

The calm before the surge

Nigeria energy framework: Having usurped South Africa to become Africa's largest economy in 2014, Nigeria has made great economic strides in recent years. Its energy network, however, remains underdeveloped, but a series of pro-solar policies and incentives could see PV plug those gaps, writes Ulrike Brückner of Rödl & Partner.

Nigeria's extreme power deficit has posed a major challenge for decades. With a population of approximately 174 million (2014), currently growing at a rate of around 2.8% per annum, and economic growth of 6.3% (2014), Nigeria has failed to sufficiently increase its power generation capacity over the years and seems overwhelmed by its growing energy demand. Nigeria is now the largest economy in Africa after a recent rebasing of its GDP, which determined the actual size of the economy to be \$510 billion, 89% more than previously thought.

In January 2015, the Energy Commission of Nigeria (ECN) published figures that indicated that the country's national grid generated just 4,389 MW at the end of 2014. Approximately 28,360 MW are necessary, however, to meet the country's energy needs assuming a reference GDP growth rate of 7% per year.

There have been major efforts to reform the energy sector through a privatization process aimed at bridging this supply gap. This reform process, which was initiated by the introduction of the National Electric Power Policy of 2001, was aimed at improving regulatory conditions and increasing competition in the energy sector, and was finally concluded in February 2013.

Part of the process included a restructuring of the Power Holding Company of Nigeria (PHCN), which saw the holding company unbundled into 18 companies: six successor generation companies (GENCOs), 11 successor distribution companies (DISCOs), and a transmission company that remained the only entity to not undergo privatization. Due to various challenges such as insufficient gas supply, technical impediments (particularly with regards to transmission infrastructure), delays in payments for electricity supplied, as well as wastage and theft of electricity, this major undertaking has not yet translated into improved energy produc-

tion and transmission. Nevertheless, this was the first instance of privatization of the energy sector to be implemented on the African continent and can be considered a holistic approach to solving the energy crisis in Nigeria. Furthermore, it may well serve as a model to be emulated by other African countries in the future.

With the opening of the market to independent power producers (IPPs), power generation from renewable energy sources provides an interesting alterna-

aims to obtain approximately 1,350 MW and 6,830 MW from solar energy by 2020 and 2030 respectively.

PV policies and incentives

According to Section 62 of the Electric Power Sector Reform Act 2005, all persons intending to engage in the business of electricity generation, transmission, system operation, distribution or trading shall be required to obtain an operator's license from the Nigerian Electricity



Godwin Ojo of Friends of the Earth Nigeria campaigns against fossil fuels and for the use of clean energy in the country. The NERC has introduced new measures that support solar PV.

tive to oil and gas considering the country's estimated potential. The annual average daily solar radiation ranges from 3.5 kWh/m² along the coastal belt to 7.0 kWh/m² per day in the arid northern regions, with daily sunshine hours averaging four to nine hours. Under the auspices of a bilateral agreement between the Nigerian and German governments ("Nigerianisch-Deutsche Energiepartnerschaft"), for example, 420 MW of electricity shall be raised from solar projects alone across nine of Nigeria's northern states. This undertaking, signed in 2008 and extended for a further five years in 2013, is consistent with the country's Electric Power Sector Reform Act, which

Regulatory Commission (NERC). Established in 2005 under the aforementioned Act, the NERC is an independent regulatory agency tasked with the technical and economic regulation of the electricity industry. New regulatory instruments shall help mitigate the current energy crisis and encourage energy generation from renewable energy sources. NERC recently confirmed that renewable energy-based power projects, which require no fuel supply agreement, such as those involving solar energy, receive priority attention. License exemptions are granted for the generation of electricity being less than 1 MW in aggregate at a given site, as well as in the case of the

Photo: Friends of the Earth Europe/Flickr

distribution of electricity not exceeding 100 kW in aggregate at a given site.

A power purchase agreement (PPA), which must be submitted alongside the issued license, is entered into with the Nigerian Bulk Electricity Trading PLC (NBET), a government-owned company charged with the interim responsibility of purchasing power from generation companies through PPAs and selling it to distribution companies. A standard NBET PPA has a contractual term of 20 years. Any PPAs that IPPs conclude with NBET are accompanied by credit enhancement instruments provided by the government.

IPPs for solar generation must apply within the framework of unsolicited power procurement procedures. The following mandatory requirements must be met for the due diligence exercise before the NBET enters into any negotiations with IPPs:

- evidence of land ownership – e.g. title deed, notarized sale agreement, deed

Wholesale FITs for solar power plants

Wholesale contract prices (€/MWh)*	2014	2015	2016
Wholesale feed-in tariff solar power plant	354.30	382.45	412.86

* Exchange Rate: €1 = NGN 219.304

SOURCE: Nigerian Electricity Regulatory Commission

NERC has placed a cap on all renewable energy sources at 10% of the country's total generation for a period lasting until December 2018. This limit will be reviewed once the federal government's target has been reached. On the legal basis of Section 76 of the EPSR Act 2005, the Commission issued a Multi-Year Tariff Order (MYTO) in 2008 for the determination of charges and tariffs for electricity generation, transmission and retail tariffs. MYTO provides a 15 year tariff path for the Nigerian electricity industry with bi-annual minor reviews undertaken to accommodate macroeconomic indicators such as inflation, gas

generation of power using solar energy and are expected to compensate for anticipated high capital costs, inflation rates, and investment costs. The Nigerian government has implemented the following incentives in an effort to further encourage investments in the country's renewable energy sector:

- a tax holiday of 5–7 years for pioneer industries (also granted to manufacturers of solar energy-powered equipment and appliances);
- the repatriation of all profits without hindrance; and
- access to land. With the implementation of the Land Use Act of 1978, all land in Nigeria is vested with the governors of the state. A governor can grant statutory rights of occupancy to individuals, including foreigners, for a definite period (max. 99 years).

In conclusion

These aforementioned incentives highlight the political will to facilitate and encourage investment in Nigeria's renewable energy sector. The recent democratic change in government further improves the country's standing as an investment destination. Although the new government, which came into power in May 2015, has pledged to ensure development of the renewable energy sector by 2019, it remains unclear to what extent it intends to do so. The election results were highly welcomed not only by the local population but also by experts who foresee a bright future for Africa's largest economy. The new government is expected to tackle the national security situation and, consequently, corruption issues and improving the country's overall investment climate.

Nigeria's potential as a solar PV market cannot be overlooked. The incessant energy crisis and growing investor interest in solar energy are set to push Africa's leading economy to continue to improve the existing regulatory framework for renewable energy generation, thus creating immense opportunities for investors in this sector. ♦

Ulrike Brückner



Photo: Roger Taylor/NREL

Despite progress on the economic front, the provision of reliable energy and clean drinking water remains a challenge in some parts of Nigeria.

of assignment or evidence of submission of title deed to a land processing agency;

- environmental Impact Assessment (EIA) – approval to be received from the Federal Ministry of Environment;
- provisional evacuation approval from the Transmission Company of Nigeria (TCN); and
- solar irradiation report/energy yield report.

Additional documents should provide information on project partners, the status of the license application and other permits as well as further information on capacity, technology, initial time line, etc.

prices and exchange rates, and major reviews carried out every five years.

Adjustments to the original MYTO resulted in MYTO 2, which incorporated feed-in tariffs (FITs) for renewable energy, for the first time including ground-mounted solar PV with no tracking systems. MYTO 2, which is valid for the period beginning 1 June 2012 and ending 30 May 2017, has been reviewed once, with a focus on provisions made with regard to the distribution of energy, resulting in a supplementary document referred to as MYTO 2.1. This document came into effect on 1 February 2015 and extends the validity of MYTO 2 to 2018. The FITs are intended to incentivize the