



Investment Brief for the Electricity Sector in Nigeria

Overview

Nigeria is now the largest economy in Africa with a 2013 GDP estimate of US\$ 510.0 billion, recently surpassing South Africa after rebasing the GDP calculations. Nigeria’s growth, however, continues to be severely constrained by an insufficient supply of reliable electricity. In a 2009 study, 97% of all Nigeria’s firms experienced, on average, 196 hours of outages per month, which is equivalent to approximately 8 days. As a result, almost all firms and upper income households operate their own generators to mitigate the effects of outages. Nigeria has an installed on-grid generation capacity of 6,800 MW, but only generates a daily average of 3,600 MW due to gas supply constraints and seasonal hydro. In contrast, South Africa--with less than a third of Nigeria’s population of 168.8 million--has an installed generation capacity of more than 40,000 MW or 0.78 kW per capita.

Energy Supply

The Federal Government of Nigeria (FGN) has embarked on several programs aimed at facilitating increased investments in the power sector. Given the abundance of natural gas (Nigeria has the 7th largest natural gas reserves in the world) and the long lead times required for the development of hydro power projects, most of the additional short and medium term generation capacity will come from gas-fired electricity plants. Historically, there have been limited renewable energy projects in the country, with hydro power supplying the bulk of renewable energy-derived generation. Currently, 77% of the generation input mix is thermal powered plants (mostly gas) and 23% hydro. There are several solar PV power projects in various stages of development with a proposed size ranging from 50 MW to 1,200 MW. There is also an expressed interest in the development of wind power in the country.

Power Portfolio Profile

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Installed Capacity (GW)	5,888	5,898	5,898	5,898	5,900	5,900	5,900	5,900	5,900	5,900
Hydro Net Generation (GWh)	8,152	7,374	8,027	7,690	6,200	6,165	5,644	4,484	6,310	5,594
Fossil Fuel Net Generation (GWh)	12,511	11,971	15,197	14,825	15,836	15,746	14,466	14,333	18,562	20,101

Source: U.S. Energy Information Administration

Economic Development Policies

Throughout the last 10 years, the FGN has been carrying out an ambitious reform agenda aimed at transforming the Nigerian economy. Recognizing that improving the power sector was critical to addressing development challenges, the FGN launched the power sector reform initiative in 2005. The challenging process of implementing reform was revitalized through the 2010 Roadmap for Power Sector Reform. The roadmap clearly outlined the FGN’s strategy and actions in undertaking a comprehensive power sector reform in order to expand supply, encourage private sector participation, and address chronic sector issues hampering improvements in electricity supply.

The FGN’s Roadmap for Power Sector Reform is focused on delivering new electricity generation infrastructure to eliminate the current supply deficit while also providing new generation capacity to support growth in the country. The majority of new generation will be derived from fossil fuels with natural gas playing a significant role. As such, the FGN is examining the gas sector with a focus on enabling the sector to supply enough gas for power generation.

Assuming Nigeria can achieve 5,000 MW delivered to DISCOs by January 2016 by completing the gas-fired power plants and gas processing plants now underway, growth of 14-20% per annum would result in 8,500-10,000 MW of delivered power by 2020. This will only be possible if Nigeria is able to overcome technical and financial hurdles for:



- Gas pipeline vandalization
- Gas processing capacity
- Transmission wheeling capacity
- Distribution system capacity
- Installed generation capacity
- Gas pipeline capacity

Investment Climate

Since the return to democracy, Nigeria has embarked on an economic reform program geared towards more openness and liberalization. Consequently, Nigeria has become a top destination of Foreign Direct Investment (FDI) in Africa, across various sectors of the economy, excluding the power sector, thus surpassing South Africa in 2009. The FGN's Transformation Agenda recognized private sector development as the main engine for development and has included bold economic reforms:

- Nigeria established the One Stop Investment Center (OSIC), an investment facilitation mechanism that brought all relevant governmental agencies in one location to streamline the provision of services to investors
- Any investor is guaranteed the unconditional transferability of funds
- Any investor is guaranteed the free importation and convertibility of foreign exchange
- Nigeria was among the very first countries in the world to ratify the ICSID convention and was the first African country to adopt the Model Arbitration Law and Conciliation Rules elaborated by the United Nations Commissions on International Trade
- Both S&P and Fitch have provided Nigeria a long term sovereign credit rating of "BB-", while Moody's has assigned the country a rating of Ba3. S&P cited the government's involvement in the electricity sector as reason, among others, for the rating

Investment incentives particularly targeted for the energy sector, include:

- Tax holiday of 3-5 years is granted to companies that manufacture transformers, meters, control panels, switchgears, cable and other electrical related equipment, which are considered pioneer products/industries
- Power plants using gas are assessed under the company Income Tax Act at a reduced rate of 30%

Private Sector Focus

Nigeria is developing a market-based economy, where the role of the FGN is to act as regulator of competitive markets rather than to act as a participant in those markets. Nigeria is open to both private sector investments from local sources as well as from foreign sources of capital, and has developed a number of policies aimed at attracting foreign capital. FDI into Nigeria has significantly increased in the last 10 years as companies respond to incentives by investing in Nigeria's privatized industries and infrastructure.

The FGN is looking to the private sector to deliver a substantial portion of required electricity infrastructure investments. While estimates vary, more than US\$ 10.0 billion is required to resuscitate and rehabilitate Nigeria's power infrastructure in the next few years and the National Integrated Infrastructure Master Plan estimates that US\$ 900.0 billion will be required to develop the country's energy sector in the next 30 years, with private sector participation needed to mobilize such large annual funding levels.

Energy Sector Institutions

The key institutions involved in managing and regulating the Nigerian electricity sector include:

Federal Ministry of Power (FMP): The FMP is the policy making arm of the federal government responsible for initiating and formulating programs on the development of the power sector. See: www.power.gov.ng

Nigerian Electricity Regulatory Commission (NERC): The NERC is an independent regulatory agency responsible for regulating the electricity sector. See: www.nercng.org



Nigerian Bulk Electricity Trading Company Ltd (NBET): NBET is a FGN-owned company established in 2010 as a transitional SPV for carrying out, under license from NERC, the bulk purchase and resale of power. See: www.nbet.com.ng

Niger Delta Power Holding Company (NDPHC): NDPHC started in 2004 and was conceived as a fast track government-funded initiative to stabilize the Nigerian Power sector while the privatization efforts were gaining momentum. As part of the privatization efforts, NDPHC will divest 80% of its ownership in 10 generation assets with a combined capacity in excess of 5,100 MW together with requisite transmission infrastructure. See: www.ndphc.net

Transmission Company of Nigeria (TCN): TCN is a government owned entity whose responsibilities include electricity transmission, system operation, and electricity market operations. See: www.tcnng.org

Gas Aggregation Company Nigeria Limited (GACN): GACN was established in 2010 to stimulate growth of natural gas utilization in Nigeria. Among its chief responsibilities, GACN is to facilitate transactions between gas buyers and sellers including managing the dispute resolution process for stakeholders. See: www.gacn-nigeria.com

Bureau of Public Enterprises (BPE): BPE is charged with the responsibility of implementing policies on commercialization and privatization of assets of the FGN. See: www.bpe.org

Rural Electrification Agency (REA): REA is tasked with promoting, supporting and providing electricity access to rural and semi-urban areas. REA also administers the Rural Electrification Fund (REF) to support electrification programs through public and private sector participation.

Electricity Sector Enabling Environment

Nigeria's electricity market has made significant enabling developments to facilitate privatization and investments. The government-run power sector was clearly unable to meet the service levels required for growth, and policy makers realized that capital expenditure levels required to upgrade and maintain the sector were beyond the FGN's financial capacity. The federal government has adopted various reforms to enable investments in the power sector, including:

- The creation of the Nigerian Bulk Electricity Trading Company (NBET), which is a government off-taker that is responsible for the bulk purchase and resale of electricity until such times as the distribution companies are credit-worthy and capable of entering into direct bilateral contracts with the generation companies
- The NERC was reconstituted to bring more confidence to the electricity sector
- The entire distribution sector (all 11 electricity distribution entities) was sold to private investors
- NERC issued two Multi Year Tariff Orders, which attempted to establish the concept of cost reflective tariffs

Electricity Sector Investment Framework

The electricity sector investment framework gives protections and fiscal incentives to investors. In support of the power sector restructuring that is ongoing, the World Bank provided a Partial Risk Guarantee (PRG) to private sector gas suppliers dealing with government entities and successor entities. Other risk mitigation mechanisms include the MIGA political risk coverage which insures a portion of the project financing loans and the equity investors against the risk of default under project documents; lender direct agreements, gas supply and gas transportation agreements, as well as power purchase agreements which are based on general risk allocation principles. However, given the FGN's focus on gas to power, minimal attention has traditionally been paid to renewable sources of energy.

Investment Opportunities

Given the massive demand for infrastructure over the coming years coupled with rapid urbanization in Nigeria's towns and cities, there are significant needs for investment at all levels of the value chain, from fuel supply, through generation to transmission and distribution. While there has been significant activity in the generation sector, new opportunities exist for additional generation plants as households and industries move from self-generation to the grid. At present, the majority of power sector privatization investment has been domestically sourced and in the case of the DISCOs, lead JV members were mostly Nigerian entities with foreign strategic partners.



With the deregulation of the industry, the following are potential investment opportunities for private sector participation:

- Building new power plants
- Development of new gas production, treatment, and pipelines under private ownership/control
- Expansion of existing transmission lines in conjunction with TCN
- Manufacturing of wires, cables, transformers, and auxiliary equipment
- Building new gas supply facilities
- Production and distribution of metering devices
- Provision of operations and maintenance services

Transmission Sector Rehabilitation: While the Nigerian transmission system is adequate at present to wheel the available generation to load, when the ongoing gas supply constraints are addressed the transmission system may be next in line as the weakest link in the electricity value chain. The existing system suffers reliability issues due to years of under-investment and lack of redundancy. TCN estimates it will require approximately US\$ 4.2 billion dollars in the next 5 years to rehabilitate and modernize existing facilities, complete projects already under construction and expand the network to 10 GW. The funding is expected to come mainly from additional FGN borrowing. In light of the immense funding challenge, policy makers have expressed an openness to private sector investment in transmission and several transmission PPP projects are in the development stage.

Privatized GENCOs & DISCOs CapEx Requirements: All 11 DISCOs have been privatized, with 80% or more of acquisition costs covered by local banks. The local financial markets, however, lack the depth and expertise to supply the successor companies with required capital for modernization and expansion. Potential investors have opportunities to support DISCO improvements by supplying the appropriate long term financing required for CapEx.

Generation Capacity Expansion: While the generation sector has seen significant activity, investment opportunities still exist in the sector. In order to get Nigeria on par with other similarly sized economies, significant opportunities still exist in expanding the generation capacity post the 30,000 MW target set in the Vision 2020 (12,000 MW by December 2015). Some gas-fired generation projects in the pipeline include the Exxon IPP (500 MW) and the Azura Edo IPP (450 MW), which are in various stages of development.

Technical & Advisory Services: Additional investment opportunities exist in supplying technical and advisory services to various power sector stakeholders.

Gas Supply Investments: Investment opportunities exist in the infrastructure required for gas supply. Given the focus on gas fired generation in the country, financing and technical advisory services will be required to provide the necessary infrastructure to evacuate natural gas from the Niger Delta to the power plants. Some of the NDPHC plants undergoing privatization have been put on hold due to lack of fuel supply.

Hydro Power Projects: Significant investment opportunities exist in developing hydro-power projects. The Presidential Task Force on Power estimates that there is potential for 11,500 MW in large hydro power plants as well as up to 730 MW in small hydro-power projects in the country.

Solar & Wind Power Investment Opportunities: Nigeria lies within a high sunshine belt and is thus endowed with enormous solar energy potential. Resources in the northern parts of the country provide for viable large scale solar projects such as the 100 MW Nigerian Solar Capital project in Bauchi State. Similarly, Nigeria also possesses favorable wind resources that can be utilized for power generation. The 100 MW JBS Wind Power project under development in Plateau state in central Nigeria demonstrates the availability of on shore wind resources. Offshore resources are currently being evaluated and mapped.



For more information on Power Africa visit: www.usaid.gov/powerafrica

U.S. Government Coordinator for Power Africa Contact for Nigeria

Andrew Herscowitz
USAID, Pretoria, South Africa
Email: powerafrica@usaid.gov
Follow on Twitter: @aherscowitz

Kate Steel
Power Africa Country Team Leader
Energy Sector Team Lead
Acting Transactions Team Lead
Email: ksteel@usaid.gov

U.S. Commercial Service Nigeria contact for U.S. Exporters

Joseph Latunji
Power, Construction & Building,
Household Consumer Goods Specialist
Email: joseph.latunji@trade.gov