

# **POWER AFRICA TRANSACTIONS AND REFORM PROGRAM (PATRP) NIGERIA**

## **SCOPE OF WORK FOR STRATEGIC ASSESSMENT OF GAS SECTOR**

### **1. INTRODUCTION**

A lack of gas supply in Nigeria is a key constraint to increasing electricity availability. To address this constraint USAID's Power Africa Transactions and Reform Program (PATRP), seeks to identify the most effective mechanism for delivering technical assistance to the gas sector. As a first step, PATRP will deploy strategic consultants (PATRP Strategic Consultant) to:

- Perform a rapid assessment of current programs seeking to address issues in the gas sector in Nigeria.
- Generate a list of specific (and realistic) interventions and activities that can be implemented in the current environment to 'unlock gas to power transactions'
- Determine areas of collaboration with Government and donors.

The output of this work will be a practical work plan for the next 12 month period focused on achievable results that will serve to further the domestic gas to power sector, to facilitate transactions supporting an increase in gas-to-power projects, and identifying where and how assistance will be challenged. Once approved, PATRP's Resident Gas Advisor that has already deployed to Nigeria will immediately proceed to implementing the work plan

### **2. KEY CONSIDERATIONS FOR THIS ASSIGNMENT**

Numerous obstacles and issues have limited the growth in power generation in Nigeria right across the energy generation chain including the supply of gas, and expanding power to meet Nigeria's needs through increasing gas-to-power faces many challenges. These challenges are well documented and cover a range of issues, and whilst not the immediate focus of this assignment, they set the context in which the assessment undertaken by PATRP Strategic Consultant will take place. A brief description of these broader challenges is included later in this section. This assignment will focus on an in-country assessment to establish the specific (and realistic) interventions and activities that can be implemented in the current environment to 'unlock gas to power transactions'. The output of our work will be a practical work plan for the next 12 month period. Practical interventions within the existing policy and legislative framework are required for the proposed activities to be achieved within a 12 month timeframe. It will not be realistic to implement any interventions that require amendment to existing policy and legislation.

By way of example, there are a number of practical issues in the gas to power market chain that are currently impacting the efficient production and utilisation of gas. Addressing these issues within the current policy environment within Nigeria will increase the quantity, security and reliability of gas to power. The challenges fall within three broad areas: gas production; gas transportation; and gas flaring. By seeking to address these challenges there are opportunities to unlock both transactions that would result in the timely completion of outstanding projects and expedite new projects.

Gas Production. There are gas supply projects that have not been completed in the timeframes indicated by the operators. These projects are both upgrades/expansion of existing facilities and installation of additional processing equipment. There are also delays in starting new projects. There is an opportunity to identify which projects can be brought to a timely completion, e.g. utilisation of Bonga gas, and what interventions could activate new projects.

Gas Transportation. There are a number of existing gas pipeline projects that are to be completed and new projects identified in the Gas Master Plan. A review of the status of these projects and identification of the impediments to completion will provide realistic opportunities for interventions, e.g. timely completion of OB3 pipeline project. There may also be opportunities for third party investment in new pipeline projects. The recently released Gas Master Plan will be reviewed as part of this assessment.

Gas Flaring. Gas flaring continues to be a significant problem in Nigeria having both a damaging environmental impact and wasting gas that could be brought to market. Whilst there have been recent reductions in gas flaring there is still much more that can be done. There is a need to identify the practical barriers to further reductions and opportunities for parties to invest in practical solutions, e.g. deployment of localised generation sets to utilise flared gas.

These three areas will be considered as inputs into the identification of potential barriers to be unlocked that the PATRP Strategic Consultant will test (and potentially add to) during its assessment.

There are also wider contextual challenges to the development of the gas sector in Nigeria, many of which may take a longer period of time to address. These include:

- Legislation
- Strategic Management and Regulation of the Domestic Gas Market
- Gas Master Plan
- Industry Structure
- Gas Commercial Regime
- Gas Pricing
- Gas Utilisation
- Gas Flaring
- Infrastructure Security

Each of these issues is considered in more detail in the sections that follow.

#### **a. Legislation**

Major investments occur where there is certainty. The failure of the Nigerian Government to pass new oil and gas legislation, the Petroleum Industry Bill, has had a major impact on the development of the oil and gas sector. The main areas of uncertainty affecting gas-to-power as a result of a lack of appropriate oil and gas legislation are:

- Uncertainty over the taxation regime, which has had a significant impact on new investment. This has been amplified in severity by the current low crude oil price further limiting the availability of capital for investment.
- Uncertainty over the structure and management of the domestic gas market.
- Uncertainty over source and availability of funds for the development of the gas network.

#### **b. Strategic Management and Regulation of the Domestic Gas Market**

Historically the development of the gas market has suffered under the management of NNPC with gas having to compete with all NNPC's other business interests for available resources. This has resulted in a lack of transparent strategic direction for the domestic gas sector. Also, with NNPC effectively self-regulating its gas activities via Department of Petroleum Resources, little regulatory oversight has been given to the gas sector. Liberalisation of the Nigerian gas market requires effective Ministerial intervention in its strategic direction and appropriate independent regulatory oversight (as is provided in the power sector by NERC).

#### **c. Gas Master Plan**

Whilst there has been a Gas Master Plan in place for a number of years there is a lack of transparency in the articulation of what and how it will be implemented. The plan may no longer be appropriate to meet immediate future needs. For example, the Gas Master Plan is underpinned by a gas pipeline to the north of Nigeria – many of the issues still remain in the South. Whilst a pipeline is required to the north of Nigeria this should be coincidental with the development of new large scale gas consuming projects such as new power stations. The existing plan also fails to identify funding sources for projects, assess project feasibility, and early stage financing. Furthermore, it is critical that some existing projects are expedited

as quickly as possible, including the OB3 pipeline project that will connect the Eastern gas network to the Western network – most of the unexploited reserves of gas are in the East but a significant proportion of the existing demand and shortfall in supply is in the West.

#### **d. Industry Structure**

Failure to provide a clear indication as to the proposed structure of the domestic gas market has resulted in an environment that is too uncertain for private investors. Clarity of the industry structure would assist in providing an enabling environment for the private sector to participate in a liberated domestic gas market.

#### **e. Gas Commercial Regime**

The World Bank has advocated liberalisation of the commercial market to provide partial risk guarantees to the sector. There are a number of impediments to the gas market functioning in a commercial manner. For example:

- The sale of the Government owned PHCN power stations necessitated the negotiation and agreement of gas sales and transportation agreements. These agreements were signed but have not yet been activated: until they are, a commercial semi-competitive gas market will not exist.
- The Nigerian Gas Company (NGC) needs to move away from being a monopoly gas business to becoming separate gas retailing and a transportation business.
- Power stations need to receive sufficient revenue from NBET/Market Operator to honour, in full, their payment obligations under their gas supply and gas transportation contracts, when activated. Without dependable payments being made this will continue to act as a disincentive to new gas supplies entering the market or existing ones increasing their gas production capacity.

#### **f. Gas Pricing**

Nigeria has chosen to introduce a domestic gas supply obligation on the larger oil and gas companies and a process of price aggregation. As a result, all suppliers with a gas obligation receive the same price for their gas regardless of the market segment supplied. This may not be the best approach to encourage growth in gas supply. Indeed, there is already a strong case to move to a competitive gas supply pricing policy; this should encourage greater investment and hence growth in gas supply.

#### **g. Gas Utilisation**

There is an immediate opportunity to instigate additional, as well as improve existing, gas utilisation that would increase gas to power. Completion of a number of gas supply and infrastructure projects, putting in place an appropriate gas commercial regime, introducing more liquidity into the gas market, and commencing implementation of the required revised industry structure would unlock further gas utilisation potential.

#### **h. Gas Flaring**

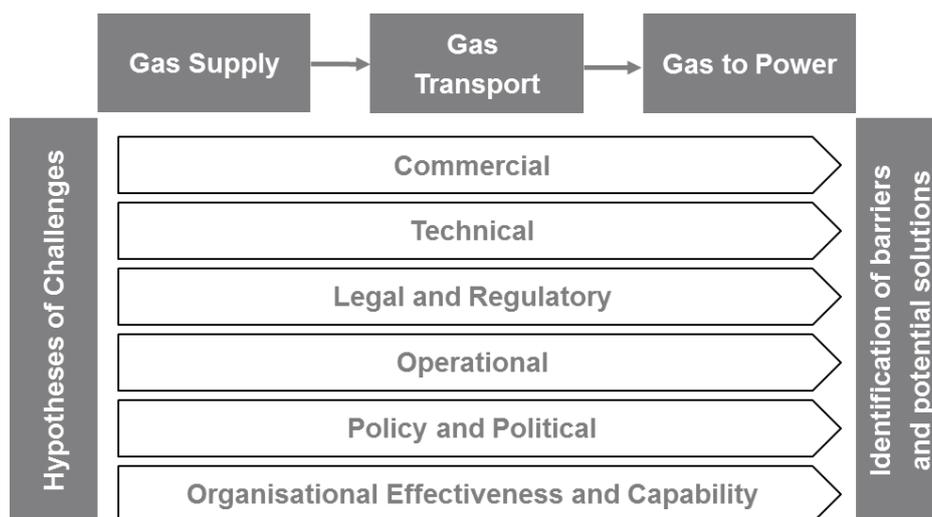
Nigeria has struggled to address the cessation of gas flaring in part due to lack of political will and the reluctance to impose financial penalties as provided for in legislation. Reducing gas flaring may not bring significant quantities of new gas to the domestic gas market but it is clearly required to address the environmentally impact such flaring is having. There is an immediate requirement to instigate a program to eliminate gas flaring.

#### **i. Infrastructure Security**

Theft of crude oil and condensate is a major issue for Nigeria. More recently there has been an increase in vandalism and sabotage of gas pipelines and facilities which has no direct economic benefit for the perpetrators. These actions have significantly reduced the reliability of gas supply and new protocols are required to protect gas assets and hence increase the security and reliability of gas.

### 3. APPROACH

PATRP Strategic Consultant will explore the practical issues in the gas to power chain that are currently impacting the efficient production and utilisation of gas (as described in the section above) through work streams that will result in a work plan that covers each of the issues in a coherent fashion. A series of hypotheses, based upon the issues set out above will be developed and tested through engagement with relevant stakeholders in Nigeria to enable the identification and understanding of the real obstacles to additional gas-to-power generation. These hypotheses will need to be examined from different perspectives; these perspectives will form work streams through which we look at each issue across the gas-to-power chain:



Exploration of the challenges requires multiple sources of information and stakeholders to be taken into account:

- Sector development programs
- Policy documentation including the Gas Master Plan of 2015
- Relevant gas and power sector regulations (for example, the long delayed Petroleum Industry Bill)
- Government, including the Department of Petroleum Resources, the Nigerian National Petroleum Corporation and the Nigerian Gas Company (NGC)
- Current gas and power sector firms, both international and domestic
- Multilateral and bilateral donors
- USAID and PATRP’s team

The PATRP Strategic Consultant also has existing contacts in the public and private sector of the Nigerian gas and power sectors that can be approached as part of this assessment assignment.

### 4. TASKS

The work will be organized into the following three tasks:

<b>Task 1: Discover Phase: Initial desktop review in advance of the in-country mission</b>	
<b>Objectives:</b>	Confirm objectives of the rapid assessment, develop hypotheses of the barriers and issues constraining gas to power in Nigeria, identify and meet with key stakeholders as part of the assessment.

<b>Activities:</b>	<ul style="list-style-type: none"> <li>▪ Arrange teleconference meeting with USAID and Tetra Tech PATRP team to discuss objectives, current thinking and discuss the initial issues constraining gas to power identified in this document to draw in any additional perspectives</li> <li>▪ Confirm structure of final deliverable (work plan)</li> <li>▪ Undertake research and review background materials and available documentation (e.g. sector development programs, Gas Master Plan, sector regulations)</li> <li>▪ Prepare hypotheses of the current constraints to be explored and tested during the assessment</li> <li>▪ Agree and confirm timetable and logistics for in-country mission, including kick off workshop, timing, attendees, identify key stakeholders to meet, purpose and objectives of meetings, and security arrangements</li> <li>▪ Contact existing and identified contacts to arrange meetings in Lagos and Abuja (only) and circulate agendas</li> <li>▪ Hold in-country kick off workshop with USAID and PATRP team</li> <li>▪ Conduct program of stakeholder interviews to explore the challenges to additional gas to power (using the hypotheses and the work streams), and obtain stakeholder buy-in to the objectives of the resulting implementation work plan</li> </ul>
<b>Outputs:</b>	Comprehensive notes of the stakeholder interviews to be taken forward to the Analyse phase of work.
<b>Task 2: Analyze Phase: Synthesize the findings of the <i>Discover</i> phase and draw out conclusions on the constraints to additional gas to power.</b>	
<b>Objectives:</b>	Establish the key constraints to additional gas to power in Nigeria and identify the interventions and activities that would result in increased gas fired power generation.
<b>Activities:</b>	<ul style="list-style-type: none"> <li>▪ Analyze results of stakeholder meetings, test and refine the hypotheses to establish the key constraints to additional gas to power in Nigeria</li> <li>▪ Identify the interventions and activities that would create a more enabling environment resulting in additional gas fired power generation (actual production of MWh, not just generation capacity)</li> <li>▪ Establish the timescale, stakeholders and challenges of implementing the interventions identified</li> <li>▪ Seek to quantify the indicative cost of implementation of each intervention and the value of the resulting impact on additional MWh of gas fired generation</li> <li>▪ Whilst in Nigeria in Week four of the project, prepare for and hold an Findings Workshop with USAID and PATRP team, to present and discuss: <ul style="list-style-type: none"> <li>- findings of stakeholder interviews</li> <li>- potential interventions</li> <li>- draft 12 month work plan to implement the interventions</li> </ul> </li> </ul>
<b>Outputs:</b>	Identification of the key practical impediments to additional gas fired power generation and draft 12 month work plan to implement a series of interventions and activities to unlock the existing barriers to gas to power and create a more enabling environment.
<b>Task 3: Report Phase: Capture the findings and conclusions of the <i>Analyze</i> phase to be presented in Nigeria before commencing implementation of the 12 month plan</b>	
<b>Objectives:</b>	Preparing a final work plan and accompanying report describing the work undertaken over the course of the rapid assessment and setting out:
<b>Activities:</b>	<ul style="list-style-type: none"> <li>▪ A summary of the current position of the Nigerian gas to power sector and conclusions on the key constraints to gas to power to be addressed</li> <li>▪ A description of the interventions and activities that can be implemented to address the issues and challenges identified</li> </ul>

