



**RENEWABLE ENERGY**  
**AND**  
**NIGERIA'S POWER SECTOR**



# INTRODUCTION

The Nigerian Electricity Supply Industry has been the subject of numerous reforms over the years due to challenges that have led to insufficient supply of electricity in the country. This has hampered the growth of the nation's economy as many businesses have had to shut down due to huge running costs largely due to maintenance and servicing of alternative power generators.

Nigeria currently has a total generation capacity of 12,522MW, but average operational capacity is just 3,879MW, of which 7.4% is lost in transmission and up to 27.7% load is rejected at distribution, leaving just about 2,519MW for a country with an electricity demand of over 25,000MW. The need to explore and invest in other sources of energy generation is therefore critical to make up for the deficit in power generation and supply in the country.

# DEVELOPMENTS IN NIGERIA'S POWER SECTOR

In 2013 two segments of Nigeria's power sector were privatized. The generating sector as well as the distribution sector "DisCos" were put in private hands while the government maintained ownership and control of the Transmission Company of Nigeria. The DisCos are mainly private owned, with government holding minority shares. There are several Independent Power Producers (IPPs) and the generating stations under the National Integrated Power Project (NIPP), developed by the Niger Delta Power Holding Company of Nigeria.

The Generating Companies operate either hydro-electric or thermal gas-fired power plants. About 83% of power generated in Nigeria comes from thermal gas-fired power plants. The installed capacity of hydro-electric power in Nigeria is 1,938.4MW with an available capacity of 1,060MW while thermal gas-fired plants have a total installed capacity of 8,457.6MW with an available capacity of 4,996MW.

Regrettably, the privatization of the Nigerian Electricity Supply Industry (NESI) has only changed the dimensions of the challenges as power supply remains seemingly inadequate, unaffordable, and unreliable in the country. With an estimated seventy-six million (76,000,000) Nigerians, which accounts for about 40.7% of the country's population, not connected to the national grid, and only about 10% of power demanded is supplied to those connected, it goes without saying that it is high time the Nigerian Electricity Supply Industry strongly considered more renewable options to bring stability, consistency and sustainability to the sector. + + + + + + +



Some of the very visible challenges in the Nigerian Electricity Supply Industry include:

- i. **Infrastructure Deficit:** Nigeria's electricity infrastructure are outdated and poorly maintained. Power cuts and blackouts are frequent occurrences partly due to over-burdened and poorly maintained transmission grids.
- ii. **Inadequate Generation Capacity:** With an electricity demand of over 25,000MW and an actual operational installed capacity of 3,879MW, power cuts and shortfalls in supply all over the country is incontrovertible, hence, the need for serious investments in power generation from renewable sources.
- iii. **High Cost of Generation:** Due to the over dependence of gas-powered thermal plants, the cost of generation by the GenCos is enormous. This high cost of generation is further transmitted to the DisCos and ultimately, the end users are forced to pay more for power. However, generation from renewable sources is more cost effective as the recurrent expenditure on gas or coal is completely eliminated since power is generated from mostly naturally available sources.

- iv. **Aggregate Technical, Commercial and Collection (ATC&C) losses:** The inability of the Nigerian Electricity Regulatory Commission and other electricity stakeholders such as the DisCos, to come up with mechanisms of reducing ATC&C losses further hampers the supply of electricity across the country.
- v. **Non-implementation of government policy and lack of continuity:** The Policy Guidelines on Renewable Electricity 2006 and the National Renewable Energy and Energy Efficiency Policy (NREEEP), approved by the Federal Executive Council for the electricity sector on 20 April 2015, are the major policies of government in the area of renewable energy development in Nigeria. The renewable energy targets under the NREEEP are as follows:
  - a. Hydropower programme targets are 6,156 MW by 2020 and 12,801 MW by 2030.
  - b. Biomass electricity programme targets are 57 MW by 2020 and 292 MW by 2030.
  - c. Solar electricity programme targets are 1,343 MW by 2020 and 6,831 MW by 2030.



- d. Wind electricity programme targets are 631 MW by 2020 and 3,211 MW by 2030.

Unfortunately, some of these objectives which are due by the end of 2020 have not yet been achieved due to non-implementation and lack of continuity of government policies and programmes by successive governments.

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<sup>2</sup> ibid

<sup>3</sup> Oladipo, K., et al, Power Sector Reform in Nigeria: Challenges and Solutions, IOP Conf. Series: Materials Science and Engineering 413 (2008).

# RENEWABLE ENERGY IN NIGERIA



There is no comprehensive legislation on renewable energy in Nigeria, however, the Electric Power Sector Reform Act 2004 established the Nigerian Electricity Regulatory Commission (NERC) and empowers it to create, promote, and preserve efficient industry and market structures, and to ensure the optimal utilization of resources for the provision of electricity services. Renewable energy sources are also, by implication, included in the resources to be optimally utilized.

Renewable energy is not defined by any legislation in Nigeria. However, the Policy Guidelines on Renewable Electricity 2006 and the National Renewable Energy and Energy Efficiency Policy (NREEEP) 2015 define 'renewable energy' as energy obtained from energy sources whose use does not result in the depletion of the earth's resources.

Paragraph 2.8 of the NREEEP requires the Nigerian Electricity Regulatory Commission to introduce and develop economic measures to ensure attractive pricing template for renewable energy sources for small hydro plants not exceeding 30MW and all sizes of biomass cogeneration power plants, solar and wind-based power plants. NREEEP also provides that renewable energy projects shall be eligible for guaranteed market whereby the Nigerian Bulk Electricity Trading Company (NBET),

DisCos and other offtakers shall be encouraged to buy electricity from renewable energy sources. Other incentives stated in NREEEP include grid connection; simplified licensing procedure for renewable IPPs selling electricity to the grid; facilitation of land acquisition for renewable energy projects; and a waiver of licensing for renewable energy plants with less than 1MW capacity.

On 8 December 2015, NERC issued the Regulations on Feed-in Tariff for Renewable Energy Sourced Electricity in Nigeria 2015 (the Regulation). The Regulation aimed at stimulating investment in the renewable energy sector of the country with a target of 2,000MW from renewable sources such as biomass, small hydro, wind and solar by 2020.

The Federal government is trying to implement the objectives of the NREEEP, however, hydro-electric power is the only major utility-scale renewable energy source being utilized in Nigeria. It, regrettably, accounts for less than 20% of Nigeria's total installed electricity generating capacity.

Apart from hydro-electric power, solar power is gradually being harnessed and developed mainly for the purpose of servicing small rural agricultural communities and villages that do not have access to the national grid. The Nigerian Bulk Electricity Trading Company (NBET) initiated solar power purchase agreements with 14 developers with a potential to add about 1.125GW to the grid.

Even with these gains, however, more investments still need to be done in the area of renewable energy by the government, either by way of direct investment or private participation through joint ventures and Public Private Partnerships.

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<sup>4</sup> Section 32.

## CONCLUSION

Nigeria's renewable energy potential is remarkably enormous. Recent studies put concentrated solar thermal power potential in Nigeria at over 427,000MW with hydropower having an utmost renewable energy potential of 10,000MW. These resources, regrettably, remain largely untapped due to the country's overdependence on conventional energy sources. Although some progress has been made with respect to harnessing renewable energy sources, more work needs to be done to exploit the enormous potentials of renewable energy in Nigeria, as renewable energy is not only the future of energy globally, but also presents a lasting sustainable and environmentally-friendly solution to Nigeria's energy deficit and power challenges.

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<sup>5</sup> OFFGRID NIGERIA issue of October 25, 2018. Available at <https://www.offgridnigeria.com/14-solar-ipp-s-signed-1125mw-promised-zero-electron-delivered/> accessed 14th July 2020.

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