

# PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC7335

<b>Project Name</b>	NG-Electricity Transmission Project (P146330)
<b>Region</b>	AFRICA
<b>Country</b>	Nigeria
<b>Sector(s)</b>	Transmission and Distribution of Electricity (80%), General energy sector (20%)
<b>Theme(s)</b>	Infrastructure services for private sector development (100%)
<b>Lending Instrument</b>	Investment Project Financing
<b>Project ID</b>	P146330
<b>Borrower(s)</b>	FEDERAL GOVERNMENT OF NIGERIA
<b>Implementing Agency</b>	Transmission Company of Nigeria
<b>Environmental Category</b>	A-Full Assessment
<b>Date PID Prepared/ Updated</b>	15-Jul-2014
<b>Date PID Approved/ Disclosed</b>	16-Jul-2014
<b>Estimated Date of Appraisal Completion</b>	26-Nov-2014
<b>Estimated Date of Board Approval</b>	10-Jun-2015
<b>Concept Review Decision</b>	

## I. Introduction and Context

### Country Context

The Federal Republic of Nigeria has experienced stable economic growth averaging 8 percent over the past decade and 7.4 percent in 2013. In the context of high economic growth, Nigeria's key challenge is to make its growth more inclusive. Of the millions of Nigerians who enter the labor market each year, only 10 percent are able to find formal jobs. As a result, (formal) unemployment grew from 19.7 percent to 23.9 percent between 2009 and 2011, affecting principally the young (15-24 age group) with a rate rising from 25 percent in 2009 to 37.7 percent in 2011. A statistical rebasing of the gross domestic product (GDP) in 2014 reveals that Nigeria's GDP is estimated at close to US\$500 billion (2012), making it the 26th largest economy in the world.

A large and rapidly expanding population of 170 million in Nigeria represents an opportunity for economic development and increased employment if new markets can be unlocked. By making markets more inclusive, Nigeria can extend opportunities to the poor and other excluded groups.

Limited inclusiveness also implies wide divergences in performance between geopolitical regions and states. There remain worrying trends concerning the geographic distribution of the poor. In North-East and North-West poverty rates remain very high: on average, above 50 percent, and in some cases above 70 percent with a tendency to stagnation.

The growth and poverty reduction strategy for Nigeria has to be built on the broader comparative advantages which include a diverse population, a focal point of connectivity for Northern and Southern cultures on the Africa continent, and a gateway to Central Africa. Economic diversification through improvements in governance and service delivery, increasing productivity, improved infrastructure and human capital, and a progressive regional policy will unlock the development potential and support strong and inclusive growth and accelerated job creation.

### **Sectoral and Institutional Context**

Nigeria is one of the world's largest oil exporters and is endowed with abundant domestic energy resources, including the eighth largest reserves of natural gas and significant untapped hydropower and solar power potential. Despite these favorable conditions, access to energy services is low at about 35 percent of the population - this includes those connected to the electric grid (about 18 percent) as well as those relying on self-generation. Nearly 100 million citizens (about 65 percent) are left entirely without access to electricity - the second largest national deficit behind India.

In order to achieve tangible improvements in energy services, the Federal Government of Nigeria (FGN), over the past few years, has embarked on an ambitious reform program. In 2009, the 'Roadmap for Power Sector Reform' outlined a series of comprehensive measures across the sector value chain with specific short, medium, and long term actions to expand supply and open the sector for private investment, while addressing the chronic sector issues hampering improvement of service delivery. Under sustained political commitment, the Roadmap has been successful in: (i) unbundling and privatizing the vertically integrated sector; (ii) addressing broken institutional and regulatory systems; (iii) enhancing sector governance and accountability; (iv) establishing a new pricing regime (multi-year tariff order, MYTO); and (v) scaling up private sector investment in the sector.

The implementation of the complex reform program is challenging and requires ongoing support. Some of the key issues that underpin the reform program (discussed in further details in the sections below) are: (i) increasing the power generation capacity; (ii) augmenting the capacity of the transmission network in order to deliver the power to the consumers; (iii) reducing the high levels of aggregate technical, commercial, and collection (ATC&C) losses in the distribution segment; (iv) enhancing last-mile access to modern energy services to the masses; and (v) ensuring long term financial viability of the sector.

Currently, the demand for electricity in Nigeria vastly outpaces supply. Over the past decade, Nigeria's publicly owned and operated electricity system has been failing to meet Nigeria's power needs. In early 2013, the total available capacity was around 3,500 MW which was significantly below the suppressed demand estimated to exceed 6,000 MW. The demand in the Nigerian power sector is expected to continue to increase at around 10 percent per annum in the medium term, reaching 10,000 MW (medium growth rate scenario) to 14,000 MW (high growth scenario) by the year 2020. Due to the measures undertaken as part of the reform program, the supply capacity is expected to reach at least 9,500 MW by 2020. The additional capacity is being developed by a mix of public financed and private sector led independent power projects (IPPs). FGN's National

Integrated Power Plant Project (NIPP) is expected to commission around 1,000 MW of additional supply capacity a year during 2014-15. In addition, several IPP developers are actively working on various power plant projects able to be commissioned from 2017 and onwards.

Presently, the transmission network in Nigeria is not equipped to transmit the volume of power needed to supply the demand. The Transmission Company of Nigeria (TCN), which has remained as a public utility during the reforms, has been placed under a management contract (Manitoba Hydro International (MHI)) to support its capacity building and to improve the efficiency of the national grid operator, whose technical losses are estimated to be in the range of 12 percent (MYTO estimate for transmission loss is 8 percent). FGN intends to combine TCN's reform with a major investment program which will increase the wheeling capacity of the network from the current 4,800 MW to about 13,000 MW by the year 2020, as well as to increase the network's reliability, stability, and efficiency.

TCN's Investment Plan has already identified several areas of critical investment (upgrades, refurbishments, and new installations) that are needed in order to modernize the transmission network, expand its capacity, and reduce losses (see Box 1). The investments, estimated at US\$8 billion, are categorized under three main pillars based on the main business units: (i) Transmission Services Provider (TSP) investments focus mainly on refurbishing existing facilities to restore the network to its original capacity, finishing projects that are in various stages of construction, and initiating the construction of over 100 new lines and sub-stations, and many new voltage control facilities; (ii) System Operator (SO) investments focus on restoration, improvement, and expansion of the telecom, supervisory control and data acquisition (SCADA) system, and related control systems; and (iii) Market Operator (MO) investments focus on automation and streamlining of business processes and information and communication technology (ICT), including other supporting infrastructure for meter data collection and settlements.

The sector is currently under-recovering its revenues under the prevailing Market Interim Rules (Pre-Transitional Electricity Market). Newly privatized DISCOs continue to pay, on average, about half of the MO invoices resulting in a cash shortage for all market participants, including TCN, which recovered about 60 percent of its wheeling charges in 2013. Studies are ongoing to ascertain the appropriate level of retail tariff that would make the sector whole. Similarly, the wheeling charge required to cover TCN's operating expenses and the long term cost of capital expenditures is being evaluated. As part of the financing efforts for the Investment Plan, TCN is in the process of submitting a tariff increase to NERC based on its financial projections for the period 2014-2017.

As the reform program addresses many of the key structural issues for the power supply and grid network, in parallel, the FGN plans to launch a 'National Electrification Access Policy' (NEAP) aimed at achieving enhanced electricity access by accelerating both grid and off-grid programs while employing appropriate policies and innovative technical solutions to reduce costs, improve reliability, and provide timely service to all households. The NEAP includes an ambitious target of achieving an access rate of 75 percent by 2020, with a particular focus on traditionally undeserved rural population as well as rural institutions such as: schools, health centers, and administrative buildings. The key development challenge for Nigeria is posed by low access to electricity and a spatially dispersed population, combined with the high cost of standalone generation from expensive diesel fuel, and often poor service quality. The many unserved (lacking access) and under-served (suffering from poor interruptible supply) consumers in Nigeria are forced to resort to self-generation at a high cost to themselves and the economy (about US\$30-50 cents per kWh as

compared to the current grid based tariff of US\$0.13 per kWh) and poor quality lighting alternatives such as kerosene and wick lanterns. Even when current sector reforms are fully in place, ‘business as usual’ will risk leaving more Nigerians in the dark without electricity access. International experience suggests that scale-up of access requires not only enabling policy and regulatory environment but also the necessary planning tools and appropriate economic incentives for sector utilities to extend access to the the bottom of the pyramid population.

### **Relationship to CAS**

The proposed Project is fully aligned with the FY14-17 Nigeria Country Partnership Strategy (CPS), which focuses on three strategic clusters in support of inclusive economic growth. The WBG’s support to improving Nigeria’s power supply is a critical part of the CPS. Many outcomes of the CPS are directly linked to improving power generation and transmission capacity, and efficiency of power supply. Specific focus is put on the Northern states facing dire power deficit in the absence of proximate power generation sources (the bulk of power is generated in the Nigeria’s gas rich south), and insufficient transmission capacity to deliver the limited quantities they receive. The proposed Project is also aligned with WBG Energy Directions Paper, and the twin goals of eradicating extreme poverty and boosting shared prosperity by increasing access to affordable household energy services and reducing the need for expensive diesel based self-generation for small business and Industry, currently hampering competitiveness and job growth. The Project also supports the goals set under the Sustainable Energy for All (SE4All) initiative by assisting in increased power supply and improving access to energy.

The proposed Project will be implemented as an integral part of the coordinated donor support to the sector that includes significant investment and technical assistance (TA) programs from both multilateral partners such as: the African Development Bank (AfDB), as well as bilateral partners such as: Agence Francaise de Développement (AFD), UK Department for International Development (DFID), Japan International Cooperation Agency (JICA), and the US Government (USG) under the Power Africa Initiative (PAI).

The proposed Project is part of the World Bank Group’s Joint Energy Business Plan (EBP) for Nigeria. The proposed Project is part of long standing support to the energy sector by IBRD/IDA, IFC, and MIGA. WBG support includes upstream and downstream investments along the supply chain as well as a strong sectoral dialogue with the authorities. Bank’s support to the Nigerian power sector includes the ongoing Nigeria Electricity and Gas Improvement Project (NEGIP), and the recently approved Power Sector Guarantee Project (PSGP) which is providing IBRD Partial Risk Guarantees (PRGs) to support increased private sector participation in the sector (IPPs, privatized generation, and distribution companies) by supporting improved credit worthiness of the FGN agencies. The first two greenfield IPP transactions being supported under PSGP (Azura Edo IPP and the Exxon Qua Iboe IPP) will increase the installed power capacity of Nigeria by 1,000 MW and mobilize over US\$1.7 billion in private capital.

## **II. Proposed Development Objective(s)**

### **Proposed Development Objective(s) (From PCN)**

The project development objective is to improve the capacity and efficiency of the transmission network and increase electricity services.

### **Key Results (From PCN)**

The proposed PDO indicators are:

- (i) Increase in transmission network's wheeling capacity (MW);
- (ii) Reduction in transmission network losses (percentage);
- (iii) Number of people connected to the grid under the Project (number); and
- (iv) Direct project beneficiaries (number), of which female (percentage).

### III. Preliminary Description

#### Concept Description

##### A. Concept

The proposed Nigeria Electricity Transmission and Access Project (NETAP) would channel concessional public financing to critical parts of the supply chain which are unlikely to be fully financed from private sources. It complements private investments and investments from the FNG's own resources. The proposed project would support transmission network investments as well as access investments. As new generation investments are coming on line, transmission is increasingly the critical link of the energy value chain and the potential limiting factor of investment underpinning the success of the entire reform program. The proposed NETAP will also finance specific programs to increase quantity, quality and access to the electricity network, particularly in the Northern areas of the country where economic activities have long suffered from the lack of affordable energy supply. Finally, the proposed NETAP will also provide targeted technical assistance and capacity building support to the FGN agencies to support the implementation of the Project.

##### B. Description of Project Components

Component 1: Transmission Network Improvement (IBRD US\$650 million) component 1 would finance selected investments highlighted in the TCN Investment Plan, as follows:

Sub-Component 1(a): Transmission Network Rehabilitation (IBRD US\$200 million). This subcomponent would finance a subset of refurbishment and replacement sub-projects included in Package 1 of the TCN Investment Plan. These investments are needed for refurbishing existing facilities, to restore the network to its rated capacity, and to reduce high ATC&C losses associated with the transmission network.

Sub-Component 1(b): Transmission Network Expansion Investments (IBRD US\$200 million). Sub-Component 1(b) would finance a subset of new capacity expansion sub-projects identified under Package 2 of the Investment Plan. Package 2 of the TCN Investment Plan outlines investments needed for new transmission and sub-transmission lines, sub-stations, as well as associated equipment and costs of implementation, such as: retaining owner's engineers, in order to expand the grid capacity to 10,000 MW. IBRD support would finance investments grouped by geographic locations to reduce interdependence and increase efficiency in implementation. Target zones may include North-West zone including the Kaduna-Kano Axis and the South-West zone including the Lagos network. Support would be geared towards underpinning key potential 'growth poles' in the country to spur access enhancement as well as growth of commerce, job creation, and shared prosperity.

Sub-Component 1(c): Transmission Network Expansion Partnerships (IBRD US\$200 million). Sub-Component 1(c) would support a subset of new capacity expansion sub-projects identified under

Package 2 of the Investment Plan. The project team, in cooperation with IFC and MIGA, will carry out an assessment during project preparation to identify the optimal use of WBG instruments to finance these greenfield transmission sub-projects. The assessment will review the possibility of various public private partnership (PPP) arrangements, including build, own, operate, and transfer (BOOT) type arrangements to leverage the use of public funds. Financing supplied under Sub-Component 1(c) could be used as TCN's equity or debt participation in such arrangement or used to provide guarantees to assist with securitization of private capital mobilization.

Sub-Component 1(d): Efficient Network Management (IBRD US\$50 million). Complementary to the TSP investments under Sub-Components 1(a), 1(b), and 1(c), Sub-Component 1(d) would support improvements to efficient management of the increased national grid infrastructure. Support would be provided for a subset of investments identified in the TCN Investment Plan for the SO and the MO, such as: integrated operation of the power system, restoration and expansion of the SCADA system, and telecommunication equipment.

Component 2: Capacity Building and Technical Assistance (IDA US\$50 million): This Component will support much needed capacity building and technical assistance activities at key sector institutions and other relevant stakeholders in order to ensure that the implementation of reform program is successfully carried out. The support provided under this Component will not only assist in implementation of the investments identified under NETAP, but will benefit the sector as a whole with the overall goal of scaling-up energy access in Nigeria. Capacity building and TA activities will be identified during project preparation to be complimentary to ongoing support from other donors.

#### IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04			x
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11			x
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37		x	
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

#### V. Financing (in USD Million)

Total Project Cost:	700.00	Total Bank Financing:	700.00
Financing Gap:	0.00		
<b>Financing Source</b>			<b>Amount</b>
Borrower			0.00
International Bank for Reconstruction and Development			700.00

Total	700.00
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