's already overloaded electricity grid. Some of these electricity sources are renewable energy, embedded electricity generation of up to 500 Kilowatt or 1 Megawatt for already specified locations who on the installation of these embedded power plant, are taken off the national grid. Other sources are gas flared power generation, wind and solar electricity sources of electricity. Meanwhile, in response to this research question, the interview conducted on the Assistant General Manager of Ibadan Electricity Transmission Office, revealed that in a bid to improve power generation and distribution in the country, the transmission arm has to be well equipped and improved upon. Especially the hinterlands and countryside be added to the national electricity grid so that they can benefit from it.

He also suggested that the Federal Government of Nigeria should not leave the sector to the whim and caprice of private owners, but rather constantly intervene in the sector through constructing and taking on very capital-intensive projects that seem too huge for private investors. Furthermore, he revealed that widespread sensitization is required to be conducted on consumers so that they can appreciate and understand the nation's current electricity situation and also understand the logical reason for the need to increase the cost of electricity per unit so that each of the arms in the electricity sector can possess relatively adequate funds to improve their services, which will also lead to an improvement in the nation's electricity supply and generation. In an interview with the Assistant General Manager of the National Electricity Transmission Company, Osun state, he revealed that for development and growth to come to Nigeria's electricity sector,

there has to be a complete overhaul of the national transmission grid. Beginning with decentralizing the national grid from one, which is located in Osun state, to other smaller unit, which can be sited either according to the nation's geopolitical zones or across the thirty-six (36) states of the federation.

Furthermore, he suggested the creation of a special commission strictly dedicated to attending to the challenges, of Nigeria's electricity company. In his opinion, this commission should be an agency of the federal government as he feels that the commission can be usurped if it is a private entity. In addition, he explained that the reason behind his clamor for a special commission dedicated to attending to the country's electricity challenges is that the system is bedeviled with so many challenges that can distract electricity personnel from their main jobs of providing electricity while attempting to solve these challenges. Thus, he suggested that while electricity personnel focuses on the generation, transmission and distribution of electricity, the commission and its staff are solely saddled with the responsibility of meeting these challenges. He concluded his interview session by suggesting that there be the economic revitalization and the creation of jobs so that citizens can be financially capable enough to perform their financial obligations to the electricity sector, which will also transform into the improvement of the sector. In expressing his opinion while attempting to answer this research question.

The General Manager of the Ikeja Electricity Distribution Company, Ikeja, Lagos, state commented that: Firstly, there ought to be a complete change of most of the equipment utilized in the three arms of the electricity, industry. Secondly, there ought to be dedicated huge financial investments in all the arms of the electricity sector of the country. Thirdly, there ought to be strict measures put in place to punish consumers who tamper or bypass their meters so that their actions can be curtailed and so that optimal funds can be generated for all the arms of the electricity distribution. Lastly, the unit cost of electricity should be revised upwards, to reflect the cost of production and afford the different arms of the sector the chance of profit-making. Moving to the Federal Capital Territory, the Assistant General Manager of the Abuja Electricity Distribution Company further corroborated the suggestions mentioned by the General Manager of the Ikeja Electricity Distribution Company. He however added that the nation should Endeavour to migrate from turbine-powered electricity to other green and renewable electricity sources. This he said would free up the already overloaded national grid, thereby making electricity more available to consumers. Thus, from the findings of this research question above, one can infer that to improve the state of electricity in Nigeria, there has to be a restructuring of the system to make it more commercially viable and attractive to investors – both home and abroad.

In addition, there have been calls for well-coordinated sensitization campaigns that will educate and inform electricity consumers about the structure and inner workings of the electricity system and how their choices to pay their electricity bill or choices not to pay to affect the daily operations of the sector. Furthermore, decentralization of the power grid is required so that the creation of other monitoring transmission units can be ascertained. This decentralization will lead to the birth of some level of electricity stability across the country as voltage load will be shared among these decentralized grids, thereby reducing the spate of system collapse that is currently a frequent feature in the nation's electricity system due to the overload of the single national grid. Other strategies to improve electricity as suggested by the respondents include the establishment of a commission dedicated to solving the challenges of the electricity sector, complete equipment overhaul of the transmission arm of the sector, the increment of the unit cost of electricity to provide more funds for the electricity sector, switching from the turbine-powered electricity generation to newer and healthier energy sources such as renewable energy and finally, increasing the economic welfare of the citizens so that they can be financially independent enough to pay for their electricity bills without resorting to vandalism or theft of electrical machinery or meter bypassing and other actions that short change the revenue generation of the electricity sector.

Research Question Three: What are the Effects of Energy Poverty on the Economic Growth of the Country: To answer this research question, both in-depth interviews and Focus Group Discussions were conducted to elicit responses from both electricity personnel and citizens on the effects of energy poverty on the economic growth of the nation. It is important to indicate at this juncture that the in-depth interviews were conducted on the electricity personnel, while the Focus Group Discussion was conducted on ordinary citizens to gather their opinions about energy poverty and its impact on the nation's economic wellbeing.

Findings from the focus group discussions conducted reveal that most citizens strongly believe that insufficiency or poverty of energy had adverse effects on them as individuals and the society as a whole. One of the ten (10) discussants in Ibadan, Oyo State, who is currently a bike transport operator (Okada rider) revealed that if he could get a constant supply of electricity, he would begin his profession as a barber.
He claimed that the reason he was in the bike transportation business was that the cost of power generation sets and fueling made the salon business unviable; hence, he had to look for another alternative for survival. Another participant in Ibadan who is a secondary school had this comment to make: Once the challenge of electricity is solved in this country, so many other problems will automatically get fixed. When I was younger, I remember that there used to be many type factories along the Oke-Ado – Molete road, but these factories have long closed shop because of the high cost of production using power-generating sets. Now, it is churches that have taken over these factories. The painful consequences of the closure of these businesses are that more people lose their jobs and their sources of livelihood and are thrown into lives of hardship together with their families and dependents. The snowball effect of all of these is that there is a high level of hunger and crime in the land. The consensus among the participants of the focus group discussion in Ibadan is that energy poverty adversely affects the Nigerian economy and its people as industries and factories produce at a higher cost of production, thereby placing the burden of their production costs on the citizens. They also agree that constant electricity would bring alteration to the status quo as the cost of production will reduce, more factories and industries will be created consequently leading to the availability of jobs and thus, better life. In another discussion conducted in Lagos state, the discussants revealed that the importance of electricity is important not only to the social wellbeing of Nigerian citizens.

But also to the economic sustainability of the country. One of the participants who work in a beverage manufacturing plant expressed the large expense that his principals, accrue as a result of purchasing diesel to power their huge power plants. He added that because of the large power costs of their plant for production and also makes profits from their business Endeavour; his principals thus transfer the bulk of the costs to their consumers. Hence, products that would have cost less if there were constant electricity now cost twice as much because of the nation's erratic power supply. At the end of this discussion, the consensus was that the economic consequence of energy poverty is negative, as prospective investors into the nation's economy opt out of taking the risk to invest in Nigeria after completing their feasibility studies and discovering that electricity would be a challenge in profiting maximally from their business Endeavour. In the discussion conducted in the Federal Capital Territory, Abuja, the consensus was that electricity poverty portends backwardness and stagnancy to the social wellbeing of Nigerians as well as to the Nigerian economy. They pointed out that some years back, about a decade ago, Nigeria used to be called the giant of Africa. Unfortunately, the characteristics that made the nation have this title have gone as most of the industries that used to reside in Nigeria have relocated to neighboring African nations. The Head of the Technical Department of the Ibadan Electricity Distribution Company, Ibadan in response to this research question during the interview indicated that electricity poverty is harmful.

To the economic growth and development of the nation in his word, as an electricity distributor that services many industries that require very large units of electricity in Ibadan: I am aware of the large expenses that these industries have to make to power there, generating sets to augment the unavailability of electricity. It is disturbing to note that whenever these industries run on their generating plants, it costs as much as three times if they were running on electricity from the national grid. The unfortunate situation however is that there is no constant electricity supply anywhere in the nation. Except for huge organizations that generate their electricity and are not connected to the national grid. He also added that due to insufficient electricity, otherwise known as energy poverty, the pace of technological advancement is slower as there is no sufficient electricity to power and sustain Research and Development in any part of the country. The health sector too suffers from this energy poverty as most hospitals; including government-owned hospitals have to rely on power generating sets, which can barely power their office bulbs and little other equipment, to run their hospital and laboratories. In the various interviews with all the key electricity personnel on this research question, the consensus was that energy poverty or inadequate electricity hurts the socio-economic wellbeing of the nation. They also reach a consensus that energy poverty or inadequate electricity stunts the technological development of the nation, thereby causing the nation to be dependent on the technological advancement of other nations, without developing its own. This suggests to some extent that despite the

availability of affordable electricity, certain persons still prefer to maintain their consumption of harmful sources of energy.

Discussion of Findings: From the various findings discussed above, it is evident that there are challenges in Nigeria's energy sector and the study's findings further revealed that despite these numerous challenges, there are solutions that can be adopted to save the situation and increase the generation and distribution of electricity. This section of the study will briefly discuss this study's findings of the empirical researches referenced earlier in the conduct of this research. In the focus group discussion conducted in five different parts of the country as highlighted in chapter three of this study, the discussants stressed the adverse effects of electricity poverty on the nation. Their revelations and opinions confirmed Szakonyi & Urpelainen, (2015) research that discussed the overall social and commercial effects of energy poverty where they emphasized the existence of widespread power insufficiency among traders in Patna, India. The researchers just as respondents of the focus group discussions opined that solving the challenge of power insufficiency with frequent electricity could boost their sales and increase their living standards. Another study conducted by (Pachauri et al., 2012) revealed that an increment in the accessibility to energy led to appreciable socio-economic advantages for energy-deprived persons.

This study, which was conducted in India, further corroborates the opinion of the Head of the Technical Department of the Ibadan Electricity Distribution Company, who stated clearly that constant availability of electricity in the country will lead to the overall betterment of life in all ramifications in the country. He revealed that constant electricity will automatically make things work and generally make life easier, thus leading to improved social and economic wellbeing. In addition, (Pereira et al., 2011) reported similar effects in Brazil, which were achieved through sustained action of the authorities in the expansion of dependable electricity. On the question of strategies to adopt to improve electricity generation in Nigeria, (Wang, Wang and Wei, 2015) in their research discovered proof of a reduction in China's electricity poverty due to an increment in electricity servicing availability and affordability and effectiveness of electricity. All of the interviewed top management staff of Nigeria's electricity sector further confirms that electricity poverty and insufficiency can be reduced if all hand can come on deck to jointly rebuild and reinvest in the nation's electricity sector and if more electricity servicing plants can be constructed. On the contrary opinion, however, a study conducted by Tang and Liao, (2014) revealed that, despite the widespread movement towards massive energy empowerment, in terms of public connection to electricity and the diminishing of energy poverty, interior China's reliance on harmful solid fuels remained on the high side.

5. Summary, Conclusion and Policy Recommendations

Summary: This study examined the energy sector of Nigeria, while concomitantly highlighting the nexus, between electricity or energy and its effects on both human advancement and a larger scale, financial and socio-economic development. It investigated the various challenges that impede the development of the nation’s energy sector, discussed strategies and roadmaps that can improve the current state of power generation and distribution in the country and also analyzed the effects of energy poverty on the economic growth of the county. To achieve the aims and objectives of this research work, the qualitative research method was employed. The study conducted five (5) in-depth interviews on key individuals in a top management position in various arms of the country's electricity sector and also conducted five (5) Focus Group Discussions consisting of mainly ordinary citizens and consumers of electricity who are affected by the electricity situation in the country. This was necessary to get the opinions of not only the personnel working in the nation's electricity sector, but also hear the opinions of consumers who are directly affected by the availability or unavailability of electricity.

Findings from the first research question revealed that the pervading challenges that impede the development of the electricity sector in the country are the insufficient financial capacity to purchase huge power generating sets or maintain the existing ones, the commercial unavailability of the electricity sector that renders it unattractive to prospective investors, consumers' unwillingness to pay for electricity units at cost-reflective prices. Other challenges discovered include the theft and vandalism of transmission lines and equipment, obsolete equipment and transmission lines, insufficiency of electricity units, thereby leading to constant power outages, inadequate consumers' knowledge of the electricity sector and its inner workings

and very importantly, the widespread poverty in the nation that makes it difficult for consumers to pay their electric utility bills and also explains their reluctance to pay for electricity. Other discoveries concerning the second research question treat strategies that can be employed. To improve electricity generation and distribution in Nigeria include the restructuring of the system to make it more commercially viable and attractive to investors – both home and abroad.

Other strategies include the conduction of well-coordinated sensitization campaigns that will educate and inform, electricity consumers about the structure and inner workings of the electricity system and how their choices to pay their electricity bill or choices not to pay to affect the daily operations of the sector. Furthermore, in a bid to improve power generation and distribution in the country, decentralization of the power grid is required so that the creation of other monitoring transmission units can be ascertained. This decentralization will lead to the birth of some level of electricity stability across the country as voltage load will be shared among these decentralized grids, thereby reducing the spate of system collapse that is currently a frequent feature in the nation's electricity system due to the overload of the single national grid, located in Osun state. Other strategies to improve electricity include the establishment of a commission dedicated to solving the challenges of the electricity sector, complete equipment overhaul of the transmission arm of the sector.

The increment of the unit cost of electricity to provide more funds for the electricity sector, switching from the turbine-powered electricity generation to newer and healthier energy sources such as renewable energy and finally, increasing the economic welfare of the citizens so that they can be financially independent enough to pay for their electricity bills without resorting to vandalism or theft of electrical machinery or meter bypassing and other actions that short change the revenue generation of the electricity sector. Finally, findings from the third research question indicate that most of the respondents gave similar consequences of energy poverty saying that energy poverty, apart from having negative effects from the individualistic perspective also goes further to taking its toll on the national economy by causing a hike in the cost of production, which in turn leads to a hike in the cost of living and therefore seemingly continues the vicious circle of poverty that has been in the Nigerian society for a very long time. They also reach a consensus that energy poverty or inadequate electricity stunts the technological development of the nation, thereby causing the nation to be dependent on the technological advancement of other nations, without developing its own.

Conclusion: The findings of this research indicate that energy poverty possesses an adverse effect on both the individual and economic well-being of the nation. Besides, the research revealed that the Nigerian electricity sector is divided into three-arm that is the electricity generation companies, transmission companies and distribution companies, all of which possess their peculiar challenges. An aggregation of all the interviews and discussions conducted in the course of this study revealed the challenges that bedevil the different arms of the nation’s electricity sector. It also suggested strategies and roadmaps for the improvement of electricity generation and distribution in the country. Finally, the interviews and discussions all made allusions to the fact that insufficient electricity or energy poverty negatively affected the individual's social wellbeing, just as it adversely affects a nation's economic wellbeing.

Recommendations and Policy Implications: This study's findings necessitate that the following recommendations be made to serve as some form of aid to the prospective beneficiaries of the study. Firstly, the nation's electricity sector requires restructuring to be made more commercially attractive to investors. Most of the electricity officials interviewed referred to the fact that the current unit cost of electricity is not cost reflective, thus suggesting that the electricity sector is operated at a loss. Secondly, there is an urgent need for the decentralization of the power grid. This decentralization will lead to the birth of some level of electricity stability across the country as voltage load will be shared among these decentralized grids, thereby reducing the spate of system collapse that is currently a frequent feature in the nation's electricity system due to the overload of the single national grid, located in Osun state.

In addition, adequate security measures should be taken to protect the transmission cable and lines of the transmission companies, to avoid thefts or destruction of this equipment. More so, there should be massive economic revitalization and creation of employment, so that electricity consumers will be financially capable of paying their electricity bills and so that the rate of vandalism and theft of electricity equipment will

diminish. Furthermore, there is a need to consider an increment of the unit cost of electricity to provide more funds for the electricity sector. This is because, from the findings of this research, the current unit cost of electricity is far below the cost of production, thus it cannot ensure the improvement of the electricity sector, and rather it will lead to a continuous deterioration of the nation's electricity sector. Moreover, based on the findings of this research, there should be the creation of an independent body charged with the sole responsibility of attending to the challenges of the electricity sector.

This will create room for core electricity staff to focus on the business of electricity provision, transmission, and distribution, while this independent body swings into action as soon as there are anomalies or problems in the system. This independent body is especially required at the current status quo of electricity in the country because the country is currently witnessing so many challenges that appear larger than the current electricity staff can handle. In addition, electricity consumers need to jettison the current practice of indebtedness and learn the habit of constantly paying for their electricity bills. Findings also revealed that concerted sensitization needs to be conducted on electricity consumers so that they can understand the dire and peculiar situation that electricity in the country is in and the need for them to fulfill their end of the bargain, which is the ideal payment of their power bills so that the electricity organization will be funded enough to ensure a semblance of provision of constant electricity. Other important recommendations include switching from turbine-powered sources of electricity to other modern and healthier electricity sources such as wind energy, solar energy and other renewable sources of electricity.

This switch will gradually ensure continued movement away from the country's obsolete system of electricity, to a more modern and more stable source of electricity. Also, there should be realistically prosecutable sanctions against any individual or corporate entity that breaks any law regarding the use of electricity in Nigeria. For example, there are many cases of meter tampering or bypassing and illegal connection to the electricity grid. But the unfortunate situation currently is that such illegal actions are rarely punished, thereby causing the continued growth of these illegal activities. However, when prosecutable sanctions are put in place, they will serve as deterrents to others. In conclusion, there should be a situation that allows for every arm of the electricity sector, that is, the generation, the transmission and the distribution arms, to be able to collect charges for their duties. The current situation is that the electricity distribution company is the only arm that collects revenue on behalf of the other two. There have however been concerns raised by the other two arms about the optimal remittance of revenue due to them and as such have demanded a structure that allows them to collect their revenue. This is highly recommended, as it will lead to the avoidance of one arm accusing the other of its inability to perform optimally due to financial incapacitation.

There is no doubt that there have been many pieces of literature, account and academic work on energy poverty across the world and to some extent, energy poverty in Nigeria. Other works have focused largely on energy poverty in Europe or other aspects of energy poverty even in Nigeria, but none of these materials, especially as related to Nigeria has treated energy poverty and its influence on both individual and economic wellbeing of the nation. This study is therefore intended to fill this academic vacuum created by the non-existence of sufficient empirical literature on the effects of energy poverty on the individual and economic wellbeing of Nigeria. The study is intended to critically analyze the challenges against the development of constant electricity in the country and consequently proffer solutions that can efficiently tackle these identified challenges. None of the existing studies provides the information contained in this research. However, in the course of conducting this research, the researcher discovered that there was a dearth of indigenous materials in this area of study – energy poverty especially about the practical ways it affects Nigeria. The researcher discovered that most of the available resources on energy poverty are from Europe and Asia. Thus to understudy its peculiarities in the country, more scholarly work should be conducted in the area of energy poverty, especially by Nigerian scholars.

References

Andadari, R. K., Mulder, P. & Reitveld, P. (2014). Energy Poverty Reduction by Fuel Switching. Impact Evaluation of the LPG Conversion Program in Indonesia. *Energy Policy*, 66(1), 436–449.

Awolusi, O. D. & Atiku, O. S. (2019). Business Process Re-Engineering and Profitability in the Nigerian Oil and Gas Industry: The Mediating Influence of Operational Performance, *Information Management and Business Review*, 11(3), 13-26.

Awolusi, O. D. (2021). Economic Growth and Socioeconomic Sustainability in BRICS Countries: A Vector Error Correction Modeling Approach, *Journal of Economics and Behavioral Studies*, 13(3), 1-23.

Awolusi, O. D., Pelser, T. G. & Adelekan, A. S. (2016). Determinants of Foreign Direct Investment: New Granger Causality Evidence from Asian and African Economies, *Journal of Economics and Behavioral Studies,* 8(1), 104-119.

Awosusi, O. O. & Awolusi, O. D. (2014). Technology Transfer, Foreign Direct Investment and Economic Growth in Nigeria, *Africa Development,* 39(2), 1–20.

Day, R., Walker, G. & Simcock, N. (2016). Conceptualizing Energy Use and Energy Poverty using a Capabilities Framework. *Energy Policy*, 93(1), 255–264.

DECC (Department for Energy and Climate Change Report). (2015). DECC, London.

Eleri, E., Ogwu, O. & Onuvae, P. (2012). Expanding Access to Pro-Poor Energy Service in Nigeria.

Fahmy, E. (2011). The definition and measurement of fuel poverty. A briefing paper to inform consumer focus's submission to the Hills fuel poverty review, University of Bristol.

González-Eguino, M. (2015). Energy Poverty: An Overview. *Renew. Sustain. Energy Rev*, 47(1), 377–385.

Heindl, P. (2015). Measuring fuel poverty: general considerations and application to German household data. *Finanz: Public Finance. Anal*, 7(1), 178–215.

ICEED. (2010). Low Carbon Jobs in an Interconnected World, www.iceednigeria.org

IEA, UNDP and UNIDO. (2010). Energy Poverty. How to make Modern Energy Access Universal? Special Early Excerpt of the World Energy Outlook for the UN General Assembly on the Millennium Development Goals, International Energy Agency, Paris.

IEA (International Energy Agency). (2011). Energy Poverty: The Missing Millennium Development Goal? Paris: International Energy Agency.

Jean, P. H. & Marc, D. F. (2007). From a Forced Dependency to Positive Co-operation in the Field of Energy; WEC Energy Future in an Interdependent World.

Krizanic, F. (2007). The European market of Electricity and Natural Gas. EIB forum, Ljubljana

Lefkothea, P. & Dimitris, K. (2018). A Stochastic Model for Energy Poverty Analysis. Energy Policy, 153–164.

Legendre, B. & Ricci, O. (2015). Measuring fuel poverty in France: which households are the most fuel vulnerable? *Energy Econ*, 49(1), 620–628.

Mbisiogu, F. (2013). EXPOSED: OBJ spent N1.6trillion on power! [Online] Nigeria Standard Newspaper Available at: http://nigeriastandardnewspaper.com/ng/exposed-obj-spent-n1-6trillion-on-power/ UNDP NBS-CBN-NCC. Collaborative Survey (2011) Annual Socio-Economic Survey Report.

Nussabaumer, P., Bazilian, M. & Modi, V. (2012). Measuring energy poverty: focusing on what matters. Renew. Sustain. *Energy Rev,* 16(1), 231–243.

Odoko, F. O. (2003). The Pricing of Crude oil and refined products in the Nigerian Economy: In CBN's Contemporary Economic Policy Issues in Nigeria.

Odunlami, S. A., Awosusi, O. O. & AwolusiI, O. D. (2017). The Influence of Leadership Styles on Employees' Performance: A study of Selected Private Universities in Ogun State, Nigeria, *Global Journal of Commerce and Management Perspective,* 6(2), 5-13.

Oladejo, M. J. & Awolusi, O. D. (2017). Effect of Work-Family Role Conflicts on Employees' Commitment and Organisational Performance: A study of AKLAD Interlink concept, Nigeria', *Global Journal of Commerce and Management Perspective,* 7(2), 81-96.

Olayisade, A. & Awolusi, O. D. (2021). The Effect of Leadership Styles on Employee's Productivity in the Nigerian Oil and Gas Industry, *Information Management and Business Review*, 13(1), 47-64.

Pachauri, S. (2012). Energy Access for Development. The Global Energy Assessment: Toward a More Sustainable Future, IIASA, Laxenburg, Austria and Cambridge University Press, Cambridge, UK and New York, USA.

Pereira, M. G., Freitas, M. A. V. & Da Silva, N. F. (2011). The Challenge of Energy Poverty: Brazilian Case Study. *Energy Policy*, 39(1), 167–175.

Sadath, C. A. & Acharya, H. R. (2017). Assessing the Extent and Intensity of Energy Poverty using Multi-dimensional Energy Poverty Index: Empirical Evidence from Households in India. *Energy Policy*, 102(1), 540-548. www.elsevier.com/locate/enpol

Sanusi, A. & Owoyele, S. G. (2016). Energy Poverty and its Spatial Differences in Nigeria: Reversing the Trend. Africa-E.U Renewable Energy Research and Innovation Symposium. Tlemcen, Algeria.

Schuessler, R. (2014). Energy poverty indicators: conceptual issues - Part I: the ten-per- cent-rule and double median/mean indicators. SSRN Electron. J. http://www.ssrn.com/abstract=2459404〉.).

Sen, A. (2014). Global Warming is just one of many Environmental Threats that demand our attention. New Republic, ⟨http://www.newrepublic.com/article/118969/environmentalists-obsess-about-global-warming-ignore-poor-countries⟩

Sher, F., Abbas, A. & Awan, R. U. (2014). An Investigation of Multidimensional Energy Poverty in Pakistan: A Province Level Analysis, *International J. Energy Economics and Policy*, 4(1), 65-75.

Sissoko, M. (2012). Corruption stalls Nigeria's Economic Growth – UN. 2013 International Anti-Corruption Day in Abuja. [Online] *The Sun Newspaper*, Available at: http://sunnewsonline.com/new/?p=45692

Sovacool, B. K. (2013). Confronting Energy Poverty behind the Bamboo Curtain: A Review of Challenges and Solutions for Myanmar (Burma). *Energy Sustain. Dev,* 17(1), 305–314.

Szakonyi, D. & Urpelainen, J. (2015). Energy Poverty among Urban Street Vendors in India: Evidence from Patna, Bihar. *Energy Sustain. Dev*, 24(1), 44–49.

Tang, X. & Liao, H. (2014). Energy Poverty and Solid Fuels use in Rural China: Analysis Based on National Population Census. *Energy Sustain. Dev*, 23(1), 122–129.

UNDP (United Nations Development Programme). (2010). Energy for Sustainable Future. United Nations Development Program New York, USA.

Wang, Wang. & Wei, K. (2015). Energy Poverty in China: An Index-Based Comprehensive Evaluation. Renew. Sustain. *Energy Rev,* 47(1), 308–323.

World Bank. (2016). World Development Indicators: Power Outages in Firms in a Typical Month. www.data.worldbank.org/indicator/IC.ELC.OUTG