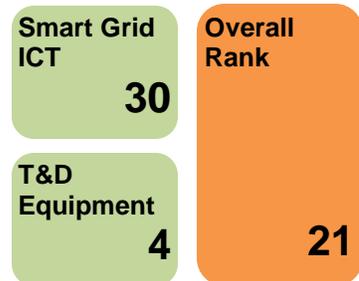




## 2016 Top Markets Report **Smart Grid** Country Case Study

### Nigeria

The recent transformation of Nigeria’s power sector, combined with sustained economic growth and increasing electricity demand, is driving opportunities for T&D suppliers to Africa’s most populous nation and places Nigeria fourth in the Top Markets T&D Equipment sub-rankings. Nigeria’s government has thus far been responsive to the need to direct the proceeds from economic growth towards the overhaul of decrepit T&D infrastructure that currently only reaches 50 percent of the population.



The country’s newly-privatized distribution companies are under pressure to modernize their infrastructure and quickly expand power supplies. Financing these projects will be a challenge, but efforts, such as the Power Africa Initiative, have already helped to catalyze international investment in power and grid modernization projects. Significant opportunities in Nigeria’s Smart Grid ICT segment are not anticipated in the near-term, and utility finance and business sector risks limit the potential for many U.S. exporters, keeping Nigeria’s Top Markets ranking at a modest 21<sup>st</sup>.

#### Market Overview

Nigeria’s traditionally under-developed power sector is changing rapidly, in terms of structure as efforts to privatize the industry take shape and in terms of the levels of investment supporting the development of new energy supplies and improvements to infrastructure used to meet surging electricity demand and support economic growth. Thermal power supplies dominate Nigeria’s electricity supply mix is dominated by natural gas, which comprises almost 90 percent, Supply disruptions and shortages often result in power outages in a nation where electricity demand growth has averaged 8.5 percent annually over the last three

years. Expanding the power supply, modernizing the electricity infrastructure and ensuring that the energy sector is foundational to the nation’s continued economic growth are top priorities for the Federal Government of Nigeria (FGN).

Nigeria has the largest economy in Africa, but well-rounded economic growth is hampered by a low electrification rate (approximately 50 percent of the country), and frequent power outages that cause work stoppages at industrial centers and add uncertainty to the market. The FGN estimates that an additional 26.6 GW of supply will be required to meet electricity demand by 2020.

Additionally, the Government plans to pool \$2.6 billion in institutional funding for near-term investment in transmission infrastructure; the projected annual capital expenditure in the distribution sector is set at \$370 million. In order to achieve its ambitious goals, the FGN will also have to ensure that investors in the newly privatized electricity sector are able to recover adequate returns and continue to fuel growth.

The structural transformation of Nigeria’s power sector began in 2004 with the National Integrated Power Plan

## Overview of ITA's Analysis: NIGERIA

### Strengths

- Electricity demand and grid investment growth
- Successful divestment of distribution utilities
- Smart grid working group established as part of Electricity Distribution Services Association (ELDER) with strong commitment to national deployment

### Key Trends

- Continued commitment and investment in smart grid and energy efficiency technologies by the Turkish Government
- Progress towards further energy sector divestment and electricity market reform

### Risks

- Lack of national coordination in smart grid implementation
- Political and economic issues could derail electricity market reform and/or investment

(NIPP), a government-funded initiative to boost and stabilize electricity supplies, followed by the Electric Power Sector Reform Act (EPSRA) of 2005. EPSRA has thus far led to the unbundling of state-owned Power Holding Company of Nigeria (PHCN), a process that officially ended in late 2013 with the establishment of 15 private successor companies (five generation firms and 10 distribution utilities). While transmission remains government-owned, it is estimated that up to \$4 billion in funding will be required to upgrade and expand assets in the newly privatized generation and distributions sectors.

The privatization of PHCN has spurred optimism for growth in Nigeria's power sector. Investors are hoping immediate returns can be reaped from innovations and efficiencies driven by the successor companies. Growth through the transitional phase will depend on access to finance and successful upgrades to ageing infrastructure. Thus, a healthy power sector in Nigeria will mean robust opportunities for T&D suppliers and service providers in particular.

### Policy and Regulatory Environment

The FGN has made the expansion of the power supply and upgrades to T&D infrastructure policy priorities, but the country has many challenges to overcome on the regulatory and finance fronts in order to ensure necessary strong investment growth in the sector. In 2006, the Nigerian Rural Electrification Agency (RER) was set up in order to increase rural and peri-urban access to electricity from the estimated level of 35 percent to 75 percent by 2020. Beginning in 2010, privatization of the power sector became a focus, and recent progress in this effort has led to the allocation of approximately \$3.5 billion for transmission investments

and the mobilization of public pension funds to support investments across the power sector.

Amid the electricity sector reforms that began in 2005, the Nigerian Electricity Regulatory Commission (NERC) was established as an independent regulator. NERC monitors and regulates the electricity industry, including licensing and compliance for market participants. Over the last few years, NERC has worked to expand gas-fired supplies and issued power generation licenses to 29 independent power producers since 2011.

In 2012, NERC implemented a new Multi-Year Tariff Structure (MYTO) intended to increase electricity rates and help attract further investment to the power sector. The MYTO has gone some ways to correcting policies that severely underpriced electricity in Nigeria at a high-cost to the government and to the detriment of investment in the power network. Today, the agency is focused on establishing a regulatory framework for the development of the renewable resources sector and for the improvement of the efficiency of the grid, including through energy efficiency and demand-side management programs.

Meanwhile, the privatization of generation and distribution has begun to take shape in Nigeria. Since 2013, five generation and 10 distribution companies have been privatized, and 10 newly built plants by Niger Delta Power Holding Company are all privately operated. Contractual obligations in the private generation sector are designed to boost capacity by over 13,000 MW over the next five years. To help achieve these goals, the FGN is focused on sustaining a stable investment climate for private sector participation, expanding T&D networks, maintaining

creditworthy off-takers, establishing cost-reflective tariffs and reducing inefficiency of networks.

A major pillar of Nigeria's efforts to improve the transmission network is the government's \$23.7 million management contract with Manitoba Hydro International Limited (MHI), a Canadian electric utility company. Under MHI's management, the Transmission Company of Nigeria (TCN) is expected to effectively and reliably transport power from generation companies to distribution companies and eligible customers connected to the national grid. The contract also has the goal to establish local capacity in this area. System collapses and transmission losses have been a frequent issue faced by TCN, and the hope is that this arrangement will reduce this issue.

### Market Analysis

Thus far, investor interest in Nigeria's transformed power sector has been positive, including the U.S.-supported Power Africa Initiative. The initiative, announced by President Barack Obama in 2013, aims to expand access to power across Sub-Saharan Africa by 2030 through the addition of 60 million new electricity connections and 30,000 megawatts of new and cleaner power generation. Nigeria has been a country of focus since the inception of the Initiative, which provides technical assistance, credit enhancement, financing for independent power producers and other forms of transaction facilitation to support an additional 14,000 MWs of additional capacity in Nigeria alone. The effort also includes a \$100 million investment in Nigeria's gas and power transmission infrastructure through the World Bank's Nigeria Electricity and Natural Gas Improvement Project. Through the work of Power Africa, over \$1 billion has also been mobilized for the newly privatized generation and distribution companies to reduce energy losses, improve operational efficiencies, and expand generation and grid capacity.

A May 2014 U.S. Department of Commerce trade mission to Nigeria, led by Secretary Penny Pritzker with a focus on energy infrastructure, resulted in a number of key power sector deals and has helped to establish a foothold for U.S. T&D and smart grid companies in Nigeria. The Mission concluded with a grant signing by the U.S. Trade and Development Agency for two power generation projects and an electricity distribution modernization plan, all of which have the potential to catalyze nearly half a billion dollars of investment in Nigeria's energy sector.

### Opportunities and Challenges for U.S. Companies

In order to be sustainable, the proceeds from Nigeria's recent economic growth will need to be directed to grid modernization, and Nigeria's decision makers have so far proved responsive to this notion. Additionally, major consumers of electricity are also proving willing to invest in distributed energy sources to overcome grid inadequacies. While the health of the financial sector and the wider economy will be major factors, it appears that the massive demand for electricity and upgrades to power infrastructure are currently providing a healthy market for utility equipment suppliers and service providers.

#### Opportunities

- T&D network upgrades and expansion of backbone infrastructure.
- Metering, billing and collection software, systems, and solutions, including theft prevention.
- Global Information System (GIS) software and platforms, Supervisory Control and Data Acquisition (SCADA) systems, network monitoring and control systems.
- Outage management and emergency response solutions.
- Smart grid road mapping and strategy services.

#### Challenges

- The cost of lending is high in Nigeria, and recently privatized distribution utilities are under pressure from local investors to provide immediate returns.
- Continued economic growth will be required to fund infrastructure projects in Nigeria's energy sector, and the government will have to remain committed to increasing electricity tariff rates.
- Nigeria's government has begun to push for more protectionist legislation in recent years. Local content requirements and other protectionist policies could limit opportunities to export to Nigeria.

#### Know Your Buyer

Nigerian purchasers of U.S. smart grid goods and services include generation, transmission and distribution companies. For example, there are 11 distribution companies in Nigeria that maintain a

monopoly status within each of their geographical areas.

### **Summary of Resources**

- U.S. Department of Commerce Nigeria Country Commercial Guide:  
<http://www.export.gov/ccg/nigeria091342.asp>
- Power Africa Portal:  
<https://www.usaid.gov/powerafrica>
- Power Africa Nigeria:  
<https://www.usaid.gov/powerafrica/nigeria>