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Report No: 47945-NG

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 134.4 MILLION
(US$200 MILLION EQUIVALENT)

TO THE

FEDERAL REPUBLIC OF NIGERIA
ALONG WITH

A PROPOSED SERIES OF IDA PARTIAL RISK GUARANTEES IN THE AMOUNT OF US$400 MILLION

IN SUPPORT OF GAS SUPPLY AND AGGREGATION AGREEMENTS OF SHELL PETROLEUM DEVELOPMENT COMPANY, CHEVRON NIGERIA LTD. AND OTHER OIL COMPANIES WITH POWER HOLDING COMPANY OF NIGERIA

FOR THE

NIGERIA ELECTRICITY AND GAS IMPROVEMENT PROJECT

May 20, 2009

Energy Group
Country Department AFCW2
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 10, 2009)

Currency Unit	=	Nigeria Naira
₦ 145.0	=	US$1
US$1.00	=	SDR 0.672

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
AG	Associated Gas
APL	Adaptable Program Loan
BP	Bank Policy
BPE	Bureau of Public Enterprises
CNL	Chevron Nigeria Ltd.
CPS	Country Partnership Strategy
CREST	Commercial Reorientation of Electricity Sector Toolkit
DFID	Department for International Development (UK)
DGSO	Domestic Gas Supply Obligation
DPR	Department of Petroleum Resources
EGASPIN	Environmental Guidelines and Standards for the Petroleum Industry
EIA	Environmental Impact Assessment
ELPS	Escravos Lagos Pipeline System
EPSR	Electric Power Sector Reform
ERSU	Environment, Resettlement, and Social Unit
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESW	Economic and Sector Work
FARAH	Financial Accounting, Reporting and Auditing Handbook
FGN	Federal Government of Nigeria
FME	Federal Ministry of Environment
FMF	Federal Ministry of Finance
FoNN	Friends of NEGIP-Network
FPM	Financial Procedures Manual
GAC	Governance and Anti Corruption
GHG	Green House Gases
GIFMIS	Government Integrated Financial Management Information System
GSAA	Gas Supply and Aggregation Agreement
GTA	Gas Transmission Agreement

HVDS	High Voltage Distribution Systems
IAU	Internal Audit Unit
ICA	Investment Climate Assessment
ICP	Investment Climate Program
IDA	International Development Association
IDB	Islamic Development Bank
IEG	Independent Evaluation Group
IFC	International Finance Corporation
IMF	International Monetary Fund
IOC	International Oil Company
IPP	Independent Power Producer
JV	Joint Venture
L/C	Letter of Credit
LAA	Land Acquisition Assessment
LNG	Liquefied Natural Gas
LOC	Local Oil Company
mmbtu	million metric standard cubic feet
mscf	thousand standard cubic feet
mmscfd	million metric standard cubic feet per day
MDG	Millennium Development Goals
MIGA	Multilateral Investment Guarantee Agency
MOCA	Market Operator Clearing Account
MYTO	Multi-year Tariff Order
NAG	Non Associated Gas
NEDP	National Energy Development Project
NEGIP	Nigeria Electricity and Gas Improvement Project
NEITI	Nigeria Extractive Industries Transparency Initiative
NELMCO	Nigeria Electricity Liquidity Management Company
NEPA	National Electric Power Authority
NERC	Nigeria Electricity Regulatory Commission
NGC	Nigeria Gas Company
NGO	Non-Governmental Organization
NIAF	Nigeria Infrastructure Advisory Facility
NIPP	National Integrated Power Project
NNPC	Nigeria National Petroleum Corporation
OAGF	Office of the Accountant General of the Federation
OC	Oil Company
OP	Operational Policy
PAD	Project Appraisal Document
PAP	Project-Affected Person
PCN	Project Concept Note
PEMFAR	Public Expenditure Management and Financial Accountability Review
PHCN	Power Holding Company of Nigeria
PIM	Project Implementation Manual
PMU	Project Management Unit
PPA	Power Purchase Agreement
PRG	Partial Risk Guarantee

QER	Quality Enhancement Review
RAP	Resettlement Action Plan
RCM	Revenue Cycle Management
REA	Rural Electrification Agency
RPF	Resettlement Policy Framework
SCADA	Supervisory Control and Data Acquisition System
SEA	Strategic Environmental Assessment
SF6	Sulphur Hexafluoride
SGA	Strategic Gas Aggregator
SIL	Specific Investment Loan
SME	Small and Medium Enterprise
SPDC	Shell Petroleum Development Company
T & D	Transmission and Distribution
TA	Technical Assistance
TCF	Trillion Cubic Feet
TCN	Transmission Company of Nigeria
TDP	Transmission Development Project
USAID	United States Agency for International Development
WAGP	West Africa Gas Pipeline
WBG	World Bank Group
WGTP	Warri Gas Treatment Plant

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NIGERIA
Electricity and Gas Improvement Project (NEGIP)

CONTENTS

NIGERIA

NIGERIA ELECTRICTY AND GAS IMPROVEMENT PROJECT (NEGIP)
PROJECT APPRAISAL DOCUMENT

AFRICA

AFTEG

Date: May 20, 2009	Team Leader: Prasad V.S.N Tallapragada
Country Director: Onno Ruhl	Sectors: Power (100%)
Sector Manager: S. Vijay Iyer	Themes: Infrastructure services for private sector development (P)
Project ID: P106172	Environmental screening category: B
Lending Instrument: Specific Investment Loan Loan/Guarantees	

Supplemental Project Information

Supplemental ID: P114277 Team Leader: Prasad V.S.N Tallapragada
Sector Manager: S. Vijay Iyer
Sector Director: Inger Andersen
Sectors: Power (50%); Oil and gas (50%)
Themes: Infrastructure services for private sector development (P)

Project Financing Data

[ ] Loan [X] Credit [ ] Grant [X] Guarantee [ ] Other:

For Credits/Guarantees:
Total Bank financing (US$ million): SIL: US$200.00 (IDA); Guarantees: US$400.00 (IDA allocation of US$100.00)
Proposed terms: 40 years maturity with a 10-year grace period for IDA Credit

Financing Plan (US$m)

Source	Local	Foreign	Total
BORROWER/RECIPIENT	0.00	0.00	0.00
International Development Association (IDA)		200.00	200.00
IDA Partial Risk Guarantees (PRGs)	0.00	(400.00)	(400.00)
Total (excluding PRGs)	0.00	200.00	200.00

Recipient: Federal Republic of Nigeria for the IDA Credit.

Guarantor: Federal Republic of Nigeria for IDA Credit and PRGs.

Project Implementing Entity: Power Holding Company of Nigeria (PHCN) for IDA Credit

Responsible Agency: PHCN and each JV Operator, Shell Petroleum Development Company (SPDC), Chevron Nigeria LTD. (CNL) and other relevant oil companies who will conclude Gas Supply And Aggregation Agreements (GSAAs) with PHCN for PRGs.

Content	
For Guarantees:	**[] Partial Credit [X] Partial Risk [] Both Partial Credit & Risk**
Proposed Coverage:	Each Partial Risk Guarantee will backstop PHCN's debt payment obligation to a local commercial bank that has paid a JV Operator under a standby letter of credit (the L/C) issued for the account of PHCN for the purpose of backstopping PHCN's payment obligations towards the JV Operator under each GSAA.

Estimated disbursements for IDA Credit (Bank FY/US$ m)									
FY	2010	2011	2012	2013	2014				
Annual	5.0	10.0	55.0	60.0	70.0				
Cumulative	5.0	15.0	70.0	130.0	200.0				

ect implementation for redit 2009

Expected effectiveness date: October 24, 2009.

Expected closing date: December 31, 2014.

Project implementation period for PRGs: Each of the PRGs will be for a maximum term of up to 12 years from the date of its effectiveness.

Does the project depart from the CAS in content or other significant respects? The project is consistent with the 2005 - 2009 CPS which calls for supporting infrastructure development, especially power, gas and transport infrastructure, and the new 2010 - 2013 CPS which is currently under preparation, and will contain a medium-term energy sector engagement. The project contributes to the higher level objectives of domestic gas market development. The project also helps power sector development which is an essential ingredient for Nigeria's economic growth and improved competitiveness, particularly in the very important non-oil sector. The project will have the added benefits of reduced Green House Gas emissions through substitution of captive generation with cleaner grid based generation.	[ ]Yes [X] No
Does the project require any exceptions from Bank policies? Have these been approved by Bank management? N. A. Is approval for any policy exception sought from the Board?	[ ]Yes [X] No [ ]Yes [ ] No [ ]Yes [X] No
Does the project include any critical risks rated "substantial" or "high"? The project has risks rated substantial or high. These are presented in the Critical Risks table in para. 78 of the PAD.	[X]Yes [ ] No
Does the project meet the Regional criteria for readiness for implementation: Yes as described in para. 111 of the PAD.	[X]Yes [ ] No

Project Development Objective:

The development objectives of the Project are to: (i) improve the availability and reliability of gas supply to increase power generation in existing public sector power plants; and (ii) improve the power network's capacity and efficiency to transmit and distribute quality electricity to the consumers.

Project Description: The Project consists of the following Components:

A: Risk Mitigation in the form of PRGs in support of Gas Supplies to increase Power Generation for existing Public Sector Power Plants.
B: Enhancement of Transmission and Distribution Infrastructure.
C: Technical Advisory Services.

Which safeguard policies are triggered, if any?

O.P/BP 4.01 Environmental Assessment

Significant, non-standard conditions, **if any**, for:

Board Presentation:
No conditions for Board presentation

Loan/Credit effectiveness:

The Conditions of Effectiveness consist of the following:

(i) The Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity;

(ii) The Recipient has adopted the PIM; and

(iii) The Recipient has established the stakeholders' consultations forum referred to in paragraph 4 of Section 1 A of Schedule 2 to the Financing Agreement, in form and substance satisfactory to the Association.

Effectiveness of each PRG:

Execution and effectiveness of the GSAA and Gas Transportation Agreement (GTA), each in a form and substance satisfactory to IDA, conclusion of Guarantee Agreement between the L/C Bank and IDA, a Project Agreement between each relevant Oil Company and IDA, and an Indemnity Agreement between IDA and the Federal Republic of Nigeria and receipt by IDA of all associated documentation (see PRG Term Sheets in Annex 10).

Covenants applicable to project implementation: Listed in para. 80 of the PAD.

I. STRATEGIC CONTEXT AND RATIONALE

A. Country and sector issues

1. Improving power sector performance is critical to address the development challenge Nigeria faces. Poor infrastructure, particularly in the power sector, has been identified as one of the key constraints to growth in Nigeria.[1] Reliable electricity supply is essential to harness opportunities for production, value-addition and employment, particularly in the non-oil sector. With about 3,000 MW of available generation supplied through the grid against an estimated demand of 10,000 MW, Nigeria has considerable unmet demand for power forcing a large proportion of the population and almost all private enterprises to resort to self generation at a high cost to themselves and the economy (about 35 Nairas a kWh as compared to the current grid based tariff of 6 Naira per kWh). By some estimates self generated power now substantially exceeds public sector-delivered power in Nigeria.[2] Poor access to power has forced firms to invest in self-generation, diverting substantial resources away from productive uses, lowering productivity and competitiveness. Shortfalls in availability have meant that only about 40% of the population has access to electricity and average annual per capita power consumption is only 155 kWh, among the lowest in the world.

2. Along with the current decline in oil prices, the global financial crisis will impact Nigeria's power sector at the macro level on account of fiscal and budgetary pressures, although the impact in 2009 is likely to be limited partly as resources from the Excess Crude Account[3] will be accessed to finance critical infrastructure projects. Looking beyond 2009, macro projections still call for 4% to 5% growth in real terms for the non-oil sector. The IMF expects a healthy growth in capital expenditures from N785 billion in 2008 to N1022 billion in 2009 which will lay the foundation for continued growth in the medium-term. Unlike many countries whose manufactured export markets are drying up during the global financial crisis, Nigeria's revenue-earning prospects from sales of crude oil are relatively stable, even in current conditions. The negative impacts of the global financial crisis are therefore likely to be somewhat mitigated in Nigeria. The Federal Government of Nigeria (FGN) continues to demonstrate clear commitment to continue with its public sector-led stimulus of the power sector, even as private investment resources become more limited due to scarce liquidity, shrinking capital markets and dwindling investor appetite. Prospects for the public and private sectors in Nigeria are likely to differ sharply in the short- to medium-term, as the country's national oil resources provide a cushion to the public sector that is not available for private entities. At the micro level, the crisis is likely to further reduce the capacity of businesses, SMEs and households to cope with the cost of self generated power. This is forcing firms to either scale down or exit from the market with attendant job losses.[4] Increased and reliable grid based power supply can particularly cushion the impact of the crisis on the non-oil economy. Against this backdrop, making adequate and reliable grid based power supply available through a public sector-led investment drive, as well

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[1] Nigeria Country Economic Memorandum, Competitiveness and Growth, May 2007, Vol. I page 10.

[2] Studies estimate self-generation at 4,000 MW against 2,500 - 3,000 MW available in the grid.

[3] The Government adopts a reference benchmark price per barrel of crude oil exported and deposits any excess revenues due to actual market price in this account.

[4] Analytical work proposed to be undertaken on the performance of the power sector and its impact on households and business productivity is likely to provide sufficient data to validate these observations by the end of the project implementation period.

as a program of resource transfer to the power sector through a well-defined Multi-year Tariff Order (MYTO) program containing calibrated transitional subsidies, is a key priority for the Government of Nigeria's plans to usher in economic growth and alleviate poverty through improved productivity.

3. The commitment of substantial public resources to the power sector is critical to improve the performance of the sector. Apart from major capital investment requirements, the power sector is also posting significant financial losses that have to be absorbed by the Government. The Power Holding Company of Nigeria (PHCN) is unable to stem energy losses, cut costs and collect adequate revenue from customers to meet its costs.[5] The Government's response has been to introduce reforms, expand investments and provide budgetary support to keep the sector afloat in the interim.

4. The Government has launched a significant electricity sector reform initiative since 2005. This was followed by a major investment program in the power sector with the launch of the National Integrated Power Project (NIPP). Additionally, realizing that the absence of appropriate gas policy and infrastructure is causing a severe shortage of gas for power generation, the Government recently launched a series of measures designed to improve domestic gas supply for power and other economic needs. The power sector is a key priority in the Seven Point Agenda of the Government, which outlines the administration's strategy in key priority areas. These include critical infrastructure, Niger Delta development, food security, development of human capital, land tenure changes and human capital, national security and intelligence, and wealth creation. In particular, in the area of critical infrastructure, the Government is placing the strongest emphasis on improving the electricity sector.

5. The Electric Power Sector Reform (EPSR) legislation, enacted in March 2005, provided for commercial operation of the sector and led to the restructuring of the existing power utility, National Electric Power Authority (NEPA) into separate generation, transmission and distribution companies, which are overseen by the PHCN in the interim and which will eventually be privatized in the medium- to long-term (see Chart 1). The EPSR Act also established an independent regulatory agency, the Nigeria Electricity Regulatory Commission (NERC), to promote efficient growth of the power sector as well as a Rural Electrification Agency (REA) to expand rural access[6]. A market operator is also in place to provide a clearing house mechanism for public and private generation companies to facilitate bulk sale of power to the electricity transmission company for onward sale of power to distribution companies.

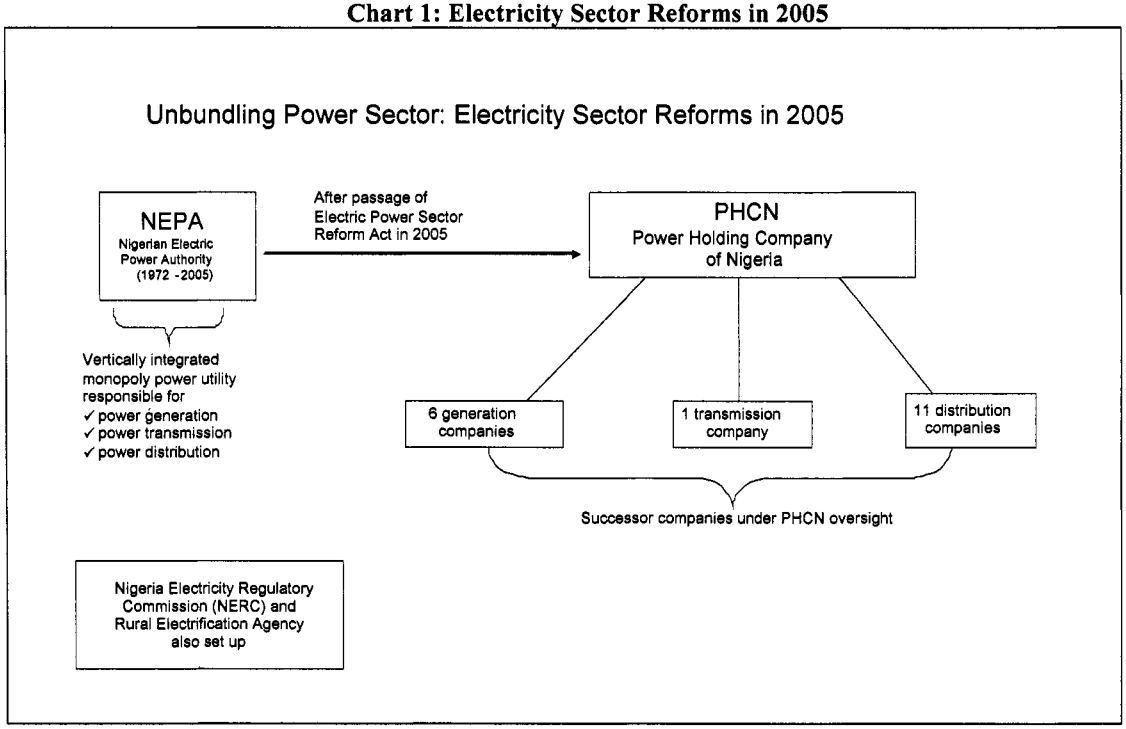
6. Government's efforts to mobilize private resources for the sector have not taken off well, even before the onset of the recent global financial crisis. The response since 2000 has been limited to some private power generation projects. A history of poor governance, low tariffs, underperforming downstream electricity sector and absence of an established regulatory framework has been some of the barriers for private participation in the electricity sector. Apart

[5] A detailed financial analysis of the electricity sector is given in Annex 9.

[6] NERC is currently working on designing a tariff structure that will take into account MYTO cost reflective levels and develop mechanisms to target subsidies efficiently for the poor. The mandate for NERC and REA also includes development of financially sustainable rural access expansion.

from limited incentives for commercial power generation, bottlenecks in gas supply to power have been identified as a major constraint to power generation. Over 70% of the country's generation capacity depends on gas. But despite Nigeria's gas reserves being the seventh largest in the world,[7] reliable and sustained gas supply is still elusive to power generation and other end uses. With almost 60% of currently available natural gas being flared, only about 300 mmscfd of gas is available for domestic consumption against a current demand of 600 mmscfd. This has reduced power generation by about a half of installed capacity and also has negatively impacted production in core industrial sectors such as cement, fertilizer and steel. Apart from inadequate gas supply for generation, poor planning and under-investment have also led to the poor state of the power sector leading to a huge deficit in generating capacity and leaving the transmission and distribution infrastructure in a serious state of disrepair.

Chart 1: Electricity Sector Reforms in 2005



7. In conjunction with its reform initiatives, the Government also approached private investors, including international oil companies, to develop additional power generation capacity of about 3,000 MW in the form of private or Joint Venture power plants. In parallel, the Government seeks to rehabilitate existing public power generation plants to improve their current power output by at least 1,000 MW from the currently available 3,000 MW. In order to accomplish this objective, apart from allocating budgetary resources, the Government is actively seeking funding support from various bilateral and multilateral agencies.

8. About US$5.1 billion has been spent by the Government on the power sector since 1999, taking advantage of the debt relief and oil price spikes during this period. Of this, around

[7] The Nigerian gas reserves are estimated to be about 184 Trillion Cubic Feet.

US$3.3 billion was spent on capital expenditure and the balance was utilized to cover the cash gap on account of inefficiencies and inadequate tariffs. However, these initiatives by the Government have not been coordinated and implemented well, yielding only modest results that are far below expectations. The National Integrated Power Project (NIPP), launched with a planned outlay of US$9.7 billion funded from crude oil revenues, was designed to complement the Government's reform program, increase public-sector generation capacity by around 2,744 MW, strengthen and expand transmission and distribution networks. Of the total US$5.1 billion total expenditure since 1999, to date some N361 billion (US$2.8 billion) has already been spent on the NIPP and the Government has recently committed a further US$5.3 billion to complete the NIPP projects. When completed, the NIPP will add about 2,700 MW of generation capacity, several hundred miles of rehabilitated transmission and distribution network which will go a long way in improving the electricity situation in Nigeria. However, NIPP's implementation had several deficiencies which include faulty procurement and sequencing of contracts, poor planning, logistics as well as weak management. To illustrate, though a total of eighteen gas turbines have been imported into Nigeria valued at over US$500 million, the proposed power station sites are not ready for these gas turbines to be delivered to site, installed and commissioned. The NIPP needs to address serious governance issues, corruption allegations and cost overruns[8] to produce results on the ground.

Box 1: Progress in the Government's power sector program

- A Multi Year Tariff Order (MYTO) that provides for a path to cost reflective electricity retail tariffs, transitional subsidies from Government, and periodic tariff reviews. Government has made a budget allocation of US$542 million in 2008 to implement the MYTO.
- About 1,500 MW of public generation capacity has been added between 2005 and 2007.
- A new process of reviewing Power Purchase Agreements, for improved transparency, has been developed with Bank support.
- NERC has issued licenses to successor entities and new generating plants, and has developed regulatory and network standards. The National Electric Power Policy provides for the establishment of a Consumer Assistance Fund, to be administered by NERC, to ensure the availability of targeted subsidies to less privileged Nigerians to promote their access to electricity.
- Upgrades in commercial processes, and adoption of international best practice at the utilities (through the CREST[9] program), have led to a substantial increase of monthly revenues from 4.8 billion Naira in 2003 to 7 billion Naira in 2007, and a rise in metered customers from 40 to 67 percent.
- System losses are showing a declining trend. Introduction of private management outsourcing through Revenue Cycle Management (RCM) contracts has also contributed to improvements in commercial performance of the distribution sector.
- Nigeria is the first country to claim carbon credits for SF6 gas reductions in the transmission sector, which will be used to finance further reductions in transmission and distribution losses.

9. Therefore, although these reforms and the investments have yielded some initial results (see Box 1) there is still an unfinished agenda before these results can match expectations. Table 1 details the elements of Government's strategy to address key issues in various segments of the sector.

[8] Given the intense public frustration on this issue, a parliamentary inquiry specifically looked into the implementation delays and governance aspects of the NIPP.
[9] Commercial Reorientation of the Electricity Sector Toolkit.

Table 1: Government's power sector reform strategy

Challenges	Government's proposed actions
Generation	***Generation***
• 5,700 MW of capacity installed, only 3,000 MW operational; most of the capacity is old, dilapidated, underperforming. • Severe shortfall in power generated; high public frustration; affecting competitiveness of non-oil sector. • Existing thermal plants are losing one-third of power generation capacity due to gas shortages. • Lack of gas availability of required quality will be a binding constraint to new power plants. • Uneconomic pricing of gas and electricity distorting incentives.	• Increase power generation by completing public sector plants and attract private power generation. • Detailed rehabilitation program for all old generation plants with urgent repairs. • Secure increased gas supply for domestic market. • Ensure improved gas quality through bilateral contracts with gas suppliers. • Implement phased pricing reforms with transitional subsidy to ease impact on consumers.
Transmission	***Transmission***
• Capacity to carry only 4,000 MW, while available generation is expected to reach around 7,000 MW once the plants under construction are completed. Thus remedial action is required to ensure that power reaches end-users. • Low reliability and efficiency; high losses of scarce power.	• Physical investment to alleviate bottlenecks; Construction must proceed in parallel with generation efforts so that transmission network is ready to evacuate power from generation plants. • Physical investments and upgrades also reduce transmission losses.
Distribution	***Distribution***
• High technical and commercial losses, widespread power theft. • Below-cost tariffs, poor billing and collection efficiency.	• Targeted investments in best-practices and improved management as demonstrated in CREST pilots, to improve service delivery and reduce theft of power. • Raise tariff to cost-recovery levels as per MYTO; improve utility efficiency.

10. The Gas sub-sector has not developed as much as the crude oil sub-sector, except for exports of gas in the form of Liquefied Natural Gas (LNG). Hence, the amount of gas available for domestic utilization for both power generation and non-power uses has been limited and the supply/demand imbalance persists. This limitation has been due in part to a variety of factors including lack of: (i) adequate fiscal incentives to encourage gas development by local and foreign non-oil exploration companies; (ii) an appropriate gas pricing policy; (iii) an appropriate legal, contractual and regulatory frameworks; and (iv) adequate gas transmission network to move gas from the well head to consumers.

11. Gas availability and quality are critical constraints to power sector performance. Out of installed power generation capacity of 5,700 MW actual power supply tends to be only 3,000 MW on account of insufficient gas supply among other causes. Bank's analysis shows that, apart from inefficiencies arising out of poor maintenance and management, existing thermal power plants are losing one half of their capacity *due to gas supply shortages.* Also, the poor quality of gas supplied is reducing the operational and technical integrity of these plants. Similarly, shortage of gas will also limit production from the six new public-sector gas-fired power plants being constructed under the NIPP. Therefore, increasing gas supply for power

generation is an essential part of the Government's strategy to address problems in the power sector. The Government's strategy is to directly address the barriers to supply gas to the domestic market and to jumpstart investments in gas infrastructure by the International Oil Companies (IOCs),[10] which are the major gas producers in the country. The key disincentives to investment by gas producers are uneconomic pricing, unclear institutional roles, inefficient or non-existent contractual arrangements, inadequate gas infrastructure for gas gathering, processing, transmission and distribution as well as lack of payment security.

12. The Government has introduced politically challenging pricing reforms in the gas sector to complement those in the electricity sector. The recent gas policy gradually increases the price of gas for electricity from US$0.10 to US$1.0 per mmbtu[11] by 2012. Simultaneously retail electricity prices are set to move to cost reflective levels from the current 6 Naira to 10 Naira per kWh by 2011 with transitional subsidies from the Government to ease the impact of the increase on the end-user. The relevant policies allow for periodic adjustments to inflation both in case of electricity and gas prices. While the gas prices are denominated in dollar terms, the electricity regulator proposes to conduct an annual review of electricity tariffs which includes adjusting the subsidy requirement based on utility performance and inflation among other factors.

13. Other specific measures being launched by the Government include: (i) Domestic Gas Supply Obligations (DGSO) for gas companies, which are mandatory irrespective of LNG exports,[12] and (ii) the introduction of bilateral commercially enforceable contracts between IOCs and all end-users, including power companies (see Table 2). These measures by the Government are also expected to help its overall strategy for gas flaring reduction.

14. The proposed bilateral contracts between IOCs and PHCN are at the core of the Government's strategy to channel gas to the domestic market, especially for power generation. The bilateral Gas Supply and Aggregation Agreements (GSAA) will provide appropriate commercial incentives and accountability on account of the direct commercial interface between gas producers and end users. These GSAAs will require the IOCs to provide gas that meets specified quality standards. The Agreements will also require PHCN to accept "take or pay" obligations in respect of the gas it nominates each year. In addition to entering into the bilateral Gas Supply and Aggregation Agreements, PHCN and other end users of gas will enter into Gas Transportation Agreements (GTA) with Nigeria Gas Company (NGC) for the transmission of the gas to each end users' facilities. These transportation agreements are required, since the Gas Supply Agreements provide that the IOCs' delivery point for gas to their domestic customers will be at the entry to the NGC pipeline, where title of the gas will transfer to the customer.

15. A domestic Strategic Gas Aggregator (SGA) is proposed to be established by the Ministry of Petroleum in consultation with suppliers of gas, to manage the commercial interface and the implementation of the proposed contractual framework. Timing for the establishment of the SGA has been announced as August 30, 2009, with interim arrangements to take effect by

[10] Shell, Exxon-Mobil, Chevron and Total are the major gas producers as almost all of the currently produced gas is associated gas that comes as a byproduct with oil extraction (stand alone dry gas fields are yet to be exploited).
[11] This pseudo regulated price is designed to match the netback from LNG to IOCs, i.e. to remove the large price discrepancy between domestic supply obligations and foregone export opportunities.
[12] This means that the obligation to deliver gas to the domestic market must be met before the gas company is permitted to export.

July 15, 2009. The SGA is expected to implement and monitor the demand and supply of gas in domestic markets, and operate a nomination and balancing mechanism to manage the gas requirements through the issuance of gas purchase orders as part of implementation of the Domestic Gas Supply Obligation (DGSO). The SGA will work to ensure transparency of dealings between gas suppliers and purchasers, and act as an intermediary in the domestic market in implementing the proposed pricing framework. The arrangement is expected to ensure a

Table 2: Government's Gas Sector Strategy

Challenges	Government's proposed response
Pricing • Low domestic prices. • Gas to power price inadequate to justify investment necessary to supply gas to power plants. • Creditworthiness of power sector weak due to regulated tariffs and poor revenue collection.	• Transparent gas pricing policy for the domestic market announced, including a phased price increase over five years for power sector. • Poor creditworthiness in the power sector addressed through announcement of a transparent Multi Year Tariff Order (MYTO) for the electricity sector.
Availability • 300 mmscfd available versus domestic demand of 600 mmscfd.	• Clarification of Gas Policy • Master Plan defines treatment for three domestic customer categories, power sector being the first.
Reliability and Quality of Domestic Gas Supply • Gas deliveries to power plants unpredictable and of substandard specifications.	• Bilateral contracting (Domestic Supply Obligation) between gas seller and gas buyer imposes contractual obligation to meet delivery and quality standards and to off-take the gas.
Delivery/Transportation • Nigeria Gas Company (NGC) has monopoly on purchase, resale and transportation of gas for domestic market.	• Gas sector reform: proposal to split NGC into two companies, one for gas transportation and one for gas marketing. • Gas Transportation Company (resulting from reform of NGC) will be subject to commercial discipline through contractual relationships with customers.

balanced growth of domestic gas projects through the availability of adequate volumes of gas to the Strategic Sectors. The SGA is also expected to open and manage a proposed Escrow Account with an Escrow Agent approved by the Ministry of Petroleum, and will direct purchasers of gas to make payment for gas supply into the proposed Escrow Account in accordance with the payment schedules agreed by the gas suppliers and gas purchasers. The SGA will also facilitate payments to gas suppliers in accordance with the minimum Aggregate Price (US$0.50/mmbtu). The SGA will maintain and prepare detailed annual audit reports of the proposed Escrow Account.

16. According to the Government's gas policy, the SGA acts as an intermediary between the suppliers and *diverse* demand sectors. The SGA will manage the domestic gas supply obligation and demand, and at the same time ensure that the suppliers get the aggregated price.

B. Rationale for Bank involvement

17. The Bank's current engagement in the power sector is consistent with the Country Partnership Strategy (CPS) (2005 - 2009), and the new CPS for 2010 - 2014, which is under preparation. Since 2001 the Bank Group, in partnership with Department for International Development (DFID), and the United States Agency for International Development (USAID) has supported Nigeria's reform efforts with both operational and analytical activities. This includes, Analytical and Advisory Activities (AAA) based policy advice and investment support through the lending projects. The policy advice comprises electricity sector reform and restructuring, including outsourcing commercial functions and natural gas policy. The Bank is currently undertaking Economic and Sector Work (ESW) covering sector governance, institutional issues, finances, tariffs and subsidies as well as analytical work on the political economy of the electricity sector. The International Development Association (IDA) projects currently under implementation target improvements in transmission reliability, distribution efficiencies, improved access and supply in targeted areas as well as rehabilitation of hydro units. Of the total IDA assistance of US$407 million to the power sector in three projects,[13] about US$210 million has been committed, and US$145 million was disbursed by May 2009. The Bank has also facilitated a Carbon Finance initiative in the power sector where the Transmission Company is in the process of claiming carbon credits for SF6 gas emission reductions in its network. The International Finance Corporation (IFC) is currently processing assistance to a private power generation plant - Geometric power - which also proposes to maintain and supply power to a decentralized ring fenced distribution network in the vicinity of the power plant.

18. The Government has approached the Bank for support to implement its gas and power sector strategy and has requested a series of Partial Risk Guarantee (PRGs) to back-stop the payment obligations of the public power utility, PHCN under its proposed Gas Supply and Aggregation Agreements (GSAAs) with the Oil Companies (OCs). These contracts are urgently needed to ensure regular and sufficient supply of gas to the power companies for power generation, given that public power companies consume most of the gas supplied in domestic markets (currently around 80%). The OCs are however seeking acceptable security for PHCN's payment obligations in the form of IDA PRGs before they would be willing to conclude these contracts with PHCN. The Government sees several advantages in offering risk mitigation through the PRG instrument to the OCs as: (i) it will help to conclude the GSAAs thereby ensuring critical supply of gas to the strategic power sector; (ii) the use of the PRGs will help limit FGN's contingent liabilities only to the counter-guarantee provided to IDA compared to the FGN Sovereign guarantees that were originally required to support PHCN's entire payment obligations under the GSAA for the duration of the contract term; and (iii) it will help to catalyze private sector finance in the gas and power sectors. Given the early stage of sector reform of the gas and power sectors, IDA's ongoing sector dialogue with the Government, together with its counter-guarantee requirement, IDA is best positioned within the World Bank Group (WBG) to offer the proposed risk mitigation from a risk management perspective. IDA is also perceived by the OCs to have better leverage with the Government and on this basis they have confirmed their interest in the proposed PRG security structure as detailed in PRG Term Sheets (see Annex 10).

[13] One IDA project – the Transmission Development Project (US$100 million) closed in December 2008, and with full disbursement.

19. The resource requirements of the power sector are large. Therefore the Bank's strategy focuses on leveraging its assistance to assist the FGN with its efforts to reform the sector and place it on a sustainable growth path and catalyze private sector finance during the transitional period through PRGs. Additionally, it is important to demonstrate electricity transmission and distribution projects with "good practice" design, governance and implementation features to help the Government utilize the significant resources under NIPP efficiently and achieve the intended outcomes. There is also a clear opportunity for the Bank to leverage limited IDA investment resources to promote "good practice" in executing public investments. In view of the Bank's experience in the global and Nigerian power sectors, and the good track record of prior support in these areas, FGN has also requested the Bank for support with (i) developing good practice investment packages for upgrading network efficiency; (ii) technical assistance to help in policy and sector analysis, including among other things, a detailed diagnostic of all rehabilitation requirements in the older power generation plants, and identifying barriers to market development in the Independent Power Producer (IPP) sector; and (iii) development of a carbon finance program in connection with its gas and power sector development efforts. Furthermore, the Bank is also in a position to support the Government to achieve international best practice on safeguards compliance and stakeholder consultation. Investment and Technical assistance from the Bank will complement the proposed PRG support for as contracts. While generation is expected to increase with sustained and improved gas supply with the PRGs, the investment assistance will help evacuate this power, and the technical assistance will facilitate the necessary complementary policy actions by the Government. IDA's analysis shows that the cost recovery trajectory that underpins the MYTO and the overall Government sector reform strategy is unrealistic. Analysis given in Annex 9 (Table 11), shows that the subsidy requirements may persist till 2018 as against an optimistic projection of 2011 under MYTO. While the time frame for cost recovery may hence be longer, analysis shows that the increase in subsidy requirements may not be proportionally as high. This is mainly on account of delayed investments, such as NIPP, longer gestation periods for generation expansion plans, and a conservative assessment of PHCN's performance. The Project takes this into account by requiring subsidy adjustments based on annual MYTO revisions, which will take into account actual sector performance, as a Covenant. In this context, discussions with Government have indicated that a longer trajectory may be acceptable if it is accompanied by reasonable outcomes in the sector.

Future Bank support for Government Strategy

20. In the medium-term, the Bank intends to support the energy sector with a series of Specific Investment Loans (SILs) and PRG operations (for private power plants likely to come on stream) that will be designed to help a systematic, sequential approach to building up the commercial structure and related infrastructure with appropriate covenants. While the gas supply contracts, facilitated by the PRGs will lead to improvements in gas supply and reliability for power generation, these improvements can be sustained only if the Government follows through with complementary actions to rehabilitate the power plants and the gas pipeline along with the continued implementation of the tariff policy with the required subsidy transfers. The investments in the proposed Project will set the stage by providing downstream electricity investments to realize the immediate benefits of improved gas supply. The combination of a series of PRGs together with investment credits, including technical assistance, would enable continued focus on essential policy actions by the Government. These actions will be required to

realize longer term benefits of increased gas supply. Furthermore, while providing benefits to Niger Delta communities and rural communities in general is essential, the proposed Project's main focus is to assist Nigeria harness its natural gas resources to enhance grid based power supply. The investments planned in the current Project are mainly designed to help evacuate the resultant increase in grid based power. Therefore benefits to Niger Delta and rural communities in general may have to be considered in other operations which may be designed to serve this purpose. The upcoming CPS 2010-13 will address this issue. Hence, while Niger Delta communities will generally benefit from the increase in grid based supply in the same way as the rest of the country, the Project is not explicitly addressing provision of benefits to Niger Delta.

21. This approach will be spelled out in the forthcoming CPS 2010 - 2013. The three pronged approach (PRG, investment and TA) serves to address gaps on multiple fronts; the investments in PHCN will help to enhance sector revenues while the TA will support decision-making at all levels and will allow for improved monitoring and evaluation of results on the ground.

22. PRG support may be provided in future Bank operations to backstop PHCN's payment obligations for power purchased from IPPs currently being developed by NNPC's Joint Ventures with IOCs such as Total, Chevron and Exxon–Mobil. The Government has already requested PRG support for the proposed IPP with TOTAL which is at an advanced stage of development and is expected to be processed for Management and Board approval later this year.

23. Given the low access rates and given that around 50 million people in the rural areas are living in darkness, it is critical that the Bank supports Government's efforts to expand rural electrification. Promoting use of renewable energy is equally important given the need to diversify energy resources and high costs associated with extending the grid to hitherto unconnected areas. These can be addressed in a future operation exclusively designed to address these issues, in view of important but complex challenges involved in implementing rural and renewable energy programs. In addition the Bank could support the development and preparation of carbon credits, or Emission Reduction Purchase Agreements (ERPAs). These credits are expected as a result of enhanced grid based power generation that will arise from regular and higher availability of gas supply. The incremental grid based power will substitute power generated from captive sources that use diesel and other fuels (that emit much higher level of greenhouse gases).

C. Higher level objectives to which the project contributes

24. The project is consistent with the 2005 - 2009 CPS which calls for supporting infrastructure development, especially power, gas and transport infrastructure. The project contributes to the higher level objectives of domestic gas market development, through enhancing the credibility of government reform in the gas and power sector. Besides direct economic benefits the project will also indirectly contribute to social service deliveries that are generated through increased power supply. These benefits will be studied and analyzed further under the accompanying program of Economic and Sector Work being carried out in parallel. The project also helps power sector development which is an essential ingredient for Nigeria's economic growth and improved competitiveness, particularly in the very important non-oil

sector. The project will have the added benefits of reduced Green House Gas emissions through substitution of captive generation with cleaner grid based generation.[14]

II. PROJECT DESCRIPTION

A. Lending Instruments

25. The proposed instruments will be a series of PRGs for gas contracts, along with a Specific Investment Loan to support investments and technical assistance. The proposed structure with the associated PRGs would underpin the Government's new gas policy designed to enhance domestic gas production through the conclusion of specific GSAAs with OCs and support the power transmission and distribution networks to accommodate the increase in power generation resulting from the PRG support for gas supplies.

26. In order to achieve these objectives, the project will provide: (a) Partial Risk Guarantees of an amount of US$400 million to support gas contracts (IDA US$100 million); and (b) Investments and TA under the SIL (IDA US$200 million) (2009 - 2014).

B. Project development objective and key indicators

27. The objectives of the Project are to: (i) improve the availability and reliability of gas supply to increase power generation in existing public sector power plants; and (ii) improve the power network's capacity and efficiency to transmit and distribute quality electricity to the consumer.

28. The project-term outcomes are expected to be as follows:

(a) Increase in volumes and quality of domestic gas supply to public power plants through support to the new Gas Policy Framework and gas supply agreements.

(b) Increase in availability and reliability of power supply through increase in power output of existing public plants; and improvement in delivery of power through targeted investments in electricity transmission and distribution infrastructure.

(c) Development of power plant rehabilitation plans, and options for private sector participation in existing public power generation capacity through Technical Assistance.

(d) Development of plans for improving the gas pipeline infrastructure in terms of technical, environmental and safety dimensions, through policy development, and capacity building through Technical Assistance, including enhancement of institutional capacity to evaluate and improve the enforcement of environmental and social regulations in the gas sector.

[14] This will be achieved on two counts: (i) cleaner grid power; and (ii) reduced technical losses in operations due to performance improvements.

C. Project Components

29. The following is a brief description of the activities targeted by the project (see Annex 4 for further details).

Component 1: Risk Mitigation through a series of PRGs in support of Gas Supplies to increase power generation from existing Public Sector Power Plants (PRGs for US$400 million with IDA allocation of US$100 million as explained in paras. 32 - 43).

Component 2: Enhancement of Transmission and Distribution Infrastructure (US$180 million of IDA Credit) through;

(a) Rehabilitation and reinforcement of aging 330 kV and 132 kV transmission stations including Afam, Akangba, Kaduna, Birnin Kebbi, Ikeja West, Ayede, Aba, Biu, Akure, Jerico, Ijebu-Ode, Eket, Ikorodu, Osogbo, Dan Agundi, Port Harcourt and Alagbon.

(b) Rehabilitation/retooling of existing power transformer workshop.

(c) Rectification/corrections of switchyard deficiencies and malfunctioning in 330/132 kV transmission stations so as to improve communications to strengthen electrical systems' performance, efficiency and reliability.

(d) Reinforcement of distribution networks to increase electricity supply in selected cities including Kano, Kaduna, Eko, Ikeja, Ibadan, Abuja, Benin, Port Harcourt, Yola, Jos and Enugu.

(e) Installation of 11 kV sectionalizers in Karu, Kubwa, Lagos University Teaching Hospital, Ogba, Agege and Idiaraba to increase customer satisfaction by reducing economic loss resulting from chronic power outages in these service areas.

(f) Acquisition and installation of metering and other relevant equipment required to analyze and measure the quality and quantity of gas supplied to the Project Implementing Entity under Component 1 of the Project.

Component 3: Technical Advisory Services (US$16 million of IDA Credit).

30. Provision of logistical support and technical advisory services required to sustain ongoing reforms undertaken by the Recipient to improve the performance of its power sector including:

(a) Carrying out studies to identify and select rehabilitation and management options to be adopted to promote efficiency for the Power Holding Company of Nigeria's power generation subsidiary companies;

(b) Improvement of the tariff-subsidies model and delivery mechanisms adopted under the MYTO;

(c) Design of gas infrastructure and transmission and distribution systems needed to handle expected increases in power supply;

(d) Activities aimed at building capacity for relevant institutions of the Federal Government of Nigeria responsible for the power sector including the NERC, ERSU and the Market Operator;

(e) Enhancing capacity for FME and DPR, specifically with respect to implementation and enforcement of environmental rules/regulations governing the undertaking of gas and oil operations in Nigeria;

(f) Formulation and execution of community outreach activities including a communication program to foster and to sustain open and continuous dialogue amongst all relevant stakeholders about the Project;

(g) Carrying out of selected feasibility and re-engineering studies and supervision activities needed for execution of investments identified under Component 2 of the Project; and

(h) Carrying out of activities designed to strengthen NPTI's operational capacity.

31. Support for incremental operating costs of PMU (US$2.0 million); and

32. Un-allocated funds (US$2.0 million)

Series of Partial Risk Guarantees

33. It is proposed that a series of PRGs for an amount of up to US$400 million (which will involve an IDA allocation of US$100 million) be provided in support of gas supply payment obligations of PHCN under individual GSAAs to International and Domestic Oil Companies who are in existing Joint Ventures with the state-owned Nigerian National Petroleum Corporation (NNPC). The first two PRGs are expected to be in support of GSAAs between PHCN and Shell Petroleum Development Company (SPDC) as JV Operator and Chevron Nigeria Ltd. (CNL) as JV Operator respectively for a total amount of US$315 million. Once Board approval is obtained for the first two contracts, as part of the proposed PRG operation, based on the PRG framework detailed in the PRG Term Sheets (see Annexes 10 A and B), it is proposed that the balance amount of US$85 million be deployed for five subsequent PRGs in support of GSAAs between PHCN and Exxon Mobil, AGIP, Pan Oceanic, Total and Addax as JV Operators respectively on a 'first come first served' basis. The five subsequent contracts would be very similar to the SPDC and CNL contracts because of the industry-wide approach adopted by the FGN under its new gas policy, in terms of contractual obligations and risk allocation, and are likely to vary only in terms of contractual amounts to reflect the varying levels of gas supply obligations. It is, therefore, proposed that the subsequent PRGs be approved by the Regional Vice President following which they are circulated to the Executive Directors on an 'absence of objection' basis for a 10 day 'Board comment' period at the end of which the approval would become effective. The PRG operation could be scheduled for Board discussion if at least three Executive Directors so request during the circulation period. If a subsequent operation should materially deviate from the approved PRG terms as set out in the PRG Term

Sheets then it would be presented to the Board as a separate PRG operation following consideration by the OC. This process would be similar to the approach approved by the Board for the Guarantee Facility for the WAEMU Capital Market Development Project[15] on February 26, 2004. However, the proposed operations would incorporate 'lessons learnt' from the Guarantee Facilities previously approved by the Board in the following ways:

- The major amount of the proposed PRGs will be approved as part of this operation in support of the SPDC and CNL contracts leaving only US$85 million for subsequent contracts which have been identified but are not ready for appraisal, thereby reducing the risk of cancellation.

- Separate L/Cs and associated Guarantee documentation would be issued in support of each PRG operation by IDA instead of a local intermediary.

- There would be no delegation of due diligence to a local intermediary, as in the case of the Guarantee Facilities, and IDA would only issue its Guarantee once the contract has been fully appraised and the Regional VP approval has been obtained.

34. IDA's Pilot Program for Guarantees is limited to US$500 million and the currently available IDA exposure under this program is around US$143 million. A Board Paper 'Review of the IDA Guarantee Pilot Program' which proposes the mainstreaming of the IDA Guarantees, effectively lifting the current ceiling and allowing management to set a revised program ceiling of US$1.5 billion for risk management purposes, is currently being processed for Board consideration on June 11, 2009. In the event the Board Paper is not approved for any reason prior to the Board consideration of the NEGIP, Board approval is sought for the PRG component of this operation for the available IDA exposure amount in support of one of the proposed contracts on a 'first come first served' basis.

The Proposed PRG Operation

35. As noted above, the first PRG will be for an amount of up to US$150 million in support of a GSAA between PHCN and SPDC as JV Operator. The SPDC JV shareholding consists of SPDC 30%, NNPC55%, Total Nigeria Ltd. 10%, and AGIP 5%. The second PRG is expected to be for an amount of up to US$165 million in support of a GSAA between PHCN and CNL as JV Operator. The CNL JV shareholding consists of CNL 40% and NNPC 60%. Although the above Public Private Partnerships (PPP) are majority public owned, the private sector JV Operator has management and operational responsibility for the unincorporated JV which are operated as private commercial ventures. The JV Operators' responsibilities, for joint operations, include the development and operation of projects, concluding relevant contracts and managing the financing and budgetary resources on behalf of the Joint Venture. In addition, any major decision at the JV level requires the concurrence of the private partners. The proposed PRG support is considered by the OCs as key to their participation in the GSAAs and is, therefore, consistent with the Bank's current business strategy of 'crowding in' private investments as outlined in WBG's Sustainable Action Plan for FY09-FY11 as well as with IDA Guarantee policy. In addition to PHCN and the JV Operator, the Gas Aggregator will also be a

[15] Report No: 27518-AFR.

signatory to the GSAAs with the objective of enforcing the OC's domestic gas supply obligations and facilitating the payments for gas supplies to the OCs through Escrow Arrangements which will be set up under the GSAAs.

36. The proposed PRGs will backstop PHCN's debt payment obligation to local commercial banks, based in Nigeria that have, on behalf of PHCN, paid under Standby Letter of Credits (L/C) issued by such banks for the account of PHCN for the purpose of backstopping its payment obligations towards SPDC, CNL, and other JV Operators under the GSAAs. The PRG would only guarantee the risk of non-payment by PHCN under the GSAAs for gas made available for delivery at a delivery point in the NGC-Escravos Lagos Pipeline Systems. It would be PHCN's responsibility to have the gas transported from the delivery point to its various power plants for which it will conclude a Transportation Agreement with NGC. PHCN's payment obligation towards the JVs will arise principally under the following circumstances: (i) upon delivery of gas in accordance with specifications stipulated in the GSAA to the delivery point that is taken by PHCN; (ii) when gas is made available for supply up to a maximum of 80% of contracted quantities but is not taken by PHCN; and (iii) in the event that gas not conforming to specifications is delivered, it is taken knowingly by PHCN.

37. PHCN's payments obligations under the PRG would be capped at an amount equivalent to the highest 12 month aggregate amount under each GSAA, as the GSAA payments will increase incrementally over the first five year period to reflect the phased price increase provided for by the new Gas Pricing policy. Each PRG would have the structure, as further detailed in the PRG Term Sheets and Schematic in Annex 10 A and B with respect to SPDC and CNL GSAAs.

38. PHCN would issue separate revolving Standby L/Cs through an L/C Bank to CNL, SPDC and other JV Operators for a maximum amount equivalent to 12 months of PHCN's payment obligations under the individual GSAAs. The repayment obligation of PHCN to the L/C Bank would, in turn, be backstopped by the PRG. In the event of a failure by PHCN to comply with its payment obligations under the GSAA, which would be entirely within its control, the JV Operator would be authorized to make drawings under the respective L/Cs at the expiry of the relevant contractual payment periods and upon the presentation of pre-agreed documentation under a PRG Support Agreement. Following a drawdown under the L/C, PHCN will be obligated under a Reimbursement and Credit Agreement (to be entered into between PHCN and the L/C Bank) to make a repayment to the L/C Bank (plus pre-agreed interest) within a period of one year. If repayments are made by PHCN within the stated 12 month period for the amounts drawn by the relevant JV Operator, the L/C would be reinstated by the L/C Bank for the amounts repaid. If PHCN should fail to repay the L/C Bank within the one year period, the L/C Bank would then have recourse to the PRG for the drawn amounts plus any accrued interest under the Guarantee Agreement it would conclude with IDA. In the event of disputes between PHCN and the relevant JV Operators as to the amounts due under the GSAA, provisional payments would be payable under the L/Cs on the posting of appropriate security by the JV operators which PHCN could call should the dispute be resolved in its favor.

39. A guarantee payment under the PRGs would trigger the Indemnity Agreements that IDA will conclude with the Federal Republic of Nigeria in support of each PRG. Any amounts paid by IDA to the L/C Bank would be deducted from the maximum guaranteed amount under each PRG and even if PHCN's payment default is remedied following a call on the PRG, those

amounts would not be reinstated under the relevant L/C. As with all guarantee operations, the Federal Republic of Nigeria will undertake to indemnify IDA, on demand or as the Bank may otherwise determine, for any payments made by IDA under the PRGs in accordance with the Indemnity Agreement.

40. Each PRG would be for a maximum term of 12 years comprising, the term of the GSAA, currently expected to be ten years from the date of its effectiveness, plus PHCN's one year repayment period plus the 60 day payment period within which the Bank would be obligated to pay the L/C Bank following a call on the PRG. Each PRG would be priced at 75 basis points per annum on the guarantee amounts of each GSAA and would be payable six monthly in advance. In addition, there would be an Initiation Fee of 15 basis points or US$100,000, whichever is higher, and a Processing Fee of a maximum of 50 basis points (for reimbursable expenses) on the guaranteed amount. All PRG-related Fees would be payable by the JV Operators. The above is consistent with the pricing policy of IDA Guarantees.

Value Added of the PRG

41. The proposed risk mitigation through the PRG component of this operation is a pre-condition to the OCs concluding the GSAAs with PHCN. The principal advantage of the proposed PRG framework is that minimal security, limited to amounts equivalent to only 12 months of GSAA payments under each contract, is being provided to the OCs through the PRGs. This will help to leverage both IDA resources as well as limit FGN's contingent liabilities substantially. The proposed PRG Framework would obviate the need for FGN Sovereign Guarantees for the payment obligations of PHCN under the GSAA for the duration of the contract term. The Bank's intermediation through the PRG backed L/C structure is sufficiently attractive to the IOCs for them to dispense with FGN Sovereign Guarantees in support of the GSAAs. Instead, FGN would only provide a counter-guarantee to IDA for PRG support for the 12 months equivalent of GSAA payments for each contract. This catalytic effect of the PRG is amply demonstrated by the fact that PRG support of US$315 million for the SPDC and CNL GSAAs is expected to leverage over US$3 billion of gas payments flows over the term of these two contracts.

42. The PRG would thus help to mobilize much needed private investment in gas production thereby helping to address the problem of shortages of gas supply which have resulted in severe power shortages with its resultant negative impact on GDP growth. The Government, therefore, considers the unlocking of the domestic gas sector by the provision of risk mitigation through this PRG operation as critical to its sector reform strategy. The PRG support would help to kick start the Government's much needed reform of the gas sector with its key strategy of commercializing the sector and enhancing domestic gas production as well as power generation capacity for the strategic power sector.

PRG Risk Coverage

43. As noted above, the proposed PRGs will cover only the risk of non-payment by PHCN for gas delivered and would be capped at a maximum amount equivalent to 12 months of gas payments with respect to each GSAA supported by the PRG. In the context of total power sector finances, which will determine the ability of PHCN to make timely payments to the OCs under

the GSAAs, it is anticipated that there would be a shortfall in total sector finances at least for the next three years until cost recovery tariffs are introduced by NERC. However, for the transitional period, FGN has already approved a subsidy for the sector of around US$542 million in 2008, US$651 million in 2009, and US$311 million in 2010, which is expected to cover the shortfall in sector revenues for the next three year period. As power generation volumes increase, the expected subsidy requirement will increase if cost recovery tariffs are not in place. In the event that the allocated subsidies do not cover the shortfall, FGN will undertake in the Indemnity Agreement to cause the cash gap of PHCN to be closed through additional resource transfers as and when required.

44. There would be additional protection for the PRGs in the following ways: (i) increased gas production would help to generate additional sector revenues through an increase in power generation; (ii) an assurance would be obtained from FGN and the Market Operator, who manages the entire sector revenues, that specific amounts will be earmarked for payments under the GSAAs for public sector plants in the amounts allocated to public generation companies, and which would rank first in the sector revenue waterfall under the Market Operator's Clearing Account (MOCA); and (iii) the design of the PRG structure is such that there would be immediate notification to the Bank should there be a drawing under the L/C thereby giving the Bank 12 months to actively work with PHCN and FGN in the context of its ongoing sector involvement to ensure that PHCN would be in a position to repay the L/C Bank to avoid a call on the PRG.

Investments and Technical Assistance

45. Investments under the project have been specifically identified to meet the twin tests of complementing the commercial reform in the gas and power sectors being supported by the project as well as meeting important needs of the Government's investment strategy in the near to medium-term. The proposed investments in transmission and distribution systems will support the expected improvements in power generation on account of increased and reliable gas supply by targeting network investments to remove transmission bottlenecks and improve electricity distribution to end users. The investments in Distribution will help financial health of the Companies to meet the costs of increased gas and power supply. In order to achieve this, PHCN will, though these investments extend loss reduction and service delivery improvement initiatives such as the CREST which have proved highly successful in Bank projects currently under implementation and support power companies to achieve the efficiency targets. They are also designed to facilitate knowledge transfer to enable the Government to replicate and scale up best practice investments with its own financing. The investments planned under the transmission component are essentially meant to help evacuate the increased power generation. On the other hand the planned distribution investments are aimed at improving the financial sustainability of the distribution companies by improving service delivery. While providing benefits to Niger Delta communities and rural communities is essential, this may have to be considered in other operations which may be designed to serve this purpose and the upcoming CPS 2010-13 will address this issue. Hence, while Niger Delta communities will generally benefit from the increase in grid based supply in the same way as the rest of the country, the Project is not explicitly addressing provision of benefits to Niger Delta.

46. Technical assistance will complement the interventions through support to reform measures and contractual frameworks being supported with Partial Risk Guarantee. Additionally TA will assist the capacity of the relevant institutions to deliver optimal results in terms of implementation, safeguards compliance, communication and stakeholder consultation and overall outcomes of the proposed investments. Among other activities as described in para. 29 above, Technical Assistance will focus on assisting NERC in design of lifeline tariff protection systems for the poor, improving subsidy targeting and implementing the consumer assistance fund. Additionally, resources under the TA component will be utilized to strengthen institutional capacity to sustain monitoring and evaluation of results achieved under the project.

D. Lessons learned and reflected in the project design

47. **The Project design should be simple with a clear focus on core objectives targeting key sector constraints.** Drawing from the experience gained from projects currently under implementation, the proposed project design focuses exclusively on improving the availability and reliability of gas and electricity as the development objective, leaving complex reform and sector restructuring issues, as well as critically needed access expansion issues to subsequent operations. Given that the Gas and Power sectors face multiple challenges, it is critical to prioritize interventions. Hence this project seeks to address more fundamental issues such as lack of gas supply to power sector and contractual gaps in gas distribution in the domestic market.

48. **Application of national regulations for management of upstream impacts.** Previous experience has demonstrated that management of safeguards associated with assets such as oil and gas - the development of which is closely interwoven with the country economy at large - and associated sovereignty issues - requires strong national safeguards management systems rather than a lateral outside intervention to be effective. The safeguards approach in the West Africa Gas Pipeline (WAGP) built upon this experience, using the Access Code to require prospective new shippers of gas to certify that its production is in full compliance with Nigerian laws and regulations.

49. **A project relying on national safeguards regulations needs to provide resources to assist the borrower in building capacity and improving performance.** Experience in WAGP showed that there was both need and demand for capacity-building, but the design of the operation did not provide a means for the Bank to support it. Hence this project seeks to make an effective and positive influence on the national environmental impact assessment process by actively working with the Ministry of Environment and the Department of Petroleum Resources to strengthen the relevant national systems through capacity building. Additionally, WAGP demonstrated the need for a well-coordinated and adequately resourced supervision strategy.

50. **Early stakeholder consultation and improved communications with various stakeholders is essential for sustainability.** Compliance with safeguards, both in environmental and social aspects, requires extensive consultation with stakeholders. The experience of implementation of the West Africa Gas Pipeline project emphasizes the importance of community inputs into safeguards issues and related mitigation plans. The project undertook an extensive series of consultations both before appraisal and at appraisal. A mechanism for ongoing consultations and community relations has also been developed

(outlined in Annex 12 A). The impact of positive communications with stakeholders was evident at the Stakeholders' workshop organized by the PHCN-PMU in the Niger Delta (Port Harcourt) during appraisal. A network of community associations calling itself "Friends of NEGIP" was spontaneously formed, undertook to provide the Minister, decision-makers, and IDA with regular feedback during implementation. All through the implementation period, the Project will strive to keep stakeholder and public expectations in line with ground realities. A Stakeholder Forum will be formed to address any project-related concerns. A strategic communication program spanning the implementation period has helped to produce positive results in mitigating risks and fostering favorable investor perceptions in other countries that have gone through similar reform processes.

E. Alternatives considered and reasons for rejection

51. **Alternative instrument such as an APL.** Designing the operation as an APL was considered. This was particularly relevant given that the project aims to target fundamental barriers related to domestic gas development and in turn set the stage for power generation expansion and improvements in service delivery, and therefore an integrated and long-term approach is called for. Yet this long-term approach also relies on the simultaneous implementation of complementary policies in two or more sectors, with separate institutional backdrops. While the commercial reforms supported in the gas sector support enhanced power generation, supporting actions such as rehabilitation of existing power infrastructure as well as improvements in technical capacity of the pipeline infrastructure are required to derive optimal benefits and sustain these gas supply improvements. Also the pricing reforms are being introduced over a time frame and sector performance improvements that underpin these reforms, will have to be monitored through subsidy transfers and adjustments to ensure sustainability. An APL structure with pre-defined triggers that cannot factor in the reform trajectory in the next three years is likely to pose a severe constraint on IDA's flexibility to respond as a high-value implementation partner to FGN. A series of flexible, stand-alone SILs that can be processed as part of a medium-term engagement, and can include timely and responsive features as required by FGN, is a much more appropriate approach for IDA to use in this complex environment. The PRG is the appropriate instrument in support of JV public private partnerships to mitigate PHCN payment risk for the private sector and incentivize them to increase domestic gas production, thereby catalyzing private sector finance. The PRG has been designed to provide minimal support to the private sector, and yet at the same time obviate the need for FGN to provide any Sovereign Guarantees in support of the GSAAs. The only form of contingent liability for FGN will be the counter-guarantee it will provide to IDA for its support to the GSAAs.

52. **Including a rural access and renewable energy component.** The team considered including an additional component on rural access and renewable energy in view of poor access rates in the country and the need to diversify energy resources. It was finally agreed that the current Project should remain focused on improving gas supply for power generation along with complementary investment interventions and enabling policy changes. Lessons from implementation of rural electrification projects across the Bank have pointed out the need for focused implementation efforts. These activities could be anchored in a future project, as an investment operation that could be a part of SILs that the Bank proposes to assist the power sector with as part of the Nigeria Country Partnership Strategy.

III. IMPLEMENTATION

A. Partnership arrangements

53. Implementation of the Country Partnership Strategy (CPS) has demonstrated the advantages of concerted and coordinated sector-wide interventions for optimizing impact of the support of Development Partners. USAID and DFID are helping with the ongoing economic and sector work (ESW), particularly in the review of policy and contractual framework, due-diligence of power and gas sectors, development of regulatory and institutional structures, sector and utility governance, and the political economy surrounding the sector. The analytical work supported by these agencies has informed the design of this operation in a significant manner. *Agence Française de Développement* (AFD), the African Development Bank and the Islamic Development Bank have all approached the Government with an offer to partner with the Bank team and give parallel financing/co-financing for activities closely related to investments and TA in this project. The African Development Bank has indicated a resource envelope of US$100 million for this proposed support, and the AFD has indicated availability of US$200 million for associated Transmission and Distribution investments to support PHCN's investment program. In addition, FGN's energy partners will participate in the medium-term energy sector support program which will be articulated in the forthcoming CPS.

B. Institutional and implementation arrangements

54. The proposed IDA credit will be implemented by the Power Holding Company of Nigeria through its Project Monitoring Unit (PMU). The choice of PHCN as the implementing agency would result in streamlined arrangements because: (i) project implementation will be coordinated among all relevant institutions and restructured PHCN entities, so that transaction and implementation costs can be minimized; (ii) economies of scale and uniformity in quality and specifications in procurement can be realized for common items for all restructured PHCN entities; and (iii) single-point tracking of all project outcomes, accounts and safeguard compliance will be possible. Capacity already exists at PHCN to carry out these functions. The PMU has successfully implemented the Transmission Development Project and is currently implementing both the National Energy Development Project and the Niger River Basin Project components which support the rehabilitation of two hydropower stations. Project implementation performance is rated satisfactory in both. PMU has experienced staff which is familiar with IDA fiduciary requirements pertaining to goods, works, consultants and other services, as well as IDA safeguards policies. There is unlikely to be a better-placed institution in Nigeria for the implementation of the IDA-supported power sector investment credit than PHCN-PMU, which has a comparative advantage over other potential implementing agencies, given its track record of successful project implementation. The PRG component will be implemented by the PHCN and the respective Oil Companies, as JV operators, under the GSAAs. In addition, there will be an Indemnity Agreement with the Ministry of Finance. The IDA Supervision Strategy is provided in Annex 13 A.

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56. **Assessment of the implementation capacity of the PHCN-PMU** as part of a recent Mid-Term Review has indicated that: (a) PHCN-PMU continues to have adequate and acceptable capacity for implementation; (b) reporting and project management in PMU has progressively improved and plans are underway to implement a more efficient Project Management Information System. This System will facilitate timely follow up of the procurement, implementation, and disbursement status for necessary corrective actions. The assessment also identified areas regarding procurement which can improve such as: (a) the time taken to process post-review contracts, evaluation reviews and award of contracts; and (b) stricter adherence to rules of tender opening. Specific training will be arranged in Contract Management for relevant staff implementing the Project as necessary.

57. **Accounting and Audit**: The Finance Section (FS) of the PHCN-PMU will be responsible for managing the financial affairs of the Project. It will be responsible for ensuring compliance with the financial management requirements of the World Bank and Government, including forwarding the quarterly Interim Financial Reports and audited annual financial statements to IDA. The Internal Audit Section of the PMU will perform necessary modern internal audit functions for the Project. The IDA Credit Agreement will require the submission of Audited Project Financial Statements for the Project to IDA within six months after each year-end. Experienced and well-qualified external auditors will be engaged by the PHCN-PMU (based on a TOR acceptable to IDA) to audit Project accounts and transactions, and financial statements, irrespective of the source of financing.

58. **Project Financial Management Risk**: The Project financial management risk is assessed to be Substantial and mitigated to Moderate through adequate supervision by Bank staff, and the provision of external independent audit. The PHCN, Market Operator, working groups in the Ministries of Finance and Power, the relevant Oil Companies, the Strategic Gas Aggregator and Commercial Banks will be responsible for implementation arrangements of the PRGs.

C. Monitoring and evaluation of outcomes/results

59. Data for monitoring project outcomes and results indicators (as shown in Annex 3 – Results Framework) will primarily be generated by the implementing agency PHCN through progress reports, annual reports, etc. Evaluation of results indicators will be part of regular IDA supervision missions. The Project's mid-term review will thoroughly review project implementation and the indicators. The PRGs will be monitored through regular supervision until the expiry of each PRG as well as notification and reporting requirements by the OCs, L/C Bank, PHCN and FGN under the Project, Guarantee, and Indemnity Agreements.

60. A stakeholder forum chaired by the Minister of Power, including FME, DPR, other relevant government agencies, civil society organizations and industry representatives will discuss project implementation issues, give expert opinion, and provide a platform to articulate and address concerns about social and environmental aspects of project implementation. Regular Project beneficiary surveys at inception and the mid-point of the project will also provide information to assess outcomes.

D. Sustainability

61. Cost recovery in both the Power and the Gas sectors will ultimately be essential for sustainability and phasing out of requirements for FGN budgetary support. Investments in the power sector under the proposed project are designed to promote cost recovery through reduction of technical and commercial losses. As PHCN's losses are reduced and its commercial viability improves, the risk perception of PHCN will also improve. In the medium-term, the gas supply arrangements are expected to become self-sustaining as PHCN builds up a track record of timely payments. Gas supplies that are in conformity with contractual specifications could then be forthcoming without the need for such risk mitigation instruments. Certainty of payments by PHCN will also reinforce gas suppliers' efforts to invest in equipment and construction of spur lines, to meet their contractual obligations. Planned investments under the proposed project support loss reduction strategies in the electricity distribution sector by scaling up a pilot program called Commercial Reorientation of Electricity Sector Toolkit (CREST), initiated under the Bank's Transmission Development Project and continued under the National Energy Development Project.

62. The approach adopted by the project is to demonstrate both the risk mitigation structure and good practice investments in this Project and attempt a scale up of investments in potential future SILs. The Transmission and Distribution investments focus on demonstrating efficiency investments that can be replicated and scaled up to improve the operational and commercial efficiency of the utility.

63. Unbundling the Power business on a functional basis has advanced through the formation of generation, transmission and distribution companies. The project helps to sustain this restructuring by introducing investments and technical assistance aimed at strengthening the companies. The regulatory commission has just announced the Multi Year Tariff Order which can move the sector to financial sustainability with transition subsidies and performance improvements. PHCN distribution companies have launched a distribution efficiency program called CREST (Commercial Reorientation of the Electricity Sector Toolkit) in selected electricity consumer clusters with active support from the Bank under the Transmission Development Project and the National Energy Development Project. These pilots have yielded significant results in terms of reduction in energy losses from an average of 43% to 7%, and improvement of quality of supply from 180 Volts to 220 Volts. This project seeks to expand and scale up the CREST approach through investment assistance in various distribution company areas as specified in Annex 4.

E. Critical risks and possible controversial aspects

64. **Safeguards related risks:** The project aims to improve power generation in Nigeria by supporting gas supply contracts through Partial Risk Guarantees and complementary investments. All gas in Nigeria is sourced and transported through the Niger Delta. Gas suppliers are international and domestic oil companies operating in the Delta. Existing and new power plants are mostly located in the Delta. The Niger Delta is characterized by social unrest that is often directed at facilities and personnel of the oil and gas industry. Local communities attribute their problems – poverty, environmental degradation, lack of infrastructure and social services – to inadequate sharing of benefits from natural resource extraction. Project implementation also faces the risk of possible vandalism of gas infrastructure, which could lead to interruptions of gas supply and therefore restrict normal operations in power plants. Several oil and gas pipelines have recently been put out of service by sabotage, leading to extended fuel shortages in public power plants. The present administration has made the Niger Delta a top priority in its 7-point agenda, established a high level commission to address the issues of the Niger delta, and initiated several measures including formation of a ministry to focus on Niger Delta development.

65. The project boundary dictates how safeguards risks are being managed. It is based on two concepts – "project affected area" as defined in Annex A of OP 4.01, and the geographic and sectoral limits within which the Bank is able to apply its safeguards policies. For the investment component, where IDA will be supporting improvements in existing electric power transmission and distribution facilities, the area of influence governs the project boundary. It will be limited to the locations and vicinities of the substations and other facilities being improved, and these are defined in the respective ESMPs that the Environment, Resettlement and Social Unit (ERSU) of PMU has prepared for the first two years' investments and will be preparing for subsequent years. For the PRG, the "upstream" boundary is the point where the OCs deliver gas into the ELPS, and the ownership of the gas transfers from an OC to PHCN. The "downstream" boundary is the point(s) at which the gas is delivered to an end user from the ELPS. The basis for the PRG boundary determination is as follows:

(a) IDA is not financing construction or modification of any gas production, gathering, processing and transmission infrastructure in the Project (except for metering and analyzing equipment to measure gas volumes and quality under GSAAs).

(b) The project is dependent on ELPS for its development outcomes, which is therefore within the project area of influence. The ELPS pipeline has been the subject of a technical integrity study carried out in 2000, which was updated in 2008/2009 by an independent expert firm, and has been rated as meeting all required safety criteria. ELPS has been transporting gas for the last 20 years and has not experienced any technical or operational deficiencies.

(c) The gas could come from any of a large number of existing gas or oil wells and will be delivered to ELPS through a complex gas gathering and delivery network after passing through treatment works. Maps of the Nigerian oil and gas fields are included in Annex 16 and show the complexity of the system.

(d) OCs could choose to drill new wells in response to increased domestic demand for gas, and NEGIP if successful may contribute to that increase in gas demand. IDA will, however, not be financing any gas production or development under NEGIP.

(e) The gas is fungible when it arrives at the delivery point into ELPS; it is not possible to trace it back to its point of origin. In the case of a decision by an Oil Company to drill a new well, it will be virtually impossible to determine whether that decision is attributable to NEGIP.

(f) OCs are subject to Nigerian laws and regulations when developing gas or oil wells or gathering or treatment systems, including (i) the Environmental Impact Assessment Act (Decree No. 86 of 1992) that requires EIA for such developments, to be reviewed and approved by the Federal Ministry of Environment (FME) and (ii) the Environmental Guidelines and Standards for the Petroleum Industry issued by Department of Petroleum Resources in 1991 and revised in 2002 that also require EIA and define the DPR review and permitting procedures.

(g) Downstream, the users of the gas are existing plants. They are currently operating on gas delivered through ELPS and do not depend on the PRG to continue operation. NEGIP is not financing any modifications to these plants. Consequently, they are outside the project area of influence.

66. Although IDA does not have any leverage beyond the boundaries of NEGIP, it is sensitive to concerns about environmental and social impact management upstream and downstream. Thus an initial review and assessment of the Nigerian legal and institutional framework for environmental management in the oil and gas sector has been conducted. The technical assistance component will provide support to FME and the Department of Petroleum Resources (DPR) to enhance their capacity to monitor and enforce the environmental and social laws and regulations relating to investments and facilities in the gas sector, based on the recommendations in an initial review already conducted (see Annex 11 for details) and a more detailed review of the legal framework and of the enforcement track record and performance that the borrower will initiate within the first six months from project effectiveness. In addition, the technical assistance component of the proposed project will support PHCN in developing plans for rehabilitation of existing generating stations that will include work to improve environmental management at the plants and to remedy any adverse impacts.

67. In summary, the treatment of safeguards risk in addition to the establishment of the stakeholder forum already mentioned is as follows:

- For the investment component, application of World Bank safeguards by preparation of ESMPs prior to appraisal for distribution and transmission investments that are to be implemented in the first two years of the Project (ESMPs of investments that are to be implemented after year two of the Project

will be prepared subsequently) and supervision of ESMP implementation by ERSU and IDA.

- For ELPS pipeline, updating the ELPS Integrity Study of 2000, plus TA for developing plans and designs for remedial action, and implementation of the action plan by NGC to complete remedial actions on ELPS.

- For any other pipelines that might be involved through additional PRGs, preparation of pipeline integrity studies, prior to approval of the PRG.

- For investments in new gas production facilities upstream of the project boundary, application of Nigerian laws and regulations, with requirements in the PRG Project Agreements for related compliance by the OCs, and with TA from the project to build monitoring and enforcement capacity of FME and DPR.

68. For the last mentioned item, in so far as any new oil/gas production and treatment facilities that may be developed in future to increase gas supplies for the domestic market are concerned, PRG Project Agreements would have an undertaking from the relevant OCs that any new wells, gas gathering facilities or gas treatment works would be developed in full compliance with Nigerian law, including applicable requirements for environmental assessment, public consultation, and disclosure, if any. The OCs would also be required to provide the Bank with notification of their applications for permits to the Ministry of Environment and the Department of Petroleum Resources and confirmation of receipt of the relevant approvals and permits. In the event of non-compliance, the Bank would have the right to suspend the PRG until such time as the default is satisfactorily remedied. This approach is consistent with the experience with the Bank's West African Gas Pipeline Project (WAGP) currently under implementation.[16]

69. Reputational risks arise to the Bank in several ways. A number of influential NGOs have taken the position that the Bank should not "reward past bad behavior in the Delta" by supporting projects of Oil Companies. NGOs have also criticized the Bank for not doing enough to eliminate gas flaring and otherwise improving conditions in the Delta in the energy projects it supports – a criticism most recently asserted in the Request to the Inspection Panel for the West African Gas Pipeline Project. The Delta communities have expectations that quality of life will improve because of the Bank's involvement. Also, conflict may arise between those communities that would benefit from improvements to the power grid and those communities that will not receive enhancements to the infrastructure and/or delivery systems.

70. In order to understand stakeholders' views and concerns, the NEGIP team and management are:

[16] Reliance on Nigerian environmental regulations in WAGP to address potential impacts of upstream gas production facilities is explained on page 36 of the main text and pages 138 -139 in Annex 13 in the "Project Appraisal Document on a Proposed IDA Partial Risk Guarantee in the Amount of US$50 Million for Ghana and a Proposed MIGA Guarantee in the Amount of US$75 Million for Sponsors Equity to the West African Gas Pipeline Company Limited for The West African Gas Pipeline Project" (Report No: 30335-AFR) dated November 2, 2004. WAGP was approved by the Board of Executive Directors with this arrangement on December 23, 2004.

(i) Developing and implementing a stakeholder communications and participation process that includes ongoing dialogue with Government and civil society at the national level (already begun with a successful workshop with strong participation by NGOs at the Abuja Office in May 2008, and a consultation held in the Niger Delta with more than 70 people representing more than 42 organizations, six states and about 50 Niger Delta communities in April 2009). Transparency will be provided through disclosing key documents at strategic locations in Nigeria and on Bank and FGN websites, and consultations with local governments, traditional leaders, affected communities and NGOs; and

(ii) Building on this process, establishing a stakeholder forum led by the Government to continue the stakeholder dialogue as suggested during the Abuja and Niger Delta workshop consultations.

71. The updated ELPS Integrity Studies (see para. 102 and Annex 11) include recommended measures to improve the operational safety, security, technical integrity and capacity of the pipeline infrastructure as well as measures to mitigate any adverse environmental impacts. Technical assistance will be available for preparation of designs, cost estimates and action plans, to implement the recommendations.

72. The approach for potential impacts for investments in electric transmission and distribution follows the practice under the National Energy Development Project, currently under implementation.

73. **Operational risks.** The risk of the contracted gas not being picked up either fully or in part by the power plants under the Gas Supply Agreements was examined through a specially commissioned study. Results of this study indicate that even in the current state, there is a significant scope for off-taking gas to increase current generation by thirty percent. The proposed Gas Supply Aggregation Agreements allow PHCN to confirm, at the time of signature of the Agreements, the contracted gas volumes for each year of the contract, thus giving it flexibility to estimate and adjust quantities in accordance with their requirement. Moreover, PHCN can always divert the contracted gas to any of its plants and balance the gas supply between its plants as the gas is essentially supplied to all the power plants through the same Escravos Lagos Pipeline System (ELPS), which is the NGC trunk pipeline. Thus the risk of contracted gas not being absorbed is manageable.

74. At the same time, since the Gas Supply Agreements will provide that title to the gas shall transfer at the upstream end of the NGC pipeline, PHCN must ensure that its Gas Transportation Agreement with NGC is drafted so as to assign to NGC those transportation risks that ought to be borne by NGC. To achieve this objective there will need to be a close match of PHCN's Gas Supply Aggregation Agreements and its Gas Transportation Agreement with NGC. Furthermore, in order for PHCN to optimally realize the gas supply benefits from these contracts it is essential to eventually rehabilitate power plants. The Bank's analysis shows that plants suffer on account of numerous physical infrastructure deficiencies and may face technical difficulties in off-taking this gas. These arise out of their equipment being maintained sub-optimally due to underinvestment in spares and absence of timely overhauls. Also, the related infrastructure has been subjected to technical degradation due to continuous supply of gas of substandard

specifications in terms of high moisture content and chemical impurities, in the past. For example Egbin has recorded an efficiency of 32% over the years and Sapele has been functioning at 10% of its capacity.[17] Hence, the issues of rehabilitation of generation capacity as well as ensuring adequate and sustained gas supplies to generation will have to be addressed in conjunction.

75. Against this backdrop, this project seeks to adopt a twin track approach where these two measures are initiated together. Apart from financing studies that will lead to action plans to improve the safety, technical capacity and environmental effects of the pipeline infrastructure (see para. 29 (c) and (e)), the Technical Assistance component seeks to support a comprehensive study that will examine the existing generation capacity and suggest the scope for rehabilitation (see para. 29 (a)). While doing so, the study will also suggest various management options that will help sustain the generation units at a reasonable level of operational efficiency. These management options could suggest a Rehabilitate-Operate-and-Transfer structure with private participation or a management contract (if appropriate and feasible under the circumstances) along with estimates of resources required for rehabilitation. In the process, the study is also expected to determine how much capacity can be rehabilitated. The Bank may then be able to assist Government's efforts to rehabilitate these plants subsequently by providing part of the resources required under a future SIL or with other partner funding. In the transition, to mitigate the risk of under utilization of gas by PHCN (and the resulting risk of PHCN having to incur "take or pay" charges), the contracted gas volumes would be kept low initially, commensurate with the current capacity of the PHCN power generation plants and gradually increase as capacity is revived. Another potential mitigation measure is to stagger the contractual coverage of gas supply to other plants by other gas suppliers to allow PHCN to divert unutilized contracted gas under the initial contracts to other plants.

76. **Governance risks.** Nigeria has achieved some progress in recent years on measures to tackle corruption and improve public resource management. Initiatives taken by the government include the passage of the Procurement, Fiscal Responsibility and EITI Laws in 2007. The passage of the procurement law was followed by the establishment of the Bureau of Public Procurement, development of procurement tools, and creation of professional civil service positions to enhance procurement capacity. Competitive bidding in federal contracts is now being increasingly practiced with resultant significant savings being made, though comprehensive official statistics are not available in this regard. While improvements being introduced at the national level are slowly taking root, it is clear that governance and corruption challenges have long had a debilitating effect on the power sector in Nigeria. The sector's performance is not commensurate with the level of public resource allocations in recent times.

77. The Bank's analytical work has pointed out that this is due to persistent governance gaps. Public investments have been inefficient and opaque while the private sector faces significant barriers to entry due to poor enforcement of contractual obligations. The Bank's Public Expenditure Review of the power sector points out that two naira are frozen for every allocated naira in unfinished projects, and that most investment decisions are lacking in sound technical and analytical underpinnings. This explains the low effectiveness of public spending in the

[17] Annex IV has a more detailed description of the constrained capacity of public generation plants currently under operation.

power sector, and the very high rate of incomplete projects (particularly rural electrification projects) that were started in some cases over fifteen years ago and have delivered no benefits to date. Implementation of NIPP which is facing serious cost overruns, delays and corruption allegations illustrates the governance gaps affecting the sector.

78. Against this backdrop, the Government has identified public-private partnerships with appropriate contractual and governance frameworks as a central part of its strategy to address the power supply deficit, commercial discipline in the gas sector and the need for efficiency in delivery of public resources. The project's interventions seek to support this new strategy. Specifically, the project aims to strengthen GAC measures in the gas and power sectors through the PRGs, investments and technical assistance. These measures will promote transparency and clear commercial benchmarks in the transactions supported. In addition, the project aims to mitigate governance and corruption risks by introducing anti theft and loss reducing pilots and supporting the application of the power sector's regulatory framework. Also, the transmission and distribution investments will be implemented in a ring fenced manner to demonstrate the benefits of improved governance measures in procurement and implementation. The Bank's ongoing analytical work on the political economy of the sector and cross cutting governance issues will also inform implementation of this project.

79. The overall risk rating for this proposed Project is high. Table 3 shows these and other identified risks and potential mitigation measures.

Table 3: Critical Risk Factors

Risk Factors	Description of Risk and Mitigation Measures	Risk Rating
Continued political commitment	Support for reforms in the power, oil & gas sectors by the Government could be vulnerable to interest groups. However, the Government's commitment to power and Niger Delta in its seven-point policy agenda, as well as actions such as MYTO, the gas master plan and the planned reforms in gas and power sectors are positive indications. There is a need to reinforce support for Government's initiatives in this regard.	H
Fiscal Space	Given the current decline in oil prices, the Government's revenue base has declined, which will affect its ability to provide sector subsidies. However, the Excess Crude Account has significant reserves that can help FGN meet its subsidy commitments under MYTO.	H
Implementation of New Gas Policy	Since the gas policy has been adopted recently, there are risks relating to its implementation both by the Government and the IOCs. To date both the Government and the IOCs have shown their resolve in concluding the GSAA with penalties for breach on both parties, which will be supported by the PRG. The PRG operation would only go ahead if the GSAAs are successfully concluded.	S
Governance and Corruption issues	Governance and corruption challenges have long had a debilitating effect on the power sector in Nigeria. The project's interventions seek to strengthen GAC measures in the sector through the PRGs, investments and technical assistance under the project by promoting transparency and clear commercial benchmarks in the transactions supported, as well as by introducing anti theft and loss reducing pilots	H

	and supporting the regulatory framework. In addition, the investments under the proposed project will be implemented in a ring fenced manner to demonstrate the benefits of improved governance measures in procurement and implementation.	
Gas Supply Interruptions due to unrest in Delta	The Niger Delta remains a high security risk region with pipeline vandalism disrupting gas production and supplies. This creates a risk for the technical safety of the ELPS pipelines. The present administration has made the Niger delta a top priority in its seven-point agenda, established a high level commission to address the issues of the Niger Delta, and initiated several measures including formation of a ministry to focus on Niger Delta development.	H
Reputational Risk related to providing PRGs for gas sourced in Niger Delta OCs	The Delta communities have expectations that quality of life will improve because of the Bank's involvement, although the Bank's ability to effect such changes is limited. Some NGOs may argue that Bank support to OCs is a reward for past bad behavior and that the Bank is not doing enough to eliminate gas flaring and otherwise improve conditions in the Delta through the energy projects it supports – a criticism most recently advanced in the Request to the Inspection Panel for the West African Gas Pipeline Project. The creation of the stakeholder forum, implementing a sound communications process, and insisting on transparency in project-supported activities will reduce the risk but will not eliminate it. Improved availability of power in the national grid will also benefit communities in the Delta.	H
Gas Supply Interruption due to NGC Performance	NGC has provided IDA with an agreed timetable to undertake maintenance of the ELPS which will be monitored through IDA supervision. NGC is responsible for current gas deliveries and interruptions to gas supply for operational reasons have been limited by far.	S
GSAA payments by PHCN	The power sector remains in a precarious financial situation with low tariffs, low collection rates, and high technical and non-technical losses. The Government has approved a subsidy to the sector for the transitional period leading up to cost recovery tariffs set by the MYTO. (See earlier discussion and Box in Annex 1). Also Bank monitoring of GSAA payments under the PRG is expected to moderate this risk.	H
Gas off-take risk if the power plants are not rehabilitated as envisaged	PHCN could experience problems in off-taking the gas supplied under the contracts if its power plants are not rehabilitated as planned under the program. This could potentially expose it to substantial financial liability due to the "take or pay" features incorporated in the gas supply agreements. This risk is sought to be mitigated by PHCN by managing the annual contracted gas volumes on a realistic basis. Also, the Project has a covenant that mandates the Government and the PHCN to ensure that the rehabilitation of the power plants is carried out as per a time plan agreed at the time of appraisal.	S
Financial Management Risk	Use of already established FM arrangements at NEPA/PMU with sun system accounting software for financial management will mitigate this risk to some extent. This was also used for the NEDP and TDP projects. This is supported with appropriate staffing and an effective internal audit	S

	function. Regular external audits and IDA supervision will also help to strengthen the FM environment.	
Procurement related risks include lack of manuals, lack of adequate record keeping and management systems, inadequate contract management, change of procurement staff, frequent political interference in procurement systems	The project will ensure that professionally qualified and experienced procurement staff assigned to the project are not changed. Record keeping systems will be computerized. The project will adopt the generic procurement manual as well as the Project Implementation Manual. Approval processes will be ring fenced as far as possible to reduce, if not eliminate, political interference in procurement process.	M
Transmission constraints	Increases in power generation on account of improvements in availability and reliability of gas supply face the prospect of under evacuation of power due to severe transmission constraints. Government's NIPP and investments in this project are designed to mitigate this to some extent.	S
Overall Risk Rating		H

Risk rating: H (High), S (Substantial), M (Moderate), N (Negligible).

F. Loan/Credit/Guarantee conditions and covenants

80. The Conditions of Effectiveness for the Credit will consist of the following:

(i) The Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity.

(ii) The Recipient has adopted the Project Implementation Manual; and

(iii) The Recipient has established the stakeholders' consultations forum referred to in paragraph 4 of Section 1 A of Schedule 2 to the Financing Agreement, in form and substance satisfactory to IDA.

Each PRG would be subject to the Conditions Precedent specified in the Term Sheet in Annex 10.

81. Other Undertakings/Covenants include the following:

- The Recipient shall take all measures required to ensure that the recommendations of the ELPS Integrity Study are promptly implemented in accordance with timetables agreed upon with the Association.

- The Recipient shall take all measures required on its part to ensure that the stream of revenues earmarked for the PHCN - the Project Implementing Entity pursuant to the MYTO shall be: (i) periodically adjusted in accordance with the formula set forth in the MYTO; and (ii) promptly made available to PHCN as and when they are needed.

- The Recipient and IDA shall, from time to time, at the request of either party, exchange views with regard to the Recipient's pricing policies and its plans in respect of the overall development of the power sector.
- The Recipient agrees, as long as it exercises control over the setting of prices of the companies, to establish prices for electricity and gas sold by such companies which would: (i) allow the companies, under conditions of efficient operation at reasonable levels of capacity utilization, to cover their operating costs including taxes, earn an adequate return on funds invested in them, meet their financial obligations and make a reasonable contribution to future investment for expansion of capacity; (ii) be reasonably competitive with prices for electricity and gas in other major producing countries; and (iii) subject to the achievement of objectives (i) and (ii) above, pass on the benefit of declines in the real costs of production to the customers through reduction in prices in real terms.
- The Recipient shall cause PHCN - the Project Implementing Entity - to: (a) prepare, under terms of reference satisfactory to IDA, and furnish to IDA, on or about June 30, 2012, a report integrating the results of the monitoring and evaluation activities on the progress achieved in the carrying out of the Project during the period preceding the date of said report and setting out the measures recommended to ensure the efficient carrying out of the Project and the achievement of the objectives thereof during the period following such date; and (b) review with IDA, by September 30, 2012, or such later date as IDA shall request, the report referred to in paragraph (a) above, and, thereafter, take all measures required to ensure the efficient completion of the Project and the achievement of the objectives thereof, based on the conclusions and recommendations of the said report and IDA's views on the matter.
- The Project Implementing Entity shall not incur any debt, unless the net revenues of the Project Implementing Entity for the fiscal year immediately preceding the date of such incurrence or for a twelve-month period ended prior to the date of such incurrence, whichever is greater, shall be at least 1.5 times the estimated maximum debt service requirements of the Project Implementing Entity for any succeeding fiscal year on all debt of the Project Implementing Entity, including the debt to be incurred.
- The Recipient will provide a schedule of rehabilitation of power plants to IDA and ensure that the rehabilitation of the power plants is implemented as per the schedule and as per recommendations of related studies conducted under the project.
- The Recipient through the Power Holding Company of Nigeria will ensure that payment obligations for gas supplied to the power plants will be discharged as a first charge on sector revenues in the Market Operator's Clearing Account (MOCA) as part of the payments due to GENCOs.
- The Oil Companies that will be beneficiaries of the PRGs are required to notify the Bank of their application for permits to FME and DPR for new oil/gas wells and other structures like gas gathering facilities, or gas treatment works and of

receipt of those permits and approvals, and to confirm that these developments are in compliance with the relevant environmental and social legislation/regulation of Nigeria.

- The Recipient, through Ministry of Power, will convene a bi-annual stakeholder consultation forum that will, *inter alia*, facilitate dissemination and discussion on overall power sector reform, project implementation, project safeguards issues and concerns among all concerned stakeholders.

Performance Indicators and reporting

82. Including the results indicated in Annex 3, PHCN, through its regular reports, will monitor the progress on the following performance indicators:

i. the annual plant load factor has been increased from 66% to 70% by 2014;

ii. revenues collected from billed customers have increased by 1 percentage point per annum;

iii. the ratio of electricity generated to electricity billed to customers has increased by 2.5 percentage points per year;

iv. the revenue yield per kWh generated has increased by 0.6 Naira per year;

v. the volume of gas used for power generation has increased by 12 percent per year from January 2011 onwards;

vi. the transmission capacity for the project interventions increases from a baseline of 60 MVA to 360 MVA by 2014;

vii. the transmission losses for the selected networks decrease from 13% to 8% by 2014;

viii. the number of households connected to electricity in selected clusters increases by 10% from a baseline of 12 million by 2014;

ix. the end-user voltage in selected clusters increases from 180 Volts to 220 Volts by 2014; and

x. gas supply interruptions to public power plants to decrease by 20% from a current level of 10 per month by 2014.

IV. APPRAISAL SUMMARY

A. Fiduciary

83. **Review of fiduciary Arrangement**: The Financial Management System of the PMU which will be responsible for implementing the project is computerized, using Sun Systems Accounting software and this is used in producing the financial reports required by the client, IDA and other stakeholders. The same financial management arrangement was used for two other Bank Assisted projects, TDP and NEDP. The accounting software has been upgraded to allow for three users. A system of planning and budgeting exists. Expenditure and commitment control is now exercised through the keeping of contract register. The contract register would need to be updated, adequate supporting documentation provided for un-retired advances and the fixed assets register updated. The Internal Audit Unit in the PMU has been strengthened with the deployment of additional staff. IAU conducts inspection visits to project sites and carries out quarterly review of financial operations of the project. Government counterpart funds as appropriated in the national budget for previous projects are released on time. These fiduciary arrangements will be extended to the NEGIP with suitable modifications.

84. **Financial Management.** In January 2005, a review of the implementation of the recommendations of the Country Financial Accountability Assessment (CFAA 2000) was carried out. It observed that the Federal Government of Nigeria (FGN) has made a significant effort in advancing reform of the PFM system since 2003. This finding was further supported by a recent PEMFAR. The reforms have clearly helped to reduce waste of public resources, particularly on the capital budget and payroll expenditures. The impact of these early measures is also evident in significantly improved fiscal and broader macroeconomic outcomes. There is nevertheless still a long way to go. PFM initiatives and reforms are stated in the Government's PRSP, which is supported under the Country Partnership Strategy (jointly developed by IDA and DFID), and specifically through three Bank assisted projects - EMCAP, SCBGP and the ERGP.

85. The Finance Section (FS) of the PMU (FS/PMU) will be responsible for managing the financial affairs of the Project. They will, amongst other things, be responsible for ensuring compliance with the financial management requirements of the Bank and the government, including forwarding the quarterly Interim Financial Reports and audited annual financial statements to IDA. The FS is already in place and is presently managing the finances of Bank-Assisted projects using computerized FM systems. The last supervision mission and updated FM assessment indicate that FM arrangements for the PMU are satisfactory. The PMU uses a report based disbursement. The Internal Audit Section of the PMU will perform necessary modern internal audit functions for the Project. There are no outstanding external audit reports.

86. The FM arrangements for the project are designed to: (i) ensure that funds are used only for the intended purposes; (ii) ensure the production of timely information for project management and government oversight; and (iii) facilitate compliance by the project with IDA fiduciary requirements.

87. The overall project risk from a FM perspective is Substantial and would be reduced to a residual risk of Moderate if FM action plans are satisfactorily implemented.

88. **Procurement**. Since fiscal year 2001, Nigeria has been implementing a procurement reform program based on the recommendations of the 2000 Country Procurement Assessment Review (CPAR). The 2007 Public Expenditure Management and Financial Accountability Review (PEMFAR), shows that implementation of procurement reform has brought about substantial improvements in obtaining value for money in public sector expenditure. This has further introduced some level of transparency into the country procurement process. Some of the actions taken by Government to advance the procurement reform in Nigeria include: (a) the establishment of the procurement professionals cadre at the Federal level in 2006; (b) the passage of the Procurement Bill in June 2007 to further sanitize the public procurement system, which has often been the subject of abuse and corruption; and (c) the establishment of a functional regulatory body, the Bureau of Public Procurement (BPP) to speed up implementation of recommendations. The BPP has organized a series of sensitization workshops at the Federal and State levels. The National Bidding documents have also been produced by BPP. The recent PEMFAR report indicated that contract prices were reduced substantially. A Cash Management Team chaired by the Minister of Finance, of which the BPP is a member, ensures that payments are made only when certified by the Bureau, enhancing transparency of the procurement system. Currently, the Government Procurement Reform Program is being supported by an IDA Credit-Economic Reform and Governance Project (ERGP). There are three IDF Grants, supporting the Federal and two State Governments to address weak public procurement capacity and to build partnerships with the private sector. "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004, revised October 1, 2006; and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, revised October 1, 2006, have also helped.

89. There will be no procurement or procurement – related disbursements relating to the PRGs. Should the PRGs be called, IDA would disburse to the L/C Bank and Nigeria would then be obligated to repay the Bank in accordance with the terms of the Indemnity Agreement, on demand or as IDA may otherwise determine.

B. Economic and financial analysis

90. **The project components yield six distinct economic benefits:** incremental reliable and improved quality of gas supply, reduction of losses (technical and non-technical), improved power quality and supply reliability, avoided captive generation, improved financial health of PHCN, and enhanced customer satisfaction. The economic benefits are sensitive to loss reductions, load growth and revenue improvement (reflected in sensitivity analysis). Benefit estimates are conservative since they do not include environmental gains from displacement of inefficient power sources, or productivity and competitiveness improvements. Overall economic benefits are expected to be high since there is a large unmet demand for power in Nigeria.

91. **Project Benefits and Internal Rate of Return (Gas)**. The economic and financial analysis of the Project is based on a cost-benefit analysis of implementation of the gas supply agreements between PHCN and gas suppliers, taking into account: costs incurred by PHCN to generate, transmit and distribute the electricity; revenue for PHCN from electricity retail, after factoring-in transmission and distribution losses along the electricity value chain; and benefits for electricity users on account of the electricity received from the grid. This analysis takes on board the new pricing and regulatory framework in the power and gas sectors, which

contemplate a five-year transition period in moving to more cost-reflective tariffs. With a discount rate of 12%, the Net Present Value of the financial flows is US$205 million. The corresponding FIRR is 35%. Adding the economic benefits to users, the economic NPV at a 12% discount rate yields approximately US$2,456 million, equivalent to an EIRR of 271%.

92. **Project Benefits and Internal Rate of Return (Electricity).** The Investment component in transmission and distribution is estimated to generate a FNPV of US$130 million and a FIRR of 25%. The corresponding ENPV is US$261 million, which implies an EIRR of 35%. With the investment, additional power of approximately 590 GWh would be supplied to end-users. The critical factors affecting the project economic and financial returns are loss reductions due to improvement in transmission and distribution grids, tariffs and cost of self-generated electricity. An estimate of US$0.17/kWh has been used in the baseline analysis as the cost of self-generated supply.

Impact of the tariff increases under MYTO on poor households

93. The MYTO issued by the Government of Nigeria is designed to increase the weighted average tariff from the current level of N6/kWh to the cost reflective level of N10/kWh by 2011. There is an apprehension that an increase in tariffs and a consequent reduction in consumption subsidies would hurt the poor disproportionately. However, a study commissioned for this project demonstrates that electricity consumption subsidies are not well targeted to the poor in Nigeria. Therefore, the argument for preserving these subsidies as they exist today in order to make services affordable for the poor, while valid for those among the poor connected to the network, does not necessarily hold when considering what is required to reduce poverty in the population as a whole. The MYTO presents a significant opportunity to change the tariff structure aimed at better targeting of subsidies to the poor, or alternatively of a reallocation of existing subsidies from electricity consumption to an expansion of connections to the electricity network.

94. A future IDA project to promote electricity access for the poor is being planned as part of the medium-term IDA assistance to the sector, and this project will be complemented with adequate analytical work to address affordability issues with corresponding proposals for their mitigation, within the FGN's overall framework for electricity tariff reforms. The FGN's current policy for the sector contains a Power Consumer Assistance Fund which is implemented by the regulatory agency, NERC, and is intended to direct targeted subsidies to the poorest consumers, who require assistance to make lifeline tariff payments. The future IDA project referred to above will also contain assistance to improve the design and operation of the Consumer Assistance Fund, and will build in a monitoring and tracking mechanism that will permit evaluation of the scheme's impact on the poorest consumers.

95. **Cost-recovering electricity tariffs would establish a virtuous circle in the sector.** Increase in tariffs would be a step in providing PHCN with enough revenues to cover its operating and maintenance costs thus reversing the trend of declining public generation, and also leave resources for network expansion. With improving electricity services, due in part to higher O & M expenditures, the willingness of customers to pay a higher price for the service would also improve. This would enable more poor households to benefit from network expansion. The gains to be achieved for poverty reduction from a revision of tariffs could, thus, be substantial.

Technical Assistance under the Project will provide resources for development of appropriate lifeline protection features in the tariff design under the MYTO developed by the Nigeria Electricity Regulatory Commission (see para. 29 (b)).

96. **Financial assessment of PHCN**. While PHCN's revenue growth has been substantial, from N35 billion in 2000 to about N106 billion in 2007, the costs are also forecast to increase, based on the proposed trajectory for domestic gas prices. PHCN will have to carefully balance the opportunity for collecting more revenues from higher tariffs as reflected in MYTO, with the increased costs it must incur due to higher gas prices and delivery of customer-service improvements. Currently, PHCN payments for gas are given very low priority and are made after its other operating obligations are met; this will have to change as part of the market reform package to be supported by this project. Overall, the gap analysis indicates that there will be a need for transitional subsidies to cover deficits during the adjustment period. The financial gap arises from both the impending gas price increase as well as the increase in power purchase payments to private providers. *It is critical therefore that the sector's revenues and loss reductions catch up to close this gap as early as possible*, while also meeting the improved service delivery targets.

C. Technical

97. Components (i) **PRGs.** The PRG structure and the Term sheets were discussed with SPDC and CNL - as the GSAAs between PHCN and these two OCs are being considered for initial PRG coverage. Action plans to rehabilitate the power generation plants and to complete the necessary measures required to improve the technical integrity of ELPS have been agreed with PHCN and NGC respectively and are available on file. The PRG operation is discussed in Section II and Annexes 10 A and B.

98. Component (ii) **Expansion of T & D.** Specialized consultants will be selected to write specifications for competitively awarded procurement packages, ensuring that no obsolete technology is included in planned electricity transmission investments. The medium-term Transmission Development Plan developed by PHCN formed the basis for identification of transmission investments with a focus on removing transmission constraints and on improving evacuation of power. In electricity distribution, technology deployed will be mostly a replication of successful CREST pilots already implemented, involving high accuracy meters, pole mounted small transformers, and use of high voltage at all injection points.

99. Component (iii). **TA** will be used for studies, analyses and capacity building that are of direct relevance for improving sector outcomes. The studies will underpin the technical integrity and soundness of the Bank's support to the power and gas sectors, while capacity building will strengthen the government's ability to manage impact assessment and oversight including implementation of environmental regulations.

D. Social

100. The project will not fund activities that would cause any form of land acquisition or restriction of access to sources of livelihoods. The potential social impacts of the Project's activities will be small-scale and site-specific and thus easily remediable, as is typical of category B projects. The likely positive social impacts would arise from increased availability and reliability of electric power, while negative impacts could be classified as: (i) minor for rehabilitation and operation of electrical transmission and distribution infrastructure; (ii) moderate for the public health and safety risks involved in transporting gas through existing pipelines under PRGs. The Project is aware of the political economy of Niger Delta, has fostered consultations with stakeholders during the preparation, and will continue to do so during implementation. Feedback obtained adds value to the Project and will be used to facilitate dialogue with government and stakeholders during project implementation. The proposed power sector stakeholders' forum will provide a channel for stakeholders to brainstorm on how to move the sector forward, raise concerns, and seek answers. It will provide easily accessible means of interaction between project implementers and citizens to discuss the benefits communities will receive, what the Project is responsible for, documenting their concerns and how the project will either address concerns or not. The Project launched consultation efforts during preparation at a workshop in May, 2008, with NGOs, Ministry of Finance, NERC, PHCN, NNPC, REA, and representatives of civil society organizations that focus on environmental and social issues in the Niger Delta. This was followed by a series of consultations held in Abuja and Port Harcourt (in Niger Delta) during the appraisal mission in April 2009 (Please refer to Annex 12 B). The Stakeholder's forum that is being established under the Project will facilitate additional, more-detailed consultations on proposed PRGs and investments during implementation of the project. It was made clear in the consultations held in Abuja and Port Harcourt that the Project's main focus is to improve power generation through improved gas supply. The investments planned under the transmission component are essentially meant to complement the increased power generation by removing some transmission constraints and help evacuate power. On the other hand the planned distribution investments are aimed at improving the financial sustainability of the distribution companies by improving service delivery. Hence, while Niger Delta communities will benefit from the increase in grid based supply as the rest of the country, the Project is not explicitly addressing provision of benefits to Niger Delta communities.

101. Early in project preparation when the scope was broader and the specific investments were not decided, it was possible that some investments in new transmission lines could result in significant land acquisition and resettlement. A resettlement policy framework (RPF) and an Environment and Social Management Framework (ESMF) were therefore prepared for compliance with OP 4.12 and OP 4.01, reviewed by the Bank, and disclosed in-country and in the InfoShop. It is now clear that there will be no land acquisition as new transmission lines are not being taken up under the project. The main thrust of social safeguards work will be to include social impact management as part of the Environmental and Social Management Plans (ESMPs) for the investments in electricity transmission rehabilitation and distribution.

E. Environment

102. There are two sets of potential environmental impacts – those associated with: (i) the expansion/upgrading and operation of electric transmission and distribution lines and substations; and (ii) the environmental, public health and safety risks involved in transporting gas through existing pipelines. The PMU initially prepared and disclosed an Environmental and Social Management Framework to comply with the Bank's OP 4.01, at a time during project planning when the project scope was broader, possibly including electric transmission line construction and rehabilitation of existing power stations. Subsequently, the scope was reduced, to focus on PRGs for gas delivery and improvements in electricity distribution and transmission that involve little or no new construction outside the confines of existing substations. The more complex types of investment projects involving new construction that are covered in the ESMF are not going to be financed in the proposed project. In addition, some specific investments in transmission and distribution were identified in advance; consequently, the PMU has prepared and disclosed site-specific environmental and social management plans (ESMPs) in accordance with the guidelines in the ESMF for the investments to be financed in the first two years of project implementation. EAs and/or ESMPs for investments to be financed in the third year of implementation and beyond will be prepared, reviewed and disclosed during implementation, in accordance with the ESMF. Similarly, the pipeline integrity study for the initial gas PRGs (the ELPS Integrity Study Update) has been prepared and reviewed by the Bank, and additional integrity studies that may be required for subsequent PRGs will be prepared before the subsequent PRG operations are processed for approval.

103. The main conclusions of the ELPS Integrity Study Update are that:

- The technical integrity of the system is reasonably sound. It can, however, be improved if all the remaining remedial work recommended in the 2000 study is carried out. The critical remedial works needed to upgrade the mechanical integrity of the ELPS to good practice industry standards will include: general valve and pig trap maintenance; continuous maintenance of the ROW; general refurbishment of electrical, instrumentation, safety systems, and controls; and complete redesign and replacement of large parts of the SCADA and telecoms systems.

- The technical safety of the ELPS, with the remedial works that were implemented as a follow-up to the 2000 integrity study is fairly acceptable. The operational history of the system from the safety point of view for the past 20 years can also be described as acceptable. According to the information obtained from NGC records the few safety issues have been caused by delivery of wet gas to end users, i.e. with substantial amount of condensates leading to safety breaches at end users facilities. Proper control of condensates at all necessary parts of the supply chain must be built into the ELPS supply system. The level of technical safety presently achievable on the ELPS will be improved when the remaining remedial actions highlighted in the report are implemented (See also Annex 11).

- During appraisal, NGC reviewed the list of outstanding remedial actions presented in the ELPS Integrity Study Update and provided a timetable that shows completion of the last action by September 30, 2010 (See also Annex 11).

- Also during appraisal, NGC provided the Bank a copy of its emergency response plan for ELPS. The plan places substantial emphasis on maintaining liaison with communities along the ELPS Right Of Way.

104. With respect to the project components focusing on transporting gas through existing pipelines to PHCN power plants, the project expects to facilitate gas supply contracts in accordance with specifications. There are already large quantities of both associated and non-associated gas produced in the Niger Delta and in offshore fields for both export (LNG) and domestic consumption. The proposed project is expected to encourage investments by some gas producers to improve the quality of gas for delivery to the domestic market by rehabilitation or upgrading of equipment within their existing gas processing facilities. These investments are particularly needed to facilitate contracts for domestic consumption, but are expected to occur within the fence of existing gas processing facilities and therefore will have only modest environmental and social impacts during rehabilitation or construction. It is possible that OCs/gas companies delivering gas to PHCN power plants with the backing of Bank PRGs will see new market opportunities not only for export and for firm domestic consumption (facilitated by this project), but also possible future growth in domestic consumption thanks to a demonstration of reliable supply of good quality gas. If so, IOCs/LOCs may decide to drill new gas wells or construct extensions to gas collection systems. Because of the nature of the production system, gas transport system, and the market, it would be very unusual to know whether any, or which, new wells or extended collection systems would be directly attributable to gas deliveries under Bank-guaranteed contracts. Once produced, collected, and processed, gas transported by pipeline becomes fungible and potentially delivered to any one of a wide variety of end users.

105. New wells and gas gathering systems are outside the project boundary, as described in para. 64. The project will rely on existing Nigerian regulations for impact management and use Bank resources through Technical Assistance to help the Government to improve their application to gas production facilities. PRG Project Agreements will have an undertaking from the relevant IOCs to the effect that any new wells, gas gathering systems or gas treatment facilities will be developed in full compliance with Nigerian law, including requirements for environmental assessment, public consultation, and disclosure. The OCs that are parties to the Gas Supply Agreements supported by the Bank's PRG will notify the Bank about their permit applications and EIA submissions to the FME and DPR and confirm to the Bank the receipt of permits and EIA approvals. In the event of non-compliance the Bank would have the right to suspend the PRG until such time as the default is remedied. Furthermore, the capacity of FME and DPR in implementing and enforcing provisions of Nigerian law with respect to OC gas wells and gas gathering systems will be strengthened during project implementation through technical assistance. The stakeholder forum will facilitate articulation of any concerns that arise regarding upstream developments and will thus contribute to enhanced transparency.

106. The main institutions responsible for monitoring and enforcing compliance with Nigerian regulations in the oil and gas sector are FME and DPR. Among other functions, FME reviews

and approves EIAs. Under the EIA Act of 1992, full EIAs are mandatory for oil and gas field development and for gas and oil separation, processing, handling or storage facilities. The DPR also maintains an environmental unit that oversees operations in the sector. DPR administers the Environmental Guidelines and Standards for the Petroleum Industry (EGASPIN) issued in 1991 and revised in 2002. EGASPIN requires environmental screening of all proposed investments, preliminary EIA reports for most of them, and full EIAs for many. The result is that OCs have to comply with both FME and DPR regulations. FME through the EIA process concerns itself with social impacts as well as environmental; the EIA process is supposed to ensure that affected people are compensated fairly for loss of land and other productive assets. DPR is concerned with technical and environmental aspects of developments and, increasingly, with social aspects as well. The initial review of the institutional and regulatory framework carried out as part of project preparation identified a number of areas in which capacity can be improved, including:

- Improving coordination between DPR and FME;
- Improving accessibility of the vast amount of information in FME, including EIAs, through development of a digital cataloguing, storage and retrieval system;
- Provision of training to FME and DPR staff in areas such as computer literacy, strategic environmental assessment, real-time monitoring, transparency and stakeholder consultation, and pipeline integrity analysis;
- Office rehabilitation; and
- Provision of laboratory equipment and vehicles.

107. The Government will be conducting a more in-depth review of the legal and institutional framework coupled with an assessment of monitoring and enforcement performance and recommendations to improve it. Terms of Reference have been prepared for this purpose. Results of the study will guide the elements of the TA component that will be directed toward environmental management capacity building for the gas sector.

108. The Environment, Resettlement and Social Unit (ERSU) that is located in PMU prepared the ESMF and RPF for the project in-house, with advice from Bank safeguards specialists. ERSU will be responsible for the preparation and processing of EIAs, ESMPs, environmental audits and pipeline integrity studies for NEGIP. ESMPs will be prepared by ERSU staff. More complex instruments or those that require more specialized expertise, such as pipeline integrity studies and full EIAs, will be prepared by consultants under contracts that ERSU will oversee. ERSU has experience in both oversight and direct preparation of safeguards documents. For example, while the first substation ESMP under the TDP was prepared by consultants, ERSU itself prepared ESMPs for the additional substations included in TDP and NEDP. An ESMF was prepared by consultants for NEDP. Implementation of ESMPs and audit recommendations is the responsibility of the concerned electricity transmission or electricity distribution company, but ERSU monitors implementation and provides advice where needed. A TDP-NEDP supervision mission conducted in May 2008 reviewed a sample of these ESMPs – the ESMP for the PHCN/WB HVDS Project prepared under TDP and the one for Jos-Makerie prepared under NEDP – and found them to be comprehensive and of good quality. The mission also reviewed ESMP and audit implementation and did not find any significant problems. ERSU was also

responsible for preparing the corporate environmental policy and HIV-AIDS policy, both of which have been formally adopted by PHCN.

109. The ERSU is a four-person group headed by a social scientist; the other three members are environmental specialists. ERSU is organizationally part of the environmental and social unit within the Transmission Corporation of Nigeria (TCN) under PHCN, but it remains physically located at PMU because of its specific responsibilities for preparation and implementation of TDP, NEDP and NEGIP. Additional training for ERSU staff is planned in:

(a) Ecosystem management – a course conducted by UNESCO.
(b) Resettlement planning and implementation.
(c) World Bank Group operations specifically on safeguards and the project cycle.

F. Safeguard policies

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

110. The NEGIP is classified in EA Category B. An ESMF and RPF were prepared early in project preparation, when it was planned that individual investments would be identified during implementation. However, specific investments have now been identified. They all involve rehabilitation or upgrading of electric transmission and electric distribution substations and electric distribution lines, with no new construction outside of existing facility footprints, hence there would be no significant or complex impacts and no resettlement. No RAPs will be required. Partial EAs will be sufficient, and most if not all of them will take the form of environmental and social management plans (ESMP). The ESMPs for the first and second years' investments have been prepared by ERSU and the ELPS integrity study update has been prepared by a consultant to PMU. Both have been reviewed by the Bank. The ESMPs have been publicly disclosed; integrity studies are not disclosed for reasons of pipeline security. The ESMF and RPF have been publicly disclosed, but the RPF will not be needed in this project. Because the ESMF provides guidance for preparation of ESMPs, pipeline integrity studies, and environmental audits, it remains in effect for the project. It includes a screening process that is consistent with both World Bank operational policies and FGN regulations, and a chapter on project processing that describes the responsibilities of each organization involved in NEGIP. The ESMF is described in more detail in Annex 11.

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas.*

Agencies involved in Environmental Supervision

111. The key actors that will be involved in environmental supervision in NEGIP are:

- FME which enforces national environmental assessment regulations. FME reviews and approves EIAs for Category I projects (the Nigerian equivalent of Category A) and monitors implementation of EIA mitigation and monitoring measures. It will only become involved in NEGIP supervision if it classifies any of the subprojects in Category I, which is unlikely.

- Environmental agencies have been set up by some states and local governments and, where they exist, they have a role in reviewing EIAs and monitoring implementation. The organizational arrangements, procedures and regulations vary, and those that prevail in each individual location need to be consulted.

- ERSU. Its composition, functions and capacity are described in paragraphs 107 and 108 above.

- TCN formed an environmental unit at its corporate headquarters under TDP and plans to have staff trained in environment and safety at its main transmission stations.

- Electricity Distribution companies do not have environmental and safety management capacity as extensive as that of TCN. As part of the ESMP for any NEGIP-supported activities in the distribution system, specific responsibilities for implementation have to be identified and arrangements defined for providing the necessary technical capacity.

- Bank staff. The project team, supported by Bank's Africa region safeguards specialists, will review and clear, pipeline integrity studies, and ESMPs after review by ERSU. No subproject will be approved for NEGIP support until the required safeguards instruments have been reviewed, cleared, disclosed, and amended to address any stakeholder inputs. The Bank will supervise implementation of safeguards, with at least one full safeguards mission per year, plus more frequent supervision from the country office.

G. Policy Exceptions and Readiness

Policy exceptions: No policy exceptions are being sought.

112. *Readiness:* It should be noted that while the structure of the guarantee is well defined as described in the Term Sheets agreed with SPDC and CNL (beneficiaries of PRG) (see Annex 10), the negotiations of the Guarantee Agreement, the Indemnity Agreement and the Project Agreement are expected to be finalized after Board consideration. Should the negotiated agreements for any PRG result in any substantial changes in the terms of the guarantee from those approved by the Board, such PRG would be resubmitted to the Board for approval. Such approach is consistent with the procedure set forth in BP 14.25 – Guarantees. As far as the IDA credits are concerned, the PMU has a strong record of managing projects under implementation,

and specifically, has demonstrated experience in undertaking the fiduciary obligations required for the investment activities to be funded by the proposed Project. Also, the PMU has strong in-house capacity to address environmental mitigation and compliance issues. The Environment, Resettlement and Social Unit (ERSU) of PHCN has already demonstrated satisfactory capacity to address safeguards related impacts in projects under implementation. ERSU will oversee the preparation of EIAs and/or ESMPs in accordance with the ESMF which was publicly disclosed.

Annex 1: Country and Sector Background

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. Nigeria is experiencing an economic surge that can provide a solid foundation for accelerating development. The Nigerian government's macro policies combined higher oil prices in the recent past have shored-up domestic growth in oil and non-oil sectors, promoted macroeconomic stability, and ensured strong external and fiscal positions (IMF, 2008). Economic growth is expected to be above 8% in 2008 and 2009.

2. To sustain the economic momentum, it is important to continue building appropriate institutional and governance structures. As the 2007 Public Expenditure Review (PER) pointed out, budget management improvements at the sector level (planning and implementation of specific programs and projects) have generally been less advanced than progress in macroeconomic management. Stronger transparency and accountability arrangements at the project and activity level are required in this regard.[18]

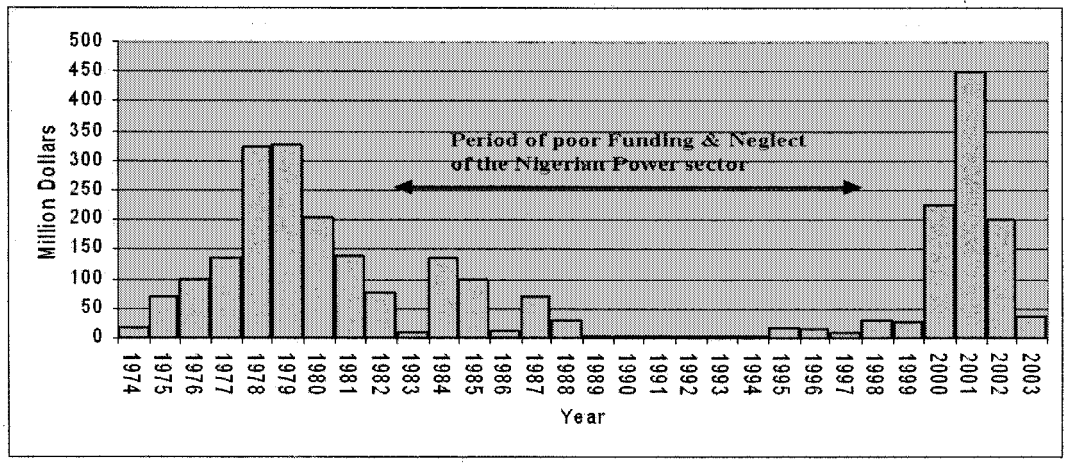
3. In the power sector, two decades of poor planning and under investment (1981-1999) have left a huge supply deficit and the existing infrastructure in a state of serious disrepair. No new power plant has been built in the country since 1990 till 2005. The situation is equally precarious in the transmission subsector with less than 2% of the Transmission Development Plan implemented between 1995 and 2005. No transmission line additions were made between 1987 and 2003.

4. The situation has improved since 2001, when the Government embarked on a public investment program that included: (i) initiatives to increase generation capacity, through the rehabilitation of existing plants and building of new plants; (ii) reinforcement of transmission network, through the rehabilitation of existing system and building of new grid stations and transmission lines; (iii) rehabilitation and extension of the distribution system, initiation of pilot demonstration projects and expanding rural electrification schemes. These initiatives were supported by the World Bank and undertaken as part of the SCADA and the CREST[19] programs. They resulted in the addition of 1,500 MW to power generation capacity and some improvement in the transmission and distribution system.

[18] Specifically, the PER calls attention to the need to further formalize the planning, approval and oversight of the off-budget investments managed by federal entities, namely, funding for JVs in Gas and Oil sector, National Power Projects, and donor funded projects. These account for 40% of non-interest spending at the federal level, equivalent to 5% of GDP.

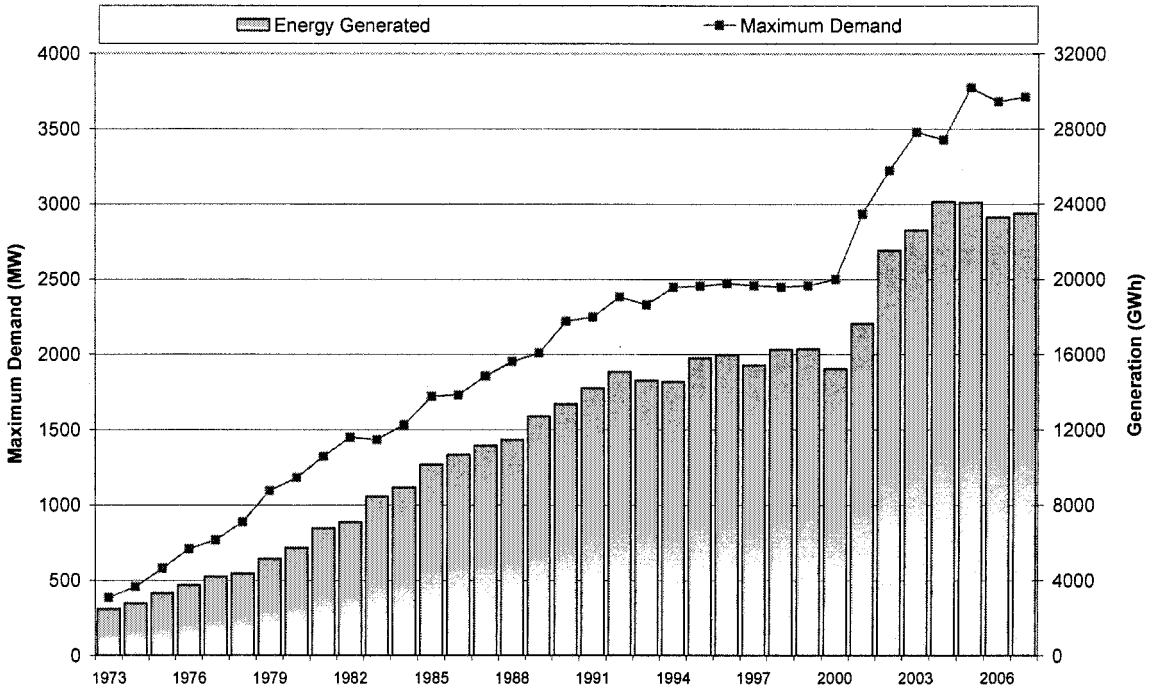
[19] CREST: Commercial Reorientation of Electricity Sector Toolkit.

Figure 1: Investments in the power sector



Source: PHCN.

Figure 2: PHCN: Supply and demand of electricity



5. In conjunction with these investments, the Government launched several reform measures. The Electric Power Sector Reform (EPSR) Act, enacted in March 2005, provided for commercial operation of the sector and a market-oriented industry structure. The Act led to unbundling of the Power Holding Company of Nigeria (PHCN) into 18 companies (6 generation, 1 transmission, and 11 distribution companies) and more open access to the grid. A Renewable Energy Master Plan was also developed and the Rural Electrification Agency was established to promote access to electricity in rural areas. In addition, an independent regulatory agency, the

Nigeria Electricity Regulatory Commission (NERC), was set up to promote efficient and equitable growth of the power sector.

6. The National Integrated Power Project (NIPP), also launched in 2005, is intended to make a transformational impact on the power sector through an outlay of US$9.7 billion to build six new power plants that would add 2,744 MW of new capacity with associated gas, transmission, and distribution improvements. The Government has spent US$2.8 billion on as yet unfinished capital investments under the NIPP, which require further funding from the Government to complete the ambitious projects initiated. The project also needs to address serious governance issues, implementation delays and cost overruns[20] to produce results on the ground.

7. The sector development program has yielded some modest results, as seen in Table 1.

Table 1: Nigeria: Power sector development (2000 - 2006)

	2000	2006	Change
Installed Available Capacity (MW)	2,753	4,090	49%
Highest Daily Peak Demand (MW)	2,500	3,776	85%
Bulk Energy Delivered (GWh)	21.0	36.0	72%
Transmission Capacity (MVA)	11,000	15,000	36%
Distribution Capacity (MVA)	7,500	12,250	63%
Metered customers (%)	40	67	67%
Revenue collections (naira billion per month)	2.8	6.5	268%
Access to electricity (%)	50	60	20%

Source: PHCN

8. However, even with these improvements, the energy scenario in Nigeria is grossly inadequate to the needs of the country's population and the economy as a whole. Today, only about 60% of Nigeria's population has access to electricity, electricity consumption per capita has fallen to a low figure of about 155 kWh in 2007, among the lowest in the world, and there are widespread blackouts owing to energy shortages. In addition, more needs to be done to provide for increasing electricity demand in the future (Table 2).

Table 2: Projected electricity demand (MW)

Year	Minimum	Most Likely	Optimistic
2010	6,000	7,000	12,500
2015	9,000	10,000	17,500
2025	12,000	15,000	25,000

Source: Behre Dolbear Report, 2006.

9. Recent reviews carried out by the Government, and the Bank's analytical work, have pointed to the following issues in Nigeria's energy sector and the steps to resolve them:

(a) Substantial public investments (about US$5 billion in 2000 - 2007) hitherto made in the power sector have not produced commensurate results due to governance

[20] Given the intense public frustration on this issue, a parliamentary inquiry specifically looked into the implementation delays and governance aspects of the NIPP.

gaps. For example, while the total fixed assets of PHCN grew by almost 200 percent (about N77 billion) between 2000 and 2004, more than half of this growth (N40 billion) was due to an increase in the costs of unfinished projects (work-in-progress) reflecting long implementation delays. There is a need, therefore, for expediting the commissioning of power projects under construction and making the necessary outlays available from the Budget.

(b) While public investment has been inefficient, private sector faces significant barriers to entry related to problems in enforcement of contractual obligations. Since over 70% of generation capacity in Nigeria depends on gas, the absence of enforceable contracts for gas-to-power has translated into gas being supplied on an "as available" basis, and corresponding payment arrears from PHCN to NGC have grown. To resolve this, mandatory domestic supply obligations that each gas supplier needs to meet are being introduced, and bilateral Gas Supply and Aggregation Agreements (GSAAs) between gas suppliers and PHCN are being finalized.

(c) To provide added comfort to gas suppliers, the Government is looking to implement a revenue securitization scheme that backstops PHCN payment risks through Bank PRGs.

(d) In the past, domestic electricity prices have been set without reference to costs, and this has blunted incentives for private investment in IPPs, restricted resources for maintenance and operations at the disposal of PHCN and could undermine the implementation of the new gas-to-power contractual arrangements. The Government has responded by planning increases in electricity retail prices plus interim subsidy transfers to plug the revenue gap through the Multi-Year Tariff Order (MYTO).

(e) There are several indications of weaknesses in corporate governance at PHCN, which are reflected in poor operational performance, overstaffing, and inadequate attention to maintenance. The Government has resolved to strengthen corporate governance and decision-making capacity through a PHCN Interim Board that will address urgent issues relating to performance deficiency, introduce performance contracts, and subsequently continue with privatization plans.

10. The following sections discuss these sector issues in more detail.

Increased supply of gas for power and other domestic priority sectors

11. As stated earlier, 70% of generation capacity in Nigeria depends on gas and this proportion is set to go up as gas is planned to be the main fuel for the expansion of power generation capacity (see Table 3 for projected gas consumption until 2016). Gas is the logical choice for power generation in Nigeria as it has the 7th largest proven gas reserves in the world, with 184 TCF of high grade gas. Gas is available, both as associated gas and as dry gas in stand alone gas fields. However, Nigerian gas, though abundant, is rich gas with several chemical impurities requiring substantial processing before it can be used for electricity generation.

Table 3: Forecast gas consumption in Nigeria's power sector (2008 - 2016)

Plant	Gas Consumption (mmscf/d)								
	2008	2009	2010	2011	2012	2013	2014	2015	2016
Existing Thermal	**471**	**547**	**798**	**656**	**618**	**544**	**513**	**554**	**586**
Sapele	29	29	25	4	0	0	0	0	0
Egbin	171.5	171.5	257.2	257.2	257.2	252.8	247.6	252.4	255.1
AES	65.6	65.6	63.5	15.5	1.3	0.0	0.2	0.6	1.8
Afam	11.0	47.0	43.2	57.6	57.6	53.0	49.2	53.3	55.3
Delta	66.0	66.0	101.8	19.2	1.2	0.0	0.0	0.7	1.9
Agip Okpai CCGT	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3	68.3
Ajaokuta	0.0	0.0	13.1	1.9	0.1	0.0	0.0	0.1	0.2
Rivers IPP	6.2	6.2	6.2	6.2	6.2	5.5	5.0	5.5	5.9
Omoku Phase I	7.0	7.0	11.7	18.7	18.7	16.1	14.1	16.2	17.5
Geregu (NIPP) - Phase I	23.2	51.8	86.2	86.2	86.2	70.6	64.4	74.1	79.9
Papalanto (NIPP) - Phase I	11.4	17.5	60.8	60.8	60.7	43.9	36.6	45.4	52.5
Omotosho (NIPP) - Phase I OCGT	11.4	17.5	60.7	60.8	59.9	33.8	27.9	37.8	47.5
Committed Thermal	**25**	**59**	**161**	**537**	**621**	**414**	**490**	**540**	**608**
Geregu (NIPP) - Phase II	0.0	0.0	0.0	0.0	83.8	41.0	32.0	44.1	55.9
Papalanto (NIPP) - Phase II OCGT	0.0	0.0	0.0	90.6	0.0	0.0	0.0	0.0	0.0
Papalanto (NIPP) - Phase II CCGT	0.0	0.0	0.0	0.0	95.6	95.6	95.6	95.6	95.6
Omotosho (NIPP) - Phase II OCGT	0.0	0.0	0.0	0.0	84.9	27.9	0.0	0.0	0.0
Omotosho (NIPP) - Phase II CCGT	0.0	0.0	0.0	0.0	0.0	0.0	95.6	95.6	95.6
Alaoji (NIPP) - Phase I OCGT	0.0	0.0	0.0	88.3	71.2	0.0	0.0	0.0	0.0
Alaoji (NIPP) - Phase II CCGT	0.0	0.0	0.0	0.0	0.0	95.6	95.6	95.6	95.6
Calabar (NIPP)	0.0	0.0	0.0	0.0	76.2	26.0	32.1	44.2	62.6
Egbema (NIPP)	0.0	0.0	0.0	62.3	31.4	10.6	11.8	18.6	27.2
Ihovbor (formerly known as Eyaen) (NIPP)	0.0	0.0	0.0	75.3	32.2	9.4	13.8	18.7	27.5
Gbarian/Ubie (NIPP)	0.0	0.0	0.0	30.4	11.0	3.4	4.3	7.4	10.1
Sapele (NIPP)	0.0	0.0	0.0	51.8	18.4	5.5	7.1	10.9	18.8
Omoku (NIPP)	0.0	0.0	0.0	19.3	6.3	1.8	2.5	4.1	6.5
Afam VI SPDC - Phase I OCGT	24.7	30.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Afam VI SPDC - Phase II CCGT	0.0	0.0	94.2	94.2	94.2	94.2	94.2	94.2	94.2
Ibom IPP Phase I	0.0	28.8	28.5	13.8	4.1	0.9	1.6	2.9	4.5
Ibom IPP Phase II	0.0	0.0	0.0	0.0	9.6	1.9	3.3	6.5	11.1
Aba IPP	0.0	0.0	38.5	11.3	1.9	0.2	0.6	1.3	2.7
Planned Thermal (In Service before 2016)	**0**	**0**	**0**	**0**	**4**	**226**	**226**	**229**	**232**
CNL Agura Phase I	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.3	2.4
TEPN Obite Phase I	0.0	0.0	0.0	0.0	0.0	61.7	61.7	61.7	61.7
Exxon Mobil QIT	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.8	4.2
Agip Okpai CCGT Phase II	0.0	0.0	0.0	0.0	0.0	68.3	68.3	68.3	68.3
Ibafo IPP Phase I	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0
Ibafo IPP Phase II	0.0	0.0	0.0	0.0	0.0	95.6	95.5	95.6	95.6
Total	**495**	**607**	**959**	**1194**	**1242**	**1184**	**1230**	**1323**	**1426**

Source: OPTS Report.

12. The FGN has taken a number of policy initiatives to expand gas supply to the domestic sector and to reduce the 20 bcm of gas that is currently flared. In February 2008, FGN approved a package of measures to improve the medium- to long-term development of the gas sector that included a Gas Master Plan that provides a blueprint for the future gas infrastructure network in Nigeria, a new gas pricing policy, an obligation for gas producers to serve the domestic market, and introduction of a modern contractual framework for gas sales to the power sector.

13. *Gas Master Plan:* The Gas Master Plan introduced a blueprint for the future gas infrastructure network in Nigeria. Box 1 shows the main features of the Gas Master Plan. Following successful road shows to promote the Gas Master Plan, it has become apparent there is significant investor interest in participating in the Nigerian oil and gas sector and many 'Expressions of Interest' are expected.

Box 1: Highlights of the Nigerian Gas Master Plan

- Proposed structure planned for significant increase in capacity to 5bcf/d with scope for rapid expansion.
- Harmonizes gas infrastructure into one national grid, which is critical for flexibility of supply. Allows for all the IOCs to align their infrastructure with national grid.
- Minimizes concentration of infrastructure in one region. Extends infrastructure to Katsina with future plans for other areas in the north. Significant increase in network to meet demand growth in South East.
- Primarily allows for processing of natural gas, removal of LPG and condensates for export.

Source: NNPC.

14. *Gas pricing:* Recognizing that the low price of gas used domestically distorted the incentives towards serving LNG export markets and encouraged gas flaring, FGN enacted a transitional domestic gas pricing framework that moves prices progressively to cost-reflective levels. There are three distinct gas price regimes:

(a) The Regulated Pricing Regime (cost of supply basis): This pricing approach applies specifically to strategic domestic sectors.

(b) The Pseudo-Regulated Pricing Regime (Product Netback basis): This price applies to strategic industrial sectors i.e. sectors that use gas as feedstock.

(c) The Market Led Regime (Alternative Fuels Basis/LNG prices): This price applies to all commercial sectors.

15. The price of gas for power sector is determined as per (a) above. In the transitional period, the contract price for sale of gas to the power sector at the delivery point (which is ex-Gas Processing Plant) has been set as in Table 4 below. In addition, a charge of US$0.30/mmbtu will cover the transportation of gas from to the delivery point to the power plant.

Table 4: Price of gas for the power sector

Year	Gas price (US$/mmbtu)
2008	$ 0.10
2009	$ 0.30
2010	$ 0.60
2011	$ 0.80
2012	$ 1.00

16. Domestic Supply Obligations: In August 2008, the Minister of State for Energy (Gas) issued a Domestic Gas Supply Obligation to all operators which specified the power plants (public and IPPs) each operator must supply to, as well as a general obligation to serve industries. The planned Domestic Gas Supply Obligation for 2008 was 22 bcm rising to 51 bcm in 2013. Of this, 16 bcm was planned to go to the power sector in 2008 and 35 bcm in 2013. The Domestic Supply Obligations for gas are expected to be met by a mix of associated gas as well as from new development of gas fields.

17. Contractual framework: A new Gas Sale and Aggregation Agreement (GSAA) has been negotiated between gas suppliers and PHCN and is expected to be finalized in August 2009. The agreement introduces a number of concepts common in modern gas contracts such as nomination of gas supply (no nomination system is in place at present) and risk allocation between buyers and sellers. The contract also introduces a third party to the GSAA, the "Strategic Gas

Aggregator" who will manage the gas supply portfolio and payment for gas to the domestic sector and will aggregate the revenue streams for gas sold to all buyers. Sellers will be paid the same aggregate domestic price and receive a Minimum Aggregate Price of US$0.50/mmbtu which is the weighted average price for gas delivered to the three segments of the domestic market ((a) - (c) in para. 14 above). The Strategic Gas Aggregator will issue Gas Purchase Orders after due diligence of Sellers.

18. Risks: Investments in gas development could be affected by concerns relating to payment risks for gas and electricity and the transport of gas to the power stations, including security issues related to pipelines.

(i) Payment risks: To justify investments in incremental gas production, gas gathering and processing, producers require payment security. The PRG will provide such security by providing a guarantee for payments for gas sales to PHCN public power plants under the new GSAA. The contract introduces commercial discipline in the sector and penalizes buyers and sellers for non-performance.

(ii) Gas transportation: A number of stakeholders have raised concerns about the security situation in the Delta where oil and gas pipelines have been repeatedly vandalized, resulting in a drop in the volumes of gas delivered to power plants. Proactive measures to counter this risk would have to be taken.

19. Under the GSAA, gas suppliers make gas available to the Buyer at the inlet into the ELPS system. PHCN therefore needs to arrange for transport of the gas from the delivery point to the various power plants. In most cases, the NNPC subsidiary NGC operates the gas transmission network, such as the ELPS system on the Western Gas system. Today, NGC has a merchant function and operates more on a "best endeavor" basis than on firm contractual basis with nomination for supply of gas to particular power plants. A transport agreement linked to the GSAA is under preparation. It is of utmost importance that a balanced agreement between NGC and PHCN is finalized and properly implemented to enable reliable transport of gas to the power plants. The agreement on a network code which also sets standard specifications for the quality of gas delivered to the ELPS pipeline and transported by NGC is the next step to ensure that the gas supply and transportation systems work properly in the future.

20. Other commercial agreements linked to the establishment of the Aggregator are under preparation. While the concept of a gas transmission and distribution company that buys gas on LT contracts and sells it to its customers at different prices over various contract durations is not new in the gas business, the concept of a Strategic Gas Aggregator with the function described above, is quite novel. Definitive projections of various customer categories off-take and agreements need to be in place to make the aggregation of prices work. The projections for the Domestic Supply Obligations going to the power sector seem optimistic, which highlights the need for more definitive projections.

21. In addition, the Downstream Gas Law needs to be finalized to create a legal and regulatory framework for private investments in gas pipelines and modify/reduce the role of NGC. The proposed law introduces a regulatory body and is meant to reduce the role of NGC by

separating its transport and merchant functions as a de-facto monopoly for gas pipelines and allow others to build them.

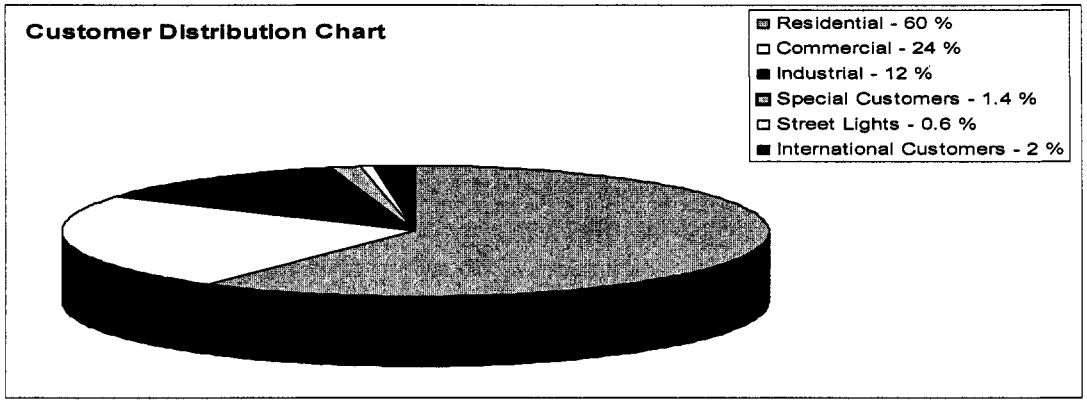
22. Monitoring: A monitoring system is crucial to ensure that the system works, for both gas supply and capacity in the power sector to utilize the gas. A Gas Monitoring Committee was established early in 2008 under the Minister of Energy (Gas) consisting of representatives of the IOCs, NNPC and NGC. This Committee can take emergency measures to remove obstacles to meeting the gas supply targets. Proper measurement and quality monitoring systems need to be in place at relevant points to ensure that the arrangement works.

23. Gas flaring: Plans for utilizing the large volumes of gas associated with oil production that is currently flared are under implementation by the operators. Current operator plans would result in reduction of flaring to the specified minimum level only by 2013, though options are being examined to meet the specified targets sooner.

New regulatory framework for retail electricity pricing

24. The retail electricity tariff in Nigeria consists of 3 elements: (a) Energy Charge - for variable costs recovery; (b) Demand Charge - for applied pressure (load amount) on the system; and (c) Fixed Charge - for capital costs recovery. Electricity consumers in Nigeria are divided into 6 categories, namely, residential, commercial, industrial, street lighting, customers on special tariff, and International Customers. The electricity customer distribution (by revenue share) is shown in the figure below.

Figure 3: Electricity customer distribution in Nigeria (by revenue share)

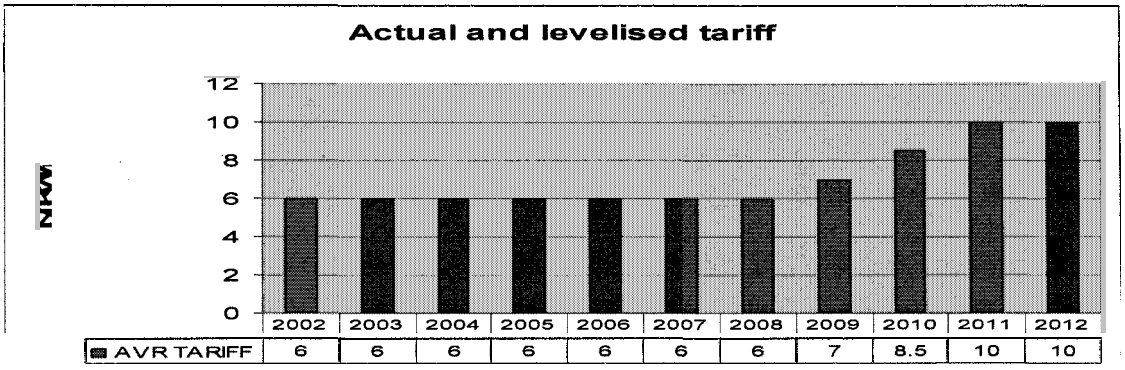


Source: NERC.

25. Currently, the average tariff for the Nigerian electricity market is one of the lowest in the world, at about N6/kWh or US$4.3 cents/kWh, and has remained constant since 2002. With increasing costs, the current tariff level has not been sufficient to meet operating costs or capital investments of the unbundled companies along with the gas supply payment and the IPP payments. Other major reasons for this deficiency are the high technical losses and low collection efficiency, which together account for almost half of the revenue loss. As a result, there is a yearly revenue gap, which has been historically met by the Government through ad hoc transfers.

26. The recent Multi Year Tariff Order (MYTO) by the regulator is an attempt to remedy the situation, where the gap is sought to be plugged by a mix of government subsidy and tariff increases. The MYTO developed by the Nigeria Electricity Regulatory Commission (NERC) raises retail prices to cost-recovery levels over a 5-year period (see tariff trajectory in Figure 4), based on operational cost recovery, return on investment for new capital investment and replacement capital investment.

Figure 4: Tariff trajectory



Source: NERC.

27. The MYTO is based on the following principles:

(a) Every unit of the supply chain should be allowed to recover its efficient costs, including a reasonable rate of return on capital.

(b) Prices should encourage efficient level of investment in the industry.

(c) Prices should be predictable and stability should be guaranteed to encourage private investments.

(d) Tariff structure should be transparent, easy to understand and not costly to implement.

(e) Price structure should give incentives for operating cost reductions, efficiency and service quality improvements.

(f) Prices should be affordable to the various classes of users and should support Uniform National Tariff.

28. The MYTO implementation will lead to an increase in tariff over the next 3 years starting in July 2009, and reaching a cost reflective tariff level of N10/kWh by 2011. In arriving at this figure, the MYTO assumes that the generation availability will be around 10,000 MW by 2010. It also assumes that the combined technical, non technical and collection losses will drop from 45% to 30% by 2009. The improvements are expected to be a result of investments in transmission and distribution subsectors, and collection efficiency improvements. The MYTO is

developed for each functional component of the Electricity Industry (Generation, Transmission, Distribution and Retail) each year for 15 years, with a provision for 5 yearly reviews.

29. The proposed tariff re-alignment requires Government support to meet the shortfall between the required revenue and the collected revenue, with the subsidy being sunset over 3 years: 1st Year N64.84 billion,[21] 2nd Year N77.31 billion, 3rd Year N35.80 billion (total N178 billion) through a tariff equalization fund. This will give PHCN sufficient margin of maneuver in its finances to accelerate performance improvements. The Government of Nigeria has approved the implementation of MYTO and agreed to provide the needed subsidy. The next challenge for the Nigerian Electricity Regulatory Commission (NERC) is to design a tariff structure that will take into account these cost reflective levels and target subsidies efficiently for the poor.

Box 2: International Experience: Lessons Learned on MYTO and Subsidies in the Power Sector

International experience indicates that design of the MYTO transition period must properly contemplate social and political acceptability. Willingness and ability to pay for electricity services to consumers targeted for subsidization needs to be quantified. The best mix of alternatives (progressive elimination of in-tariff subsidy, government funding, within-industry funding, generation vesting contracts, grouping business units, etc.) must be carefully analyzed, as well as the time schedule for its effective and sustainable implementation. But, regardless of the time needed to move in that trajectory, its initial (current condition) and final ("steady state" condition) points must be transparently determined and informed to all sector stakeholders at the time the new methodology for setting tariffs is applied for the first time.

Setting a regime for subsidization of selected consumers (low-income, low-consumption, rural, etc.) comprises, among other issues, the *definition of consumers to be permanently subsidized* and *others whose current subsidization will be eliminated in the future* (transitory); mechanisms for defining the size and allocation of subsidy; sources of funding for every subsidy, and institutional arrangements for implementation and monitoring of the subsidy.

Decision on a regime of subsidies is clearly a policy issue. It must be adopted by the political authority responsible for the power sector. The subsidy regime should aim at reaching sustainable electricity supply to the selected consumers, meeting acceptable standards on quality. Sustainability implies consideration of willingness and ability of the consumers to pay for the service. This creates a wide range of situations. In some cases, it will be enough to subsidize capital costs partially. In others, it will be necessary to provide permanent subsidy for energy consumption, in order to cover the gap between cost of supply and willingness and ability to pay of consumers. In principle, relatively richer, high-consumption customers should subsidize poor, low-consumption and rural consumers (tariff cross-subsidization).

Improving PHCN performance and related aspects

30. The Electric Power Sector Reform Act, which became law in 2005, provides the legislative framework for Nigeria's reformed electricity supply system. The Act provides for the following:

(a) Unbundling of NEPA, and the creation of an initial holding company (Power Holding Company of Nigeria, PHCN) owned by the Federal Government to facilitate the unbundling.

[21] Will translate roughly into US$542 million in the first year as per current exchange rates.

(b) Prescribes the incorporation of successor companies owned by the Federal Government through the Ministry of Finance, and the BPE, to inherit the assets and liabilities of NEPA.

(c) Prescribes for the transfer of all staff of NEPA to the PHCN, the successor companies and NERC and the maintenance of all obligations to staff, including pensions.

(d) Establishes the Nigeria Electricity Regulatory Commission (NERC) and prescribes the rules that NERC should apply to license and regulate participants in the reformed electricity supply system.

(e) Prescribes a legal framework for the development of competitive electricity markets.

(f) Prescribes a legal framework for the regulation of tariffs, enforcement of standards, and consumer protection.

(g) Establishes a Power Consumer Assistance Fund.

(h) Establishes the Rural Electrification Agency supervised by the Minister of Power and Steel, and a Rural Electrification Fund to promote access of electricity to rural areas.

31. A decision was taken to create six generation companies to inherit NEPA's generation infrastructure; one transmission company, now called the Transmission Company of Nigeria, to inherit NEPA's 330 kV and 132 kV transmission infrastructure, and eleven distribution companies, each operating in a geographic zone to inherit NEPA's distribution operations. Power Holding Company of Nigeria Plc (PHCN) was incorporated and became operational in 2005. PHCN is a temporary holding company to warehouse all the assets and liabilities of the power sector while the successor companies are being set up.

32. The intent of the reform program was to sell these successor companies to private investors while allowing private investment in additional new generation projects. However, the Government's assessment is that the privatization of the PHCN successor companies needs to be postponed until generation capacity increases, and the companies are repaired, revitalized and their viability is ascertained. Besides urgent maintenance and rehabilitation, this will call for a solution to the mounting pension liabilities and debt, uncertainty about labor contracts, and corporate governance deficiencies. In the interim period, the coordination of operations and investments in the power sector will fall on the new Interim Board of PHCN.

33. It is important that during this interim period the successor companies are operated on clearly defined commercial principles to obtain optimum benefits from the ongoing refurbishment and recapitalization of the sector, and enhance the commercial viability of the sector. There is also a need to enhance the efficiency of these companies. To achieve measurable impact and to ensure that efficiency gains through the governance structure introduced by the transitional board are sustained, the Ministry of Power and the BPE are working with the Public Private Infrastructure Advisory Facility (PPIAF) and the DFID to

develop performance contracts. This task needs to be prioritized so that it is complementary to the overall investment plans prepared by the interim board of PHCN. With active Bank support, the successor electricity distribution companies of NEPA, implemented an innovative program called CREST (Commercial Reorientation of Electricity Sector Toolkit) aimed at improving performance and service delivery. Box 3 below summarizes the program and results so far in pilot areas.

Box 3: The CREST ProgramGood Practice Pilots for Distribution Loss Reduction by PHCN with Bank Support

The program seeks to introduce efficiencies into electricity distribution management through a best practice framework that is anchored on the following principles:

-Right incentives for distribution business to be a net cash generator for: (i) reduced tariffs in the long run and for supply of quality power; and (ii) gradual elimination of the need for Government support.
-Operational philosophy to change from that of a service provider to that of retail trade in electricity.
-Reengineering business processes with innovative technology adaptations, leveraging Information -Technology for efficiency, energy balancing, performance monitoring, and new HR practice.
-Reorienting the market with introduction of competition, well established regulation, standards of service, retail outsourcing and developing technical and human skills within the local market, for sustainable private sector participation.

The key action elements of CREST are:

-Distribution business outsourcing (either in ring-fenced distribution zones/clusters or in retail pockets such as housing estates, markets, and industrial areas) on bulk service to customers.
-Distribution function outsourcing.
-Metering of all customers.
-Rationalize bill estimation value in the interim.
-Electronic and spot-billing of customers, including provision of printed bills and collection of 'on-the-spot' payments through cash cards (cashless transactions).
-Energy audit of distribution feeders.
-Remote reading of major customers to eliminate fraud in meter reading and collusion between unscrupulous staff/customers.
-High voltage distribution systems to reduce theft and losses.
-Internet based customer records for greater transparency and information.
-Customer service centers for improving utility-customer interface.
-Rapid response mobile customer service units.
-Focusing on collecting government receivables.
-Asset and facilities management.
-Performance measurement and monitoring.
-Database and data mining initiatives including GIS/GPS techniques.

To date CREST has yielded encouraging results in targeted clusters with losses going down from an average of 40% to around 7% and improvement in quality of supply from 180 volts to 220 volts.

34. Another key activity is the initiation of the transitional electricity market. This will be necessary to implement the performance contracts by the successor companies of NEPA. In addition, issues relating to the Nigeria Electricity Liquidity Management Company (NELMCO), which manages residual assets and liabilities as well as future liabilities including Power Purchase Agreements, such as its commencement and operations should be resolved to enable the start of a proper IPP program that will include procurement guidelines and clear cut plans for

IPPs in the short-, medium- and long-term. Another area that requires concerted attention during the transition is the Market and System operations. To achieve the targets set in the Act for the establishment of an independent system operator, work must begin to strengthen and support the entities within the sector. Operationalizing the Market Rules and Grid Codes developed by the NERC, the BPE and other industry codes is also important in this regard.

Enabling private sector participation through IPPs

35. Private sector participation in the power sector is desired to leverage additional financing into the sector to fill the growing investment gap, and reduce the planning and operational inefficiencies that have plagued public sector projects. Up to now, private investment has been limited due to the poor track record of utilities in meeting payment obligations, uncertainty about the regulatory framework, and the incidence of high political and security risks.

36. In all, the private sector generation projects in the pipeline are expected to add about 3000 MW to the grid (see Table 5). While some of these projects are sponsored by private power companies, e.g., Geometric Power, the bulk of the additional generation capacity will come from joint-ventures between the government-owned Nigeria National Petroleum Corporation (NNPC) and the international oil companies operating in Nigeria - Shell, Agip, Exxon-Mobil, Chevron and Total. These projects are in different stages of implementation and when completed will enable Nigeria to add substantially to the current generating capacity through high performance and cleaner plants.

Table 5: Joint Venture IPPs between International Oil Companies and NNPC

Project	Promoter (Contractor)	Cap. (MW)	Fuel	Inv. ($ m)	Status
Kwale, Delta State	NNPC (60%), Agip (20%), Phillips (20%)	450	Gas	425	300 MW commissioned.
Bonny, Rivers State	NNPC, Exxon Mobil	388	Gas (Oso)		In progress
Afam	NNPC, Shell	930	Gas		In progress
Obite	NNPC, Total	450	Gas		In progress
Ijede	NNPC, Chevron, Texaco	780	Gas		In progress
Total		**2,998**			

Source: PEMFAR background paper.

37. However, the limited experience with independent power producers (IPPs) has raised concerns for both, the Government and the IPPs. Significant risks for the government include: (a) high price of power under the current PPAs in comparison to international benchmarks, which strains the already deficient PHCN revenues; (b) creation of contingent liabilities for the FGN through its guarantees to the PPAs. On the other hand, for IPPs, current revenue shortfall in the sector and gas supply issues creates significant commercial risks. An enabling policy and institutional framework, and equitable PPAs that conform to international benchmarks are prerequisites for sustainable private sector participation in generation.

Annex 2: Major Related Projects Financed by the Bank and/or other Agencies

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. There are few Development Partners involved in the energy sector in Nigeria, and the World Bank is by far the largest international development institution active in the power sector in recent years. Several multilateral (African Development Bank, Islamic Development Bank, UNIDO) and bilateral donors (DFID, French AFD, USAID, China EXIM, India, etc.) have also expressed interest in assisting the energy sector through investments, technical assistance and advisory support, and capacity-building projects.

2. The following is a selective list of projects and technical assistance activities which relate to the Nigeria Electricity and Gas Improvement Project (NEGIP), and which are funded by international financial institutions and bilateral development agencies:

(a) The **World Bank** has two on-going projects in Nigeria in the power sector including: (i) the National Energy Development Project; and (ii) the Niger Basin Water Resources Development & Sustainable Ecosystems Management APL 1 Project. In addition, the Bank is also supporting the West Africa Gas Pipeline Project, which aims at delivering gas from Nigeria to Benin, Togo and Ghana. Additionally, the Bank is supporting the Privatization Support Project, under which privatization or private sector participation in the energy sector is being fostered. There are Technical Assistance (TA) components with each of the above operations.

(b) The **Department for International Development (DFID)** is supporting development of energy infrastructure through its Nigeria Infrastructure Advisory Facility (NIAF). Under NIAF, a number of advisory services on energy sector issues are being provided to the Federal Government of Nigeria. Several papers in the ongoing ESW are being undertaken in cooperation with NIAF.

(c) The **United States Agency for International Development (USAID)** is providing resources for Technical Assistance, particularly in analysis of the gas sector, through its Africa Infrastructure Program, capacity-building and implementing renewable energy projects.

Table 1 provides details of some of the Bank-financed and DFID-supported projects:

Table 1: Major related Projects Financed by the Bank and other Agencies

Sector Issue	Project	Latest Supervision Ratings (Bank-financed projects)		Summary of sector-related projects
		IP	DO	
Sector restructuring & Transmission infrastructure strengthening	Transmission Development Project (Cr. 3559-UNI)	S	S	To support the Federal Government of Nigeria's (FGN) overall program of power sector reform and privatization by addressing the requirements of the transmission and dispatch sub-sectors. Project closed in December 2008.
Sector reforms, transmission and distribution investments, renewable energy, and related issues	National Energy Development Project (Cr. 4085-UNI)	MS	MS	To facilitate the sector's smooth transition to the new market and institutional structure with policy and regulatory reforms, increased private sector and community participation, efficiency, supply and service improvements, pilots to scale-up electricity access, renewable energy, and preparatory work for gas pipeline and related power generation project.
Water Resources Management	Niger Basin Water Resources Development and Sustainable Ecosystems Management (Cr. 4348-UNI)	S	S	To enhance regional coordination, development and sustainability of water resources management in the Niger River Basin, especially rehabilitation, optimization and development of regional electricity generation infrastructure with particular focus on Kainji and Jebba Dams.
Gas transmission infrastructure for export	West Africa Gas Pipeline (WAGP) Project (Cr. B0060)	MS	S	Sharing gas resources in West Africa by a new pipeline system for transport of natural gas from Nigeria to Ghana, Togo, and Benin, conversion of existing power generating units to gas, and provision of additional compression investments.
Facilitation of privatization and Private Sector Participation	Privatization Support Project (Cr. 3520–UNI)	MS	MS	
Advisory support: Economic and Sector Work	Nigeria Energy Policy Analysis	n.a	n.a	Analytical work being conducted by the Bank in coordination with Nigerian counterparts on various aspects of the power sector to inform Government and development partners' strategy in the sectors. This includes a methodology for regulatory review of Power Purchase Agreements which was recently published.
Advisory support	Nigeria Infrastructure Advisory Facility (DFID)	n.a.	n.a.	Analytical work to inform model PPAs, performance contracts and other sector issues.
Advisory support	Nigeria Gas sector analysis (USAID)	n.a	n.a	Analytical work on Government's gas policy.

Annex 3: Results Framework and Monitoring

Nigeria: Electricity and Gas Improvement Project (NEGIP)

Results Framework

A. PRG

PDO	Project Outcome Indicators	Use of Project Outcome Information
Improve the availability and reliability of gas to increase power generation in public sector power plants.	*Availability* Gas supply to public sector power plants (mmscfd). *Reliability* Interruptions in gas supply to public sector power plants (number/month). *Power generation in public sector plants* Additional power generation from increased gas supply (MW).	Monitor the results from power plants receiving gas under the contract supported by the PRG. Increased gas supply to existing plants as well as new IPPs in pipeline will contribute to power supply improvements. Validate the usefulness of the proposed risk mitigation framework to support private sector participation in power generation.
Intermediate Outcomes	**Intermediate Outcome Indicators**	**Use of Intermediate Outcome Monitoring**
Institutional arrangements for gas sector reform in place.	Contracts supported by PRG signed. Implementation of Gas Master Plan launched.	
Capacity to assess and address power plant rehabilitation needs strengthened.	Power plant rehabilitation plans completed (number).	

B. NEGIP - SIL

PDO	Project Outcome Indicators	Use of Project Outcome Information
Improve the power networks capacity and efficiency to transmit and distribute quality electricity to the consumer.	*Transmission capacity* Transmission capacity (MVA). *Distribution efficiency* Average Revenue per kWh input in targeted clusters *Access in targeted clusters* Households connected to electricity (number). *Quality in targeted clusters* Households with end-user voltage at 220 volts (%).	Demonstrate the potential for scaling-up transmission capacity; distribution efficiency and resultant supply enhancements. Disseminate to improve image of sector and strengthen support for necessary reforms to improve financial sustainability.

Intermediate Outcomes	Intermediate Outcome Indicators	Use of Intermediate Outcome Monitoring
Transmission Investments		
Alleviation of bottlenecks to transport more electricity from the generation source to the distribution point. Increased Supply Capacity in selected Transmission Substations.	At least two 330/132 kV and at least ten 132/33 kV substations.	Increased supply capacity to saturated bottlenecks in the grid directly increases the amount of power available downstream of the investment point.
Cluster level transmission improvements (Lower input voltage compromises end user voltage levels making it difficult to use appliances.)	Input voltage to the 33/11 kV interface (V).	Measuring the Voltage level at the delivery point to the cluster boundary gives a combined indication of the upstream results of capacity increases and reactive power compensation investments.
Distribution Investments		
Reduction in distribution system losses in targeted clusters.	Distribution system losses (%).	Measured by PMU, and will be tracked as Naira billed/kWh of energy purchased at bulk voltage level.
Improved revenue collection in targeted clusters.	Revenue collection ratio (%).	
Intermediate Outcomes	**Intermediate Outcome Indicators**	**Use of Intermediate Outcome Monitoring**
Policy framework and capacity building		
Improved capacity to manage Environment, Health and Safety Issues.	ERSU staff trained (number): o UNESCO Ecosystem Management course. o WBG safeguards and project cycle training. Designated Officials responsible for EHS in place FME and DPR Capacity o Needs assessed. o Capacity building program launched. Facilities under PRGs have EHS plans in place and in use (number) (integrity study/EMP/safety plan/emergency response plan). Recommendations from Integrity Study implemented (%). New wells / lines constructed for project complying with Nigerian environmental laws (%). Stakeholder forum meeting every six months. Communication program implemented and public opinion used to gauge project effectiveness.	Support the implementation of new reform actions (tariff-setting under MYTO, introduction of performance-linked subsidies, effective targeting of transfers) and environmental, health and safety features.

NEGIP

Arrangements for results monitoring

PRG

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**2010**	**2011**	**2012**	**2013**	**2014**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Gas supply to public sector power plants (mmscfd/month)	300	400	548	613	685	700	Quarterly	Invoices from Gencos/IOCs	Market Operator
Interruptions in gas supply to public sector power plants (number/month)	10	10	10	9	8	8			
Additional power generation from increased gas supply (MW)	0	135	250	350	475	500			
Intermediate Outcome Indicators									
Contracts supported by PRG signed	0	2	3	5	7	7			
Implementation of Gas Master Plan launched	0	1	1	1	1	1			
Power plant rehabilitation plans completed (number)	0	1	2	2	5	-			

Specific Investment Loan -- NEGIP

		Target Values					Data Collection and Reporting		
Project Outcome Indicators	**Baseline**	**2010**	**2011**	**2012**	**2013**	**2014**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Transmission capacity (MVA)	60	60	60	60	360	360	Quarterly	Reports from TCN/SCADA	Market Operator
Households connected to electricity (number)	Average 60% (in selected clusters)	+0%	+0%	+0%	+10%	+10%	Quarterly	Reports from Distribution Companies	COOs of Distribution companies
Households with end-user voltage at 220 volts (%)	180V in selected clusters	+0%	+0%	+4%	+10%	+10%	Quarterly	Reports from Distribution Companies	COOs of Distribution companies
Intermediate Outcome Indicators									
Transmission losses (%)	13% (in selected network sections)	11%	9%	8%	8%	8%	Yearly in Year 1-3 and Quarterly in Year 4, 5	Reports from Transco/SCADA	TCN
330/132 kV substations (number)	0	0	0	4	6	8	Yearly in Year 1-3 and Quarterly in Year 4, 5	Reports from Transco/SCADA	TCN
132/33 kV substations number)	0	0	0	3	7	8	Yearly in Year 1-3 and Quarterly in Year 4, 5	Reports from Transco/SCADA	TCN
Input voltage to the 33/11 kV interface (V)	29KV in selected clusters	+0%	+0%	+10%	+10%	+10%	Yearly in Year 1-3 and Quarterly in Year 4, 5	Reports from Transco/SCADA	TCN

		Target Values					Data Collection and Reporting		
Intermediate Outcome Indicators	**Baseline**	**2010**	**2011**	**2012**	**2013**	**2014**	**Frequency and Reports**	**Data Collection Instruments**	**Responsibility for Data Collection**
Distribution system losses (%)	15% in selected clusters	14%	14%	13%	11%	11%	Quarterly	Reports from Distribution Companies	COOs of Distribution Companies
Revenue collection ratio (%)	85% in selected clusters	85%	86%	87%	88%	90%	Quarterly	Reports from Distribution Companies	COOs of Distribution Companies
ERSU staff trained (number)	0	5	5	5	5	5	Quarterly	Reports from PMU	PMU
FME, DPR Capacity Needs assessed	0	1	1	1	1	1	Quaterly	Reports from PMU	PMU/FME/DPR
FME, DPR Capacity building program launched	0	1	1	1	1	1	Quarterly	Reports from PMU	PMU/FME/DPR
New facilities under PRGs have EHS plans in place and in use (number)	To be established if the OCs need to set up new facilities as gas demand evolves	As applicable	As applicable	As applicable	As applicable	As applicable	As applicable	Reports from OCs/FME/DPR	OCs/FME/DPR
Recommendations from Integrity Study implemented (%)	0	50%	80%	100%	100%	100%	Annual	Reports from NNPC/NGC	NNPC/NGC
Stakeholder forum meeting every six months	0	2	2	2	2	2	Bi-annual	Reports from MoP	MoP

Annex 4: Detailed Project Description

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. **Component 1: Partial Risk Guarantees (PRGs) for gas suppliers for an amount up to US$400 million.** The proposed PRG Scheme would help the Government in increasing the supply of gas to power from the OC JVs to the level required by various existing and new PHCN power plants. Initially PRGs will be provided in support of two GSAAs between SPDC and PHCN and CNL and PHCN. Subsequently, other gas supply contracts between PHCN and other gas suppliers will be covered.

2. The Domestic Gas Supply Obligations of the OCs, as mandated by the Government under the gas policy, earmark specific power plants that will receive gas to be supplied by each OC under respective gas supply contracts with PHCN. Accordingly, PHCN's gas supply contract with SPDC will cover the gas to be consumed by Egbin and Sapele power plants. The Government has done so in order to ensure that the gas requirements of all power plants are met by "allocating" the gas requirement of each power plant to a specific gas supplier. However, this allocation is notional given that the gas supply agreements are to be executed by each individual OC with PHCN (on behalf of the power generation companies) and not with individual plants as identified in the domestic supply obligations. The project aims to provide PRG support initially to the GSAAs between SPDC and PHCN and CNL and PHCN, other GSAA's between other OCs and PHCN will be covered subsequently within this Project. The gas to be supplied to all the power plants in the Western Delta will be supplied through the Escravos Lagos Pipeline System (ELPS) and the title of the gas transfers to the PHCN as soon as the OCs feed the gas into the ELPS trunk pipeline. Hence, after that point, PHCN is at liberty to take that gas to any power generating plant as required through the pipeline network. Therefore, PHCN need not necessarily feed the gas supplied by SPDC to Egbin and Sapele as mentioned in the domestic supply obligations, and is at liberty to utilize the gas in other power plants as required.

3. ELPS belongs to the Nigeria Gas Company (NGC), which will transport the gas to PHCN through a separate Gas Transmission Agreement (GTA) with PHCN.

4. The Bank has conducted due diligence on all the existing power plants of PHCN in order to assess their operational capacity and technical integrity, particularly to assess the gas quantity and/or quality constraints as well as the offtaker risk under the GSAAs. The Bank has also conducted due diligence of the ELPS and related spur lines to assess related risks to enforcement of the GTA. The results of the due diligence are discussed below.

5. **Due diligence of the existing PHCN power plants**: Six Power Plants were covered by the above-mentioned due diligence. Five of these power stations: Egbin, Egbin AES, Delta, Omotoso, and Papalanto are directly connected to the ELPS by spur-lines. The sixth, Sapele Power Plant is supplied with gas from two direct spur lines: (i) the 9 km 18" pipeline from the Shell Sapele Station Gas Supply Facility; and (ii) the 35 km 18" pipeline from the Shell Oben Station Gas Supply Facility. The Oben Station Gas Supply Facility is also connected to the ELPS with a possibility of supply of gas to Oben from the ELPS. The integrity of power generation from the six power plants listed above is directly or indirectly dependent on the integrity of operation of the ELPS. Historical data shows that a third of the current power generation capacity of these plants is lost due to gas supply constraints. For example, in Egbin

Power Station, which is the largest PHCN power generation plant, historically (2003 - 2008), monthly gas consumption has ranged between 1947 to 8102 mmscf (between 63 to 261 mmscfd). The proposed gas supply contracts specify annual contracted quantities that the gas supplier is obligated to supply and impose liabilities on the gas supplier for non compliance. PHCN as the offtaker of gas is also obligated to absorb these quantities, failing which it is liable for penalties. However, the contracts provide for upfront nomination of gas quantities for each year at the time fo signing the contract, providing flexibility to the supplier and the off-taker to reasonably manage the contracts.

6. Another major issue is the quality of the gas supply. Associated gas, which is produced with crude oil, forms about half of the total gas extracted in Nigeria. Associated Gas needs processing to remove liquids and chemical impurities before it can be used for electricity generation. If not properly processed it corrodes the pipeline system and can damage the pipeline infrastructure. Bank's analysis shows that Egbin and other PHCN generation plants have faced extensive damage to their systems due to the wet or impure gas being supplied. Hence the quality of this gas has to be improved before it can be transported and utilized. The proposed gas contracts place accountability on the gas supplier to supply well processed quality gas through a set of standard quality specifications for gas and impose penalties on the gas supplier for non compliance. Hence the gas contracts supported by the PRG are expected to help improve availability, reliability and quality of the gas supplied to PHCN power plants.

Due diligence of the ELPS Trunk pipeline

7. The gas supplied by the IOCs under the proposed gas supply contracts to the PHCN will be transported by the Nigeria Gas Company through its Escravos Lagos Pipeline System under a Gas Transmission Agreement between the PHCN and the NGC. Hence the integrity of ELPS is essential for compliance with enforcement of the Gas Transmission Agreement.

The ELPS is made up of the following components:

- The Western Gathering System Pipelines, with a current supply capacity of about 300 MMSCFD.
- The Southern Gathering System Pipelines, with a current supply capacity of about 600 MMSCFD.
- The Warri Gas Treatment Plant (WGTP) with an installed gas carrying capacity of about 1.06 BSCFD.
- Warri to Lagos—a 343 km, 36" pipeline from the WGTP in Warri Delta State to Egbin Tee at PS4 and the 24", 42 km pipeline from PS4 to Alagbado Tee at PS5 also in Lagos State.

8. The ELPS has been in operation for over 20 years and barring technical limitations that have arisen over the years, it has been supplying natural gas to many consumers in Nigeria without any significant safety issues. An integrity evaluation of the ELPS was carried out in 2000 by PENSPEN of UK to ascertain the readiness and integrity of the system to supply gas to the West African Gas Pipeline as well as to the other connected (and to be connected) Nigerian

customers. The due diligence study of the ELPS that was carried out as part of the PRG operation was focused at updating the 2000 report with the aim of ascertaining the preparedness, adequacy and safety of the ELP to meet gas supply obligations to the power plants that are connected to it. In the next section, a summary of our conclusions on the integrity of the ELPS is presented as well as recommendations on what must be done to ensure a high integrity of gas supplies to power plants covered by the PRG.

Conclusions on the Integrity of the ELPS

9. The following conclusions were developed from a composite consideration of the following: the conclusions of the 2000 ELPS integrity study; the activities that were carried out on the ELPS as a follow-up to the recommendations of the 2000 integrity study; and the evaluation of the current conditions of the ELPS as documented in a study conducted during preparation of this project including field visits carried out in December 2008.

Technical integrity of the ELPS

10. With the remedial work carried out as a follow-up to the intelligent pigging of the ELPS, the study reports that the technical integrity of the system is reasonably sound. It can, however, be improved if all the remaining remedial work is carried out. The critical remedial works needed to upgrade the mechanical integrity of the ELPS to world standard will include: general valve and pig trap maintenance; continuous maintenance of the ROW; general refurbishment of electrical, instrumentation, safety systems, and controls; and complete redesign and replacement of large parts of the SCADA and telecoms systems.

Integrity of gas supplies to the connected power plants

11. If the status quo is maintained i.e. nothing is done to the infrastructure, beyond the recommendations of the 2000 PENSPEN integrity report that has been implemented, and if the NGC continue to implement best practice maintenance of its facilities, then the uptake capacity of the ELPS which was 790 MMSCFD in December 2008 may be maintained for the medium-term. This uptake capacity will, however, be inadequate to meet the high demand scenario of the 6 power plants considered in this due diligence study by the year 2010. The carrying capacity of the ELPS will barely be sufficient to provide adequate gas to the power plant throughout the period 2010 - 2015 for the medium demand scenario. This conclusion has been reached due to the fact that other non-power consumers will be connected to the gas supply system apart from the power stations. To avoid this supply inadequacy there will be a need to restore the functionality of the swamp compressor stations and add other downstream suppliers to the supply vector to the WGTP so that the carrying capacity of the ELPs can be increased to about 900 MMSCFD. The addition of more upstream NAG and AG gas supplies to WGTP will enable the ELPs to operate in a line-pack condition to extend the carrying capacity even beyond the current 900 MMSCFD limit.

Component 2: Investments in complementary transmission and distribution infrastructure (US$180 million)

12. Investments under the project have been specifically identified to meet the twin tests of complementing the commercial reform in the gas and power sectors being supported by the project as well as meeting important needs of the Government's investment strategy in the near to medium-term. The proposed investments in transmission and distribution systems will support the expected improvements in power generation on account of increased and reliable gas supply by targeting network investments to remove transmission bottlenecks and improve electricity distribution to end users. Specifically these investments are aimed at:

(a) Financing investments that help resolve bottlenecks in the grid operated by the Transmission Company of Nigeria (TCN);

(b) Extending loss reduction and service delivery improvement initiatives which have proved highly successful in Bank projects currently under implementation and supporting power companies to achieve the efficiency targets specified in their performance contracts; and

(c) Facilitating knowledge transfer to enable the Government to replicate and scale up best practice investments with its own financing.

13. The following is a description of the investments that have been identified by the concerned counterpart agencies in consultation with the Bank's team.

Transmission Investments (US$107.8 million)

14. Rehabilitation and Reinforcement of Old 330/132 kV Transmission Stations (Afam, Akangba, Kaduna, Birnin Kebbi, Ikeja West, Ayede, Aba 132/33 kV, Biu 132/33 kV, Akure 132/33 kV and Jerico 132/33 kV), Ijebu-Ode, Eket, Ikorodu, Osogbo 330/132/33 kV, Dan Agundi, and Port Harcourt 132/33 kV (US94.5 million). A number of grid stations in the overall transmission network of PHCN are of different ages (and hence operational capability), and require rehabilitation and reinforcement to deliver electricity to the distribution networks. While a number of grid stations have been rehabilitated under the Transmission Development Project (TDP) and the National Energy Development Project (NEDP) many more transmission stations in the system need rehabilitation and reinforcement to improve reliability of supply across the grid. Most of these stations are among the first generation stations in the country whose equipment is obsolete and their spares are not easily available from the manufacturers. In fact some of the protection and control equipment in these stations are analogue and slow in response for system stability. This project component, when completed, will provide additional transformer capacity to the system as well as flexibility of operations. Also, since new protection and control equipment will be installed, it will provide for system stability, reliability and reduction in power outages.

15. Civil Construction and flood control of sinking Alagbon substation and the rehabilitation of its electrical system (US$7.0 million). Drainage system in Alagbon substation has broken down and the substation is flooded and has sunk more than 1 meter. The cable trenches have collapsed causing tension on the power protection and control cables which might result in fire

and total blackout of Ikoyi and Lagos Island. The equipment in this station was all installed when the station was built in 1976. Normal life of a transformer and associated equipment is 25 years. All equipment in this station has outlived their useful lives

16. Rehabilitation of Power Transformer Workshop (US$2.5 million). In recent times, a number of power transformers in the system have developed one problem or the other which, in normal course, the PHCN's Transformer Workshop should be able to rectify with minimum time. However, due to lack of facilities to repair or rehabilitate most of the equipment in the Power Transformer Workshop, repairs of faulty transformers cannot be undertaken effectively. Transmission Company of Nigeria (TCN) is therefore left with no option, but to send the defective transformers abroad at a very high cost and much longer time for repairs leading to long power outages, further exacerbating the severe power shortage situation. This project component is therefore to ensure replacement of obsolete equipment and tools, and the rehabilitation of the Workshop, to enable TCN staff carry out repairs of faulty power transformers in-house in good time. This will result in substantial savings for PHCN in foreign currency by avoiding transportation of faulty transformers to South Africa and other countries for repairs. Also, it will cut down the time required for such transportation and repair before being installed back in the system.

17. Correction of Switchyard Deficiencies in 330/132 kV Transmission Stations to Optimize SCADA/EMS/Telecom Project under TDP (US$2.8 million). Benefits of the SCADA/EMS/Telecom project carried out in TDP may not be optimally utilized because of defective equipment in some transmission stations in the system. This component therefore involves the repair, replacement or rehabilitation of obsolete equipment of 132/33 kV Transmission Stations in order to improve Man-Man and Man-Machine communications in the system as a way to improve flexibility and reliability in system operation. This will also complement full functionality of the first phase of SCADA project carried out in TDP.

18. Acquisition and installation of metering and other relevant equipment required to analyze and to measure the quality and quantity of gas supplied to the PHCN under Component 1 of the Project (US $1.0million). This will facilitate independent measurement of gas volume and quality by PHCN at the inlet(s) of NGC transmission infrastructure, as well as the delivery point at each of the targeted power plants, which is essential for monitoring and reconciliation. In this regard, measurement meters and online gas chromatograph/analyzers would need to be installed and joint readings would need to be taken by PHCN and NGC staff.

Distribution Investments (US$72.2 million)

19. Reinforcement of distribution networks in **Kano, Kaduna, Eko, Ikeja, Ibadan, Abuja, Enugu, Benin, Port Harcourt, Yola and Jos** Zones (US$63.2 million). Capacity expansion is needed to accommodate suppressed demand that is likely to emerge from the clusters where High Voltage Distribution Systems (HVDS) are being installed. The increased load is expected due to voltage improvement and reliability of supply. Reinforcement of distribution networks in these Zones would further scale up the gains of HVDS network implemented under the CREST program under the TDP and NEDP. This subcomponent will provide customer satisfaction, stimulate growth of small scale industries and improve revenue improvement. This includes Rehabilitation of 33KV Switchgear and Cables in Eko Distribution Company (estimated to cost around US$7.0 million). This component will improve the distribution supply system in Lagos

city which is served by the Eko Distribution Company. The investment will replace or rehabilitate (as necessary) dilapidated 33 KV switch gear and cables thus reducing networks faults and improving the current carrying capacity of the system. This will relieve the system from overloading and reduce technical losses. These improvements will help increase the quality of supply to businesses and households in the targeted areas, reduce supply interruptions and improve customer satisfaction as well as revenues to the Company

20. Installation of 11 kV Sectionalizers in Karu, Kubwa, Luth, Ogba, Agege and Idiaraba (US$2 million). On an average 11 kV feeder supplies 10,000 households or population of about 50,000 people. During fault all the 10,000 households (100%) are affected. About 75 hrs of interruption of power occurs per month on the network due to fault; leading to revenue loss of around US$100,000 per year. If sectionalizers are installed on the networks, less than 50% of households will be affected during fault. This will not only improve customer satisfaction, but also bolster revenues of PHCN

21. Rehabilitation of 33 kV Switchgear and Cables in Eko Distribution (US$7.0 million). This component will improve the distribution supply system in Lagos city which is served by the Eko Distribution Company. The investment will replace or rehabilitate (as necessary) dilapidated 33 kV switch gear and cables thus reducing networks faults and improving the current carrying capacity of the system. This will relieve the system from overloading and reducing technical losses. These improvements will help increase the quality of supply to businesses and households in the targeted areas, reduce supply interruptions, and improve customer satisfaction as well as revenues to the Company.

22. **Component 3: Technical Assistance (US$16.00 million).** The Project underscores the need for providing technical assistance to complement the interventions through the reform measures and contractual frameworks being supported with Partial Risk Guarantee. Additionally TA is required to ensure that the relevant institutions are adequately equipped to deliver optimal results in terms of implementation and outcomes of the proposed investments. Areas identified for assistance along with the counterpart agencies include:

(a) Studies for rehabilitation and management options in PHCN generation companies (US$0.8 million). Technical studies would comprise review of: (a) steam system; (b) turbine and generation units; (c) water treatment and supply, and waste disposal; (d) fuel supply and combustion system; (e) instrumentation; and (f) power evacuation and load dispatch arrangements. Management studies would include: (a) governance structure and institutional development; (b) monitoring and evaluation systems; (c) financial planning and cost control; and (d) personnel and human resource development studies.

(b) Developing/refining MYTO, related subsidy delivery mechanisms, Power Purchase Agreements (US$0.35 million). The financial model, under-pinning the MYTO, is envisaged to be refined and a number of new scenarios are planned to be run. The model is going to be revised in keeping with the current and firm new generation capacity, latest PPA prices, phased gas price revisions, baseline efficiency parameters, and other items. In addition, a subsidy delivery mechanism would be devised which would ensure timely and predictable financial flows from the Government to the different stakeholders in the pricing chain (IPP, TCN,

Distribution companies) in accordance with vetting and adjustments against a clear performance criteria (target versus actual units; losses; collection; etc).

(c) Designing gas infrastructure and transmission and distribution systems to match the additional power generation capacity specifically to examine the measures to improve technical integrity and environmental impacts of the pipeline infrastructure and establishment of the proposed strategic aggregator and setting up of Gas Trading Department in PHCN (US$1.0 million). This work is expected to entail:

- Assessment of gas supply and demand, and supply-demand balance in different geographical regions.
- Design of a high-pressure gas transmission system to deliver volumes to major customers, along with indicative costs.
- Alignment of the proposed transmission system with FGN Gas Master Plan.
- Identification of roles, responsibilities, and broad framework for the Strategic Aggregator.
- Identification of the mandate of a Gas Trading Department in PHCN, along with its capacity-building requirements.
- Action plans to improve the technical integrity and capacity of the pipeline infrastructure as required under ELPS integrity study.
- Action plans to improve the environmental impacts including human and community health impacts of the pipeline infrastructure.

(d) Capacity Building in PHCN successor companies, NERC, REA and PHCN PMU (US$1.5 million). This subcomponent involves training and capacity-building activities relating to: (a) management skills and technologies; (b) acquisition of computing and other equipment to facilitate performance of functional responsibilities; (c) exposure to best practices worldwide; and (d) in-country training of technicians and workers, as part of the "train the trainer" program.

(e) Environmental and Social training and capacity building (US$2.3 million). The capacity of FME and DPR in implementing and enforcing provisions of Nigerian law with respect to OC gas wells and gas gathering systems will be strengthened during project implementation through technical assistance. The capacity of ERSU, which is organizationally part of the environmental and social division within Transmission Corporation of Nigeria (TCN), will also be strengthened. ERSU will administer training to environment and safety officers at power substations. Additional training for ERSU staff is planned in:

- Ecosystem management – a course conducted by UNESCO.
- Resettlement planning and implementation.
- World Bank Group operations specifically on safeguards and the project cycle.

(f) Consultation, community outreach and communication program (US$4.0 million). Ongoing dialogues, transparency, information sharing and community outreach

will be critical to ensuring lessened political and project risk and managing expectations. Activities include:

- Establishing a communication office and program for the project and sector reforms in general.
- Providing capacity building on communication to project staff.
- Developing programs to collect community opinion such as public opinion polls and community outreach and developing community support through partnerships with local community civil society organizations.
- Undertaking a continuous consultation program led by the Ministry of Power.

(g) Technical Assistance for preparation of Technical Specifications for the Rehabilitation of Power and Distribution Transformers Workshop (US$0.20 million). A committee of five has been set up in PHCN/PMU for feasibility studies pending the engagement of a technical consultant for this sub-component. The committee has three weeks to submit its report.

(h) Engineering supervision and site Management of installation works under NEGIP (US$3.0 million).

(i) Business process re-Engineering for TCN (US$0.20 million). This will provide a blue print for improved performance of TCN.

(j) Capacity building for Market Operation (US$1.00 million). The role of the market operator will become progressively more crucial as the power sector companies try to become financially self-sufficient.

(k) Development and capacity building for the newly established National Power training institute (US$1.65 million). This subcomponent involves training and capacity-building activities relating to: (a) management skills and technologies; (b) acquisition of computing and other equipment to facilitate performance of functional responsibilities; (c) exposure to best practices worldwide; and (d) in-country training of technicians and workers, as part of the "train the trainer" program

23. **Incremental Operating Cost (US$2.0 million).** This sub-component is to support the PMU to undertake its increase responsibilities under NEGIP. It will specifically finance the incremental expenses incurred by PMU on account of project implementation, management and monitoring, including office space rental and utilities, office supplies, bank charges, advertising, communications, vehicle operation, maintenance and insurance, building and equipment maintenance cost, travel and supervision cost, and salary of supporting staff, but excluding salary of the Borrower's civil service.

24. Unallocated funds (US$2.00 million).

Annex 5: Project Costs

Nigeria: Electricity and Gas Improvement Project (NEGIP)

Project Cost By Component and/or Activity	Local US$ million	Foreign US$ million	Total US$ million
Part A: Partial Risk Guarantees to Gas supply contracts	0	400.00	400.00
Part B: Transmission and Distribution investments	0	180.00	180.00
Part C: Technical assistance	0	16.00	16.00
Operating costs	0	2.00	2.00
Unallocated funds	0	2.00	2.00
Total Baseline Cost	0	600.00	600.00
Physical Contingencies	0	0	0
Price contingencies	0	0	0
Total Project Costs	0.0	600.00	600.00
Interest during construction	0	0	0
Total Financing Required	0.0	600.00	600.00

Note: Price, and Physical Contingencies, as well as identifiable taxes and duties are, however, expected to be absorbed by the project implementing agency.

Annex 6: Implementation Arrangements

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. The main counterpart agency for the PRG will be the PHCN and the relevant OCs who will be responsible for the implementation arrangements of the PRG. In addition, the PHCN market operator and the working groups in the ministries of finance and power will support the implementation. .

2. The implementing agency for both the Investment and TA components will be PHCN-PMU. This is also the designated agency for the implementation of the on-going NEDP project. As the implementation agency for the project, PHCN-PMU will have five sets of clients — the PHCN generation, transmission (TCN), the distribution companies, NERC and the PMU's own ERSU, Ministry of Power, Ministry of Environment and Ministry of Petroleum (Directorate of Petroleum Resources), Nigeria National Petroleum Corporation and the National Power Training Institute which will have to ensure broad environmental and social compliance of all aspects of the project. This streamlined implementation arrangement for several clients would be efficient because: (i) project implementation will be coordinated among all relevant institutions and successor entities; (ii) economies of scale and uniformity in quality and specifications in procurement can be realized; (iii) synchronized policy making (on technical and other aspects) among all the Project stakeholders will be possible; (iv) the transaction and implementation costs can be minimized; and (v) single-point tracking of all project outcomes, accounts and safeguard compliance will be facilitated.

3. Reassessment of the implementation capacity of the PHCN-PMU as part of a recent Mid-Term Review has indicated that reporting and project management in PMU has improved compared to two years ago. To lead to more efficient project implementation, plans are underway to implement a Project Management Information System. This will facilitate follow up of the procurement, implementation and disbursements status and make supervision easier. Regarding procurement, there are areas that can improve, such as the time taken to process post-review contracts, evaluation reviews and award of contracts, and stricter following of the rules of tender opening. Some refresher training will be arranged for relevant staff implementing the Project in Project and Contract Management.

4. The Finance Sections (FS) of the PHCN-PMU (FS/PMU) will be responsible for managing the financial affairs of the Project. They will, amongst other things, be responsible for ensuring compliance with the financial management requirements of the Bank and the government, including producing the monthly and quarterly Interim Financial Reports (IFR) and Annual Financial Statements, on a timely basis, for submission to the Government and IDA. The Project activities, records and accounts will be reviewed and subjected to internal audit by appropriately qualified internal auditors, and Internal Audit reports will be forwarded to the FMoF and IDA. The IDA Credit Agreement will require the submission of Annual Project Financial Statements, will be prepared and submitted by PHCN/PMU to the Bank within 6 months of the end of the government fiscal year. Samples of audit reports are included in Annex XXI of the Financial Accounting Reporting and Auditing Handbook (FARAH) of the World Bank. Experienced and well-qualified external auditors will be appointed by the PHCN-PMU (on a TOR acceptable to IDA) to audit Project accounts, financial statements and transactions, irrespective of the source of financing. The Project financial management risk is assessed to be

substantial and mitigated to moderate through adequate supervision by Bank staff, and the provision of external independent audit.

5. **Procurement.** The PHCN/PMU will coordinate all procurement activities and will ensure that all works, goods and services financed by the IDA Credit are procured in compliance with World Bank Procurement and Consultant Guidelines of May 2004, revised October 1, 2006. The PMU will maintain close fiduciary control over the procurement processes and will prepare the procurement documentation to be issued for works, goods and services contracts, in close collaboration and consultation with the relevant technical departments. The PMU will evaluate all bids for contracts financed by the Credit, recommend contract awards and prepare and sign contract agreements with contractors, suppliers and consultants. The PMU will ensure that the Procurement Staff assigned have the relevant qualification and experience.

Annex 7: Financial Management and Disbursement Arrangements

Nigeria: Electricity and Gas Improvement Project (NEGIP)

Summary

1. The financial management assessment, based on the Financial Management Practice Manual (November 2005) of the FM Board, has the objective of determining whether the implementing entities have acceptable financial management arrangements, which will ensure: (i) that funds are used only for the intended purposes in an efficient and economic way; (ii) the preparation of accurate, reliable and timely periodic financial reports; and (iii) safeguarding of the entity's assets. The implementing entity, PHCN/PHCN-PMU is presently implementing Bank Assisted projects.

2. Financial Management will be handled by the Finance Section (FS) of PHCN/PMU. The FS is already in place with computerized FM system and used for on-going Bank-Assisted projects. The updated FM assessment for the on-going TDP indicates that FM arrangements are satisfactory for PHCN/PHCN-PMU. The FM arrangement will be strengthened with additional staffing and training. There are no outstanding external audits or FMRs.

3. FM risk is assessed as substantial and would be mitigated to moderate if the FM action plan highlighted in this Annex is satisfactorily implemented. Financial Procedures Manual (FPM) for on-going NEDP project will be updated to incorporate the arrangements for the NEGIP project as well as the related reporting arrangements, detail internal control framework and risk management strategy, and the chart of account and financial statements specific to the project. In addition, the internal audit unit will carry out regular risk-based reviews of the project's FM activities. Regular supervision will also ensure adherence to implementation guidelines and that appropriate remedial actions are taken expeditiously. The risk will be reviewed during both FM on-site and desk supervision reviews.

Country issues

4. In January 2005, a review of the implementation of the recommendations of the Country Financial Accountability Assessment (CFAA 2000) was carried out. It observed that the Federal Government of Nigeria (FGN) has made a significant effort in advancing reform of the PFM system since 2003. This finding was further supported by a recent PEMFAR. Major achievements so far have been: (i) the adoption of an oil-based fiscal rule that has greatly improved the quality of macroeconomic management; (ii) launching of significant steps toward increased transparency of the budget process; (iii) more efficient cash management; (iv) procurement reforms; (v) updating the legal framework for PFM; (vi) reallocation of budget resources in support of MDG-related government functions; (vii) strengthening monitoring and evaluation (M & E); and (viii) introducing a more strategic longer-term focus in budget management. These have clearly helped to reduce waste of public resources, particularly on the capital budget and payroll sides. The impact of these early measures is also evident in significantly improved fiscal and broader macroeconomic outcomes. There is, nevertheless, still a long way to go and PFM initiatives and reforms are stated in the Government's PRSP – NEEDS, and further articulated in the seven-Point Agenda, which sets out policy priorities that

will strengthen the reforms and build the economy so that the gains of reforms are felt widely. These are supported under the Country Partnership Strategy (jointly developed by IDA and DFID), and specifically through 3 Bank assisted projects - EMCAP, SCBGP and the ERGP.

Table 1: Risk Assessment and Mitigation

Risk		Risk Rating	Risk Mitigating Measures Incorporated into Project Design	Conditions for Negotiation, Board or Effectiveness	Residual Risk Rating
Inherent Risks					
1	**Country Level** Funds may not be used in an efficient, accountable and transparent way. Government's periodic budget reports are still untimely and delays are experienced in the preparation of public accounts and audit and review by PAC.	H	The Country Partnership Strategy (CPS) that supports Nigeria's NEEDS aims to achieve improved transparency and accountability for better governance, which minimize opportunity for corrupt practices. Reforms in budgeting, FM systems, procurement and auditing are being supported. Robust financial management arrangements will be established for the project which are incorporated into the project design and will help to mitigate the country level risk.	None	S
2	**Entity Level** The implementing entity (PHCN/PMU) is presently implementing Bank-assisted projects.	M	Adequate capacity building in Bank procedures and disbursement guidelines will be given to all FM staff. Periodic and detailed risk-based internal audit of all project activities.	None	L
3	**Project Level** Likely delay in project implementation and use of funds. Also, funds may not be used and accounted for properly.	S	The project FM arrangements would incorporate various accountability requirements for the entity including specific timing for retirement of funds and internal audit arrangements amongst others.	None	M
Control Risks					
4	**Budgeting** Failure to prepare comprehensive budgets, effectively monitor periodic budgets and incorporate project finances in budgets and financial records.	M	Budget preparation procedures will be documented in the FPM. Budget execution to be monitored through quarterly Interim Financial Reporting, and monitoring of budget variances in IFRs.	Formats and arrangements for preparing quarterly IFR agreed at appraisal.	M

5	**Accounting** Failure to appropriately account for project funds and provide full supporting documentation.	M	Accounting and internal control procedures including chart of accounts established and documented in the project FPM. Most of the funds are disbursed using the report based disbursement which requires quarterly and timely reporting of expenditure. Recruitment of additional qualified accountants as necessary.	None	M
6	**Internal Control** Inadequate documentation of transactions, ineligible expenditures and non-retirement of advances.	S	Mechanisms for follow up on advances/imprests for operational work will be put in place and applied. Institution of independent and effective internal audit function that is focused on risk management approaches and assignment of professionally qualified accountants. Internal control is strengthened by using trained and qualified staff. Project accounting and reporting guidelines will be included in the FPM.	None	M
7	**Funds Flow** Delay in funds flow.	M	Project funding will be from IDA credit, to be disbursed through Designated Account, Capacity building in Bank FM procedures and disbursement guidelines.	None	L
8	**Financial Reporting** Delay in the submission of accountability reports to government and to Bank, delayed finalization and submission of annual financial statements.	S	Computerized financial accounting system will be used for reporting purposes (Project reporting guidelines and timelines will be documented in the FPM).	Formats of IFR and Annual Financial Statements agreed at appraisal.	M
9	**Auditing** Delay in the submission of audit reports and unacceptable audit reports.	M	Independent external auditors will be appointed based on TOR acceptable to IDA. An external auditor will be engaged within 3 months of project effectiveness.	External audit TOR agreed at appraisal.	L
	Overall FM Risk Rating	**S**			**M**

H-High **S-Substantial** **M-Moderate** **L-Low**

Strengths

5. The implementing entity is implementing Bank Assisted projects and has existing computerized financial management system and experienced staff in place.

Weaknesses and Action Plan

6. The main weaknesses are as follows:

7. There are some FM issues identified in the audit and FM supervision reviews. Issues identified during the last FM supervision and external audit reports include ineligible expenditures, unretired advances or imprests, and lack of supporting documents for some transactions.

8. The plan below indicates the actions to be taken for the project to further strengthen its financial management system:

	Action	Due Date	Responsible
1	Review and upgrade the computerized FM system in the implementing entity to incorporate NEGIP accounts.	08/31/2009	PHCN/PHCN-PMU
2	Update NEDP FPM to reflect NEGIP project activities.	08/31/2009	PHCN/PHCN-PMU
3	Open Designated Dollar Account and Current Draw-down Account in Naira and FMoF & IDA of authorized bank signatories.	Prior to Disbursement	PHCN/PHCN-PMU
4	Engage/extend contract of external Auditor for PHCN/PMU	Within 3 months after effectiveness	PHCN-PMU

Implementing Entities and Financial Management

9. Financial Management will be provided by the Finance Section (FS) in the implementing agency. The FS is already in place with computerized FM system and used for Bank-Assisted projects. The last supervision supported by the updated FM assessment indicates that FM arrangements are satisfactory for PHCN-PMU. The FM arrangement will be strengthened with additional staffing and training. There are no outstanding external audits or FMRs.

10. Specifically, the FS will be responsible for: (a) preparing activity budgets, monthly US$ Designated Account reconciliation statements, bank reconciliations, expenditure control systems, accounting, internal audit, quarterly SOE Withdrawal Schedule, monthly financial reporting, quarterly Interim Financial Reports (IFRs) and annual financial statements (AFS); and (b) ensuring that the project financial management arrangements are not only acceptable to the Government and IDA and donors, but they continue to be improved and updated through the life of the project. They will also forward the IFRs and AFS to the Federal Ministries of Finance and IDA.

11. The overall gross FM risk in the project is rated as substantial and, when mitigated with the proposed FM action plan, will reduce to a residual risk of moderate. This will be reviewed during various Bank implementation support and supervision missions.

Planning and Budgeting

12. Budget preparation will follow the federal government procedure. Financial projections or forecasts for the life of the Project (analyzed by year) will be prepared. On an annual basis, the project Accountant (in consultation with key members of the implementing unit) will prepare the cash budget for the coming period based on the work program. The cash budget should include the figures for the year, analyzed by quarter. The cash budget for each quarter will reflect the detailed specifications for project activities, schedules (including procurement plan), and expenditure on project activities scheduled respectively for the quarter. All annual cash budgets will be sent to the TTL at least *two* months before the beginning of the project fiscal year. Detailed procedures for planning and budgeting will be documented in the FPM.

Internal Control including Financial Procedures Manual

13. The NEDP Financial Procedures Manual (FPM) will be updated to reflect the FM arrangements for NEGIP. It will contain the internal control framework and risk management strategy, and cover all the various aspects of FM, including budgeting, funds flow, internal controls, accounting, reporting and auditing. More specifically, it will include the procedures for managing the DAs, as well as the associated reporting, documentation and accountability arrangements. It will also detail the procedures for various reconciliations. It will include the chart of account and the procedures for preparing IFRs and Annual Project Financial Statements and submit these to the Bank within the stipulated time.

Accounting

14. IDA Funds will be accounted for by the Project on a cash basis, augmented with appropriate records and procedures to track commitments and to safeguard assets. Accounting records will be maintained in dual currencies (i.e. Naira and US Dollars).

15. The Chart of Accounts will facilitate the preparation of relevant monthly, quarterly and annual financial statements, including information on the following:

- Total project expenditures.
- Total financial contribution from each financier.
- Total expenditure on each project component/activity.
- Analysis of total expenditure into civil works, goods, training, consultants and other categories.

16. Annual financial statements will be prepared in accordance with relevant International Public Sector Accounting Standards (IPSAS). All accounting and control procedures will be documented in the FPM and regularly updated by the Accountants and shared with IDA and the Government.

Financial Reporting

17. The FS will produce monthly and quarterly Interim Financial Reports (IFR) and Annual Financial Statements, on a timely basis. In compliance with government reporting requirements,

monthly returns will be made to the Accountant General of the Federation for incorporation in the government accounts, as described in the FPM. These reports and financial statements are outlined below. Quarterly and annual reports are to be prepared by PHCN/PMU and submitted to: (i) Federal Ministry of Finance; and (ii) IDA.

18. **Monthly Reports:** *On a monthly basis, the FS will prepare and submit the following reports to the Project Manager:*

19. A Bank Reconciliation Statement for each bank account.

20. A Monthly Statement of Cash Position for project funds from all sources, taking into consideration significant reconciling items.

21. A Monthly Statement of Expenditures classified by project components, disbursement categories, and comparison with budgets, or a variance analysis.

22. A Statement of Sources and Uses of funds (by Credit Category/Activity showing IDA and Counterpart Funds separately).

23. **Quarterly Reports:** Interim Financial Reports (IFRs) will be prepared by the FS on a quarterly basis and submitted to Project Manager. The PHCN/PHCN-PMU will submit the IFRs to IDA within 45 days of the end of each quarter. Reports in IFR will include, at a minimum.

24. Financial Reports, which include a statement showing for the period and cumulatively (project life or year to date) inflows by sources and outflows by main expenditure classifications; opening and closing cash balances of the project; and supporting schedules comparing actual and budgeted expenditures. The reports will also include cash forecasts for the following two quarters as well as analysis of disbursements against contracts.

25. SOE withdrawal schedule, listing individual withdrawal applications relating to disbursements by the SOE method, by reference number, date and amount; and

26. *Designated* account statement reconciliation, showing deposits and replenishments received, payments supported by withdrawal applications, interest earned on the account and the balance at the end of the reporting period.

27. **Annual Financial Statements:** Annual Project Financial Statements will be prepared and submitted by PHCN-PMU to the Bank within 6 months of the end of the government fiscal year and will include the following:

28. A Statement of Sources and Uses of funds (by Credit Category and Activity showing IDA and Parallel Funds separately);

29. A Statement of Cash Position for Project Funds from all sources;

30. Statements reconciling the balances on the various bank accounts (including IDA Designated Account) to the bank balances shown on the Statement of Sources and Uses of Funds;

31. SOE Withdrawal Schedules listing individual withdrawal applications relating to disbursements by the SOE Method, by reference number, date and amount.

32. Notes to the Financial Statements.

Auditing

External Audit

33. PHCN/PHCN-PMU will appoint (or extend the services of) a relevantly qualified external auditor based on Terms of Reference acceptable to the Bank to perform the audit of the Project and to express an opinion on the consolidated annual financial statements in compliance with International Standards on Auditing (ISAs). The audit would cover all project transactions by PHCN/PHCN-PMU regardless of the sources of financing. In addition to the audit report, the external auditor will prepare a Management Letter giving observations and comments, and providing recommendations for improvements in accounting records, systems, controls and compliance with financial covenants in the Financing Agreement. The audit reports that will be submitted to IDA by PHCN/PMU are as follows:

Audit Report	***Due Date***
Annual Project Specific Financial Statements for NEGIP and related management letter.	Submitted within **six** months after the end of each financial year.

Internal Audit

34. Project activities, records and accounts will be reviewed and subjected to internal audit by appropriately qualified internal auditors and will at a minimum involve: (i) periodic reviews of project activities, records, accounts and systems; (ii) ensuring effectiveness of financial and accounting policies and procedures, as well as compliance with internal control mechanisms; (iii) review of transactions; and (iv) physical verification of purchases and asset. Internal Audit reports will be forwarded to the FMoF and IDA.

Financial Management Supervision Plan

35. FM supervision will be consistent with a risk-based approach, and will involve a collaborative approach with the TTL, LOA and procurement. The first FM review will be carried out within 6 months of credit effectiveness. This detailed review will cover all aspects of FM, internal control systems, overall fiduciary control environment and tracing transactions from the bidding process to disbursements. Thereafter, the on-site supervision intensity will be based on risk, initially on the PAD FM risk rating and subsequently on the updated FM risk rating during implementation. Given a residual risk rating of moderate at project appraisal, the FM on-site visit will be once a year. Additional supervision activities will include desk review of

quarterly IFRs, quarterly internal audit report, audited Annual Financial Statements and management letters as well as timely follow up of issues arising, and updating the financial management rating in the Implementation Status report (ISR) and the Portfolio and Risk Management System.

Fund Flows and Disbursement Arrangements

Bank and IDA Accounts

36. Project funding will consist of IDA credit.

37. IDA will disburse the credit through a single US$ Designated Accounts (DA) which will be managed by PHCN/PMU. The specific funding, banking and accounting arrangements are as follows:

38. One US$ DA to which the initial deposit and replenishments from IDA funds will be lodged.

39. One Current (US$ Interest) Accounts with bank X acceptable to IDA to which interest on the DA will be credited.

40. One Current (Draw-down) Account in Naira with bank X to which draw-downs from the DAs will be credited once or twice per month in respect of incurred eligible expenditures, maintaining balances on this account as close to zero as possible after payments.

41. All bank accounts will be reconciled with bank statements on a monthly basis with detailed review of copies of bank reconciliation statements and the relevant bank statements with expeditious investigation of identified differences. Detailed banking arrangements, including control procedures over all bank transactions (e.g., check signatories, transfers, etc.) will be documented in the FPM.

42. Additionally, PHCN/PMU will maintain an IDA Ledger Loan Account in US Dollars/Naira/SDR to keep track of withdrawals from the IDA credit. The account will show: (i) deposits made by IDA; (ii) direct payments by IDA; and (iii) opening and closing balances. The cumulative record of draw-downs from the IDA credit will be reconciled monthly with the Disbursement Summary provided by the Bank.

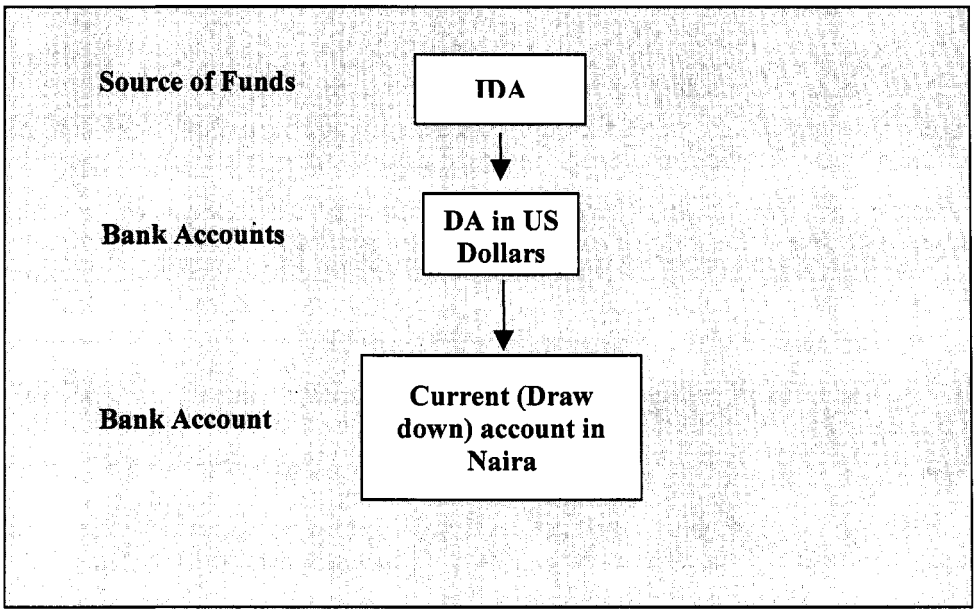
43. The PHCN/PMU will be responsible for preparing and submitting to the Bank applications for withdrawal, as appropriate. Appropriate procedures and controls, which will be documented in the FPM, will be instituted to ensure disbursements and flow of funds is carried out in an efficient and effective manner. The Withdrawal Applications will be supported by a Bank statement and a reconciliation of the Designated Account, and such other appropriate supporting documents for expenditures as may be required.

44. By effectiveness, the Project will use the Report based disbursement with the exception of payment requests regarding large contracts which can be paid directly to the suppliers through the direct payment method or the issuance of the Bank's Special Commitment letter. The format

of the quarterly IFR was agreed during appraisal and will be attached to the disbursement letter. Detailed disbursement procedures will be documented in the FPM.

45. With the exception of large contract payments all of IDA's share of expenditures should be paid through the Designated Account as shown in the Diagram below.

Funds Flow Diagram



Disbursement Arrangements

46. **Disbursement arrangements and use of funds.** Proceeds of the financing will follow the standard Bank procedures for Investment Lending, for use by the Borrower for eligible expenditures as defined in project financing agreements. Disbursement arrangements have been designed in consultation with the Borrower after taking into consideration the assessments of Borrower's financial management and procurement arrangements, the procurement plan, cash flow needs of the operation and the Borrower's prior disbursement experience. Additional instructions for disbursements are being provided in a Disbursement Letter issued for this project.

47. **Disbursement methods**. This Credit will be disbursed through various disbursement methods, including advances, reimbursements, direct payments and special commitments. Advances will be disbursed into a single Dedicated Account (DA), to be managed by project management unit at the Power Holding Company of Nigeria (PHCN). The currency for the Dedicated Account will be US Dollars and will be segregated from finance provided by other financing partners. Considering the cash flow requirements and project design, a flexible ceiling will be determined for this operation, based on funding forecasts for 2 quarters as provided in approved Annual Work Plans and Budget. Direct payments are authorized for payments to larger value contracts, including all contracts that exceed US$1 million in value.

48. **Reporting on use of Financing**. All disbursements except for payments under large contracts will be IFR based. It is expected that payments for large contracts be effected through Special Commitment letters, or through our direct payment method. Copies of original documents or records shall be requested only for direct payments or issuance of the Bank's Special Commitment.

49. The following table specifies the categories of Eligible Expenditures that may be financed out of the proceeds of the Financing ("Category"), the allocations of the amounts of the Financing to each Category, and the percentage of expenditures to be financed for Eligible Expenditures in each Category:

Category	Amount of the Credit Allocated (expressed in US$)	Percentage of Expenditures to be Financed
(1) Goods and works	180,000,000	100%
(2) Consultants' services	16,000,000	100%
(3) Operating Costs	2,000,000	100%
(4) Unallocated	2,000,000	
Total Amount	**200,000,000**	

Annex 8: Procurement Arrangements

Nigeria: Electricity and Gas Improvement Project (NEGIP)

A. General

Country Environment

1. Nigeria has been implementing a procurement reform program (PRP) based on the recommendations of the 2000 Country Procurement Assessment Review (CPAR). A review of the progress made on the 2000 CPAR recommendations as reflected in the 2007 Public Expenditure Management and Financial Accountability Review (PEMFAR) shows that implementation of procurement reform program has brought about substantial improvements in obtaining value for money in public sector expenditure. This has further introduced some level of transparency into the country's procurement process. In this regard, the CPAR of 2000 has been a positive catalyst, because it supported the agenda of financial sanitation of the current Government. The PEMFAR report also indicates that contract prices were reduced substantially and have reportedly saved the Treasury substantial amount. As a result of PRP: (a) Collaboration between procurement and financial management has been strengthened considerably; (b) A Bureau of Public Procurement (BPP) and a procurement professionals' cadre were established at the Federal level in 2006; and (iii) The Public Procurement Act was promulgated in Nigeria in June 2007 with a view to further reform sanitize the public procurement system, which has often been the subject of abuse and corruption. The Act has further brought significant improvement in the existing procurement system in the public service and enhances transparency. The Act adheres to the principles of the UNCITRAL model law, and outlines the principles of open competition, transparent procurement procedures, clear evaluation criteria, award of contract to the lowest evaluated tender, and contract signature. The legislative framework is applicable to all procurement categories (suppliers, contractors, consultants) and must be applied for all public funds regardless of value. The Act has provisions for exceptions to competitive tendering, which are the exception rather than the rule. Also, Government has already prepared relevant implementation Regulations, Standard Bidding Documents (SBD) and Manuals for the Procurement of Goods, Works and Consulting Services, which describe the minimum contents of the tender and proposal documents. The essential elements are in line with internationally acceptable procurement standards. The Procurement Act also requires a complaints and appeals mechanism to be established to enhance accountability.

2. **Procurement Risk at the Country level:** The BPP has organized series of training and awareness workshops for the cadre of professionals with the current procurement processes. Currently, the Government's Procurement Reform Program is being supported with a substantial component of an IDA Credit - ERGP focusing on procurement reforms. There are also three IDF Grants, to assist the Federal; and two State Governments address the weak procurement capacity in the public sector and to build appropriate partnership with the private sector. The project instrument has been used by the government to prepare the relevant procurement tools mentioned above. On the other hand, the Government is also reforming the Customs practices to modernize and make it more effective, thereby enhancing private sector confidence in public procurement processes.

B. Guidelines

3. Procurement under the proposed project would be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004, revised October 1, 2006 and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" dated May 2004, revised October 1, 2006 and the provisions stipulated in the Legal Agreement. The various items under different expenditure categories are described in general below. For each contract to be financed by the Credit, the different procurement methods or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame for different activities are agreed between the Borrower and the World Bank in a detailed Procurement Plan. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

4. **Procurement of Works**: Works procured under the Project would pertain to Rehabilitation and reinforcement of old transmission stations, rehabilitation of power transformer workshop; correction of switchyard deficiencies in transmission stations to optimize SCADA/EMS/Telecom project completed under the now-closed Transmission Development Project (TDP), Reinforcement of distribution stations and networks, Installation of 11 kV sectionalizers, and acquisition and installation of metering and other relevant equipment required to analyze and measure the quality and quantity of gas supplied.

5. Minor civil works estimated to cost US$100,000 or less equivalent per contract, which are labor intensive, spread over time, and which do not lend themselves to grouping and, therefore, are unlikely to attract major construction firms and or foreign bidders, may be procured under shopping procedures as detailed in paragraph 3.5 of the "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004, revised October 1, 2006 and "the Guidance on Shopping Memorandum" issued by IDA, June 9, 2000, Memorandum "Guidance on shopping" issued by the Bank.

6. **Procurement of Goods**: Goods procured under the Project would include supply of and installation of plant and equipment, furniture; project vehicles; computers; accessories; software; communication; and office equipment. Procurement of Goods will be carried out using the Bank's SBD for all ICB or National SBD if agreed with or satisfactory to IDA. Procurement for readily available off-the-shelf goods that cannot be grouped, or standard specification commodities for individual contracts of less than US$50,000 equivalent or less, may be procured under shopping procedures as detailed in paragraph 3.5 of the "Guidelines: Procurement under IBRD Loans and IDA Credits" dated May 2004, revised October 1, 2006; and the Guidance on Shopping Memorandum" issued by IDA, June 9, 2000. These include:

7. **Selection of Consultants**: Consultancy services under the Technical Assistance Component (US$16.0 million) would include: (i) Studies for rehabilitation and management options in PHCN generation companies; (ii) Developing/refining MYTO, related subsidy delivery mechanisms, Power Purchase Agreements; (iii) Designing gas infrastructure and transmission and distribution systems to match the additional power generation capacity; (iv) Capacity Building in PHCN successor companies, NERC, REA and PHCN PMU; (v) Environmental and Social training and capacity building; (vi) Technical Assistance for preparation of Technical Specifications for the Rehabilitation of Power and Distribution

Transformers Workshop; (vii) Engineering supervision and site Management of installation works under NEGIP; (viii) Business process re-Engineering for TCN; (ix) Development and implementation of a communication and consultation strategy including engagement of a Technical and Communication Manager for three years; (x) Capacity building for Market Operation; and (xi) Development and capacity building for the newly established National Power training institute. These services will be selected using "Request for Expressions of Interest, short-lists, and Bank's Standard Requests for Proposal where required by Bank's Guidelines." Short-lists of consultants for services estimated to cost less than US$200,000 equivalent per contract may be composed entirely of national consultants in accordance with the provisions of paragraphs 2.7 through 2.8 of the "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" Consultant Guidelines of May 2004, revised October 1, 2006. Research institutes, public training institutions, and NGOs may be hired to carry out specific researches, and training services in accordance with paragraph 1.11 (b through d) and 3.16 of the above Consultant Guidelines.

8. The procurement procedures and SBDs to be used for each procurement method, as well as model contracts for works and goods procured, would be presented in the *Project Implementation Manual.*

9. **Operating Costs**: The operating costs shall include staff travel expenditures and other travel related allowances with prior clearance from IDA; equipment rental and maintenance; vehicle operation, maintenance and repair; office rental and maintenance, materials and supplies; utilities and communication expenses; and bank charges. Operating Costs financed by the project will be procured using the implementing agency's administrative procedures that shall be acceptable to the Bank.

C. Assessment of the agency's capacity to implement procurement

10. Procurement activities will be carried out by the PHCN-PMU. The staff of the PHCN-PMU is part of the mainstream staff of the PHCN, a part of Federal Government owned enterprise. The PHCN-PMU staff has considerable work experience in managing procurement in operations financed by international financial institutions including IDA-financed having IDA projects include the Transmission Development Project (TDP) (Cr. 3559-UNI), the National Energy Development Project (NEDP) (Cr. 4085-UNI), and the Niger Basin Water Resources Development and Sustainable Eco System Management Project (Cr. 4348-UNI).

11. The PHCN-PMU staff who will handle procurement under the proposed NEGIP, will work under the supervision of the manager of the PHCN-PMU. There is 38 regular staff in the PHCN-PMU, out of which 22 attended the World Bank procurement Workshops/Seminars and five engineers have taken procurement training and are capable of preparing bidding documents and EOIs, and undertaking evaluation of bids. Six of the PHCN-PMU senior staff actively handled procurement under the now-closed TDP and are actively involved in the procurement under the ongoing NEDP. The staff has the requisite educational background and the required professional qualifications to manage procurement under the proposed new Project. The list of the staff which included their qualifications was provided to the mission.

12. Procurement actions for the Project have been carried out in accordance with Procurement Services Policy Group guidelines dated August 11, 1998. The assessment reviewed

the organizational structure for implementing the Project and the roles of the key staff in project implementation. The detailed assessment is in the project files.

13. Overall, the reassessment indicates a Moderate Risk rating for the PHCN-PMU. Areas in need of improvement are mainly on the time taken to process post review contracts, evaluation reviews, and award of contracts. The assessment focused on the adequacy of the organizational and institutional capacity and the quality, efficiency and transparency of procurement practices in the PHCN-PMU. Procurement documentation for a sample of 4 Prior Review contracts out of a list of 29 major contracts procured by the PHCN-PMU in the past two years were reviewed and were found to be well prepared. Procurement cycle management by the PHCN-PMU is good. IDA's guidelines and procedures are being followed. The key issues and risks concerning procurement in the implementation of the Project and action plan to address them were discussed with the PHCN-PMU Project Manager. The corrective measures that will be put in place to address the issues and risks are reflected in Table 1 below.

Table 1: Procurement Action Plan

	Action	Responsibility	Due Date	Remarks
1.	Procurement Plan for the first 18 months prepared and agreed with the Bank.	PHCN-PMU	By Negotiations.	Completed.
2.	Preparation of Project Implementation Manual (PIM) including adoption of the Generic Procurement manual for Bank financed Projects in Nigeria.	PHCN and IDA	Before effectiveness.	To be reviewed before effectiveness.
3.	Adoption of the Bank Standard Bidding Documents for use under NCB in lieu of lack of National Standard Bidding Document.	PHCN and IDA	Before effectiveness.	First set of NCB bidding document to be prepared and reviewed by IDA before Board.
4.	Conduct Independent Technical review Audit (separate from annual external financial audit).	IDA	At every supervision. Annually.	To reduce the risk of misuse of project funds.
5.	Organize Contract Management training for new PHCN-PMU staff.	PHCN-PMU	Within one year of effectiveness Not later than 3 months into project implementation.	To improve project staff contract management skills.
6.	All Post Review Contracts should be included in the Procurement Plan.	PHCN-PMU	By Negotiations.	Finalized and agreed during negotiation.
7.	Shopping - Quotations are to be opened immediately after the closing.	PHCN-PMU	During implementation.	To ensure transparency.
8.	Not more than 14 days should be allowed for evaluating quotations under shopping small contracts as it defeats the whole essence of shopping and other post review contracts.	PHCN-PMU	During implementation.	To avoid delay.
9.	Provision of adequate office space for proper keeping of procurement files.	PHCN-PMU	As soon as possible.	To keep procurement files safe and easily accessible.

D. Procurement Plan

14. The Recipient has developed an 18 months procurement plan for project implementation which provides the basis for the procurement methods for each participating State. This plan has been finalized discussed and agreed between the Borrower and the Project Team during negotiations. It will also be available in the project's database and on the Bank's external website. The Procurement Plan will be updated in agreement with the Project Team annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

E. Frequency of Procurement Supervision

15. In addition to the prior review supervision to be carried out from Bank offices, the capacity reassessment of the PHCN-PMU has recommended one supervision mission to visit the field to carry out post procurement review every year. An Independent Procurement Audit will be conducted to contribute to the mid-term review exercise of the project.

F. Publication of Results and Debriefing

16. On-line (DG Market, UN Development Business, and/or Client Connection) publication of contract awards will be required for all ICB, NCB, Direct Contracting and the Selection of Consultants for contracts exceeding a value of US$200,000. In addition, where prequalification has taken place the list of pre-qualified bidders will be published. With regard to ICB and large-value consulting contracts, the Borrower will be required to ensure publication of contract awards as soon as IDA has issued its "no objection" notice to the recommended award. With regard to Direct Contracting and NCB, publication of contract awards can be in aggregate form on a quarterly basis and in local newspapers. All consultants competing for an assignment involving the submission of separate technical and financial proposals, irrespective of its estimated contract value, should be informed of the result of the technical evaluation (number of points that each firm received) before the opening of the financial proposals. The PHCN-PMU will be required to offer debriefings to unsuccessful bidders and consultants should the individual firms request such a debriefing. All post review contracts shall also be published at the PHCN-PMU website.

G. Details of the Procurement Arrangements

17. Goods, Works, and Non Consulting Services

(a) List of contract packages to be procured following ICB and direct contracting:

1	2	3	4	5	6	7	8	9
Ref. No.	**Contract (Description)**	**Estimated Cost**	**Procure-ment Method**	**Prequali fication (yes/no)**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Expected Bid-Opening Date**	**Comments /Contract Signature Date**
A. Transmission Investment								
NGP-T1	Rehabilitation and Reinforcement of 330/132 kV Transmission Substations	94,500,000	ICB	Yes	No	Prior	11/26/2009	12/01/2010
NGP-T2	Rehabilitation of Power Transformer Workshop	2,500,000	ICB	No	No	Prior	11/24/2009	01/15/2010
NGP-T3	Correction of Switchyard Deficiencies in 330/132 kV Transmission Stations to Optimize SCADA/EMS/ Telecom Project under TDP	2,800,000	ICB	No	No	Prior	01/28/2010	04/13/2010
NGP-T4	Electrical Rehabilitation of	2,000,000	ICB	No	No	Prior	09/29/2009	11/20/2009

1	2	3	4	5	6	7	8	9
Ref. No.	**Contract (Description)**	**Estimated Cost**	**Procure-ment Method**	**Prequali fication (yes/no)**	**Domestic Preference (yes/no)**	**Review by Bank (Prior / Post)**	**Expected Bid-Opening Date**	**Comments /Contract Signature Date**
	Alagbon 132/33 kV Substation Equipment							
NGP-W1	Civil Reconstruction and Flood Control of Sinking 132/33 kV Alagbon Substation	5,000,000	NCB	No	No	Post	12/17/2009	03/08/2010
NGP-T5	Supply and installation of gas metering equipment, analyzers etc.	1,000,000	ICB	No	No	Prior	12/10/2009	03/01/2010
B. Distribution Investment								
NGP-D1	Installation of Rehabilitation and Reinforcement of Eleven (11) 33/11 kV Distribution Substations & Associated Downstream HT/LV Distribution Facilities	63,200,000	ICB	No	No	Prior	11/05/2009	07/28/2011
NGP-D2	Supply & Installation of 300 No. 11 kV Sectionalizers at Karu, Kubwa, Luth, Ogba, Agege & Idiaraba Injection Clusters	2,000,000	ICB	No	No	Prior	11/19/2009	11/16/2010
NGP-D3	Rehabilitation of 33 kV Switchgear & Cables in Eko Distribution Networks	7,000,000	ICB	No	No	Prior	10/21/2009	06/30/2011
TOTAL		**180,000,000**						

(b) ICB contracts estimated to cost US$750,000 (Goods) or US$5,000,000 (Works and above per contract and all direct contracting will be subject to prior review by the Bank.

18. **Consulting Services**

(a) List of consulting assignments with short-list of international firms.

1	2	3	4	5	6	7
Ref. No.	**Description of Assignment**	**Estimated Cost**	**Selection Method**	**Review by Bank (Prior / Post)**	**Expected Proposals Submission Date**	**Comments/ Contract Signature Date**
NGP-TC1	Studies for rehabilitation and management options in PHCN Generation Companies	500,000	QCBS	Prior	05/04/2010	09/14/2010
NGP-TC2	Developing/refining MYTO, related subsidy delivery mechanisms, Power Purchase Agreements	300,000	QCBS	Prior	05/18/2010	09/28/2010
NGP-TC3	Designing gas infrastructure and transmission and distribution systems	2,000,000	QCBS	Prior	05/28/2010	10/12/2010
NGP-TC4	Technical Assistance for preparation of Technical Specifications for the Rehabilitation of Power and Distribution Transformers Workshop	200,000	CQS	Prior	08/17/2010	01/07/2011
NGP-TC5	Engineering Supervision and Site Management of the Rehabilitation and Reinforcement of Old 330/132 kV Transmission Substations	2,000,000	QCBS	Prior	01/15/2010	06/04/2010
NGP-TC6	Engineering Supervision and Site Management of the Civil Reconstruction of Alagbon Substation	300,000	QCBS	Prior	02/09/2010	06/29/2010
NGP-TC7	Business process re-Engineering for TCN	200,000	QCBS	Prior	01/14/2011	06/01/2011
NGP-TC8	Engineering Supervision and Site Management of Rehabilitation and Reinforcement of 33/11 kV Distribution Substations	1,200,000	QCBS	Prior	05/28/2010	10/12/2010
NGP-TC9	Engagement of Technical and Communication Manager	150,000	QCBS	Prior	10/27/2009	03/05/2010
Total		**6,850,000**				

(b) Consultancy services estimated to cost above US$200,000 per contract and single source selection of consultants for *All Values* will be subject to prior review by the Bank.

(c) Short-lists composed entirely of national consultants: Shortlists of consultants for services estimated to cost less than US$200,000 per contract may be composed entirely of national consultants in accordance with the provisions of paragraph 2.7 of the Consultant Guidelines.

Annex 9: Economic and Financial Analysis

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. This Annex consists of three parts. Part A presents the cost-benefit analysis for the implementation of Gas Supply Agreements to be supported by PRGs and of the separate Transmission and Distribution investments. This appraisal shows that the proposed project components will result in substantial net benefits in different foreseeable scenarios. A summary of the baseline financial and economic internal rates of return and net present values is presented in Table 1.

Table 1: Summary of economic and financial analysis results

	FIRR	FNPV ($ mn)	EIRR	ENPV ($ mn)
Implementation of the Gas Supply Agreements	35%	205	271%	2,456
Transmission and Distribution Investments	25%	130	35%	261

2. Part B appraises the power sector finances in the context of the new pricing and regulatory frameworks. Among other things, this analysis shows that MYTO tariff increases will help PHCN to move towards cost-recovery, but only if planned efficiency improvements materialize. Part C evaluates the impact of approved tariff increases on poverty. This concludes that in Nigeria the magnitude of the poverty impact for those connected to the grid has to be weighed against the value of having additional resources to improve access for the population as a whole, given that electricity services are strongly skewed towards higher income groups.

A. Economic analysis of project components

(i) Economic analysis of the implementation of the Gas Supply Agreements between PHCN and Gas Suppliers that will be supported by PRG

3. The project intends to provide US$100.0 million (PRG coverage of US$400.0 million) in PRG support for gas supply payment obligations of PHCN to gas suppliers (JVs between international oil companies and the Nigerian National Petroleum Corporation), under the proposed gas supply and aggregation agreements (GSAAs). The volume of gas covered by each GSAA will correspond to the Domestic Supply Obligations related to PHCN, which assign specific power plants to each gas supplier. The implementation of the GSAAs over a 10-year period is expected to stabilize gas supply for existing PHCN plants, improve quality of gas supplied as per specifications in the contracts and progressively ramp-up gas to enable planned growth in the power sector as a whole.

4. The cost-benefit analysis of the implementation of GSAAs evaluates the financial and economic value of *additional benefits* accruing to PHCN and electricity users on account of additional power generation from *increased gas supply*. To do this, the analysis compares the total benefits in a scenario where there is a staggered increase in gas supply up to a level of 700 mmscfd, and the lower benefits that result if gas supply remains stagnant at a level of 400 mmscfd. This analysis takes into consideration: the costs incurred by PHCN to generate,

transmit and distribute the electricity; the revenue for PHCN from electricity retail (after reflecting transmission and distribution losses along the electricity value chain); and electricity users' benefits on account of the electricity received from the grid.

5. The analysis takes on board the assumptions of the new pricing and regulatory frameworks for the power and gas sectors, in terms of a gradual increase in electricity tariffs and gas prices applying to the power sector, performance improvements by PHCN, the need for critical investments in generation to facilitate off-take of gas and investment in transmission and distribution networks to accommodate the forecast increase in generation capacity. The analysis adopts conservative forecasts for the technical and non-technical loss reductions at PHCN, including collection losses. Some benefits that are difficult to monetize are left out of the analysis, especially environmental benefits from displacement of diesel-based captive generation, and the impact of the improved availability and reliability of electricity supply for productivity, growth and welfare.

6. The key assumptions used to estimate the Financial and Economic Internal Rates of Return and Net Present Values in the baseline scenario are presented in Table 2.

Table 2: Key assumptions for the financial and economic analysis of the implementation of Gas Supply Agreements

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Gas consumption *with* GSAA (mmscfd)	400	481	548	613	685	700	700	700	700	700
Gas consumption *without* GSAA (mmscfd)	400	400	400	400	400	400	400	400	400	400
Gas price (US$/mmbtu)	0.6	0.9	1.1	1.3	1.3	1.3	1.3	1.3	1.3	1.3
MYTO tariff ($/kwh)	0.05	0.06	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Energy station use (%)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Transmission losses (%)	13	11	9	8	8	8	8	8	8	8
Distribution losses (%)	15	14	13	11	11	11	11	11	11	11
Non-technical losses (%)	18	16	14	12	10	10	10	10	10	10
Collection ratio (%)	85	85	86	87	88	90	91	92	92	92
O & M costs for PHCN generation (US$ mn)	57	93	83	80	69	69	69	69	69	69
Critical generation investments (US$ mn)	67	67	67	0	0	0	0	0	0	0
T & D costs and overheads (US$/GWh)	8,025	5,090	3,137	4,517	5,048	5,134	5,134	5,134	5,134	5,134

7. The assumptions about PHCN gas consumption under GSAA implementation reflect the outcomes in the results framework (Annex 3); the other scenario assumes constant gas consumption at current levels. Gas price and electricity tariffs are based on approved pricing frameworks (see Annex 1 for details). Loss reduction at PHCN is based conservatively on the Tractebel National Load Demand Studies commissioned by the WB NEDP project in 2009. Operations and Maintenance cost for PHCN generation companies comes from PHCN's projections under medium demand assumptions. The estimates for critical repair and rehabilitation investments in generation were made on the basis of the due diligence report of PHCN power plants commissioned under the WB NEDP in 2008. Average transmission and

distribution costs, including return on capital and overheads for PHCN HQ, are based on NERC's MYTO model.

8. Further, the analysis also assumes that:

(a) The exchange rate is 125 Naira/US$ over the relevant period.
(b) The discount rate for the present value calculations is 12%.
(c) The average cost of self-generated power is US$0.17 /kWh. This is calculated using data about the self-generation costs for large and small users from Tractebel's National Load Demand Studies and information about the customer breakdown from PHCN (see details of the calculation in footnote 22).
(d) The energy that can be generated based on the additional gas availability with GSAA is estimated based on the actual heat rate data from existing PHCN power plants.

9. Building on these assumptions, it is straightforward to calculate the additional gas consumption on account of GSAA implementation and the corresponding increases in energy generation, fuel and other costs, billed revenues and cash collection. The financial consequences for PHCN of implementing the GSAA are estimated from the additional costs and revenue, after taking into account the cost of critical generation improvements to accommodate extra electricity delivery. Finally, the economic benefits are derived by adding the consumer surplus, which is the difference between the cost of self-generation and the PHCN tariff for the additional energy received by users. Table 3 presents these results.

10. The projected cash flow from implementing the GSAAs, net of critical generation costs that need to be incurred by PHCN, generates a financial internal rate of return (FIRR) of 35% and a financial net present value (FNPV) of US$205 million. The financial results indicate PHCN will face a deficit in 2009 - 2011 on account of the cost of critical generation investment, but by 2012 this turns into an increasing surplus. By the time the gas supply stabilizes at the 700 mmscfd level, PHCN should be able to collect around US$500 million extra each year for the additional energy served. When the economic benefits for users that stop using self-generated power are added, the economic internal rate of return (EIRR) is 271% and the economic net

[22] From the Tractebel National Load Demand Studies, the marginal cost of self-generation for large customers is 18 N/kWh (i.e., US$0.16 /kWh) leaving capital costs aside. The results come from 42 customers in Abuja disco having a connection to the network larger or equal to 1 MVA, which together have a total installed capacity of 75 MVA and average monthly consumed fuel of 30,000 litres per month. The study assumes a specific diesel consumption of 220g/kWh or 0.3 liter/kWh which corresponds to a genset rated around 500 kVA in the climatic condition of Nigeria, and takes the official diesel price in Nigeria of 60.15 naira/liter. For smaller industrial, commercial and residential customers using diesel units of 5-10 kW, fuel efficiency is lower, and therefore their cost of electricity is in the 30-36 N/kWh (i.e., US$0.26-0.31/kWh) range. This is similar to the benchmarks in WB projects (the typical value for diesel-based electricity consumed by small users is US$0.35 – US$0.50inclusive of equipment costs) and reflects the high level of diesel prices. Capital costs for diesel generators of all sizes are taken to be US$0.03/ kWh. For less affluent households relying on kerosene and batteries, the analysis assumes that the willingness to pay is US$0.10 /kWh. *The weighted average estimate of the unit cost of replacement electric power based on existing customer breakdown is calculated to be US$0.17 /kWh.* Large commercial and industrial customers (tariff classes C4 and D4) are billed 9.4% of electricity; smaller commercial and industrial and large residential users (tariff classes C1-C3, D1-D3, R3-R5) account for 31.1% of electricity bills; residential customers on the lowest tariff classes (R1, R2) are billed 50.8% of electricity.

present value (ENPV) is US$2,456 million, which are very substantial on account of the unmet and suppressed demand at present.

Table 3: Analysis of Additional financial and economic results owing to Gas Supply Agreements

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Additional gas for PHCN with GSAA (mmscfd)	0	81	148	213	285	300	300	300	300	300
Additional fuel costs ($ mn)	0	27	61	104	139	146	146	146	146	146
Additional generation (GWh)	0	2,558	4,735	6,848	9,188	9,565	9,565	9,565	9,565	9,565
Additional energy reaching users (GWh)	0	1,603	3,143	4,811	6,601	6,872	6,872	6,872	6,872	6,872
Additional billed revenue ($ mn)	0	90	214	385	528	550	550	550	550	550
Additional collected revenue ($ mn)	0	76	184	335	465	495	500	506	506	506
Difference in financial results ($ mn)	0	-2	42	61	98	112	117	123	123	123
Critical generation investments (US$ mn)	67	67	67	0	0	0	0	0	0	0
Net financial benefits for PHCN with GSAA ($ mn)	**-67**	**-69**	**-25**	**61**	**98**	**112**	**117**	**123**	**123**	**123**
Net economic benefits for users with GSAA ($ mn)	**-67**	**114**	**295**	**494**	**692**	**730**	**736**	**741**	**741**	**741**

11. A sensitivity analysis was carried out. This shows that (i) the timely implementation of MYTO tariff increases; and (ii) the introduction of better operational practices to reduce technical, non-technical and collection losses are both essential to obtain the positive financial results above. If tariffs were to stay at present levels, then an increase in gas supply under GSAA would simply lead to growing losses for PHCN as each unit of energy is sold below cost-recovery. The financial net present value would be negative in this scenario. Similarly, if the operational performance was to stagnate, then the financial net present value would be negative. At the same time, the economic benefits are so large that they would outweigh the financial losses in most foreseeable scenarios.

(ii) Financial and Economic analysis of investment components

Investment in Transmission Infrastructure (US$107.8 million)

12. The investment in transmission will support the expected improvements in power generation due to increased and stable gas supply, which will remove transmission bottlenecks in the grid operated by the Transmission Company of Nigeria (TCN) towards delivery of electricity to distribution. The transmission investment is composed of: (i) rehabilitation and reinforcement of old 330/132 kV transmission stations (Afam, Akangba, Kaduna, Birnin Kebbi, Ikeja West, Ayede, Aba 132/33 kV, Biu 132/33 kV, Akure 132/33 kV and Jerico 132/33 kV), Ijebu-Ode, Eket, Ikorodu, Osogbo 330/132/33 kV, Dan Agundi, Port Harcourt 132/33 kV (US$94.5 million), (ii) civil construction and flood control of sinking Alagbon substation and the rehabilitation of its electrical system (US$7.0 million); (iii) rehabilitation of power transformer

workshop (US$2.5 million); and (iii) correction of switchyard deficiencies in 330/132 kV transmission stations to optimize SCADA / EMS/Telecom Project under TDP (US$2.8 million), and acquisition and installation of metering and other relevant equipments required to analyze and to measure the quality and quantity of gas supplied to the PHCN under Component 1 of the Project (US$1.0 million). The details of the disbursement are shown in Table 4.

Table 4: Investment Plan for Transmission System

Substation	Unit	Fraction of Investment	Afam	Jebba	Akangba	Kaduna	Birnin Kebbi	Ikeja West	Ayede	Aba
Investment Cost	US$ m		7.66	1.64	10.40	3.28	12.05	8.21	9.31	7.11
Year 2010	US$ m	2.5%	(0.19)	(0.04)	(0.26)	(0.08)	(0.30)	(0.21)	(0.23)	(0.18)
Year 2011	US$ m	5.0%	(0.38)	(0.08)	(0.52)	(0.16)	(0.60)	(0.41)	(0.47)	(0.36)
Year 2012	US$ m	27.5%	(2.11)	(0.45)	(2.86)	(0.90)	(3.31)	(2.26)	(2.56)	(1.96)
Year 2013	US$ m	30.0%	(2.30)	(0.49)	(3.12)	(0.98)	(3.61)	(2.46)	(2.79)	(2.13)
Year 2014	US$ m	35.0%	(2.68)	(0.57)	(3.64)	(1.15)	(4.22)	(2.87)	(3.26)	(2.49)

Substation	Unit	Fraction of Investment	Akure	Biu	Jericho	Ijebu Ode	Eket	Ikorodu	Alagbon	Total Investment Cost for Transmission
Investment Cost	US$ m		6.02	1.64	5.48	6.02	6.02	6.57	16.39	107.8
Year 2010	US$ m	2.5%	(0.15)	(0.04)	(0.14)	(0.15)	(0.15)	(0.16)	(0.41)	(2.70)
Year 2011	US$ m	5.0%	(0.30)	(0.08)	(0.27)	(0.30)	(0.30)	(0.33)	(0.82)	(5.39)
Year 2012	US$ m	27.5%	(1.66)	(0.45)	(1.51)	(1.66)	(1.66)	(1.81)	(4.51)	(29.65)
Year 2013	US$ m	30.0%	(1.81)	(0.49)	(1.64)	(1.81)	(1.81)	(1.97)	(4.92)	(32.34)
Year 2014	US$ m	35.0%	(2.11)	(0.57)	(1.92)	(2.11)	(2.11)	(2.30)	(5.74)	(37.73)

Investment in Distribution Infrastructure (US$72.2 million)

13. The proposed investments in distribution systems will improve electricity distribution to end users. The main objective of the investment is to extend loss reduction and service delivery improvement initiatives which have proved highly successful in Bank projects currently under implementation and supporting power companies to achieve the efficiency targets specified in their performance contracts. The distribution investment is composed of reinforcement of distribution networks in Kano, Kaduna, Eko, Ikeja, Ibadan, Abuja, Enugu, Benin, Port Harcourt, Yola and Jos Zones (US$70.2 million) and installation of 11 kV sectionalizers in Karu, Kubwa, Luth, Ogba, Agege and Idiaraba (US$2 million).

14. The key assumptions used in the FIRR and EIRR analysis of the transmission and distribution investments are:

- Based on PHCN's actual figures and the National Load Demand Study by Tractebel, it is assumed that the energy that cannot be delivered from a typical substation is about 40% of total energy injected.
- A 2 x 15 MVA injection substation supplies an average of 367.2 MWh per day.
- Injection substations (2 x 15 MVA) of 11 units will be installed with this investment.
- Consequently, the extra energy which will be supplied by the relevant substations after the investment in T & D infrastructure is 40% of 367.2 MWh per day, or 146,880 kWh per day.
- The formula used to estimate the Financial Revenue per year is:
  (367.2 MWh x 11 units x 60% x Tariff x 365) / Exchange Rate (–) O & M Cost
- O & M Cost is assumed to be 5% of Investment Cost.
- Electricity Tariff of N 10 per kWh.
- Average cost of self-generated electricity of US$0.17 per kWh.
- Exchange rate of 125 Naira /US$.

15. Table 5 below projects the financial and economic flows for the investment over the period 2010 - 2029 based on the above assumptions, as well as the FIRR and EIRR.

Table 5: Financial and Economic Analysis for T & D Investment

Financial & Economic Results for T & D Investment Components under NEGP (in US $ Mil.)								
Year	Investment Amount	Revenue	O&M Cost	Financial Revenue	Net Financial Benefits	Additional Energy due to Investment (Gwh)	Economic Value	Net Economic Benefit
2010	(4.5)		(9.0)	(9.00)	(13.50)		(9.00)	(13.5)
2011	(9.0)		(9.0)	(9.00)	(18.00)		(9.00)	(18.0)
2012	(49.5)		(9.0)	(9.00)	(58.50)		(9.00)	(58.5)
2013	(54.0)		(9.0)	(9.00)	(63.00)		(9.00)	(63.0)
2014	(63.0)	70.8	(9.0)	61.77	(1.23)	590	91.30	28.3
2015	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2016	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2017	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2018	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2019	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2020	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2021	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2022	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2023	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2024	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2025	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2026	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2027	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2028	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
2029	0.0	70.8	(9.0)	61.77	61.77	590	91.30	91.3
				Total Investment	180.0			180.0
				FIRR	25%		FIRR	35%
				NPV	\130		NPV	261

16. The analysis indicates that the investment for transmission and distribution systems is financially viable, achieving a FIRR of 25% and FNPV of U$130 million. With the investment, additional power of approximately 590 GWh would be supplied to end-users, as a result of which the EIRR and ENPV are respectively 35% and U$261 million.

B. Financial Analysis of the sector

PHCN financial performance

Trends in revenue from electricity sales

17. Revenue growth in the sector has been substantial, increasing from about N72 billion in 2002 to about N106 billion in 2007. Capacity additions and transmission and distribution improvements have played a major role in the increase in revenues.

Table 6: Operating revenue for PHCN (naira million)

Revenues	2002	2003	2004	2005	2006	2007
Domestic	69,208	78,028	98,869	105,459	104,541	104,098
Exports	2,256	1,526	2,199	1,520	1,703	1,846
Total	71,464	79,553	101,068	106,978	106,244	105,944
Service & Connection Fees	642	869	1,368	1,466	NA	NA
Total Operating Revenue	**72,106**	**80,423**	**102,436**	**108,444**	**106,244**	**105,944**

NA: Not Available.
Source: PHCN.

18. From 2004 to 2007, there has been a marked reduction in system losses (including transmission loss, distribution loss, non-technical loss, and revenue collection loss). The implementation of two World Bank-financed projects, namely the Transmission Development Project (TDP) and the National Energy Development Project (NEDP) with a total commitment of US$272 million have helped introduce programs such as the SCADA in transmission and CREST[23] for distribution efficiency improvement. These programs have played a role in reducing the transmission and distribution losses.

Trends in operating costs

19. Operating expenses have been going up steadily, with power purchase contracts and salaries forming the major share of the expenses (see Table 7).

[23] SCADA: Supervisory Control and Data Acquisition System for transmission; CREST: Commercial Reorientation of Electricity Sector Toolkit for distribution efficiency.

Table 7: Operating expenses incurred by PHCN (naira million)

Operating Expenses	2002	2003	2004	2005	2006*	2007*
Power Purchase, excluding fuel	6,629	7,569	7 ,858	9,786	12,019	10,744
Fuel for Purchased Energy	2,176	2,206	182	152	-	-
Fuel for Own Generation	3,471	2,487	2,909	3,251	3,548	4,379
Salaries & Wages	20,475	22,537	24,261	27,258	36,477	36,893
Repairs & Maintenance	10,646	10,968	10,294	11,186	11,529	7,898
Plant Management and RCM Fees	-	2,475	2,522	2,305	1,321	771
Administration & Overheads	12,143	12,973	16,375	15,435	16,747	16,938
Depreciation	3,444	4,747	5,335	5,680	6,718	7,132
Bad Debt & Other Provisions	24,650	22,376	32,121	36,465	27,181	32,104
Total Operating Expenses	**83,634**	**88,337**	**101,857**	**111,518**	**115,540**	**116,859**

* Some missing data was estimated based on historic results.
Source: PHCN.

Gap analysis

20. The operating revenues of PHCN have stagnated in more recent years, causing the resource gap to persist at a relatively high level of over N 30 billion per annum (see Table 8).

Table 8: PHCN Gap Analysis (naira million)

	2002	2003	2004	2005	2006	2007
Operating Revenue	72,106	80,423	102,436	106,978	106,244	105,944
Cash collected	51,195	57,100	70,681	77,024	78,621	83,696
Operating Costs	83,634	88,337	101,857	111,518	115,540	116,859
Surplus (gap)	**(32,439)**	**(31,237)**	**(31,176)**	**(34,494)**	**(36,919)**	**(33,163)**

Projections for the future

21. We project the PHCN financials in the future using the medium demand scenario from "National Load Demand Study Report" (January 2009) by Tractebel Engineering. The assumptions used in the analysis are:

- Peak load systems for 2010 and 2018 are 5,200 MW and 9,849 MW and the load factors are 66% and 70% respectively.
- GDP is assumed to grow 7.5% per annum.
- Retail tariff is adjusted in accordance with MYTO model up to 2012, increasing to 10 Naira per kWh from 6 Naira in 2008.
- Gas price including transportation cost increases from U$0.6 per mmbtu in 2009 to U$1.3 per mmbtu in 2011 and onwards.
- Total system losses decrease from 50% in 2009 to 34% in 2018.
- Exchange rate is assumed to be 125 Naira/US$ during the period 2009 to 2018.
- Inflation rate is assumed to be 8.5% annually.

22. Table 9 and 10 below project PHCN cash collections and operating costs over the period 2009 - 2018 based on the above assumptions.

Table 9: PHCN Cash Collections (projected)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	1	2	3	4	5	6	7	8	9	10
Generation										
Total Generation (Gwh)	**27,091**	**30,064**	**33,036**	**36,008**	**39,249**	**42,783**	**46,634**	**50,834**	**55,409**	**60,394**
Operating Revenue										
Less: Station Use (%)	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Sent out from plants (Gwh)	26,414	29,313	32,210	35,108	38,268	41,713	45,468	49,563	54,024	58,884
Less: Transmission Losses (%)	13%	11%	9%	8%	8%	8%	8%	8%	8%	8%
Delivered to distribution (Gwh)	22,980	26,088	29,311	32,299	35,207	38,376	41,831	45,598	49,702	54,173
Less: Distribution Losses (%)	15%	14%	13%	11%	11%	11%	11%	11%	11%	11%
Delivered to customers (Gwh)	19,533	22,436	25,501	28,746	31,334	34,155	37,229	40,583	44,234	48,214
Less: Non-technical losses (%)	18%	16%	14%	12%	10%	10%	10%	10%	10%	10%
Billed to customers (Gwh)	16,017	18,846	21,931	25,297	28,201	30,739	33,506	36,524	39,811	43,393
Less: Collection loss (%)	15%	15%	14%	13%	12%	10%	9%	8%	8%	8%
Sales with revenue collected (Gwh)	13,614	16,019	18,860	22,008	24,816	27,665	30,491	33,602	36,626	39,922
Total loss in the system	**50%**	**47%**	**43%**	**39%**	**37%**	**35%**	**35%**	**34%**	**34%**	**34%**
Tariff (N/kwh collected)	7.00	8.50	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Cash Collection (Naira MM)	**95,301**	**136,164**	**188,604**	**220,080**	**248,165**	**276,655**	**304,907**	**336,023**	**366,261**	**399,215**
Cash Collection ($ MM)	**762**	**1,089**	**1,509**	**1,761**	**1,985**	**2,213**	**2,439**	**2,688**	**2,930**	**3,194**
Cash Collected per unit (N/kwh generated)	**3.5**	**4.5**	**5.7**	**6.1**	**6.3**	**6.5**	**6.5**	**6.6**	**6.6**	**6.6**

Table 10: PHCN Operating Costs (projected)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	1	2	3	4	5	6	7	8	9	10
(Naira MM)										
Power Purchase, excluding fuel	23,915	25,948	28,153	30,546	33,143	35,960	39,017	42,333	45,931	49,835
Fuel for Purchased Energy										
Fuel for Own Generation	11,292	17,542	32,479	36,379	40,631	45,264	50,309	55,810	61,796	68,316
Salaries & Wages	37,513	40,701	44,161	47,914	51,987	56,406	61,200	66,402	72,047	78,171
Repairs & Maintenace	14,726	15,977	17,335	18,809	20,407	22,142	24,024	26,066	28,282	30,686
Plant Management and RCM Fees	3,083	3,345	3,629	3,938	4,273	4,636	5,030	5,457	5,921	6,425
Administration & Overheads	21,391	23,209	25,182	27,322	29,645	32,165	34,899	37,865	41,083	44,576
Depreciation (existing facilities)	7,336	7,959	8,636	9,370	10,166	11,030	11,968	12,985	14,089	15,287
Other Provisions	21,303	30,437	43,861	53,123	62,041	73,775	83,766	94,963	103,509	112,822
Total Operating Cost (Naira MM)	**140,557**	**165,118**	**203,436**	**227,401**	**252,293**	**281,377**	**310,213**	**341,883**	**372,659**	**406,116**
Total Operating Cost ($ MM)	**1,124**	**1,321**	**1,627**	**1,819**	**2,018**	**2,251**	**2,482**	**2,735**	**2,981**	**3,249**

23. On the basis of the above projections for cash collections and operating costs, the resource gap can be projected as in Table 11. The table shows that the resource gap will decrease from N45 billion (or US$362 Million) in 2009 to around N7 billion (or US$55 million) in 2018.

Table 11: Projected PHCN Cash Gap Analysis and Required Subsidy

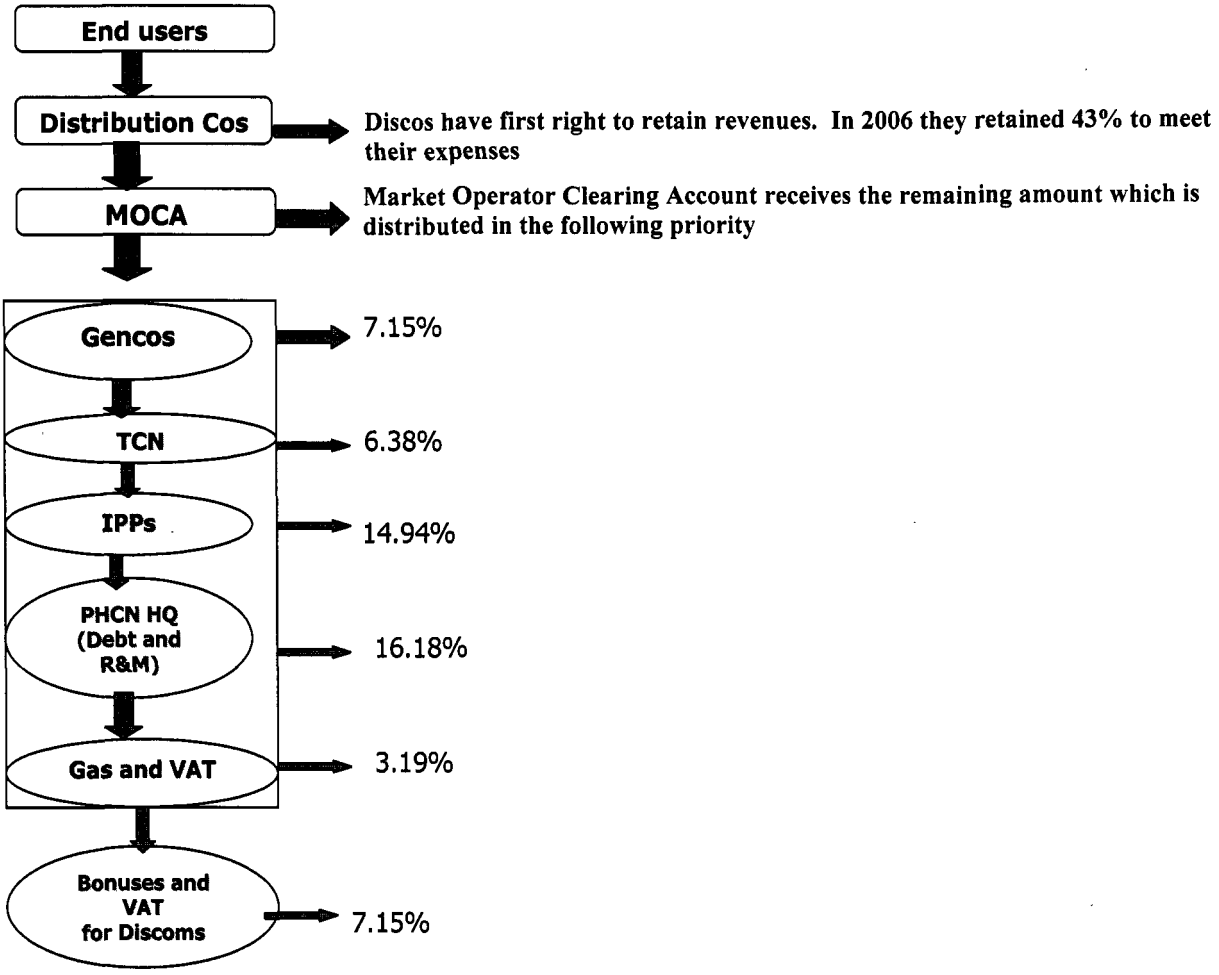
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cash Collected (naira mm)	95,301	136,164	188,604	220,080	248,165	276,655	304,907	336,023	366,261	399,215
Operating Expenses (naira mm)	140,557	165,118	203,436	227,401	252,293	281,377	310,213	341,883	372,659	406,116
Surplus (Gap) before Tax and Debt Service (naira mm)	(45,256)	(28,955)	(14,832)	(7,321)	(4,128)	(4,722)	(5,305)	(5,859)	(6,397)	(6,901)
Cash Surplus (Gap) before Tax and Debt Service ($ million)	(362)	(232)	(119)	(59)	(33)	(38)	(42)	(47)	(51)	(55)
Cash surplus (Gap), Naira per kWh	(1.7)	(1.0)	(0.4)	(0.2)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Required FGN Subsidy for Investment/Operation ($ mm)	(362)	(232)	(119)	(59)	(33)	(38)	(42)	(47)	(51)	(55)
Debt Service Coverage Ratio (DSCR)	(2.68)	(1.53)	(0.48)	0.15	0.44	0.44	0.40	0.43	0.94	1.04
Required FGN Subsidy to meet minimum 1.5 DSCR	**473**	**332**	**205**	**143**	**117**	**123**	**147**	**141**	**37**	**29**

24. Table 11 also shows the amount of FGN subsidy required to meet the minimum Debt Service Coverage Ratio (DSCR) of 1.5. The total subsidy requirement from FGN for ten years is projected to be about U$1.7 billion, which is a little above the transfers planned under MYTO.

PHCN payment waterfall and trends in operating expenses

25. In addition to the overall financial health of PHCN, another issue of relevance for payment risk to various suppliers of PHCN is the payment waterfall. In the existing payment waterfall structure (see Figure 1 on next page), PHCN revenues are collected by the distribution companies, who retain part of the cash collection and transfer the rest to the Market Operator Clearing Account, from where remaining revenue is applied to pay the other PHCN entities and expenses. One of the reasons why there is systematic underpayment for gas received is that this item comes at the bottom of the waterfall and therefore faces shortage of funds – this is in addition to outstanding disputes between PHCN and NGC about the amount of gas payments owed, which is a result of the lack of contractual certainty about the terms for gas purchases by the power sector. Gas payment will need to be closer to the top of the waterfall to ensure adequate PHCN payment capacity to gas suppliers.

Figure 1: PHCN payment waterfall (2006)



Source: PHCN Market Operator Annual Report (2007).

Sensitivity analysis of the financial situation of PHCN

26. Table 12 shows the sensitivity of the cumulative resource gap that PHCN faces with regard to tariff increase and gas prices. The base case is when the tariff increase and gas prices increase as per MYTO and the new gas policy respectively. The cumulative resource gap in this case, as per our model, is about US$1 billion (highlighted). However, if the gas prices increase as per the new gas policy while the electricity tariffs do not increase, then the cumulative resource gap increases to about US$8 billion. On the other hand, if electricity tariffs are increased at twice the rate prescribed in MYTO, then there is a resource surplus of US$6 billion for PHCN over the ten-year period 2009 -2018. Other scenarios are also shown in the table. Given the high sensitivity of the cumulative resource gap to electricity tariffs, it is essential that tariffs increase as per MYTO for PHCN to have a solid financial position.

Table 12: Sensitivity Analysis: Electricity Tariffs and Gas Prices
Cumulative Resource Gap (2009 - 2018) (US$ million)

		Electricity Tariffs		
		No increase	As in MYTO	Double of MYTO
Gas Price	No increase	(5,671)	1,255	8,181
	As in gas policy	(7,937)	(1,011)	5,915
	Double of gas policy	(10,475)	(3,550)	3,376

27. Table 13 shows the sensitivity of the cumulative resource gap with regard to tariff increases and system efficiency. The base case is when the tariffs increase as per MYTO and system efficiency improves as per our projections, leading to a cumulative resource gap of US$1 billion (highlighted). If the system efficiency does not improve while the electricity tariffs increase as per MYTO, then the cumulative resource gap increases to more than US$5 billion. On the other hand, if the electricity tariffs increase at twice the rate prescribed in MYTO, but there is no improvement in system efficiency, then there is a small resource surplus for PHCN over the ten-year period 2009 - 2018. Other scenarios are also shown in the table. The high sensitivity of the cumulative resource gap to electricity tariff increases and system efficiency improvements demonstrates the importance of adopting tariff increases as per MYTO coupled with projected system efficiency improvements.

Table 13: Sensitivity Analysis: Electricity Tariffs and System Efficiency
Cumulative Resource Gap (2009 - 2018) (US$ million)

		Electricity Tariffs		
		No increase	As in MYTO	Double of MYTO
Efficiency Improvement	No improvement	(10,657)	(5,185)	287
	As per projections	(7,937)	(1,011)	5,915
	As per higher projections	(6,045)	1,897	9,839

C. Impact of the tariff increases under MYTO on poor households

28. The MYTO issued by the Government of Nigeria is designed to increase the weighted average tariff from the current level of N6/kWh to the cost reflective level of N10/kWh by 2011. This is likely to have some impact on poverty in the country. As per the "Electricity Tariffs and the Poor in Nigeria" study commissioned for this project, it is estimated that a doubling of electricity tariffs would increase poverty by less than one percentage point in the population as a whole. This calculation is made with data from the 2004/2005 Nigeria Living Standard Survey. The baseline measure of poverty in Nigeria for each PHCN distribution company is given in Table 14, which shows that the incidence of poverty in those connected to the electricity network is considerably lower than those who do not have network access.

Table 14: Baseline measure of poverty by utility company

Company	Type of household			Total
	Connected	Access in neighborhood but not connected	No access, not connected	
Abuja Distribution Company	64.1	64.1	78.2	71.4
Benin Distribution Company	52.6	44.9	49.6	49.5
Eko/Ikeja Distribution Company	70.0	65.2	64.1	67.0
Enugu Distribution Company	29.2	30.7	42.0	34.2
Ibadan Distribution Company	31.1	35.0	39.2	34.2
Jos Distribution Company	51.1	48.2	67.1	61.3
Kaduna Distribution Company	42.5	41.6	81.2	65.1
Kano Distribution Company	41.7	48.8	78.9	63.0
Port Harcourt Distribution Company	47.5	36.8	53.0	50.0
Yola Distribution Company	45.0	51.8	70.0	63.0
Nigeria	**44.7**	**44.5**	**65.1**	**54.7**

Source: "Electricity Tariffs and the Poor in Nigeria" study conducted for the NEGIP.

29. In Nigeria, electricity tariffs have not increased since 2003, making them among the lowest in Sub-Saharan Africa. Moreover, the study shows that electricity consumption subsidies are not well targeted to the poor due to access factors. As poor households tend to live in areas without electricity service, it is not possible for them to benefit from the subsidies. The argument for preserving the subsidies as they exist today in order to make services affordable for the poor, while valid for those among the poor connected to the network, does not necessarily hold when considering what is required to reduce poverty in the population as a whole. Therefore, MYTO presents an opportunity to change the tariff structure to better target subsidies to the poor, or alternatively reallocate existing subsidies from electricity consumption to an expansion of connections to the electricity network.

30. Cost-recovering electricity tariffs would establish a virtuous circle in the sector. Increase in tariffs would be a step in providing PHCN with enough resources to cover its operating and maintenance costs thus reversing the trend of declining public generation, also leaving resources for network expansion. With improving electricity services, due in part to higher O & M expenditures, the willingness of customers to pay a higher price for the service would improve. This would also enable more poor households to benefit from network expansion. The long-term gains to be achieved from a revision of tariffs, therefore, could be substantial.

31. To mitigate the impact of tariff increase on poverty, Technical Assistance under the project will provide resources for development of appropriate lifeline protection features in the tariff design under the MYTO developed by the Nigeria Electricity Regulatory Commission. A future IDA project to promote electricity access for the poor is proposed in the Medium-Term Program of IDA assistance to the sector, and this project will be complemented with adequate analytical work to address affordability issues with corresponding proposals for their mitigation, within the FGN's overall framework for electricity tariff reforms.

Annex 10 A: IDA Partial Risk Guarantee

Nigeria: Electricity and Gas Improvement Project (NEGIP)

SUMMARY OF TERMS AND CONDITIONS OF IDA PARTIAL RISK GUARANTEE IN SUPPORT OF GAS SUPPLY AND AGGREGATION AGREEMENT BETWEEN SHELL PETROLEUM DEVELOPMENT COMPANY AND POWER HOLDING COMPANY OF NIGERIA (PHCN)

L/C Applicant:	PHCN, severally or jointly, with its Generation Companies.
IDA Guaranteed L/C:	Revolving standby irrevocable letter of credit (L/C) issued in favor of the L/C Beneficiary by the L/C Bank at the request of PHCN. The PHCN's obligations to repay the L/C bank amounts drawn under the L/C will be guaranteed by the International Development Association (IDA). Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by PHCN to the L/C Bank within the L/C reimbursement period would be reinstated as described below.
L/C Beneficiary:	Shell Petroleum Development Company (SPDC) as Operator of the joint venture (the Joint Venture) among SPDC, the Nigeria National Petroleum Corporation (NNPC), Total Exploration and Production Nigeria (Ltd) and Nigeria Agip Oil Company Limited.
L/C Bank:	A commercial bank based in Nigeria with an international long-term foreign currency investment grade rating by one of Standard & Poor's or Moody's Investors Services, acceptable to IDA, the PHCN and the L/C Beneficiary.
L/C Form:	The L/C will be issued in a form satisfactory to the L/C Beneficiary, PHCN and IDA.
Purpose:	The PRG would backstop the failure by PHCN to repay the L/C Bank amounts drawn by the L/C Beneficiary under the L/C for payments due to it from PHCN under the Gas Supply and Aggregation Agreement (GSAA) to be concluded between PHCN, the Aggregator (as defined under the GSAA) and SPDC following the occurrence of a Guaranteed Event (as defined below).

Guaranteed Events:	PHCN's failure to comply with its contractual obligations under the GSAA. More specifically these would include: PHCN's failure to pay into the Escrow Account established by the Aggregator in accordance with the GSAA with respect to the following principal obligations: (a) The monthly contractual payment due under the GSAA to the L/C Beneficiary for gas made available for delivery by the L/C Beneficiary in accordance with the gas specifications under the GSAA (or for quantities of non spec gas delivered by the L/C Beneficiary and knowingly accepted by PHCN) as invoiced on a monthly basis; and (b) The contractual payments due under the GSAA pursuant to the reconciliation statement issued under the GSAA.
L/C Amount:	The L/C amount will be capped at the equivalent of 12 months of GSAA payments amounting to a maximum of US$150 million.
Validity Period of the L/C:	10 years.
L/C Reimbursement Period:	Following a drawing under the L/C by the L/C Beneficiary, PHCN would be obligated to repay the L/C Bank the amount drawn under the L/C together with accrued interest thereon within a period of 12 months pursuant to a Reimbursement and Credit Agreement to be concluded between PHCN and the L/C Bank. In the event of a payment by PHCN, the L/C will be reinstated by the amount of the repayment. In the event of a non-payment on the due date, the L/C Bank would have the right to call on the PRG for principal amounts plus accrued interest due from PHCN. Any amount paid by IDA to the L/C Bank under the PRG would be deducted from the IDA Guaranteed Amount and even if PHCN's payment default is remedied, following a payment under the PRG, those amounts would not be reinstated.
Interest Rate on Drawings During the Reimbursement, Period Charged by the L/C Bank:	An appropriate 'spread' above LIBOR acceptable to the L/C Bank and PHCN and agreed by IDA.

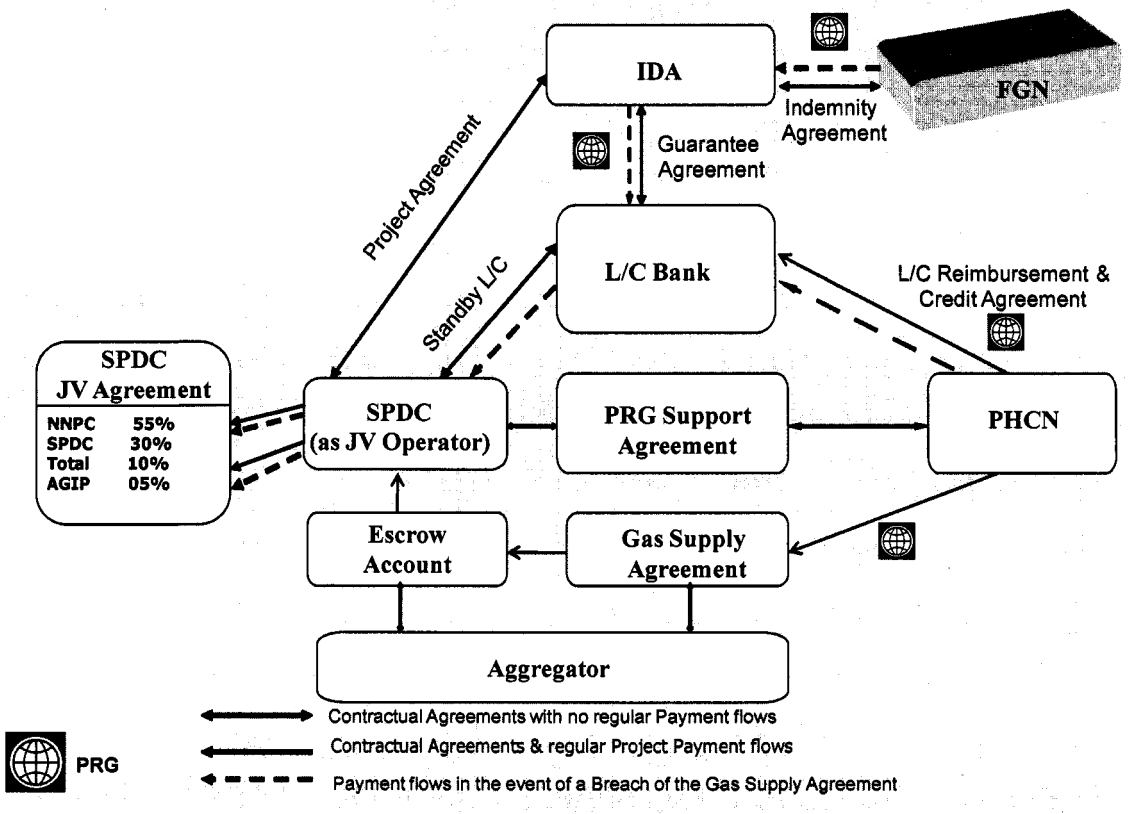
Conditional Payments in the Event of Disputes:	In the event of a dispute between the L/C Beneficiary and PHCN in connection with a Guaranteed Event, the L/C can also be drawn for provisional payments pending the settlement of the dispute, provided that the L/C Beneficiary shall provide to PHCN (on the basis of Escrow Account mechanism stipulated in the GSAA) in the amount of the provisional payments in the event the final decision determines that PHCN had no liability or its liability was for less than the amount of the provisional payments.
IDA Guaranteed Amount:	The Guarantee will be capped at 12 months of payments under the GSAA up to a maximum amount of US$150 million, plus accrued interest.
Maximum IDA Guarantee Period:	The L/C period plus 14 months.
IDA Guarantee Fees:	0.75% per annum on IDA guaranteed amounts outstanding, payable six monthly in advance by the L/C Beneficiary.
Front-end Fees:	(a) An Initiation Fee of 0.15% of the guaranteed amount (but not less than US$100,000) for internal Project preparation payable by the L/C Beneficiary. (b) Processing Fee of up to a maximum cap of 0.50% of the guaranteed amount to cover IDA designated reimbursable expenses payable by the L/C Beneficiary.
L/C Fees:	To be payable by the L/C Beneficiary to the L/C Bank.

Conditions Precedent to the Effectiveness of the IDA Guarantee:	Specific conditions will include the following: (a) Execution, delivery and effectiveness of the GSAA in a form and substance satisfactory to IDA. (b) Execution, delivery and effectiveness of the Gas Transportation Agreement in a form and substance satisfactory to IDA. (c) All relevant host country environmental approvals required for the operation and compliance with all applicable IDA requirements relating to prohibited activities[24]. In the case of the L/C Beneficiary these provisions will be detailed and agreed in the Project Agreement. (d) Provision of relevant satisfactory legal opinions from: (i) the Attorney General of the Federal Republic of Nigeria relating to the Indemnity Agreement; (ii) counsel to PHCN relating to the PRG Support Agreement and the Reimbursement and Credit Agreement, and (iii) counsel to the L/C Beneficiary relating to the Project Agreement and the PRG Support Agreement (e) Payment in full of the Initiation and Processing Fees, and the first installment of the Guarantee Fee. (f) Conclusion of a Guarantee Agreement between the L/C Bank and IDA, Reimbursement and Credit Agreement between L/C Bank and PHCN, a PRG Support Agreement between PHCN and the L/C Beneficiary, a Project Agreement between the L/C Beneficiary and IDA, and an Indemnity Agreement between IDA and the Federal Republic of Nigeria (FGN).
Guarantee Agreement:	The terms and conditions of the IDA Guarantee would be embodied in a Guarantee Agreement between the L/C Bank and IDA.

[24] Prohibited Activities include corrupt, fraudulent, collusive, coercive or obstructive practices.

Project Agreement:	The L/C Beneficiary would enter into a Project Agreement with IDA in respect of its Guarantee. Under such Agreement, the L/C Beneficiary will provide relevant Project information, and make warranties, representations and covenanted undertakings, including in respect of compliance with applicable Nigerian environmental laws and relevant World Bank Guidelines relating to prohibited activities.
PRG Support Agreement:	PHCN will enter into a PRG Support Agreement with the L/C Beneficiary under which PHCN would undertake to indemnify the L/C Beneficiary for the loss of revenues resulting from the occurrence of a Guaranteed Event on the basis of drawdown and dispute resolution mechanisms and supporting documentation to be agreed between the parties and satisfactory to IDA and to be consistent with the provisions under the GSAA.
L/C Reimbursement and Credit Agreement:	PHCN will enter into a Reimbursement & Credit Agreement with the L/C Bank in which it will undertake to repay the L/C Bank the amounts drawn under the L/C, together with accrued interest, within a period of twelve (12) months from the date of each drawing.
Indemnity Agreement:	The FGN would enter into an Indemnity Agreement with IDA. Under the Agreement, the FGN would undertake to indemnify IDA on demand, or as IDA may otherwise determine, for any payment made by IDA under the terms of the Guarantee. The Indemnity Agreement will follow the legal regime, and include dispute settlement provisions, which are customary in agreements between member countries and IDA.

PRG Contractual Structure in Support of Gas Supply and Aggregation Agreement



Annex 10 B: IDA Partial Risk Guarantee

Nigeria: Electricity and Gas Improvement Project (NEGIP)

SUMMARY OF TERMS AND CONDITIONS OF IDA PARTIAL RISK GUARANTEE IN SUPPORT OF GAS SUPPLY AND AGGREGATION AGREEMENT BETWEEN CHEVRON NIGERIA LTD, AND POWER HOLDING COMPANY OF NIGERIA (PHCN)

L/C Applicant:	PHCN, severally or jointly, with its Generation Companies.
IDA Guaranteed L/C:	Revolving standby irrevocable letter of credit (L/C) issued in favor of the L/C Beneficiary by the L/C Bank at the request of PHCN. The PHCN's obligations to repay the L/C bank amounts drawn under the L/C will be guaranteed by the International Development Association (IDA). Any amounts drawn by the L/C Beneficiary under the L/C that are repaid by PHCN to the L/C Bank within the L/C reimbursement period would be reinstated as described below.
L/C Beneficiary:	Chevron Nigeria Ltd, (CNL) as operator of the Joint Venture between CNL and the Nigeria National Petroleum Corporation (NNPC).
L/C Bank:	A commercial bank based in Nigeria with an international long-term foreign currency investment grade rating by one of Standard & Poor's or Moody's Investors Services, acceptable to IDA, the PHCN and the L/C Beneficiary.
L/C Form:	The L/C will be issued in a form satisfactory to the L/C Beneficiary, PHCN and IDA.
Purpose:	The PRG would backstop the failure by PHCN to repay the L/C Bank amounts drawn by the L/C Beneficiary under the L/C for payments due to it from PHCN under the Gas Supply and Aggregation Agreement (GSAA) to be concluded between PHCN, the Aggregator (as defined under the GSAA) and CNL following the occurrence of a Guaranteed Event (as defined below).

Guaranteed Events:	PHCN's failure to comply with, its contractual obligations under the GSAA. More specifically these would include: PHCN's failure to pay into the Escrow Account established by the Aggregator in accordance with the GSAA with respect to the following principal obligations: (a) The monthly contractual payment due under the GSAA to the L/C Beneficiary for gas made available for delivery by the L/C Beneficiary in accordance with the gas specifications under the GSAA (or for quantities of non spec gas delivered by the L/C Beneficiary and knowingly accepted by PHCN) as invoiced on a monthly basis; and (b) The contractual payments due under the GSAA pursuant to the reconciliation statement issued under the GSAA.
L/C Amount:	The L/C amount will be capped at the equivalent of 12 months of GSAA payments amounting to a maximum of US$165 million.
Validity Period of the L/C:	10 years.
L/C Reimbursement Period:	Following a drawing under the L/C by the L/C Beneficiary, PHCN would be obligated to repay the L/C Bank the amount drawn under the L/C together with accrued interest thereon within a period of 12 months pursuant to a Reimbursement and Credit Agreement to be concluded between PHCN and the L/C Bank. In the event of a payment by PHCN, the L/C will be reinstated by the amount of the repayment. In the event of a non-payment on the due date, the L/C Bank would have the right to call on the PRG for principal amounts plus accrued interest due from PHCN. Any amount paid by IDA to the L/C Bank under the PRG would be deducted from the IDA Guaranteed Amount and even if PHCN's payment default is remedied, following a payment under the PRG, those amounts would not be reinstated.

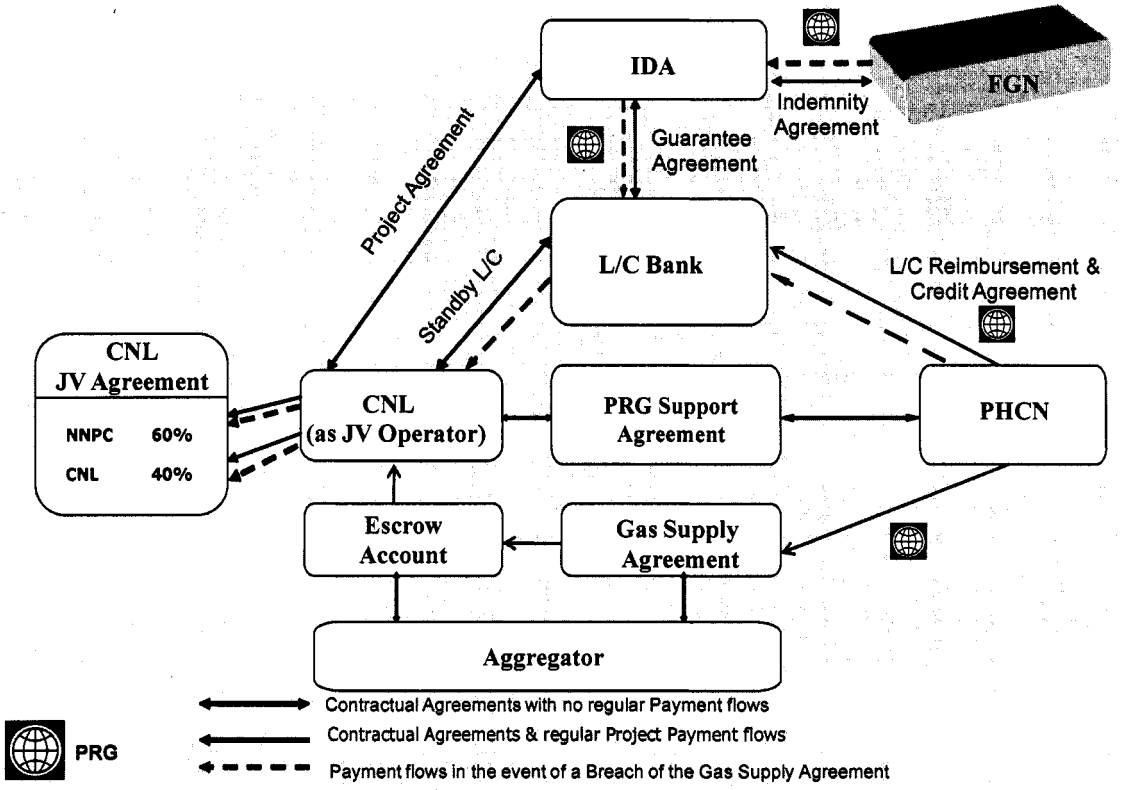
Interest Rate on Drawings During the Reimbursement, Period Charged by the L/C Bank:	An appropriate 'spread' above LIBOR acceptable to the L/C Bank and PHCN and agreed by IDA.
Conditional Payments in the Event of Disputes:	In the event of a dispute between the L/C Beneficiary and PHCN in connection with a Guaranteed Event, the L/C can also be drawn for provisional payments pending the settlement of the dispute, provided that the L/C Beneficiary shall provide to PHCN (with appropriate security acceptable to PHCN) in the amount of the provisional payments in the event the final decision determines that PHCN had no liability or its liability was for less than the amount of the provisional payments.
IDA Guaranteed Amount:	The Guarantee will be capped at 12 months of payments under the GSAA up to a maximum amount of US$165 million, plus accrued interest.
Maximum IDA Guarantee Period:	The L/C period plus 14 months.
IDA Guarantee Fees:	0.75% per annum on IDA guaranteed amounts outstanding, payable six monthly in advance by the L/C Beneficiary.
Front-end Fees:	(a) An Initiation Fee of 0.15% of the guaranteed amount (but not less than US$100,000) for internal Project preparation payable by the L/C Beneficiary. (b) Processing Fee of up to a maximum cap of 0.50% of the guaranteed amount to cover IDA designated reimbursable expenses payable by the L/C Beneficiary.
L/C Fees:	To be payable by the L/C Beneficiary to the L/C Bank.

Conditions Precedent to the effectiveness of the IDA Guarantee:	Specific conditions will include the following: (a) Execution, delivery and effectiveness of the GSAA in a form and substance satisfactory to IDA. (b) Execution, delivery and effectiveness of the Gas Transportation Agreement in a form and substance satisfactory to IDA. (c) All relevant host country environmental approvals required for the operation and compliance with all applicable IDA requirements relating to prohibited activities[25]. (d) Provision of relevant satisfactory legal opinions from: (i) the Attorney General of the Federal Republic of Nigeria relating to the Indemnity Agreement; (ii) counsel to PHCN relating to the PRG Support Agreement and the Reimbursement and Credit Agreement, and (iii) counsel to the L/C Beneficiary relating to the Project Agreement and the PRG Support Agreement (e) Payment in full of the Initiation and Processing Fees, and the first installment of the Guarantee Fee. (f) Conclusion of a Guarantee Agreement between the L/C Bank and IDA, Reimbursement and Credit Agreement between L/C Bank and PHCN, a PRG Support Agreement between PHCN and the L/C Beneficiary, a Project Agreement between the L/C Beneficiary and IDA, and an Indemnity Agreement between IDA and the Federal Republic of Nigeria (FGN).
Guarantee Agreement:	The terms and conditions of the IDA Guarantee would be embodied in a Guarantee Agreement between the L/C Bank and IDA.

[25] Prohibited Activities include corrupt, fraudulent, collusive, coercive or obstructive practices.

Project Agreement:	The L/C Beneficiary would enter into a Project Agreement with IDA in respect of its Guarantee. Under such Agreement, the L/C Beneficiary will provide relevant Project information, and make warranties, representations and covenanted undertakings, including in respect of compliance with applicable Nigerian environmental laws and relevant World Bank Guidelines relating to prohibited activities.
PRG Support Agreement:	PHCN will enter into a PRG Support Agreement with the L/C Beneficiary under which PHCN would undertake to indemnify the L/C Beneficiary for the loss of revenues resulting from the occurrence of a Guaranteed Event on the basis of drawdown and dispute resolution mechanisms and supporting documentation to be agreed between the parties and satisfactory to IDA
L/C Reimbursement and Credit Agreement:	PHCN will enter into a Reimbursement & Credit Agreement with the L/C Bank in which it will undertake to repay the L/C Bank the amounts drawn under the L/C, together with accrued interest, within a period of twelve (12) months from the date of each drawing.
Indemnity Agreement:	The FGN would enter into an Indemnity Agreement with IDA. Under the Agreement, the FGN would undertake to indemnify IDA on demand, or as IDA may otherwise determine, for any payment made by IDA under the terms of the Guarantee. The Indemnity Agreement will follow the legal regime, and include dispute settlement provisions, which are customary in agreements between member countries and IDA.

PRG Contractual Structure in Support of Gas Supply and Aggregation Agreement



Annex 11: Safeguard Policy Issues

Nigeria: Electricity and Gas Improvement Project (NEGIP)

Introduction

1. When initially conceived, NEGIP was envisioned as providing PRGs for new gas-fired generating capacity to be developed as IPPs, financing construction of transmission lines to connect the new plants to the national grid, rehabilitating existing generating stations, improving distribution, and, added later, providing PRGs for gas supplies to existing plants. The project was originally classified in Category A for EA and, as specific plant and transmission line locations were not known, the borrower prepared and disclosed an ESMF and RPF to guide safeguards work that would be required during implementation. The final drafts of the ESMF and RPF were disclosed in Nigeria under the auspices of the Federal Ministry for Environment, Housing and Urban Development on October 20, 2008. The document was made available for review and comment at:

- Offices of the Federal Controllers of Environmental in 14 States.
- State Ministries of Environment in 14 States.
- Federal Ministry of Environment Library, Abuja.
- PHCN-PMU office and website.
- TCN HQ Office in Abuja and its Regional Offices in Lagos, Kaduna, Bauchi and Enugu.
- PHCN Distribution & Marketing Zonal Offices in Abuja, Benin, Enugu, Port Harcourt, Kaduna, Jos, Yola.
- Thermal Generation Stations in Afam, Egbin, and Sapele.
- IPP Offices at Ibom Power and Total Elf Port Harcourt.

PMU delivered a copy of both drafts to the PIC at the World Bank's Abuja Office on October 20, 2008. Disclosure at the InfoShop occurred on October 23, 2008.

2. The composition of the project subsequently changed to focus on immediate gas supply problems; IPPs and associated new electric transmission lines are no longer included, nor is rehabilitation of existing generating stations. The project focuses on improving electric transmission and distribution, primarily by rehabilitating and reinforcing existing facilities, and on increasing power generation by promoting adequate, reliable supplies of natural gas through provision of PRGs for gas supply contracts. Consequently, the project has been reclassified in EA Category B. The first two years' investments have been identified. The related five ESMPs have been prepared and disclosed. The ESMF provided guidance for their preparation, and it remains effective to guide safeguards work in years three and later. None of the planned investments in the project involves land acquisition or resettlement. The RPF was therefore not needed and is not summarized in this Annex, but it too remains effective; it and the ESMF will be useful as well in subsequent Bank operations in the sector in the next few years. The ESMF, the ESMPs for the first years' program, and the pipeline integrity study for ELPS are discussed in separate sections of this annex.

3. As explained in the main text of this PAD, it is possible that OCs/gas companies delivering gas to PHCN power plants with the backing of Bank PRGs will see new market

opportunities, not only for export and for firm domestic consumption (facilitated by this project), but also possible future growth in domestic consumption thanks to a demonstration of reliable supply of good quality gas. If so, OCs may decide to drill new gas wells or construct extensions to gas collection systems. Because of the nature of the production system, gas transport system, and market, it would be very unusual to know whether any, or which, new wells or extended collection systems would be directly attributable to gas deliveries under Bank-guaranteed contracts. Once produced, collected, and processed, gas transported by pipeline becomes fungible and potentially delivered to any one of a wide variety of end users. Under these circumstances, it is unrealistic for the Bank to try to reach further "upstream" in direct project safeguards work than the integrity studies it is requiring for the existing pipelines through which the OCs will deliver the gas. The Bank does not have leverage to apply its policies to such upstream developments due to the physical and geopolitical situation in Niger Delta. It will rely instead on existing Nigerian regulations. PRG Project Agreements would have an undertaking from the relevant OCs that they would notify the Bank about their permit applications to the Ministry of Environment and the Department of Petroleum Resources so that the Bank can assure itself that Nigerian regulations are being followed. The OCs would also confirm receipt of the necessary permits for the wells. In the event of non-compliance the Bank would have the right to suspend the PRG until such time as the default is remedied.

4. The capacities of FME and DPR in implementing and enforcing provisions of Nigerian law with respect to IOC gas wells and gas gathering systems will be strengthened during project implementation through technical assistance. As an initial step towards implementing this technical assistance, the Bank has conducted a preliminary review of the legal, regulatory and institutional framework for environmental assessment and management in the gas sector in addition to that which is presented in the ESMF. It is summarized at the end of this Annex. During implementation of NEGIP, the borrower will carry out a more in-depth institutional analysis so that gaps in capacity can be identified more precisely and addressed. The TORs for this work have been drafted.

Content of the ESMF

5. In addition to its summary and introductory material, the ESMF covers the following topics:

- A general description of the environment.
- Relevant World Bank safeguards policies.
- The Nigerian regulatory framework.
- An explanation of the safeguards preparation, review and approval process for NEGIP.
- A summary of potential impacts of NEGIP investments.
- Institutional capacity for environmental management.
- Annexes including a summary of consultations held leading up to the draft ESMF, and guidelines for preparing environmental management plans.

6. **Environmental and Social Impacts of NEGIP.** The ESMF includes tables summarizing the potential impacts of each type of subproject that could be supported under the original design of NEGIP, and the mitigation measures that are typically applied to each impact. Since the project will not be supporting development of new generating facilities, rehabilitation

of existing generating facilities, and construction of new transmission lines, the information in the ESMF on their impacts is not summarized in this Annex. Table 11-1 is reproduced from the ESMF tabular summary for rehabilitation of existing facilities, noting that the proposed project will not be supporting rehabilitation of generating stations.

7. The ESMF includes a section that discusses the situation in the Delta. Some Delta-related issues, as summarized in the ESMF, are listed below.

- The Delta communities historically have not benefited proportionately from the extraction of oil and gas.
- Transparency and dialogue are essential ingredients for successful development in the Delta. This should encompass a range of stakeholders, not just those that represent one or other poles of the tension and conflict. This is important even for subprojects not located in one of the Niger Delta states; there are national NGOs with the mission of "peace in the Delta" that can provide valuable advice.
- Although gas flaring is not the sole cause of environmental degradation across the Delta, it is looked upon as such by many residents and other stakeholders. There will inevitably be expectations that NEGIP will reduce gas flaring. It is easy for unreasonable expectations to develop, and it is difficult for any individual generation project to trace the sources of gas, quantify the amount of associated gas consumed, and point to the extinguishing of any particular flare.

8. **Safeguards Preparation, Review and Approval Procedure**. The procedure defined in the ESMF incorporates the requirements from the Federal Ministry of Environment of Nigeria as specified in the Environmental Assessment Act (Decree No. 86 of 1992, hereinafter the EIA Act), the World Bank's OP 4.01, and IFC's Performance Standard 1. Compliance with this procedure will constitute part of the evaluation methodology for proposed subprojects prior to approval for NEGIP support. The steps in the process are project screening, environmental studies and document preparation, EIA review and approval, and oversight of implementation. Stakeholder consultation is an integral part of the preparation process, and public disclosure and comment are necessary prior to the decision to accept or reject a proposed subproject on the basis of environmental and social information.

9. ***Screening***. The screening decision has three parts: the assignment of the environmental assessment category, the determination of the safeguards instrument(s) that should be prepared, and the identification of applicable safeguards policies.

10. In **Step 1**, the proponent should propose the category, using the criteria discussed below. The ERSU of the Project Management Unit (PMU), in conjunction with the Federal Ministry of Environment, will review and confirm or modify the category, based on the description of the proposed activity and findings from field visits. All subprojects in NEGIP are going to be EA Category B (except for TA, which is mostly Category C), and FGN Category II, requiring partial assessments and ESMPs. In subsequent IDA projects there may be some subprojects classified as Category A and FGN Category I, requiring full EIAs. Criteria for Categories A and I are similar, as they are for Categories B and II. In case the categorization is split, e.g., Category B under OP 4.01 and Category I under the EIA Act, the more stringent category will apply. Table

11-2 below provides guidance for screening based on the scale and type of project and the potential impacts that can be envisioned. Results from the table are automatically superseded by FGN mandatory requirements for preparation of a full EIA, and thus for assignment to Categories A and I, that are specified in the Schedule to the EIA Act. The mandatory requirements that could be applicable to NEGIP are:

- Conversion of hill forest land to other land use covering an area of 50 hectares or more.
- Logging or conversion of forest land to other land use within the catchment area of reservoirs used for municipal water supply, irrigation or hydro power generation or in areas adjacent to state and national parks and national marine parks.
- Conversion of mangrove swamps for industrial, housing or agricultural use covering an area of more than 10 hectares.
- Construction of steam generated power stations burning fossil fuels and having a capacity of more than 10 megawatts.
- Construction of combined cycle power stations.

11. For **Screening Step 2**, Table 11-2 provides an indication of the safeguards instrument likely to be needed for each type of subproject, but in many cases the decision depends, as noted there, on the scale and location of the project. The proponent of a subproject is encouraged to propose the safeguards instrument, but the Environment, Resettlement and Social Unit (ERSU) will review and confirm. FME should be consulted when there are questions of EA category or appropriate safeguards instrument, particularly when the subproject is or is likely to be in Category I. Rehabilitation of existing facilities will require environmental audits. In the case in which NEGIP is providing a PRG for delivery of gas to power plants through existing gas pipelines, the pipeline owner/operator will be asked to carry out a pipeline integrity and safety analysis.

12. **Screening Step 3** is to determine which of the Bank's safeguards policies may be triggered by the particular subproject and what is required to comply with each triggered policy. This determination is subject to review by ERSU and the Bank. The ESMF includes an annex with guidance for determining the policies that are triggered. OP 4.01 (Environmental Assessment) is the only operational policy triggered for the proposed project.

Table 11-1: Typical Impacts and Mitigation Measures for Rehabilitation of Existing Substations

Project Activities / Environmental Aspects	Potential and Associated Impacts	Mitigation Measures
Environmental Management Plan and Health and Safety Plan do not exist or are not being implemented.	Workplace health and safety risks are not being adequately managed.	• Develop and/or implement EMP and HSE Plans. • Correct substandard conditions requiring urgent attention. • Develop and implement an action plan to correct other deficiencies. • Identify and empower (or recruit) responsible individuals to manage health, safety and environment at the facility. • Start or restart awareness training.
	Effluent, emission and noise standards are not being complied with. Ambient conditions in the area exceed standards.	
	Solid waste management is substandard, with abandoned equipment and accumulations of trash and litter widespread.	
	Spills and leaks have contaminated soil, structures, and possibly groundwater.	
Environmental and health and safety monitoring is not being conducted.	No database by which to judge compliance with standards in the workplace, or in effluent and emissions.	• Formulate and/or implement monitoring plans. • Repair or obtain monitoring equipment. • Identify and empower (or recruit) responsible individuals to manage monitoring program.
	No database to discern effects on ambient conditions.	
Immediate and severe health and safety risks exist in the workplace.	Workers exposed to hazardous substances such as asbestos, PCB contamination.	• Restrict access and provide protective equipment until condition is abated.
	Workers exposed to high noise levels, poor ventilation or lighting, etc..	• Correct conditions. • Enforce use of PPE.
	Workers exposed to risk of electrocution because of old or poorly-maintained equipment, lack of safety procedures.	• Post warning signs and restrict access until condition can be abated. • Institute or reinstate "lock-out and tag-out" and similar procedures.
Hazardous	Workers exposed to risk.	• Obtain expert advice in developing a remediation plan.

Project Activities / Environmental Aspects	Potential and Associated Impacts	Mitigation Measures
substance contamination.	Contamination has or may spread off-site through air, surface or groundwater, or improper disposal.	• Implement the plan. • In the interim, contain the contamination and restrict access to contaminated areas. • Test local water supplies and, if affected, provide alternative sources.
Inadequate security provisions for the facility.	Social conflict between the facility and the surrounding community. Vandalism or sabotage. Risk of electrocution or injury from contact with high-voltage equipment	• Establish effective, ongoing community relations program. • Install fences and other security features around all dangerous or vulnerable facilities. • Post warning signs. • Employ adequate number of security personnel.

Table 11-2: NEGIP Subproject Types, Major Environmental and Social Concerns and Probable Category

Project Type	Potential Major Environmental and Social Concerns	Environmental Category Safeguards Instrument
Upgrading of existing transmission and distribution lines.	Resettlement of affected settlers, damage to habitat and infrastructure by construction vehicles, temporary disruption of business.	B/II. Site-specific or generic EMP.
Reinforcement or upgrading of existing substations.	Minimal impacts; may be "legacy" issues of environment, safety or health.	B/II. Generic EMP; preliminary audit if appropriate.
Guarantee for regular delivery of gas through existing pipelines.	Public health and safety, pipeline security, potential sabotage.	Category B. Pipeline Integrity Study.

13. ***Preparation of Safeguards Instruments***. Preparation of the applicable safeguards instrument is the responsibility of the subproject proponent/sponsor, whether it is a private investor or a government agency. Where an EIA is being required for a subproject, its proponents should take note of Article 2(4) of the EIA Act that requires direct liaison with FME:

14. *All agencies, institutions (whether public or private) except exempted pursuant to this Decree, shall before embarking on the proposed project apply in writing to the Agency, so that subject activities can be quickly and surely identified and environmental assessment applied as the activities are being planned.*

15. EIAs and EMPs must cover the minimum content specified in Article 4 of the EIA Act as well as in Annexes 4 and/or 5 of OP 4.01. Annexes to the ESMF summarize the required content of EIAs and EMPs. Pipeline integrity studies assess the integrity of the line, its safety record, and its vulnerability to accidental damage and intentional damage by third parties. They are conducted by specialized experts and, unlike all other safeguards instruments, are not publicly disclosed, as they contain sensitive information that could be used by would-be saboteurs.

16. ***Public Disclosure and Consultation.*** The procedure for consultations on subprojects should conform to OP 4.01 and the EIA Act. OP 4.01 requires consultation with stakeholders at least twice during EIA preparation for Category A projects – once early in the environmental studies to ensure that the terms of reference reflect all issues of concern and once after the final draft has been publicly disclosed but before the approval decision is taken. More frequent consultation is encouraged on both Category A and B projects. Article 7 of the EIA Act specifies that:

17. Before the Agency gives a decision on an activity to which an environmental assessment has been produced, the Agency shall give opportunity to government agencies, members of the public, experts in any relevant discipline and interested groups to make comment on environmental impact assessment of the activity.

18. For NEGIP, safeguards work on subprojects entails an initial consultation of affected populations and interested NGOs as well as relevant agencies of federal, state and local governments, to inform them about the proposed activity and solicit recommendations, questions and concerns to be addressed in environmental and social assessment. Once drafts of safeguards documents are completed, they must be disclosed.

19. Both Nigeria and the Bank require public disclosure of EIAs, EMPs, and RAPs. The Bank's requirements are the most detailed and, to comply with them, safeguards documents for NEGIP subprojects will be disclosed in the same way as the ESMF – that is, at public locations in the area affected by the project as well as in appropriate State and Federal agencies, and at the Public Information Center at the World Bank office in Abuja and the InfoShop at Bank Headquarters in Washington. Following a time period adequate for the review of those documents, which for NEGIP is defined as 60 calendar

days for Category A subprojects and 30 calendar days for Category B, a second consultation is required, after which final comments are received and final documents are prepared and disclosed. It is a policy of the Bank that consultations and disclosure should be in form and language accessible to the stakeholders, and that consultation should continue throughout project implementation.

20. NEGIP is establishing a stakeholders' forum for ongoing consultations during implementation. It will provide a channel for stakeholders to brainstorm on how to move the sector forward, raise concerns, and seek answers. It will provide easily accessible means of interaction between project implementers and citizens to discuss what the project is responsible for, documenting their concerns and how the project will either address concerns or not.

21. ***Safeguards Review and Approval.*** No proposed subproject can be approved for NEGIP support until the required ESMP or integrity study, has been approved by the cognizant agency. For any project requiring an EIA, approval from FME is the first formal step. FME has the discretion to require a public hearing as part of its review process, and to refer projects to a Joint Review Panel when it deems that to be appropriate. FME's review report is a public document, and the EIA Act requires that it be provided to any interested party. The PMU (via ERSU) and the Bank will also review and approve EIAs for Category A subprojects, after FME has issued the certificate that indicates satisfactory completion of the environmental assessment.

22. The review process for subprojects that only require EMPs is simpler, as it does not involve FME. The first reviewer will be the PMU, via the ERSU. The Bank will review a representative number of ESMPs for Category B. Subprojects would also have to be reviewed and cleared by the Bank, to ensure compliance with its safeguards policies. Bank prior review will be suspended if the initial ESMPs are of good quality, and the Bank will thereafter review implementation of completed ESMPs as part of project supervision.

23. The ***Importance of ESMP Implementation.*** The key to ensuring the sustainability of the NEGIP lies in the implementation of the ESMP. If this is not done well, most of the potential risks highlighted in this document will become real causes for concern. To mitigate this risk, the ERSU of the PMU must be equipped to monitor the implementation of ESMPs in transmission and distribution subprojects.

24. **Institutional Capacity for Environmental Management.** The ESMF includes a section on the capacities of the main actors in environmental management for NEGIP. ***ERSU.*** The Environment, Resettlement and Social Unit (ERSU) was established within the Project Management Unit (PMU) of PHCN to ensure compliance with national and international environmental regulations and with the Bank's safeguard policies. The staff includes environmental and social specialists. ERSU has a proven track record of satisfactory preparation of EIAs, EMPs, and/or Environmental Audits for transmission and distribution system investments following the framework approach. Two Bank supported projects in the sector implemented by the PMU – the Transmission

Development Project (TDP) and the National Energy Development Project (NEDP) – have ESMFs. The NEDP also has an RPF, and ERSU prepared the terms of reference for the first RAP that was used in the NEDP. ERSU prepared the NEGIP ESMF and RPF in-house, with advice from Bank staff, and it has been responsible for formulating the PHCN environmental policy, the TCN environmental policy and, more recently, PHCN's "HIV/AIDS Work Place Policy".

25. **Under** NEGIP, ERSU's role will expand to include oversight functions in compliance with the ESMF. ERSU will be monitoring to keep PMU and the Bank informed on safeguards performance. For this purpose, it is recommended that ERSU staff receive additional training to cover environmental and social aspects of power generation under NEGIP, Bank policies and operations, and issues of global warming, climate change, biodiversity conservation and ecosystem management.

26. ***TCN.*** As a result of institutional strengthening under TDP, TCN now has an environmental and social unit in its Abuja head office and, in 2008 had been about to begin posting additional environmental staff to the transmission substations. This substantial expansion of environmental and social management capacity for transmission activities has not advanced as expected and needs to be reinvigorated. ERSU is on paper organizationally a part of the TCN environmental unit, but it continues to be located at PMU and to report to the PMU Manager. The TCN unit should be fully established, using the ERSU from PMU as a core. TCN needs to establish regional ERSU's in the six transmission regions in order to oversee compliance with corporate HSE rules and the safeguards requirements of NEGIP. Each facility receiving NEGIP assistance for rehabilitation will have to have on site a designated HSE officer.

27. ***PHCN***, in addition to the ERSU staff, includes other professionals experienced mainly in occupational health and safety, way-leave (for property valuation and compensation), chemistry and laboratory sciences. They monitor standards for the effluents and other activities of PHCN that must conform with laid down chemical specifications. Audits of the PHCN facilities required every three years under the EIA Act are done through hired consultants and the reports are forwarded to the Federal Ministry of Environment as required by law. The project TA will improve capacity of FME to enforce this requirement.

28. ***FME.*** The Federal Ministry of Environment is the agency of FGN responsible for setting policy guidelines on environmental issues and ensuring compliance with national environmental standards. It has different departments with field offices in every region of the country. FME has three main divisions:

- The EIA Division, responsible for the review of EIA of all new projects, including: that the required level of assessment is conducted; that the various review mechanisms for an EIA are properly applied, with emphasis on the participation of the stakeholders; and that the periodic environmental audits are conducted and reviewed. This division is responsible for issuance of environmental certificates and permits.

- The Standards and Monitoring Division, which sets environmental standards, monitors compliance through review of self-monitoring data, and applies necessary sanctions for non-compliance.
- Oil and Gas Division, responsible for the monitoring of environmental compliance in the oil and gas sector.

FME faces some implementation issues in carrying out its mandates, summarized below:

- FME has low capacity for monitoring and data collection, there is no central data collation/management, and the data are segregated, limiting the meaningful usage in environmental planning. Data sharing, within the ministry, and across departments is limited.
- FME lacks an adequate operating budget and is short of vehicles and other equipment needed for site visits and monitoring of compliance with EIAs.
- Because there are several different EIA processes currently operational in the country,[26] there are no common interaction procedures with urban and regional planners or with the environmental unit in DPR. The existence of three different systems and three different sets of agencies create confusion and increases transaction costs.
- There are loopholes in the different sets of legislation for EIA, and the legislation allows projects to be excluded from EIA requirements in the case of a national emergency or if they are considered to be in the interests of the public health and safety.
- NEGIP, through its technical assistance component, will assist FME and DPR in strengthening its capacity to enforce EIA requirements and monitor EIA and ESMP implementation in development of gas wells and gas gathering systems by IOCs. The specific content of the TA for FME will be developed during NEGIP implementation.

29. ***DPR.*** One of the statutory responsibilities of the Department of Petroleum Resources is ensuring that petroleum industry operations do not degrade the environment. This covers the control of pollutants from various petroleum exploration, production and processing operations, terminal operations, hydrocarbon processing plants, oil and gas transportation and marketing as well as control and limitation standards for effluents. The regulations that govern this function of DPR are captured in "Environmental Guidelines and Standards for the Petroleum Industry in Nigeria" (EGASPIN) of 1991, revised in 2002.

DPR's process for the approval of EIAs and issuance of environmental permits may be summarized as follows:

(i) The types of project or activities requiring EIA reports include:

[26] EIA of the Petroleum Act (DPR), the Town and Country Planning Decree, and the EIA decree of 1986.

- All Seismic Operations.
- Oil and gas field development onshore, near shore, offshore and deep offshore:
  - (a) Installation of wells.
  - (b) Construction of crude oil production, tank farm and terminal facilities
- Laying of crude oil and gas delivery line, flow line and pipeline in cumulative excess of 20 km length and/or as determined by the Director of Petroleum Resources.
- Hydrocarbon Processing Facilities:
  - Oil refineries and petrochemicals, Liquified Natural Gas/Natural Liquids/GC & P plants, Liquefied Petroleum Gas (above 20,000 litres), blending plants and products filling stations.
  - Construction of product depot with combined capacity of 50,000 bbls or more.
  - Construction of waste treatment or disposal facilities.
  - Dredging Activities of above 500 m^2

(ii) An EIA report prepared for DPR assesses all actions that will result in a modification of the physical, chemical, biological, cultural, or social environment as a result of the new project/development. The EIA and permitting process under DPR proceeds as follows:

- The project or activity is conceptualized by an operator or licensee.
- An initial assessment/environmental screening and scoping of significant issues are carried out on the concepts by the initiator and the DPR.
- An environmental Screening Report (ESR) of all optional concepts being evaluated is produced and reviewed with the DPR.
- A preliminary assessment of impacts is carried out. The preliminary EIA report (PEIAR) must be approved by the DPR before an approval of the project conceptual plan is granted to the initiator.
- If review of the PEIAR confirms that there are no potentially significant impacts, DPR may permit the project/activity to proceed with appropriate mitigation measures and monitoring.
- If the PEIAR identifies potentially significant impact:
  - DPR and the project initiator draw up the scope of work for the detailed EIA study.
  - A draft EIA is produced by the initiator and submitted to the DPR for review.
  - The final EIA is produced by the initiator and submitted to DPR at the end of detailed engineering design for approval.
  - Approval is followed by post-EIA monitoring.
- The initiator shall also satisfy any other conditions required by other government authorizing body [e.g., FME].

30. ***State Environmental Agencies.*** States and Local Government Councils (LGCs) are encouraged to set up their own environmental protection agencies. There are however, numerous differences between states in terms of institutional arrangements for environmental management. In some states such as Adamawa, there is a Ministry of Environment and a self-accounting EPA that reports to the Commissioner of Environment. In others, such as Cross River, the EPA is subsumed within the State Ministry of Environment.

31. ***Environmental and Social Impact Management Capacity-Building Under NEGIP.*** Table 11-3 is excerpted from the ESMF. The total cost for activities to be supported under NEGIP will be US$2.3 million.

Table 11-3: ESMF Recommendations for Strengthening Environmental and Social Impact Management Capacity

S/N	Item	Remark	Cost (USD)
1	Administrative costs	Procurement of office equipment, laptop computers, digital cameras with GPS device, scanners, GPS devices and GPS software, GIS software, procurement of maps, satellite images.	$ 300,000
2	Consultancy	Pipeline Integrity Studies	$ 400,000
		Site-specific EMPs (6)	$ 150,000
		Environmental Audits	$ 100,000
		Total	$ 650,000
3	Operational and Maintenance Cost	Consultations with stakeholders, stakeholders sensitization workshops, meetings, fuelling and maintenance of field vehicles, community liaison, Monitoring and site inspection, audit inspections and production of reports, procurement of two (2no.) 4 x 4 monitoring vehicles.	$ 750,000
4	Capacity building and Training for ERSU	Training on climate change and additional skills required to evaluate power generation.	$ 200,000
5	Capacity Building and Training for GenCos, TCN and DisCos	Training in EIA, Environmental Audit, and Environmental Management Workshops for ERSU staff in GenCos, TCN, IPPs and DisCos.	$ 200,000
6	Capacity Building and training for FME and DPR	Training in review of EIAs for gas production and delivery systems and monitoring of EIA implementation.	$ 200,000
TOTAL			$ 2,300,000

32. **Consultation on the ESMF.** An initial stakeholder workshop was conducted by the Bank at the project concept stage, on May 2, 2008 in the Bank's Abuja office. A complete list of the 39 participants is annexed to the ESMF. Eighteen different NGOs were represented. Officials from Ministry of Finance, NERC, PHCN, NNPC, and REA attended, along with four Bank staff. See Annex 12 A for a summary of the questions asked and recommendations made by NGOs.

33. The project will not fund activities that would cause any form of land acquisition or restriction of access to sources of livelihoods. The potential social impacts of project's activities will be small-scale and site-specific; and thus easily remediable typical of category B projects. The likely positive social impacts would arise from increased availability and reliability of electric power, while negative impacts could be classified as: (i) minor for rehabilitation and operation of electrical transmission and distribution infrastructure (ii) moderate for the public health and safety risks involved in transporting gas through existing pipelines under PRGs. The project is aware of the political economy of Niger Delta and is fostering consultation(s) with stakeholders during the preparation and will intensify it during implementation, and feedback provided will add value to the project and will be used to facilitate dialogue with government and stakeholders during project implementation, as explained in Annex 12 and 12 A.

Summary of the Environmental and Social Management Plans for Investments in Transmission and Distribution

34. An Environmental and Social Management Plan (ESMP) was prepared by the project and disclosed country wide including at the venue of the consultation with stakeholders, PHCN website. This ESMP is particularly designed to address the environmental and social impacts that might arise from the rehabilitation activities at the respective transmission substations and, because the environmental issues that arise at the substations are similar, the ESMP has been prepared as a "generic" document. During implementation, individual ESMPs will be produced for each facility so that they can be included with bidding documents and compliance with them can be made contractual obligations of the contractors carrying out the work. This Annex presents a summary of the ESMP. However, to properly situate this plan, the prevailing conditions at the sub-stations (Akangba, Alagbon, Ikeja West and Kaduna) are presented first.

Environmental and Social Safeguards Issues at the Sub-Stations and Workshop:

35. Transmission Sub-Stations: The environmental issues identified in the sub-stations are largely similar. The rehabilitation work to be done at all the stations will involve the installation of additional transformers to relief the existing ones. This will involve excavating the soil to cast foundations for the transformers and other switch yard equipment thus exposing the soil to erosion. The substations are dotted with scrap materials of different kinds, spare and decommissioned equipment are also kept in the open. The installation of new equipments and decommissioning of obsolete ones such as transformers and switchyard would lead to the generation of more wastes. There is also the concern for the handling of PCB and PCB-containing equipment at the substations.

In addition, the Alagbon Transmission substation and the cable trenches are at the verge of submergence. The premises have sunk by at least 1 meter. This exerts tension on the cables and subsequently the terminal points at the control equipment. The switchyard is practically unrecognizable and virtually impassable during the rainy season.

36. Ijora Workshop: This project proposes to support the renovation, refurbishing and equipping of Ijora workshop where damaged transformers and other equipments are repaired. However, unlike transmission stations, which are standard, the proposed upgrading of the transformer repair workshop in Ijora is a substantial operation, in which a former power plant, which is heavily contaminated with used oil and debris, is planned to be upgraded into a comprehensive workshop capable of accepting large transformers for repairs. The building is obsolete, the roof leaks, large cement platforms and pits make the building unusable for most of its area. The building however is ideally located (centre of Lagos), is not settled by squatters, and has a 60-ton crane capable of lifting large transformers. It is currently used as a workshop, but major upgrading works would make it more efficient. Environmentally acceptable disposal of large amounts of waste would be part of the operation. A five-member committee of PHCN staff was convened in April to develop recommendations for the facility and should be issuing its report in May. The committee will almost certainly recommend an environmental audit, which would be the normal safeguards instrument that would have to be produced in accordance with the ESMF for NEGIP.

Environmental and Social Management Plan (ESMP):

37. In view of the similarity of potential environmental issues from one substation to another a generic ESMP was prepared and disclosed prior to appraisal. Its content is summarized below:

(i) Potentially Significant Impacts and their Mitigation: The ESMP identifies potentially significant impacts that may result from this operation. Accordingly, it also contains a set of activities aimed at mitigating the residual impacts of the project to acceptable limits. These activities include regulatory compliance, Work safety and occupational health, waste management (including PCB oil and PCB oil-containing obsolete equipment), pollution prevention, soil erosion prevention, emergency response, capacity building for the staff, continuous consultations with stakeholders and production of IEC/BCC materials on safeguards awareness. The activities have detailed timelines and are well budgeted for. To ensure successful implementation of the ESMP, a checklist of issues peculiar to each of the sub-stations to be addressed are attached to ESMP as annexes.

(ii) Institutional Arrangements for the Implementation of the ESMP
The ESMP has a lean but fit institutional arrangement with clear roles, responsibilities and rules of engagement for its implementation. Specifically, Environment, Resettlement and Social Unit (ERSU), TCN at the National Headquarters is the apex organ responsible for environmental and social safeguards issues of this project. Hierarchically, this is followed by the regional

ERSU. The regional ERSU is made up of three sub-units: Environmental Management, Health and Safety and Socio-Economic Subunits. The Regional ERSU is headed by a manager. Finally, there is the Environment/Safety officer at the substations (work centre) who is responsible for all safeguards issues at that level.

(iii) Capacity Building for the Implementation: In recognition of the capacity building needs of the PMU, the ESMP has a detailed training program for the relevant personnel based on the needs assessment interviews that were conducted during the preparation of the ESMP.

(iv) Monitoring ESMP Implementation: An effective monitoring and evaluation system with clear and measurable indicators is contained in the ESMP. It provides for regular reporting to inform management decision on environment and social safeguards compliance of the project. In addition, the monitoring and evaluation system has a feedback loop to influence implementation of project activities on the ground.

Summary of the Findings and Recommendations of the Update to the Integrity Study of the Escravos-Lagos Pipeline System

38. *On the technical integrity of the ELPS*: With the remedial work carried out as a follow-up to the intelligent pigging of the ELPS, the technical integrity of the system is reasonably sound. It can however be improved if all the remaining remedial work is carried out. The critical remedial works needed to upgrade the mechanical integrity of the ELPS to world standard will include: general valve and pig trap maintenance; continuous maintenance of the ROW; general refurbishment of electrical, instrumentation, safety systems, and controls; and complete redesign and replacement of large parts of the SCADA and telecoms systems.

39. *On the safety and security of ELPS:* The technical safety of the ELPS, with the remedial work that was implemented as a follow-up to the PENSPEN integrity study, is fairly acceptable. The operational history of the system from the safety point of view for the past 20 years can also be described as acceptable. According to the information obtained from NGC records the few safety issues has been caused by delivery of wet gas to end users, i.e. with substantial amount of condensates leading to safety breaches at end users facilities. Adequate control of condensates at all necessary parts of the supply chain must be built into the ELPS supply system. The level of technical safety presently achievable on the ELPS will be improved when the remaining remedial actions highlighted in the report are implemented. The remedial actions are, in general, the un-implemented key actions from the 2000 ELPS Integrity Study:

- Refurbishment of Pig Launching and Receiver Stations.
- Restoration of malfunctioning portions of the Cathodic Protection Systems.

- Replacement of mechanical and Instrumentation components at the Warri Oben stations.
- Redesign and replacement of the SCADA system.

Summary of the Review of Environmental Institutions and Laws in Nigeria

40. This review, undertaken prior to appraisal as a precursor to the capacity-building elements of the technical assistance component, covers the institutions and laws in Nigeria that are relevant to environmental management, particularly for the hydrocarbon industry. It is based on discussions with officials of the Nigerian Federal Ministry of the Environment (FME), petroleum companies, the Nigeria National Power Holding Company (PHCN) and a literature/internet information search. The institutions reviewed are: the National Environmental Council, the Federal Ministry of Environment, the National Environmental Standards and Regulation Enforcement Agency, the Department of Petroleum Resources housed in the ministry of the same name, and environmental agencies at state and local government council levels. Laws reviewed are:

- National Environmental Protection (Effluent Limitation) Regulations, 1991.
- National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991.
- Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (issued by DPR in 1991, revised in 2002, and known as EGASPIN).
- Guidelines and Standards for Environmental Pollution Control in Nigeria, 1991: Ambient noise standards.
- The Environmental Assessment Act (originally the EIA Decree No. 86) of 1992.
- The Land Use Act of 1978 (as amended in 1990).
- Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) of 1991, revised in 2002.

41. The review concluded with a number of preliminary recommendations. Some of these are outside the purview of NEGIP and the authority of FME, but the last two in particular can be considered further in the technical assistance component of the project.

- *Undertake a strategic environmental assessment (SEA) of the oil sector.* A full assessment of the oil sector based on the views of different stakeholders is needed to systematically address the environmental and social issues in this sector.

- *Legal provisions for community rights in Land Use Act 1978.* The legal provisions in place for community rights and voice in the Land Use Act need to be reconsidered.

- *Need for greater transparency and accountability in public-private sector relations.* Public disclosure of information relating to financial transactions between public sector (particularly those involved in the oil sector) and transnational corporations is required.

- *Improve accessibility of information.* The FME is a great repository of information; however, the public accessibility of this information is very limited. A digital cataloguing, storage and retrieval system of available information, including EIAs, is required.

- *Improve capacity of FME.* Improving the basic capacity of FME, including training, computer literacy, office rehabilitation, laboratory equipment and acquisition of three vehicles for monitoring would empower FME in carrying out of its functions. Training needs identified by FME during appraisal include:

    - Environmental management.
    - Environmental management systems and audit.
    - EIA methodologies.
    - Socio-economic impact assessment.
    - Strategic impact assessment.
    - Risk assessment.

42. *Strengthen capacity of DPR.* The in-depth institutional analysis should be extended to cover DPR as well as FME. DPR sees as its main capacity limitations a shortage of staff and lack of specialized training. Its preliminary list of training needs consists of real-time environmental monitoring and pipeline integrity testing.

Annex 12 A: Communication and Reputational Risk

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. The need for effective internal and external communication support is well recognized by those implementing or affected by large infrastructure or power projects, given their inherent complexities and multi-sectoral characteristics. Public trust and transparency are critical to the effectiveness and sustainability of infrastructure investments, with access to accurate and timely information central to empowering citizens to demand better services and accountability. Underpinning this is the need to improve communications at all stages of the project cycle and to find more effective ways to enlist local media and civil society support in reducing risk exposures in power development for the benefit of all stakeholders. Quality interactions and decision-making informed by all stakeholder positions is critical to development effectiveness.

Management Objective:

To create a positive environment among key stakeholders about the power sector; the NEGIP project and its relationship to the overall sector goal enabling the Government of Nigeria (GON) to improve the performance of power sector.

2. **Communication Objectives:**

- create broad general awareness and support about the reforms in the power sector and the issues related to increased power generation;
- create understanding and awareness between the project and the various stakeholders to promote positive approaches to constructive partnerships;
- ensure transparency and disclosure of project information;
- ensure the implementation and communication programs are based on empirical assessments through public opinion polling enable public participation and building trust between local communities and the project. Work with networks of CSO to deliver information in particular in the Niger Delta;
- ensure the ongoing consultation process provides a forum for communication and action on the sector and the project;
- advance the sustainability and anticorruption aspects within the project;
- manage expectations about the sector and project among stakeholders;
- create dialogue mechanisms between Government and Oil Companies (OCs) to ensure trust and completion of agreement which forms the basis for the PRG;
- ensure buy-in from all internal stakeholders within government and relevant parastatals. Ensure coordination with relevant government Ministries.

3. **Approach:** The project communication function will cover four areas of communication practice. Specifically:

- *Development communication* to engage project interested and affected parties in decisions on different aspect of the project that affect them. To enhance the capacity of project implementers to listen to stakeholders and manage communication at grassroots and national level. To mitigate risks it is important to manage expectations.
- *Corporate communication*, using media and other methods to explain how the project reflects government policy and also explain the role of key institutional partners, implementing arrangements, providing access to information in a timely and transparent manner and improving the image of the project.
- *Internal communication* to facilitate a sector and project "single voice", ensure the flow of timely information among those working on the project, achieving internal consensus about messages before going to external audiences.
- *Advocacy communication* to raise awareness and to win support with the public to explain the rationale and benefit of the development intervention, including tariffs and other contextual changes and to act to build the demand side anti-corruption and sustainability measures.

4. **Stakeholders** – These are restricted to groups with whom *direct contact* in some form is needed. They are groups (or individuals) who require information to either re-disseminate or provide political and other support for the program. They can be classified as:

5. **Decision makers** – they need detailed information, on how the project will be implemented; its relation to overall reform programs; laws and regulations; steps and procedures, who will be affected and how. Decision makers who are also spokespeople will need information so they can respond.

6. **Influencers** – also need details but not as many. They need to know the "features and benefits" of the project and power program – improved service, potential to attract investment, economic benefits etc.

7. **The educated public** – need to understand the "big picture" – the role of government and the private sector; why there are power problems; who is responsible and who will provide support and improvements.

Executive

8. **Senior leaders** of the Government.

Legislative

9. **Members of the National Assembly** and in particular the House and Senate sub-committees on power and petroleum.

10. Key staff to influential members and sub-committees.

PHCN Staff and Management

Managers
Senior Staff Association
Employee Union Members

Affected Communities

Niger Delta
Locations where infrastructure is rehabilitated

The Media

Media editors
Specialist reporters on power and energy issues
Key editorial writers and columnists
Experts on the power and Gas sectors

The Business Community

Umbrella trade and business organizations
International Oil Companies.
Domestic Oil Companies.

11. **Communications Activities:** The strategy can include the following activities:

- develop information materials that provide timely, easy to understand and accurate information to all stakeholders;
- implement an information plan that explains how the project fits into the overall power sector program in Nigeria and the overall sector program;
- manage and develop an interactive web site and ensure constant content management to ensure all relevant information is provided;
- develop in cooperation with the Ministry of Power and the environmental and social unit in PHCN/PMU an ongoing consultation program for the project;
- develop partnerships with CSO to deliver information about the project to affected communities especially the Niger Delta;

- carry out Internal communication within and among the relevant government agencies to facilitate coordination, ensure common messages and the quality of interventions;
- develop a media program that includes the delivery of all information to the media; provides media access to some of the results of the project; builds capacity of the media to understand issues related to NEGIP and the power sector in general; responds to crisis or problems related to the project.
- use a multi-media approach combining print and electronic media, traditional, new media and direct communications to ensure that all segments of the population are reached.
- create an inclusive, open and reliable stakeholder engagement.

12. **Institutional Arrangements:** The project requires a dedicated full time communication manager within the PHCN-PMU for the five-year life of the project. Communication capacity within PHCN and the PMU needs substantive upgrading to carry out the communication program. The communication manager will handle all aspects of project communication program plus liaison with the Bank country communication staff. Working with networks of local CSOs to deliver information in the Niger Delta should be encouraged. The Manager should sit on project and management committees and advise on the communication needs. This person should be empowered to act as spokesperson for the project (along with the project manager). The communication manager should report to the PMU Manager.

13. **Capacity Building:** Along with the other capacity building programs outlined in the component for technical assistance and knowledge transfer, a limited communication capacity building program will be delivered. It will focus on:

- a short workshop to ensure the PMU and PHCN management have a common understanding of communication, how it relates to the program, and a clear understanding on how communication and crisis management will be managed. A common message platform will be developed and shared among all staff;
- a media relations training program for senior managers to better conduct media interviews and discussions with stakeholders;
- communications strategy design, strategic communication and program implementation for the PHCN and PMU communication staff.

14. **Consultations:** The project has already undertaken extensive consultations which have helped build a more positive environment for the program and is required under Bank safeguards policy. A regular forum for discussion related to the project and a platform for stakeholder and affected people to address issues will be implemented under the leadership of the Honorable Minister of Power. Mechanisms have further been outlined in Annex 12 B.

15. **Transparency:** there are two main transparency risks - the availability of all project documentation and the procurement process. The communication manager will:

- Work with the procurement office to ensure that a communication program around procurement is undertaken in compliance with Nigeria and Bank procurement rules related to transparency and information dissemination.
- Establishment of a viable website that is regularly updated (the rest of the project also shares this need) to ensure transparency of project documentation.
- The Bank has its own procedures for posting on its own websites. A good disclosure mechanism for the PHCN for all project documentation needs to be into place that follows on the process described in the ISDS for the ESMF.
- Ensure translations of information in relevant local languages if necessary.

16. **Community Communication:** The communication program will provide information through the media, various community forums; and NGOs. Engagement with NGOs will be ongoing to address concerns they might raise. This work should be undertaken in close cooperation with the environmental and social unit within the PHCN-PMU. Partnerships with CSOs on the communication work are encouraged.

17. **Budget:** A budget allocation from the TA component will be directed to the communication and consultation program. Over the five year period indicative costs to be covered include::

- Staffing the office US$400,000.
- Provision of equipment such as computers, internet access (US$50,000).
- The ongoing consultation program (US$400,000).
- Public opinion polling campaign (US$280,000).
- Partnership contract with CSO to disseminate information and provide outreach to local communities (US$600,000).
- Media relations, seminars, tours and training for media (US$350,000)
- Web management and content provision (US$150,000).
- Publications, documentaries, etc. for information program (US$100,000).
- Internal communication program. (US$100,000).

An indicative budget was developed calling for a budget allocation of US$4.0 million. The above list represents a partial utilization of the proposed funding in the TA component. Once the communication and consultation strategy is fully developed, the balance budget costs for the elements of the strategy will be allocated.

18. **Evaluation:** M & E indicators will be placed in the project related to communication and consultation. Success of the communication strategy will be based on five qualitative criteria:

- acknowledging and managing stakeholders' expectations.
- empowering all voices.
- building trust.
- providing information and building transparency.
- communication role in risk reduction.

Annex 12 B: Consultations

Nigeria: Electricity and Gas Improvement Project (NEGIP)

1. Lessons learned from many previous power projects and from work in power in Nigeria (e.g. West Africa Gas Pipeline) emphasize the importance of broad information dissemination and community inputs into the project and in particular the safeguards, environmental and social aspects of such projects.

2. A consultation program also helps to reduce reputational risk to the Bank and the project. It can help manage expectations of communities who expect benefits from the project; avoid conflict around the project; and help inform and mitigate potential issues that might arise between communities that receive benefits from the project and those that do not.

Continuing Consultation Program

3. As a result of the consultations held with the Minister, parastatals in the power sector; the PHCN/PMU; and civil society; a program for consultation during Project implementation has been developed. These would be multi-stakeholder consultations with a particular focus on communities and civil society. The consultation program would work together with the communication program.

4. The objectives of the consultation process would be:

- Provide a regular update on the progress of the project and the power sector in general.
- Provide information and explanations for power losses and constraints in the sector.
- Provide a forum for potential disputes or other issues that could affect the progress of the project.
- Monitor public perceptions of the power sector.
- Provide input from communities on monitoring and evaluating the project.
- Manage expectations related to benefits from the project.

5. The consultations would also look at following up on comments and actions raised in the consultations held prior to project approval and any subsequent issues raised in the new consultation program. A review of the critical risks outlined in the PAD would also form the basis for consultations. Topical issues of national importance related to the sector would also be covered.

6. At least two regular consultations will be held each year chaired by the Honorable Minister of Power, attended by relevant government departments and parastatals at various locations in the country.

7. The consultation process will be managed out of the PHCN/PMU partnership and could be developed with civil society organizations (e.g. Friends of NEGIP-Network (FoNN)) to provide information and community engagement related to this project. Funding would come from Technical Assistance component of the project.

8. While conceived as a part of the NEGIP this forum could potentially be used for future work in the power sector as a whole.

The Project Consultation Program

9. Extensive consultations were held throughout the development and appraisal of the project:

10. **Pre Appraisal:** A series of consultation processes with Federal Government of Nigeria (FGN); International Oil Companies (IOCs); international banks; bilateral development agencies and representatives of civil society. During this phase of the consultation process more than 170 people from about 43 different organizations were consulted. As part of this total the formal two stakeholder consultations attracted 60 people from 37 different organizations. Consultations included:

- Meetings with IOCs, April - May 2009
- First Stakeholder Consultation Workshop – Abuja, May, 2008[27]
- Second Series of Stakeholder Consultation Workshops – Abuja, March-April , 2009[28]

11. **Appraisal:** During the appraisal mission a further series of formal and informal consultations were held. In the process about 180 people from about 60 different organizations were consulted. The plan was to consult with various categories of stakeholders (government, private sector, and non government and community groups). The consultations were held in three different parts of the country – Abuja, Lagos and Port Harcourt:

- Government wide consultation chaired by the Honorable Minister of Power. This consultation attracted all the stakeholders within government affected by the project. Approximately 30 people from 12 different government organizations attended – Abuja, April 17, 2009.
- In a unique event, given the security issues, for the Bank and its work in the energy sector in Nigeria, a third stakeholder consultation was held in Port Harcourt in the Niger Delta. This was a wide ranging consultation including NIPP, PHCN, PMU and 70 representatives from state, local government and civil society, representing more than 41 organizations; 50

[27] Full report available - Highlights of Consultation with Civil Society, May, 2008

[28] Full report available - Nigeria Energy Development and Transmission Development Projects – Supervision Economic and Sector work, Proposed Nigeria Electricity and Gas Improvement Project – Pre-Appraisal Gas Road shows at London and Singapore

communities; and six states in the Delta region - Cross Rivers State, Akwa Ibom State, Edo State, Delta State, Bayelsa State; Commissioner of Power in Rivers State, representing the Executive Governor; traditional chiefs; World Bank team. The consultation was organized by The Centre for Development Support Initiatives (CEDSI), a local NGO based in Port Harcourt – Port Harcourt, April 18, 2009.

12. **Web based consultations:** In order to allow for the widest possible access to documents related to this project and for further input, a project related website was built on both the World Bank Nigeria country web page and the web page for PHCN. Both sites contained all public documents plus information related to prior consultations. A program to allow for thread comments was opened on the Bank web site and comments received were taken into account.

Pre-Appraisal Consultations

Government and Private Sector Consultations

13. World Bank energy sector Mission Team met with the Honorable Ministers of State for Energy (Power) and (Gas) along with Special Advisor to His Excellency the President for Electric Power; the Permanent Secretary of the Ministry of Power, the Directors of Power and Director General - Budget of the Federation, and important functionaries of the International Economic Relations Department of the Ministry of Finance; the Director General, Director (Power), and officials of BPE; the Chairman, Vice Chairman, Commissioners and staff of NERC; the Coordinator, Liaison Unit of the PHCN; the CEO and officials of TCN, CEOs of all distribution companies in general and the key staff of Abuja and Lagos distribution companies, the chief executives and key officials of NIPP and NDPHC, NNPC, REA, NGC, and PMU. The Mission Team also met with representatives of potential IPPs, oil companies, non-government organizations, Adam Smith International, consultants engaged by DFID for NIAF, other consultants, and other stakeholders.

14. The World Bank representatives informed the participants about the government's request, and preparation of an electricity and gas improvement project. The Bank explained that PRGs will cover PHCN's financial obligations against gas supplied by International Oil Companies (IOC). The Bank explained that the project is not envisaged to fund activities relating to any new gas pipelines that would cause any adverse effect on the environment, or require any form of land acquisition or restriction of access to sources of livelihoods.

15. About 21 people representing 19 civil society organizations attended the consultation along with a World Bank team and representatives from three government ministries or parastatals.

Stakeholders' Workshop (Abuja) May, 2008

16. The workshop was convened to listen to the opinions and recommendations of stakeholders as part of the planning for the proposed new project. A wide range of stakeholders was therefore invited, including government, the power utility, and NGOs. The Bank made a particular effort to include NGOs that focus on environmental and social issues in the Niger Delta.

Participants

17. A complete list of the 39 participants is in the full document. Eighteen different NGOs were represented. Officials from Ministry of Finance, NERC, PHCN, NNPC, and REA attended, along with five Bank staff. The Bank made a particular effort to include civil society organizations that focus on environmental and social issues in the Niger Delta. There were 39 participants, including representatives from 18 different NGOs, Ministry of Finance, NERC, PHCN, NNPC, and REA. Collectively, the civil society representatives made 21 specific recommendations for NEGIP and/or Bank activities in the energy sector and in the Niger Delta.

Appraisal

Stakeholders Workshop Port Harcourt April 18, 2009[29]

18. **Participants:** Government of Nigeria (NIPP, PHCN, PMU, local representatives); 60 representatives from civil society representing more than 50 communities in six states in the Delta region - Cross Rivers State, Akwa Ibom State, Edo State, Delta State, Bayelsa State; Commissioner of Power in Rivers State, representing the Executive Governor; traditional chiefs; World Bank team.

19. The consultation was organized by The Centre for Development Support Initiatives (CEDSI) based in Port Harcourt. Responses were provided by PHCN; the Commissioner of Power for Rivers States and the Bank team.

20. **Documents available:** PID; comments from previous consultations, power point presentation. Copies of the Environmental and Social Mitigation Plan were also circulated in hard copy. Participants were informed that all material was available on either the PHCN web site of the World Bank Nigeria Country office website. Hard copies of all material will be housed with CEDSI in Port Harcourt. Both websites offer an opportunity to provide further inputs electronically.

[29] Full report available – Report on PHCN/World Bank Consultation on Electricity and Gas Improvement Project (NEGIP)

21. **Proceedings:** An outline of the consultation process to date, what will take place before the approval of the project, and expectations for the PH consultations were outlined by CEDSI/WB. The point was made that this is a national project to provide more power to the system and that there would be no infrastructure built in the Delta under the project. Presentations were also made on the overall project (WB/PHCN) and on the environmental social aspects of the project (PHCN/PMU and WB). Most of the proceedings were about receiving questions and input from the participants.

22. Full reports of all the consultations along with comments from all participants including Civil Society Organizations are available on the project files.

Annex 13 A: Project Preparation and Supervision Strategy

Nigeria: Electricity and Gas Improvement Project (NEGIP)

	Planned	Actual
PCN review	April 10, 2008	April 10, 2008
Initial PID to PIC	May 30, 2008	July 17, 2008
Initial ISDS to PIC	May 30, 2008	June 25, 2008
Appraisal	April 2009	April 14 – 25, 2009
Negotiations	May 2009	May 8, 2009
Board/RVP approval	June 16, 2009	June 16, 2009
Planned date of effectiveness	October 24, 2009	
Planned date of mid-term review		
Planned closing date		

Key entities responsible for preparation and implementation of this project are:

Federal Ministry for Power
Federal Ministry of Finance
PHCN-PMU, PHCN successor entities, Transmission Company of Nigeria (TCN)
Nigeria Electricity Regulatory Commission (NERC)
Bureau for Public Enterprise (BPE)
JV IOCs
Nigeria National Petroleum Company (NNPC)
Nigeria Gas Company

Bank staff and consultants who worked on the project included:

Name	Title	Unit
Prasad V.S.N. Tallapragada	Sr. Energy Specialist/Team Leader	AFTEG
Farida Mazhar	Lead Finance Officer	FEU
Mohua Mukherjee	Senior Energy Specialist	AFTEG
Sheoli Pargal	Adviser	OPCS
Bent Svensson	Program Manager	COCPO
Waqar Haider	Senior Energy Specialist	AFTEG
John Gabriel Goddard	Economist	ECSPF
Paul Mitchell	Manager Communication	EXTCD
Suman Babbar	Guarantee Specialist/Consultant	AFTEG
Aman Sachdeva	Financial Analyst/Consultant	AFTEG
Sudeshna Ghosh Banerjee	Economist	SASDE
Ju-Sung Park	Financial Analyst	AFTEG
Yash Pal Kedia	Lead Restructuring Spec./Cons.	AFTEG
Helena Kofi	Procurement Analyst/Consultant	AFTEG
Rahmoune Essalhi	Program Assistant (Procurement)	AFTEG

Gbangi Kimboko	Procurement Assistant	AFTEG
Lily Wong Chun Sen	Program Assistant	AFTEG
Aisha Kaga	Team Assistant	AFCW2
Katharina Gassner	Senior Economist	FEU
Kirtan Chandra Sahoo	Carbon Finance Specialist	ENVCF
T. Mpoy-Kamulayi	Lead Counsel	LEGAF
Mark Moseley	Senior Counsel	LEGPS
Monica Teresa Restrepo	Counsel	LEGCF
Rajiv Sondhi	Senior Finance Officer	LOAFC
Wolfgang Chadab	Senior Finance Officer	LOAFC
Chukwudi Okafor	Senior Social Develop. Spec	AFTCS
Thomas Walton	Lead Safeguards Spec./Cons.	AFTEG
Nicolas Kotschoubey	Safeguards Specialist/Cons	COCPO
Alexandra Bezeredi	Senior Operations Officer/Safeguards Specialist	OPCQC
Bayo Awosemusi	Lead Procurement Specialist	AFTPC
Mary Asanato	Procurement Specialist	AFTPC
Akinrinmolo Akinyele	Financial Management Specialist	AFTFM
Adenike Oyeyiola	Sr. Financial Management Specialist	AFTFM
Kumar Pratap	Economist/Consultant	AFTEG
Obadiah Tohomdet	Senior Communications Officer	AFREX
Brenda Anugwom	Team Assistant	AFCW2

Bank funds expended to date on project preparation:
Bank resources: US$115,000
Trust funds:
Total: US$115,000

Estimated Approval and Supervision costs: US$150,000
Remaining costs to approval:
Estimated annual supervision cost: US$200,000

Supervision Strategy

1. The overall supervision strategy for the proposed Nigeria Electricity and Gas Improvement Project (NEGIP) emerges from lessons learned in the ongoing West Africa Gas Pipeline (WAGP) project, the ongoing National Energy Development Project (NEDP), and the recently completed Transmission Development Project (TDP).

2. NEGIP will trigger OP/BP 4.01, the Bank's environmental safeguards policy. The proposed project is financing only rehabilitation and upgrade of existing infrastructure assets (transmission and distribution lines), and supporting institutional development in the Gas sector, as well as providing a wide range of Technical Assistance including capacity building for environmental safeguards and monitoring/evaluation and enforcement of national environmental laws.

3. With respect to supervision of investments, the team will follow the same practices as are currently in place for the NEDP which is financing substantially similar investments. The team is dealing with an experienced project management unit (PMU) which is familiar with Bank policies and has demonstrated good capacity while implementing TDP and NEDP.

4. Supervision of the Partial Risk Guarantee will be on a different timetable from supervision of the investment component of NEGIP, since the state of readiness in the PRG depends on contractual arrangements and closure reached between Joint Venture International Oil Companies (JV IOCs), the Power Holding Company of Nigeria (PHCN) and the Nigeria Gas Company (NGC). These are a different set of actors from those who will be implementing the power sector investments under this project.

5. Timing of PRG missions will depend on readiness of successive contracts for JV IOCs with PHCN, to meet the Domestic Supply Obligations for gas delivery, and successful conclusion of gas transportation arrangements by PHCN with NGC.

6. Timing of supervision missions for the investment component will be driven largely by procurement of large investment packages, as well as policy dialogue to pinpoint the delivery of most relevant TA as key issues emerge.[30]

7. However, all aspects of the project will be managed by a single PMU with coordination responsibility; operating a single Designated Account (DA). PMU will maintain regular contract with the IDA supervision team and will assist with coordination of supervision missions.

8. IDA will carry out three supervision missions per year, to provide direct implementation support to the above entities, in addition to holding ongoing consultations and communications with project implementation counterparts throughout the year. Suitable staffing of the IDA supervision teams will ensure that in addition to technical, fiduciary, financial and economic specialists, every mission will also include environmental and social safeguards specialists, as well as a communications specialist. Management will allocate adequate budgetary resources for the supervision effort, which according to the Management Action Plan for the West Africa Gas Pipeline IP report, is estimated to be about three times the normal supervision budget. Given the diversity of skills needed for implementation support of this Project, the estimated annual supervision cost is US$200,000.

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[30] Two flagship TA products are currently identified, and will require in depth dialogue/supervision by the team. One is the preparation of a rehabilitation master plan for the existing gas-fired power generation plants, which will come up with recommended investments that FGN will undertake to renovate and improve efficiency in its plants. The second is the in-depth legal and institutional review for assessment of the adequacy of relevant Nigerian legislation and regulations – primarily the Environment Impact Assessment Act (Decree 86 of 1992) and laws concerning land acquisition – to meet the objectives and operational principles of World Bank safeguards policies.

Annex 13 B: Documents in the Project File

Nigeria: Electricity and Gas Improvement Project (NEGIP)

Project Concept Note Datasheet (January 2008).

Project Concept Note (April 2008).

Minutes of Project Concept Note Review Meeting (April 2008).

Federal Ministry of Finance, Federal Republic of Nigeria – Letter of Request for assistance in PRG.

ELPS Integrity Study 2000 and update 2009.

Due diligence of PHCN Power Plant.

Action plan for Rehabilitation of PHCN Power Plants.

Action plan for completion of balance recommended actions of ELPS Integrity Study.

NGC Emergency Response Plan.

Reports on Consultations.

Preliminary review of Environmental Institutions and Laws in Nigeria 2009.

Annex 14: Statement of Loans and Credits

Nigeria: Electricity and Gas Improvement Project (NEGIP)

			Original Amount in US$ Millions						Difference between expected and actual disbursements	
Project ID	FY	Purpose	IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig.	Frm. Rev'd
P090644	2009	NG-Comm. Social Dev. (FY09)	0.00	200.00	0.00	0.00	0.00	179.83	8.00	0.00
P096572	2009	NG-Fadama Development-III SIL (FY08)	0.00	250.00	0.00	0.00	0.00	231.80	0.00	0.00
P096648	2009	NG-Commercial Agriculture Development	0.00	150.00	0.00	0.00	0.00	152.16	0.00	0.00
P090135	2008	NG-Federal Roads Development	0.00	330.00	0.00	0.00	0.00	307.99	7.50	0.00
P072644	2008	NG-Rural Access & Mobility - Ph. 1	0.00	60.00	0.00	0.00	0.00	56.11	3.75	0.00
P071340	2007	NG-Lagos Metropolitan Dev & Governance	0.00	200.00	0.00	0.00	0.00	171.65	28.31	0.00
P074132	2007	NG-S&T Educ in Post-Basic Ed (FY07)	0.00	180.00	0.00	0.00	0.00	145.83	64.82	0.00
P097921	2007	NG -Malaria Control Booster Project (07)	0.00	180.00	0.00	0.00	0.00	114.51	-14.42	0.00
P096151	2007	NG - State Edu Sector Project	0.00	65.00	0.00	0.00	0.00	54.30	19.25	0.00
P090104	2006	NG-Natl Energy Dev SIL (FY06)	0.00	172.00	0.00	0.00	0.00	105.98	97.80	-8.63
P100122	2006	Avian Influenza Emergency ERL (FY06)	0.00	50.00	0.00	0.00	0.00	9.57	6.86	0.00
P071391	2006	NG-Natl Urb Water Sec Ref SIM 2 (FY06)	0.00	200.00	0.00	0.00	0.00	153.13	51.78	0.00
P088150	2005	NG-Econ Reform & Govern SIL (FY05)	0.00	140.00	0.00	0.00	0.00	88.17	69.01	43.89
P086716	2005	NG-Min Res Sustain Mgmt (FY05)	0.00	120.00	0.00	0.00	0.00	65.64	43.85	0.00
P074447	2005	NG-State Governance & Cp Bldg TAL (FY05)	0.00	18.10	0.00	0.00	0.00	11.45	10.99	10.12
P063622	2004	NG-Fadama SIL 2 (FY04)	0.00	100.00	0.00	0.00	0.00	2.00	-2.29	0.00
P069892	2004	NG-Local Empowerment & Environmental Mgm	0.00	70.00	0.00	0.00	0.00	1.61	-12.71	-13.34
P071075	2004	NG-Urb Water Sec Reform 1 SIL (FY04)	0.00	120.00	0.00	0.00	0.00	55.24	49.18	0.00
P083082	2004	MSME	0.00	32.00	0.00	0.00	0.00	18.70	16.02	14.87
P074963	2003	NG-Lagos Urb Trans SIL (FY03)	0.00	150.00	0.00	0.00	0.00	39.45	-24.75	9.25
P080295	2003	NG-Polio Eradication (FY03)	0.00	130.40	0.00	0.00	0.00	47.86	-50.34	9.39
P070291	2002	NG-HIV/AIDS Prog Dev (FY02)	0.00	140.30	0.00	0.00	0.00	37.03	-27.48	6.60
P070290	2002	NG- Health System Dev. II (FY02)	0.00	217.00	0.00	0.00	0.00	87.75	-22.60	-22.60
P069901	2002	NG-Com Based Urb Dev (FY02)	0.00	110.00	0.00	0.00	0.00	67.52	44.95	44.96
P070293	2001	NG-Privatization Supt SIL (FY01)	0.00	114.29	0.00	0.00	0.00	43.80	24.82	24.87
		Total:	0.00	3,499.09	0.00	0.00	0.00	2,249.08	392.30	119.38

NIGERIA: STATEMENT OF IFC's Held and Disbursed Portfolio in US$ millions

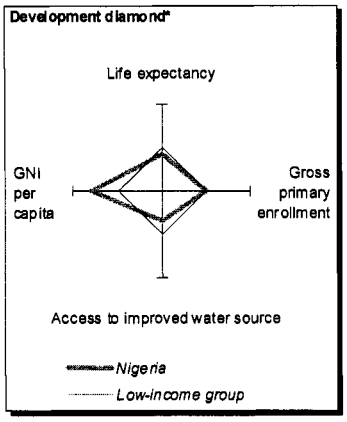
		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic.	Loan	Equity	Quasi	Partic.
1999	AEF Global Fabri	0.32	0.00	0.00	0.00	0.32	0.00	0.00	0.00
1999	AEF Hercules	1.30	0.00	0.00	0.00	1.30	0.00	0.00	0.00
2000	AEF Oha Motors	0.84	0.00	0.00	0.00	0.84	0.00	0.00	0.00
2000	AEF SafetyCenter	0.41	0.00	0.00	0.00	0.41	0.00	0.00	0.00
1995	AEF Vinfesen	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
1994	Abuja Intl	1.75	0.00	0.00	0.00	1.75	0.00	0.00	0.00
2005	Accion Nigeria	0.00	1.89	0.00	0.00	0.00	0.57	0.00	0.00
2003	Adamac	25.00	0.00	0.00	15.00	11.56	0.00	0.00	6.94
2000	CAPE FUND	0.00	6.17	0.00	0.00	0.00	5.76	0.00	0.00
2001	Delta Contractor	0.00	0.00	15.00	0.00	0.00	0.00	0.20	0.00
2000	Diamond Bank	0.00	0.00	2.00	0.00	0.00	0.00	2.00	0.00
2005	Diamond Bank	0.00	0.00	30.00	0.00	0.00	0.00	30.00	0.00
2006	Diamond Bank	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00
2000	FSB	5.25	0.00	3.75	0.00	5.25	0.00	3.75	0.00
1992	FSDH	0.00	0.86	0.00	0.00	0.00	0.86	0.00	0.00
2000	GTB	6.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00
2004	GTB	20.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
2005	GTB	20.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
2006	GTB	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	GTFP Access Bank	33.58	0.00	0.00	0.00	33.54	0.00	0.00	0.00
2006	GTFP Access Bank	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00
	GTFP Diamond Bnk	30.28	0.00	0.00	0.00	29.38	0.00	0.00	0.00
	GTFP GTB Nigeria	20.41	0.00	0.00	0.00	20.41	0.00	0.00	0.00
	GTFP IBTC Plc.	5.03	0.00	0.00	0.00	4.69	0.00	0.00	0.00
	GTFP Zenith	32.18	0.00	0.00	0.00	32.18	0.00	0.00	0.00
2000	IBTC	20.00	0.00	0.00	0.00	20.00	0.00	0.00	0.00
2006	IBTC	0.00	0.00	30.00	0.00	0.00	0.00	0.00	0.00
1981	Ikeja Hotel	0.00	0.06	0.00	0.00	0.00	0.06	0.00	0.00
1988	Ikeja Hotel	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00
2002	MTNN	70.00	15.00	0.00	0.00	40.00	14.56	0.00	0.00
2002	NTEF	20.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2005	OCC	75.00	0.00	0.00	0.00	59.12	0.00	0.00	0.00
2006	SOCKETWORKS	0.00	0.00	2.50	0.00	0.00	0.00	1.88	0.00
2004	UPDC Hotels Ltd.	10.62	0.00	0.00	0.00	4.82	0.00	0.00	0.00
	Total portfolio:	427.97	23.99	119.25	15.00	311.57	21.82	38.83	6.94

		Approvals Pending Commitment			
FY Approval	Company	Loan	Equity	Quasi	Partic.
2006	UBA/STB	0.03	0.00	0.05	0.00
2005	Zenith Bank	0.03	0.01	0.00	0.00
2007	Eleme Petrochem	0.06	0.00	0.02	0.08
	Total pending commitment:	0.12	0.01	0.07	0.08

Annex 15: Country at a Glance

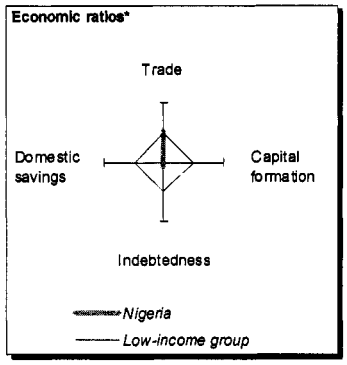
Nigeria: Electricity and Gas Improvement Project (NEGIP)

POVERTY and SOCIAL	Nigeria	Sub-Saharan Africa	Low-income
2007			
Population, mid-year *(millions)*	148.0	800	1,296
GNI per capita *(Atlas method, US$)*	920	952	578
GNI *(Atlas method, US$ billions)*	136.3	762	749
Average annual growth, 2001-07			
Population *(%)*	2.4	2.5	2.2
Labor force *(%)*	2.5	2.6	2.7
Most recent estimate (latest year available, 2001-07)			
Poverty *(% of population below national poverty line)*	..	..	..
Urban population *(% of total population)*	48	36	32
Life expectancy at birth *(years)*	47	51	57
Infant mortality *(per 1,000 live births)*	99	94	85
Child malnutrition *(% of children under 5)*	27	27	29
Access to an improved water source *(% of population)*	47	58	68
Literacy *(% of population age 15+)*	69	59	61
Gross primary enrollment *(% of school-age population)*	96	94	94
Male	105	99	100
Female	87	88	89



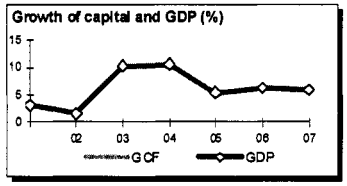
KEY ECONOMIC RATIOS and LONG-TERM TRENDS	1987	1997	2006	2007
GDP *(US$ billions)*	23.4	36.2	146.9	165.5
Gross capital formation/GDP	..	..	..	..
Exports of goods and services/GDP	28.6	45.0	43.2	40.3
Gross domestic savings/GDP	..	..	..	..
Gross national savings/GDP	..	..	..	..
Current account balance/GDP	-7.4	7.8	9.5	2.1
Interest payments/GDP	2.6	1.5	0.2	..
Total debt/GDP	123.8	78.5	5.2	..
Total debt service/exports	14.1	8.9	10.6	..
Present value of debt/GDP	..	..	4.7	..
Present value of debt/exports	..	..	10.8	..

	1987-97	1997-07	2006	2007	2007-11
(average annual growth)					
GDP	4.0	5.4	6.2	5.9	7.9
GDP per capita	1.0	2.8	3.7	3.6	5.7
Exports of goods and services	..	..	..	..	..



STRUCTURE of the ECONOMY	1987	1997	2006	2007
(% of GDP)				
Agriculture	..	..	32.0	32.6
Industry	..	..	41.9	39.3
Manufacturing	..	..	2.6	..
Services	..	..	26.1	28.1
Household final consumption expenditure	..	..	..	..
General gov't final consumption expenditure	..	..	..	..
Imports of goods and services	24.7	37.8	28.1	29.7

	1987-97	1997-07	2006	2007
(average annual growth)				
Agriculture	..	7.0	7.4	7.4
Industry	..	3.8	-1.0	-2.9
Manufacturing	..	..	..	..
Services	..	14.3	12.4	12.9
Household final consumption expenditure	..	..	..	..
General gov't final consumption expenditure	..	..	..	..
Gross capital formation	..	..	..	..
Imports of goods and services	..	..	..	..



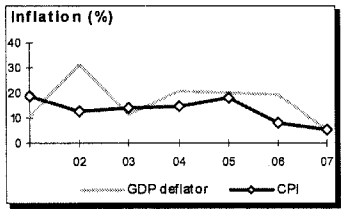
Note: 2007 data are preliminary estimates.

This table was produced from the Development Economics LDB database.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

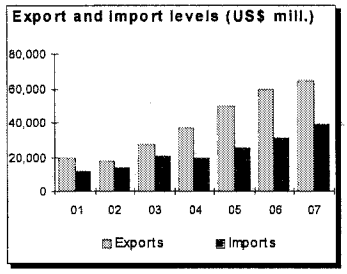
PRICES and GOVERNMENT FINANCE

	1987	1997	2006	2007
Domestic prices				
(% change)				
Consumer prices	11.3	8.3	8.3	5.5
Implicit GDP deflator	50.1	1.4	19.6	5.1
Government finance				
(% of GDP, includes current grants)				
Current revenue	..	20.0	34.1	29.2
Current budget balance	..	11.6	13.5	8.4
Overall surplus/deficit	..	1.0	7.7	1.4



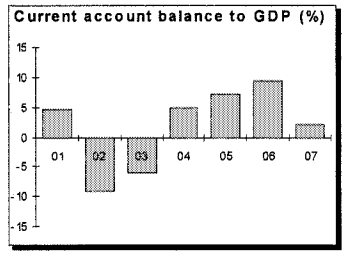
TRADE

	1987	1997	2006	2007
(US$ millions)				
Total exports (fob)	7,532	15,539	59,113	64,047
Fuel	6,994	14,850	53,464	56,577
Liquified natural gas	..	..	4,602	6,110
Manufactures	..	40	..	..
Total imports (cif)	6,392	10,246	30,911	38,944
Food	671	1,219	..	..
Fuel and energy	27	143	..	..
Capital goods	..	..	..	..
Export price index *(2000=100)*	64	71	229	261
Import price index *(2000=100)*	89	109	125	126
Terms of trade *(2000=100)*	71	65	182	207



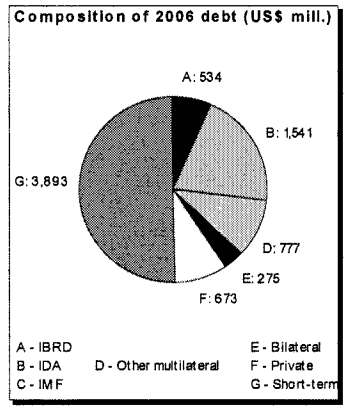
BALANCE of PAYMENTS

	1987	1997	2006	2007
(US$ millions)				
Exports of goods and services	7,757	15,661	62,613	67,225
Imports of goods and services	6,689	12,448	40,766	49,641
Resource balance	1,068	3,213	21,847	17,584
Net income	-2,770	-2,215	-11,254	-17,531
Net current transfers	..	1,841	3,400	3,414
Current account balance	-1,727	2,840	13,994	3,467
Financing items (net)	1,649	221	-97	6,037
Changes in net reserves	78	-3,061	-13,897	-9,503
Memo:				
Reserves including gold *(US$ millions)*	..	..	41,830	51,333
Conversion rate *(DEC, local/US$)*	4.6	81.1	127.4	125.8



EXTERNAL DEBT and RESOURCE FLOWS

	1987	1997	2006	2007
(US$ millions)				
Total debt outstanding and disbursed	29,021	28,455	7,693	..
IBRD	2,939	2,373	534	381
IDA	32	410	1,541	1,929
Total debt service	1,106	1,416	6,805	..
IBRD	332	519	244	201
IDA	1	4	33	35
Composition of net resource flows				
Official grants	14	27	11,383	..
Official creditors	378	-267	-4,276	..
Private creditors	425	-258	-1,502	..
Foreign direct investment (net inflows)	611	1,539	5,445	..
Portfolio equity (net inflows)	0	0	0	..
World Bank program				
Commitments	71	0	255	685
Disbursements	385	260	362	335
Principal repayments	125	339	230	196
Net flows	260	-79	132	139
Interest payments	209	183	47	41
Net transfers	52	-262	85	99



Note: This table was produced from the Development Economics LDB database. 9/24/08

MAP SECTION

IBRD 36972

NIGERIA
ELECTRICITY AND GAS IMPROVEMENT PROJECT
ELECTRICITY INFRASTRUCTURE

PROJECT / UNDER CONSTR. / EXISTING

- 330 kV DOUBLE CIRCUIT LINES
- 330 kV SINGLE CIRCUIT LINES
- 225 kV DOUBLE CIRCUIT LINES
- 225 kV SINGLE CIRCUIT LINES
- 161 kV SINGLE CIRCUIT LINES
- 132 kV DOUBLE CIRCUIT LINES
- 132 kV SINGLE CIRCUIT LINES
- 110 kV DOUBLE CIRCUIT LINES
- 110 kV SINGLE CIRCUIT LINES
- 90 kV DOUBLE CIRCUIT LINES
- 90 kV SINGLE CIRCUIT LINES
- 63 kV SINGLE CIRCUIT LINES

- 330 kV SUBSTATION
- 132 kV SUBSTATION
- THERMAL POWER PLANTS
- HYDRO-ELECTRIC POWER PLANTS
- DISTRIBUTION ZONE BOUNDARIES

- NATIONAL CAPITAL
- RIVERS
- STATE BOUNARIES
- INTERNATIONAL BOUNDARIES

NIGER · CHAD · CAMEROON · BENIN

Lake Chad · Gulf of Guinea · Rima R. · Sokoto R. · Niger R. · Benue R. · Yobe R. · Kainji Reservoir

SOKOTO · KEBBI · ZAMFARA · KATSINA · JIGAWA · YOBE · BORNO · KANO · KADUNA · BAUCHI · GOMBE · ADAMAWA · KWARA · NIGER · FCT · PLATEAU · NASSARAWA · TARABA · KOGI · BENUE · OYO · OSUN · OGUN · EKITI · ONDO · EDO · ENUGU · EBONYI · ABIA · IMO · CROSS RIVER · DELTA · RIVERS · BAYELSA · AKWA-IBOM · LAGOS

KANO ZONE · **KADUNA ZONE** · **JOS ZONE** · **YOLA ZONE** · **ABUJA ZONE** · **IBADAN ZONE** · **BENIN ZONE** · **ENUGU ZONE** · **P/H ZONE** · **IKEJA ZONE** · **EKO ZONE**

DOSSO · To Niamey · SOKOTO · BIRNIN KEBBI · TALATA MAFARA · GUSAU · GAZAOUA · KATSINA · KANKIA · GAGARAWA · HADEJIA · DUTSE · KANO · FUNTUA · ZARIA · AZARE · POTISKUM · MAIDUGURI · DAMBOA · YELWA · KONTAGORA · TEGINA · KAINJI · KAINJI HYDRO · KADUNA TOWN · KADUNA · SHIRORO HYDRO · BAUCHI · ASHAKA CEMENTS · BIU · DADINKOWA · GOMBE · MAROUA · GUIDER · JOS · MAKERI · PANKSHIN · SAVANNAH · NUMAN · YOLA · GAROUA · LAGDO HYDRO · JALINGO · NGAOUNDERE · MINNA · SULEJA · KUBWA · ABUJA · F.C.T. · ABUJA CITY · KATAMPE · KEFFI · AKWANGA · BIDA · JEBBA TS · JEBBA HYDRO · Niger R. · ILORIN · OFFA · OMU-ARAN · ISEYIN · IWO · OSHOGBO · IBADAN NORTH · IFE · ILESHA · AIYEDE · JERICHO · ABEOKUTA · ONIGBOLD · ADO-EKITI · AKURE · ONDO · ITAKPE · OKENE · AJAOKUTA · AJAOKUTA TOWN · UKPILLA · IRRUA · MAKURDI · OTURKPO · ALIADE · YANDEV · BENUE · Niger R. · To Papalanto · To Sagamu · EGBIN THERMAL · AJA · IKEJA WEST · AKANGBA · PORTO-NOVO · COTONOU · ALLADA · SAKETE · For detail, see inset at right. · BENIN · NEW HAVEN · NKALAGU · OJI · AWKA · ABAKALIKI · ONITSHA · GCM · OKIGIWE · MBALANO · OHAFIA · AROCHUKWU · OWERRI · UMUAHIA · ITU · ALAOJI · ABA · UYO · AFAM THERMAL · CALABAR · AHOADA · YENAGOA · P.H. TOWN · P.H. MAIN · EKET · IKOT-ABASI THERMAL · SAPELE THERMAL · DELTA THERMAL · KWALE THERMAL · ALADJA · EFFURUN · BAMENDA · BAFOUSSAM · N'SAMBA · BEKOKO · LOGBABA · CELLUCAM · SONG-LOULOU HYDRO · EDEA HYDRO · LIMBE · OYOMABANG · BRGM · NGOUSSO · MBALMAYO · KRIBI

0 50 100 150 200 250 KILOMETERS

LAGOS

To Abeokuta · To Oshogbo · To Aiyede · To Aiyede · To Benin

PAPALANTO · SAGAMU · SAGAMU CEMENTS · IJEBU-ODE · OTTA · SAKETE · OGBA · ALAUSA · IKEJA WEST · IKORODU · ALIMOSO · MARYLAND · EGBIN THERMAL · EJIGBO · ILUPE JU · ISOLO · OWORONSOKI · AGBARA · AKOKA · ITIRE · AJA · OJO · AMUWO-ODOFIN · IJORO · ALAGBON · AKANGBA · APAPA ROAD · Gulf of Guinea

MALI · BURKINA FASO · NIGER · CHAD · BENIN · TOGO · GHANA · NIGERIA · ABUJA · Niger · Benue · CAMEROON · CENTRAL AFRICAN REPUBLIC · Gulf of Guinea · EQUATORIAL GUINEA · SÃO TOMÉ & PRINCIPE · GABON · CONGO

JUNE 2009

IBRD 36973

NIGERIA

ELECTRICITY AND GAS IMPROVEMENT PROJECT

DISTRIBUTION OF OIL AND GAS FIELDS AND RELATED INFRASTRUCTURE IN THE NIGER DELTA

- OIL FIELDS
- GAS FIELDS

EXISTING PIPELINES:

- CRUDE OIL
- NATURAL GAS
- PRODUCT

PIPELINES PLANNED OR UNDER CONSTRUCTION:

- CRUDE OIL
- NATURAL GAS

- REFINERIES IN OPERATION
- TANKER TERMINALS
- MAIN CITIES
- CONTINENTAL SHELF
- WATER DEPTH GREATER THAN 200 METERS
- INTERNATIONAL BOUNDARIES
- STATE BOUNDARIES

0 20 40 60 80 100 MILES

0 40 80 120 160 KILOMETERS

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JUNE 2009