RENEWABLE ENERGY AS AN ALTERNATIVE TO ELECTRIC POWER SUSTAINABILITY IN NIGERIA: THE NEED FOR A LEGAL PATHWAY*

Abstract
Over the years, Nigeria has faced the problem of inadequate electricity generation and supply. Fossil fuel has been the mainstream of energy supply and a major source of revenue to the Federal Government of Nigeria, despite being an un-renewable and unsustainable source of energy which has led to emission of greenhouse gases which is unsustainable in Nigeria's power sector. The country is yet to tap into the full benefits of renewable energies after privatization of its power sector in spite of the new global evolvement in energy sector and the growing demands for renewable energy sources, which is cheaper and more environmentally friendly compared to fossil fuel and its allied products. The research aims to examine the potential of renewable energy in Nigeria and the need for a robust legal framework on renewable energy to be effectively set up if we intend to achieve adequate electric power supply in a more sustainable way in Nigeria. This work concludes by recommending the need for a stringent enforcement of energy regulatory policies with incentives for utilization of renewable energy sources for rapid growth in the industry as it is now considered a viable solution to the energy challenges of countries including Nigeria. A specific and robust legal framework on utilization and growth of renewable energy needs to be adequate to meet the social, economic and environmental development needs of the country.

Keywords: Renewable Energy, Fossil Fuel, Climate Change, Sustainable Development

1. Introduction

The term Renewable represents a natural resource or source of energy that is not depleted by use, such as water, wind, or solar power and biomass[1]. Renewable energy resource means a resource that naturally replenishes over a human, not a geological, time frame and that is ultimately derived from solar power, water power, or wind power. Renewable energy resource does not include petroleum, nuclear, natural gas, or coal as it is derived from natural processes that are replenished constantly. The National Renewable Energy and Energy Efficiency Policy (NREEEP) defines renewable energy as energy obtained from energy sources whose utilization does not result in the depletion of the earth's resources.[2] Nigeria is a major exporter of crude oil and has a vast deposit of natural gas, yet it suffers a perennial erratic power supply problem. Indeed, inefficient generation and distribution of power is a dominant factor hindering the ease of doing business in Nigeria. In this regard, Nigeria recognizes the importance of a renewable and sustainable source of energy to resolve its power deficit. Non-renewable fuel has been the primary source of power supply, and since non-renewable fuel discharges greenhouse gases it has become untenable due to its adverse effects. The Ecological system is under threat from crude oil exploration, production and there is continued global warming and exhaustion of the ozone layer amplified by the discharge of greenhouse gases. Humans, vegetation and animals have also been adversely affected owing to ecological deterioration and dilapidation from the occurrence of oil exploration in the Niger Delta Areas of Nigeria. Therefore, there is a need for a new energy policy that will encourage renewable energy usage in Nigeria.[3]

There are huge amount of renewable energy sources across the country. For instance, Nigeria enjoys a large amount of sunlight in the north where the sunlight is produced in good quantity and can be used to generate electricity for people living in that area thus reducing the burden that is on the national grid. Biomass is another renewable, low carbon fuel that is widely accessible throughout the country and it could ensure continuous energy supply to rural areas. However, there is no comprehensible legal regime on renewable energy up till now in the country. Embracing a renewable energy option is more sustainable and a total deviation from the use of coal, oil and natural gas to embrace a more reliable and environmentally friendly substitute such as geothermal, biofuels, biomass, solar, wind, and hydropower. They are acquired from non-fossil and non-nuclear resources in methods that can be replenished, and are environmentally responsive. Renewable energy conserves the

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[1] Oxford Advanced Learner's Dictionary 9th edition

[2] Oyedepo, S.O., (2012), Energy and sustainable development in Nigeria: The way forward, Energy Sustainability and Society 2(15), 1-17.

[3] M.T. Ladan, 'Policy, Legislative and Regulatory Challenges in Promoting Renewable Energy in Nigeria' in R Mwebaza and LJ Kotzé (eds), *Environmental Governance and Climate Change in Africa: Legal Perspectives* (Institute for Security Studies 2009) 104.

ecosystem, eliminates deprivation, and encourages novel technologies and initiates new job opportunities in the energy industry.[4]

There is need to generate alternate sources of electricity using sustainable sources that will not pose a threat to the environment or to the ecosystem. To achieve this, the electric power sector beyond privatization requires some operational and regulatory restructuring for sustaining ecological energy and legal regime in Nigeria. In order to effectively harness potentials of renewable energy that is available in excess in the country, there is an urgent need to have a robust legal regime that promotes and regulates the development and utilization of renewable as an alternative to electric power sustainability in Nigeria.

2. The Need for an Effective Legal Framework on Renewable Energy

The increased clamor for Renewable Energy in the 21st century is a direct response to the problems of the century. Some of these problems include the exhaustible nature of crude oil, global warming resulting from the burning of fossil fuels for energy production, and the detrimental effects of climate change. Renewable energy is an alternative to the most commonly used source of energy such as coal, and they are often used to reduce environmental and health risks. It comes from natural sources which are constantly replenished, some of the examples of renewable energy source are wind, solar, biomass, hydropower, etc.[5] This renewable energy can be replenished in the sense that their availability might depend on time or weather. Most African countries such as South Africa and Kenya have taken strides to diversify their energy regimes and boost electrification through integration of renewable energy sources, Nigeria on the other hand has made very little progress in formulating and implementing a clear sustainable renewable energy agenda. Nigeria is blessed with an abundance of conventional and renewable sources unfortunately Nigeria has not sufficiently harnessed the potentials afforded by renewable energy in its efforts to ensure availability of electricity for its growing population.

The 1999 Constitution of the Federal Republic of Nigeria (as amended) positions electricity on the concurrent legislative list. This permits all levels of government to participate in major phases of electricity allocation and distribution in Nigeria as provided under Paragraph 14 of the Schedule II of the same Constitution[6]. The 1999 Constitution of Nigeria provides the legal basis for off-grid electrification in the form of renewable energy in rural areas falling within each state of the federation by empowering the House of Assembly of each state to establish electric power stations within their respective jurisdictions, and to generate and transmit and distribute electricity to areas not covered by the national grid system within that state amongst others. The Electricity Act 2023[7] is a welcomed development as it provides for the utilization of renewable energy in Nigeria. The Act makes provisions for the decentralization of electricity and creates room for the generation of electricity through renewable options. However, to place renewable energy generation at a competitive advantage when compared to electricity generation using fossil fuel, there must be a law guiding its use, implementation, taxes, local content, technology and the procedure for transition from fossil fuel to renewable energy. Apart from the urgent need to develop and use Renewable Energy to reduce carbon emissions and mitigate climate change, the danger in Nigeria's piecemeal approach to Renewable Energy regulation is that it will remain insignificant and ineffectual to the country's pressing social, environmental and economic development needs.

3. Sources of Renewable Energy in Nigeria

Hydro Energy

Nigeria as a country is reasonably endowed with large rivers and some few natural falls. Nigeria has three main hydropower plants which are located at Kainji, Jebba, and Shiroro power stations with installed capacities of 760 MW, 560 MW and 600 MW respectively; totaling 1,920 MW[8]. These three hydropower plants contribute about 35.6% power to the National Grid[9], thus making hydropower the largest renewable energy source in the country[10]. A fourth hydropower station, owned by a private utility service company, the Nigerian Electricity

[4] Y. Omorogbe, 'The Role of Law in Promoting Renewable Energies in Africa', (eds Ruppel and Althusmann) *Perspectives on Energy Security and Renewable Energies in Sub-Saharan Africa: Practical Opportunities and Regulatory Challenges*(Second Revised and Expanded Edition, Macmillan Namibia 2016) chapter 10,p. 207.

[5] Dolapo Kukoyi and Adeyemi Esan, 'Nigeria,' in Karen B. Wong (ed), *The Renewable Energy Law Review* (Law Business Research, 2018), p. 108.

[6] Cap. C.23 Vol.3, Laws of the Federation of Nigeria, 2004.

[7] ElectricityAct 2023

[8] Owebor, K., Diemuodeke, E.O., Briggs, T.A. & Imran, M., 2021. Power Situation and renewable energy potentials in Nigeria–A case for integrated multi-generation technology. *Renewable Energy*, *177*, pp.773-796.

[9] ibid

[10]Ohunakin, O. S., Ojolo, S. J., & Ajayi, O. O. (2011). Small hydropower (SHP) development in Nigeria: An assessment. *Renewable and Sustainable Energy Reviews*, *15*(4), 2006-2013.

Supply Corporation (NESCO) limited, which is locate in Plateau State has a total potential of 21 MW. This indicates that Nigeria possesses potential renewable source of energy along with her numerous river systems, waterfalls and dams. These rivers, waterfalls and streams with high potentials for Hydropower, if properly harnessed will lead to decentralized use and provide the most affordable and accessible option to off-grid electricity services especially to the rural communities.

Solar Energy

Solar energy or power is the utilization of sun light for generation of electricity. The energy generation from sun can be done by a direct method using the photovoltaic or using indirect method where the sun's light or energy is focused to boil and heat water which is later used to provide power, the indirect method is called concentrating solar power. Primarily solar power refers to the use of sun radiation for generation of electricity. Solar energy is energy derived from sunlight. It is generally used for a number of activities such as drying crops for food purposes, drying cloths, solar cookers, solar chick brooders, and solar manure dryers, and it is also utilized for domestic use. Commercially, it is used as a veritable source of energy to power companies and industries. Nigeria is richly endowed with solar energy with an annual average daily sunshine of 6.5 hours, ranging from 4 hours at the coastal areas to 9 hours at the far northern boundary[11].. This huge energy resources potential from the sun is available for about 26% of the day. Based on the Nigerian land area of 924 km2 and an average of 5.535 KWh/m2 /, the country have an average of 1831.06 kWh of incident solar energy annually[12].
Research further shows that solar energy could be an effective renewable energy source used to power smaller grids in order to cater for areas that are not presently connected to the national grid. One way of achieving this is to use "photovoltaic equipment and heating water to drive turbines in thermal electric generators,[13] stand-alone PV systems, on the other hand, are not dependent on the electric grid to function. Rather, they are built to function independently and autonomously and are programmed to provide electricity to designated areas[14].

Biomass Energy

Biomass is a popular form of renewable energy that is considered as a credible and green alternative source of energy which many developed and developing countries have been utilizing its potential. Biomass is any organic material from plants and animals that store sunlight in the form of chemical energy. Sources of biomass include energy crops and agricultural residues, industrial wastes, Forest residues, Municipal solid wastes (MSW), Animal waste etc[15]. Biomass fuels are overwhelmingly the most important energy source for rural households, agricultural production and rural industries particularly in developing countries[16]. Modern biomass energy recycles organic waste from forestry and agriculture, like corn stovers, rice husks, wood waste and pressed sugarcane, or uses special, fast-growing ''energy crops'' such as willow and switchgrass, as fuel. The sources of biomass are specially planned to generate electricity or produce heat from them. The potential of biomass to help meet the global energy demand has been widely recognized[17]. Depending on the type, when combusted, the chemical energy in biomass is released as heat that is used to produce steam which could in turn be used to either drive a turbine for electricity production or provide heat to industries and homes.

Wind Energy

The United Nations through its Sustainable Development Goals (SDG) encourages member states to focus on ways to access ecofriendly, sustainable and readily available renewable energy sources. Wind as a source of renewable energy is gaining prominence around the world since it can be harnessed in small and commercial measures to meet the present day energy demand.[18] Wind power is the utilization and conservation of wind to provide energy for power generation for useful purposes, examples of wind power is using wind turbines for power generations, winds mills are used for mechanical power generation, wind pumps which are used for

[11] Oyedepo, Sunday Olayinka. 'On energy for sustainable development in Nigeria,' *Renewable and sustainable energy reviews* 16, no. 5 (2012): 2583-2598.
[12] Peter K. Oniemola, 'Powering Nigeria through Renewable Electricity Investment: Legal Framework for Progressive Realization,' *Afe Babalola University Journal of Sustainable Development, Law and Policy* vol. 2 no. 1 (2015), p. 89.
[13] Photovoltaic (PV) equipment can be categorized into two types: grid connected systems and stand-alone systems. As the name implies, grid connected systems are usually interconnected with the national grid; they are 'composed of PV arrays connected to the grid through a power conditioning unit and are designed to operate in parallel with the electric utility grid';
[14] Oke, Yemi. 'Energy Resources Governance for National Development: Options for Socially Sustainable Electricity Generation, Transmission and Distribution in Nigeria.' *Unilag Journal of Humanities* 3, no. 1 (2015): 134-146.
[15] Okafor. C et al. 'Biomass utilization for energy production in Nigeria: A review.' *Cleaner Energy Systems* (2022): p. 100043.
[16] Agbasi, Maureen Ngozi. 'Legal framework on clean and renewable energy towards sustainable environment in Nigeria.' *Nnamdi Azikiwe University Journal of International Law and Jurisprudence* 10, no. 1 (2019): 79-90.
[17] Jekayinfa, S O et al 'An assessment of potential resources for biomass energy in Nigeria.' *Resources* 9, no. 8 (2020): p.92.
[18] C. Ogbonnaya, C. Abeykoon, U.M. Damo, A. Turan, The current and emerging renewable energy technologies for power generation in Nigeria: A review, Thermal Science and Engineering Progress,Volume 13,2019,

pumping water or drainage, or sails which is used to power ships by propelling it[19]. Wind energy is a suitable alternative to the rising cost of power generation from fossil fuel and as well contributes towards the eradication of greenhouse gas (GHG) emission. Wind as a source of energy for power generation provides clean, ecofriendly, non-toxic and readily available renewable energy source[20]. The main advantages of electricity generation from wind are the absence of harmful emissions and the almost infinite availability of the wind that is converted into electricity. In Nigeria, there are great prospects from wind energy utilization from onshore and offshore areas.[21] States like Lagos, Ondo Ogun, Rivers, Bayelsa, Awka Ibom, Cross River, Delta and the mountainous terrains of the middle belt and northern states have demonstrated high potential for great wind energy harvest[22]. Given the inadequate and epileptic power supply being experienced in the country, using wind energy will be a sustainable alternative for energy generation since wind is all around us.

3. Benefits of Harnessing Renewable Energy

Harnessing wind to generate energy has its benefits or advantages and is an efficient option for many different parts of the world since it doesn't depend on direct sunlight exposure like solar energy. Some of the Benefits include but are not limited to the following27. In the interest of promoting a more secure, economic, and environmentally responsible energy future, the country must develop a Sustainable Renewable Master plan. The following benefits can be achieved by doing this:

One of the Cleanest Forms Of Energy

Renewable Energy is one of the cleanest forms of energy and it does not contribute to climate change by emitting greenhouse gases during energy production. It generates electricity without producing carbon dioxide. It is free of particulates which are a major problem with coal-fired power stations. Particulates have been blamed for the rise of asthma, cancer and possibly Alzheimer's disease in our environment. It is also free from the atmospheric pollutant sulphur dioxide that comes with coal- or oil-fired power stations, which is formed from the burning of sulphur impurities. Renewable energy is environmentally friendly and increasing the use of renewable energy will improve the quality of the environment by contributing to a global reduction in greenhouse gas emissions and help to improve public health.

Reduced environmental impact

Unlike fossil fuels, Renewable energy sources produce little to no greenhouse gas emissions, helping to reduce environmental pollution and mitigate climate change. The collection, transformation and consumption of renewable energy regularly occur in an environmentally friendly manner and does not have damaging effects on the environment.

Sustainability

Renewable energy is a replenishable and inexhaustible source of the energy**.** Nigeria has abundant renewable energy resources such as solar, wind, hydro and biomass, which can be harnessed to produce clean energy. In fact, Nigeria is capable of meeting its entire national energy demand using renewable energy options, making it an ideal for sustainable energy utilization.

Improved energy security

By diversifying the country's energy mix, Nigeria could improve its energy security and reduce its vulnerability to price fluctuations in the global oil market. Renewable energy sources such as solar, wind, and hydropower can help to reduce Nigeria's dependence on imported fossil fuels and improve the country's energy security.

Increased access to Electricity:

Many parts of Nigeria still lack access to reliable electricity, and renewable energy sources can help fill this lacuna, particularly in rural areas. Nigeria has one of the lowest rates of access to electricity in the world, with millions of people living without access to reliable electricity. Renewable energy can help increase access to electricity in remote areas and improve the reliability of the country's energy grid. Nigeria's rural areas still lack access to reliable electricity. Renewable energy sources such as solar and wind power can provide clean and

[19] Olujobi, O. J. (2020). The legal sustainability of energy substitution in Nigeria's electric power sector: Renewable energy as alternative. *Protection and Control of Modern Power Systems*, *5*(1), 1-12.

[20] N. A. Udo, A. Oluleye and K. A. Ishola, 'Investigation of Wind Power Potential over Some Selected Coastal Cities in Nigeria,' *Innovative Energy Research* vol. 6 (2017), p. 2.

[21] Ajayi OO. The Potential for Wind Energy in Nigeria. Wind Engineering. 2010;34 (3):303-311. doi:10.1260/0309-524X.34.3.303

[22] Agbetuyi et al, 'Wind Energy Potential in Nigeria' (2012) 3(1) *International Electrical Engineering Journal* vol. 3 no. 1 (2012), p. 601; FMP, *National Renewable Energy and Energy Efficiency Policy* (n 33) 15.

affordable energy to remote and rural communities that are not connected to the national grid. This can improve the living conditions and economic opportunities of people living in these areas

Reduces dependence on Fossil Fuels
Nigeria currently relies heavily on fossil fuels, particularly oil, for energy production. Switching to renewable energy sources such as solar, wind, hydro, and geothermal would reduce the country's dependence on these non-renewable resources. Nigeria's rural areas still lack access to reliable electricity. Renewable energy sources such as solar and wind power can provide clean and affordable energy to remote and rural communities that are not connected to the national grid. This can improve the living conditions and economic opportunities of people living in those areas.

4. Challenges of Renewable Energy Utilization in Nigeria

Absence of a legal framework on Renewable Energy
Lack of a legal framework for Renewable energy in Nigeria is a significant barrier and challenge to the development and growth of the sector. It creates uncertainty, limits access to financing, restricts market development, and undermines the sustainability of renewable energy projects in the country. Investors will be scared to invest in a market with no clear legal framework.

Lack of Policy Implementation
Nigeria has many policies that are reviewed severally and not passed into law. The policies are really slow to be passed into law, when passed into law it is hardly implemented. This makes it difficult to attract investments and establish a stable market for renewable energy systems. Lack of policy implementation affects the development and implementation of renewable energy projects in the country.

Lack of indigenous components and technical know-how
Indeed Nigeria has huge renewable potentials however, we lack indigenous technologies for renewable energy utilization and we do not participate in the value chain of these technologies. Lack of manpower with adequate technical expertise in renewable energy technologies has led to the importation of renewable energy technologies thus making it more expensive. In addition, we do not have adequate experts that have full understanding of renewable energy technology and this seems to have greater negative impact on its utilization in Nigeria.

Change of Government
Change of government also slows down the effective utilization of Renewable energy as it sometimes leads to the abandonment of some already existing projects or planned projects that have not been implemented for instance a wind farm project which was started by late President Musa Yar'Adua government in 2010 but was abandoned when Goodluck Ebele Jonathan took over; it was however resuscitated after 2015 when the Buhari led administration took over. Each administration comes up with new policies and framework which makes difficult for implementation over a period of time.

Low level of awareness
There is low level of awareness of the socio-economic and environmental advantages of renewable energy in Nigeria due to the lack of adequate flow of information on its various applications and technologies. People do not know how efficient renewable energy is and its benefits due to the lack of awareness. Renewable energy needs a lot of advocacy to inform people about its benefits and utilization.

Inadequate Incentives for Renewable Energy Development
Incentives on renewable energy are not adequate especially when compared to conventional sources of energy that have enjoyed incentives for so many years. The current policies do not have adequate incentives that will encourage private investors to go into renewable energy development in Nigeria.

5. Conclusion
Several countries have enacted a comprehensive legal framework on the growth and development of renewable energy and some have provided incentives for utilization of renewable energy as alternative source of energy. For example, the German's Federal Building Code requires local authorities to a designate area for wind energy project developments. Similarly, the German Renewable Source Act, 2001 made provision for the German wind

market feed-in-tariff for each kilowatt of power produced and prioritized grid access for renewable energy.[23] China's Renewable Energy Act, 2006 provides for the development, utilization of renewable energy to guarantee energy security and to preserve the environment. The Act decentralized renewable energy structure. Denmark has generated over 40% of its energy consumption from wind energy also France uses solar energy to power most of their homes and Morocco has Ouarzazate plant to generate electricity for its citizens as crude oil may no longer be the world major source of energy due to global downturn of crude oil price and due to commercial viability of the United States' shale oil that causes reduction of the country's demands for Nigeria's crude oil. Presently, renewable energy has boosted the country's electricity supply to its citizens. In Venezuela and Colombia, the reasons for their adoption of renewable energy as alternative source of energy are to curtail attacks on their oil and electricity infrastructure and to guarantee energy securities. The United Kingdom generates one quarter of its electricity from renewable energy thereby causing them to be ranked among the leading countries in renewable energy infrastructure developments in the world thereby guaranteeing stable electricity supply in their country. In Kenya, renewable energy is made a national development priority or agenda with adequate legal framework.

In Nigeria, efforts to diversify to renewable energy have not been successful due to absence of coherent, stringent legal framework on Renewable sources of energy such as solar, biomass, wind and hydro can help Nigeria provide electricity to its citizens while addressing environmental concerns such as global warming. For renewable energy to flourish however there has to be adequate legal and regulatory measures in place. The Nigerian policy framework on renewable energy is not adequate to increase the share of renewable energy in the national energy mix, which is currently dominated by conventional energy sources. To address this problem, this research work proposes he following recommendations to aid the development and utilization of renewable energy in the country. They are as follows:

There should be a Renewable Energy Act of Nigeria

The enactment of the legislation should be solely for the promotion and development of renewable energy which validates the government's responsibility and dedication to establish a sound renewable energy sector. As discussed above, Nigeria's existing legal framework is disjointed and incoherent. Licensing and permit processes are cumbersome and tedious. Furthermore, the overlapping functions of various ministerial departments and agencies discourage investors. A single Act for renewable energy would address these challenges and provide sound guidance for all stakeholders and interested parties to participate in Nigeria's renewable energy sector. There is no doubt that indeed Nigeria is still searching for a viable solution to her electricity production and supply problem. Solving these challenges will need us to look beyond what is available, to creating custom solutions for ourselves. This may involve a blend of different technologies in different areas which is not a bad thing taking into consideration the complexity of the problem. Nations are taking deliberate steps towards clean energy use, and Nigeria must endeavor not to be left behind.

Fiscal Incentives

Fiscal incentives and other support mechanisms should be specifically provided for the development and utilization of renewable energy in Nigeria. Setting up renewable electricity plants is more expensive than using electricity from fossil sources. Electricity derived from renewable sources requires some measure of support to make it affordable to the end users. Fiscal incentives, and subsidies that apply to Renewable Energy should be harmonized and incorporated into the law for the promotion of renewable energy . Tax exemptions should be granted on equipment imported for the implementation of off-grid electricity. The tax exemptions will reduce the total cost of off-grid technologies. While fiscal/economic incentives will help to reduce the cost of producing renewable electricity, subsidies will apply to make electricity affordable to the population. Efforts to incentivize private investors to the Renewable Energy sector would create much-needed development in the Renewable Energy sector. Also like Kenya, Nigeria needs to formulate laws which introduce an exemption from tax payments on foreign loans. This has proved to be a significant factor in Kenya's Renewable Energy development as private investors are more willing to take risks in business environments where their interests are protected, and investments respected.

Increased National Awareness

In order to create awareness of new energy sources, research into Renewable Energy Technologies and Systems should be promoted nationally, as should news about their development, uses, deployment and dispersal. Disseminating information about new energy sources, drawing up public awareness strategies and Consumer Consultation Services will also be important.

[23] Fulton, M., (2012), German Feed-in Tariff: Recent Policy Changes, Available at https://www.db.com/cr/en/docs/german_fit_update_2012.pdf (accessed 10 Apr 2023)

Investment and private sector involvement

Speeding up Renewable Energy in Nigeria requires huge investment that exceeds the current capability of the domestic private sector. So far, foreign investment capital and national foreign exchange earnings have funded energy sector investment. Introducing new market incentives, along with fiscal and regulatory measures at the national and local Government levels, could encourage more private investment in the power sector. In addition, feed-in tariffs could stimulate the private sector to invest in Renewable Energy technology and make it viable. Enhancing private sector participation in renewable energy development in Nigeria is essential for achieving the country's energy goals. By providing incentives, creating a favorable policy environment, and facilitating partnerships, Nigeria can attract investments, leverage expertise, and drive innovation, leading to accelerated growth and a sustainable energy future. Private sector participation in renewable energy in Nigeria is crucial to drive the country's energy transition. It brings in investments, expertise, and innovation, accelerating the deployment of renewable technologies. Collaboration between the government and private sector can unlock the potential for job creation, economic growth, and sustainable development, ultimately benefiting the nation and its citizens.

Education and Training

The government, together with educational institutions, should establish education and training in Renewable Energy Technology to develop the skills and knowledge of technicians, engineers, and administrators. Nigeria needs capable hands and skilled workers to achieve an optimum utilization of renewable energy. Research and development centers and institutes should be established to develop renewable energy projects facilities in urban and rural areas.