

Gas to Power: Enhancing and Optimizing the Domestic Gas Supply Obligation for Improved
Power Generation and Supply in Nigeria

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ABSTRACT

This thesis examined the Nigerian Domestic Gas Supply Obligation (DGSO), a policy formulated to enhance domestic natural gas supply for the improvement of electric power generation and supply in Nigeria. Using the theories of property and energy security, the thesis established legal justification for the formulation of the DGSO. Also, comparisons were drawn from countries, such as Indonesia, Western Australia and Egypt, which implemented policies similar to the DGSO. Challenges found to confront the successful implementation of the DGSO ranged from gas producers' contractual commitments to non-existent comprehensive and pragmatic legal framework for the DGSO. The thesis concluded that with cost-reflective natural gas and electricity pricing, investment incentives and stability, adequate and secured infrastructure, effective implementation and monitoring institutions, backed up by a clear-cut regulatory framework and a strong-willed government, the DGSO could still realize its objectives of contributing immensely to the improvement of power generation and supply in Nigeria.

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DEDICATION

This thesis is dedicated to the memory of my late mom Mrs. Janet Taiwo Shodipo; and to the much anticipated attainment of stable, effective and efficient power supply in Nigeria.

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CHAPTER ONE: INTRODUCTION

1.1. Natural Gas Fired Electricity Generation and Supply in Nigeria: An Overview

Since the ascendance of electric energy as a core energy source in the world, virtually all aspects of modern life and activity rely on electricity to thrive.¹ Electricity is often generated through the exploitation and utilization of various natural resources such as coal, oil, gas, hydro, wind etc.² In Nigeria and other countries³ with considerably large quantities of natural gas, gas powered plants are one of the electricity generating options.⁴

Natural gas has over time been a strong competitor in the electric power sector, especially pursuant to climate policy⁵ the world over because it produces much lower emissions of greenhouse gases than coal and other petroleum products.⁶

That said, reliance on a high percentage of natural gas for power generation raises issues of security of supply.⁷ Also, as natural gas and electricity converge, a country whose economy

¹ Musiliu O Oseni, "An Analysis of the Power Sector Performance in Nigeria" (2011) 15 *Renewable & Sustainable Energy Rev* at 4765.

² Abubakar Sadiq Aliyu, Ahmad Termizi Ramli & Muneer Aziz Saleh, "Nigeria Electricity Crisis: Power Generation Capacity Expansion and Environmental Ramifications" (2013) 61 *Energy* 354 at 355 [Aliyu, Ramli & Saleh].

³ For example, the United States of America, Canada, Egypt, Indonesia etc. See "International Energy Statistics", online: *US Energy Information Administration* <www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=3&pid=3&aid=6>.

⁴ For instance, in 2009, twenty-three percent of the net electricity generated in the United States was generated with natural gas. See Bruce M Pendery, "Generating Electricity with Natural Gas: It's Plentiful and Cheap, but Regulation is Needed to Prevent Environmental Degradation" (2012) 32:2 *Utah Environmental LR* at 255; "Annual Energy Outlook 2011 with Projections to 2035" (2011) at 3, online: *US Energy Information Administration* <[www.eia.gov/forecasts/archive/aeo11/pdf/0383\(2011\).pdf](http://www.eia.gov/forecasts/archive/aeo11/pdf/0383(2011).pdf)>; Also, as at November 2013, natural gas resource contributes about 8.6 percent to electricity generation in Canada. See Additional Statistics on Energy, *Natural Resources Canada*, online: <www.nrcan.gc.ca/publications/statistics-facts/1239>.

⁵ Climate Policy entails the recent global awareness of preserving the environment by limiting and eventually eradicating environmental pollution and natural gas is quite relevant due to its low carbon emission rate compared to other fossil fuels. Also, climate policies particularly address climate change including both mitigation and adaptation. See generally, Roger A Pielke, "The Case for a Sustainable Climate Policy: Why Costs and Benefits must be Temporally Balanced" (2006-2007) 155 *U Pa L Rev* at 1843.

⁶ Sergey Paltsev et al, "The Future of U.S. Natural Gas Production, Use and Trade" (2011) 39:9 *J Energy Policy* at 5309.

⁷ Security of supply in this context refers to having adequate, constant and consistent supply of natural gas for stable electric power generation. See Thanawat Nakawiro & Subhes C Bhattacharyya, "High Gas Dependence for Power Generation in Thailand: The Vulnerability Analysis" (2007) 35 *J Energy Policy* at 3335 [Nakawiro & Bhattacharyya].

depends on natural gas production and utilization may become economically vulnerable⁸ in the event that consistent and adequate supply of natural gas and electricity become threatened.

Nigeria has proven natural gas reserves of about 187 trillion cubic feet (TCF)⁹ some of which are presently being explored for electricity generation by private and government controlled facilities. At present, approximately seventy percent of power generation facilities in Nigeria are gas fired.¹⁰ With an existing generation capacity of about 6,000 Megawatts (MW) as at 2012,¹¹ coupled with the availability of such a vast natural gas resource, Nigeria should enjoy stable, consistent and affordable electric power. Ironically, this expectation of stable and affordable electricity for the country has not been the case for decades.

Indeed, Nigeria is faced with acute electricity problems principally characterized by electricity demand that far outweighs supply.¹² This imbalance in the demand and supply of electricity hinders the country's economic and overall development,¹³ notwithstanding the country's enormous natural gas reserve.¹⁴

⁸ *Ibid.*

⁹ Tade Oyewunmi, "The Nigerian Gas Industry: Policy, Law & Regulatory Developments", online: *Acas Law* <www.acas-law.com/cipxprobe/publications/Nigerian_Gas_Industry_-_Policy,_Law_Regulatory_Developments_-_February_20131.pdf>.

¹⁰ Blesing James Laburta, "Can The Vessel Of Domestic Gas Supply Obligations Under The Nigerian Gas Master Plan Sail Nigeria Safely to the Shores of Sufficient Electricity Supply?" (2013) 15 CEPMLP Annual Rev at 12, online: *Centre for Energy Petroleum, Mineral and Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/?news=32332>.

¹¹ "EIA Country Analysis: Nigeria" at 17, online: *US Energy Information Administration* <www.eia.gov/countries/analysisbriefs/Nigeria/nigeria.pdf>.

¹² Aliyu, Ramli & Saleh, *supra* note 2 at 356.

¹³ See generally H Gujba, Y Mulugetta & A Azapagic, "Environmental and Economic Appraisal of Power Generation Capacity Expansion Plan in Nigeria" (2010) 38:10 J Energy Policy 5636 at 5647-5648 [Gubja, Mulugetta & Azapagic] on impacts of erratic power supply on Nigerian businesses and the economy.

¹⁴ KR Ajao et al, "Electric Energy Supply in Nigeria, Decentralized Energy Approach" (2009) 2:5 NY Science J at 84, 86, online: <www.sciencepub.net/newyork/0205/10_0803_Paper18_ny0205.pdf>.

The electricity supply problem in Nigeria has been largely attributed to generation short falls, transmission bottlenecks, and distribution problems within the country's power sector.¹⁵

These identified problems are further results of the following failures/obstacles:

- an erratic supply of gas for power generation;
- a vulnerable and overloaded existing transmission system;
- the regular vandalism of gas and cable lines, usually associated with low levels of surveillance and security on electrical infrastructure;
- the lack of required modern technologies and/or lack of communication and monitoring of infrastructure for the generation, transmission and distribution of electricity; and
- tariff that neither sustain nor enable the electricity utility management to maintain and expand the infrastructure.¹⁶

These factors have been identified as principal reasons for the ongoing inadequate power generation and erratic power supply in Nigeria and have become the basis for characterizing the Nigerian power sector as “inefficient”.¹⁷ Accordingly, the much sought after goal for the Nigerian power sector is achieving *efficiency* as an improved and efficient electricity supply system is one of the major socio-economic priorities for Nigeria.¹⁸

Since early 2000, the Federal Government of Nigeria (FGN) has taken various steps to address some of the perceived causes of inefficiency in the electric power sector. Specifically, some of the steps taken by the FGN include legislative and policy reforms in the

¹⁵ AS Sambo et al, “Electricity Generation and the Present Challenges in the Nigerian Power Sector” at 14, online: *Research Gate* <www.researchgate.net/publication/228399732_Electricity_Generation_and_the_Present_Challenges_in_the_Nigerian_Power_Sector> [Sambo].

¹⁶ *Ibid.*

¹⁷ See generally Aliyu, Ramli & Saleh, *supra* note 2 at 356 for more identified problems of the Nigerian power sector.

¹⁸ See Gujba, Mulugetta & Azapagic, *supra* note 13 at 5636.

gas and power sectors¹⁹ as well as institutional reorganization.²⁰ To date, these initiatives, while improving the situation to a certain extent,²¹ have not realized the much sought after power sector efficiency.²²

Logically, the first link in the gas-fired power chain (which goes to the core of power generation) is natural gas supply. In an energy system with large capacity of gas-fired power plants such as Nigeria, the capability of the gas network to supply natural gas to the electric power sector is crucial and affects the overall optimal operation of the electricity network.²³ Hence, in such an integrated system, interruption in the gas supply network not only constrains the ability to meet gas demand but in turn can also disrupt electricity supply.²⁴

Indeed, the ongoing shortage of natural gas supply to power generating facilities has been identified as a significant contributor to the erratic power supply issue constantly experienced across the country.²⁵ The natural gas supply shortage is all the more perplexing given the

¹⁹ For example, the formulation of the National Gas Master Plan [NGMP] and enactment of the *Electric Power Sector Reform Act*, 2005 [EPSR Act].

²⁰ For example, the establishment of the Nigerian Electricity Regulatory Commission (NERC) under the *EPSR Act*.

²¹ The Nigerian power sector has been largely privatized allowing for an influx of private investors. Also, a regulatory agency, NERC particularly monitors and controls the affairs of the power sector. These and many more are hoped would boost the overall power generation and supply in the nearest future.

²² As at 2013, the country still experiences erratic power supply in most parts. See generally, Aliyu, Ramli & Saleh, *supra* note 2 at 354.

²³ Modassar Chaudry et al, “Combined Gas and Electricity Network Expansion Planning Applied” (2014) 113 *Energy J* at 1171 [Chaudry]; J Munoz et al, “Natural Gas Network Modeling for Power Systems Reliability Studies” (Paper delivered at the Institute of Electrical and Electronics Engineers (IEEE) PowerTech Conference, Bologna, Italy, 23-26 June 2003) at 8, online: *IEEE* <www.ieeeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=1304696>; T Li, M Eremia & M Shahidehpour, “Interdependency of Natural Gas Network and Power System Security” (2008) 23:4 *Institute of Electrical and Electronics Engineers (IEEE) Transactions on Power System* at 1817-1824, online: *IEEE* <www.ieeeexplore.ieee.org/stamp/stamp.jsp?arnumber=4652586>.

²⁴ Chaudry, *supra* note 23; See also, M Chaudry, N Jenkins & G Strbac, “Multi-time Period Combined Gas and Electricity Network Optimisation” (2008) 78:7 *Electric Power System Research* at 1265-1279.

²⁵ In fact, the Nigerian power sector is marred by low generating capacity relative to installed capacity and the majority of the country’s end-users are plagued with steady interruption of power supply. See Chikezie Nwaoha & David A Wood, “A Review of the Utilization and Monetization of Nigeria’s Natural Gas Resources: Current Realities” (2014) 18 *J Nat Gas Sci & Engr* 412 at 416.

vastness of this resource in Nigeria as well as the myriad of government initiatives aimed at optimizing domestic supply.²⁶

With respect to this latter point, and in order to address this issue of the ongoing shortage of natural gas supply to power generating facilities (as well as other gas based industries in the country), the FGN formulated the Nigerian Gas Master Plan in 2008,²⁷ which imposed a Domestic Gas Supply Obligation (DGSO) on gas producers in Nigeria.²⁸ Under this plan, the DGSO (discussed in more detail in Chapter Four) specifically mandated that Nigerian gas producing companies dedicate a certain percentage of the natural gas produced to supply identified strategic domestic industries, including electric power plants.²⁹

Implementation of the DGSO was expected by the FGN to result in improved power generation and efficient power supply in Nigeria. However, it has not yet been successful in achieving these goals as statistics show that only about 40% of the Nigerian population is connected to national electricity grid while the same connected 40% population faces electric power problems 60% of the time.³⁰ This statistics logically leaves the remaining 60% of the

26 Some of the reasons given for this supply shortage include but not limited to factors such as: an increase in natural gas demand domestically and internationally; pipeline vandalism; inadequate infrastructure; an incomprehensive legal framework; conflict with export supply commitments. See Chinedu Nebo, "Gas Pipeline Vandals Sabotage Nigeria's Power Sector Efforts" *Channels TV*, (21 December 2013), online: <www.channelstv.com/home/2013/12/21/gas-pipeline-vandals-sabotage-nigerias-power-sector-efforts/>; See also Dayo Oketola, "Funding, Infrastructure, Gas Supply Problems Plague Power Sector" *Punch Newspaper* (29 December 2013), online: *Punch Nigeria Limited* <www.punchng.com/business/energy/funding-infrastructure-gas-supply-problems-plague-power-sector-2/>; Nigerian Domestic Gas Supply and Pricing Policy, 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008 at Introductory Section [Policy].

27 Nigerian Gas Master Plan, 2008 [NGMP] The Nigerian Gas Master Plan 2008 was a laid out plan and government strategy to improve on the Nigerian gas sector and one of the effects it was expected to have is a positive influence on the domestic power sector and other industries.

28 National Domestic Gas Supply and Pricing Regulations 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008, s 10 [Regulation]; "Nigeria: The Gas Revolution - What about it?" (2011) Oil and Gas Update at 2, online: *Acas Law* <www.acas-law.com/cipxprobe/publications/ENERGY%20AND%20PROJECT%20FINANCE%20NEWSLETTER%20JUNE%202011.pdf>.

29 Other industry targets are: industries that use gas as feedstock such as petrochemical industries, fertilizer industries etc. For further details, see generally, Regulation, *supra* note 28; Policy, *supra* note 26 at Introductory Section.

30 Aliyu, Ramli & Saleh, *supra* note 2 at 354; Engr DJ Obadote, "Energy Crisis in Nigeria: Technical Issues and Solutions" (Paper delivered at the Power Sector Prayer Conference 25-27 June 2009) at 2-3; ENC Okafor &

Nigerian population in sheer darkness except when they individually source electricity, frequently turning to the use of electricity generators.³¹

Accordingly, the present study explores the ongoing efforts by the FGN to correct the problem of inefficiencies in the supply of natural gas to power generating facilities, as well as the factors that have continually hampered these efforts. Specifically, this thesis examines the DGSO in an attempt to determine some of the reasons why the DGSO may not have achieved its goals of improving domestic natural gas supply (and in turn improved electric power generation and supply in Nigeria) and to make recommendations that may assist in the optimization of the DGSO towards those goals.

In carrying out an examination of the DGSO and the potential reasons underlying its failure to achieve its objectives with respect to improved domestic natural gas supply so far, it is also important to consider the validity of the Nigerian state imposing such an obligation in the first place given the potential competing stakeholder interests involved. For example, natural gas suppliers or producers may have contractual commitments to export natural gas to other countries, especially where the pricing framework is more attractive. Thus, in order to illuminate potential tensions, conflicts or barriers to optimization of the DGSO, it is necessary to consider, at least to a certain extent, some of the following: the state's property rights and sovereignty over natural resources; the state's obligation with respect to energy security;³² and the state's mandate to boost her overall economic growth. Accordingly, this

CKA Joe-Uzuegbu, "Challenges to the Development of Renewable Energy for Electric Power Sector in Nigeria" (2010) 2 Intl J Acad Res at 211-216.

³¹ Aliyu, Ramli & Saleh, *supra* note 2 at 357.

³² Energy security has been defined as the ability of an economy to provide sufficient, affordable and environmentally sustainable energy services so as to maintain maximum welfare of a state. See Helcio Blum Luiz & FL Legey, "The Challenging Economics of Energy Security: Ensuring Energy Benefits in Support to Sustainable Development" (2012) 34 Energy Economics at 1982 [Luiz & Legey]. It is also defined as "a condition in which a nation and all, or most of its citizens and businesses have access to sufficient energy resources at reasonable prices for the foreseeable future free from serious risk of major disruption of service". See Barry Barton et al, *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (Oxford: Oxford University Press, 2004) at 5 [Barry Barton et al].

thesis attempts to construct its optimization recommendations for the DGSO in light of the need to improve power generation and supply in Nigeria.

In order to assist in generating recommendations, solutions and/or alternative approaches for Nigeria towards optimizing the functioning of the DGSO and/or improving domestic gas supply to power generating facilities (while at the same time balancing competing stakeholder interests), a comparative analysis with the countries of Indonesia, Western Australia and Egypt will be undertaken. These countries have been selected due to the fact that they share certain similar systemic characteristics as well as policy and commitment dynamics regarding domestic gas supply obligations with Nigeria.³³ This comparative analysis further brings to fore the theory of legal transplantation and the role it plays in assessing the feasibility or otherwise of importing legal rules from one country to another.

To summarize, the overarching goal of this thesis is to assess the DGSO in order to provide recommendations which could potentially assist the Nigerian government in its resolve to enhance domestic natural gas supply and utilization for the purposes of meeting a specific national need, namely, the improvement of electric power generation and supply in Nigeria. This study contributes significantly to the growing conversations on how best to improve overall power generation and supply output in Nigeria³⁴ as well as offer insights into ways of eventually attaining the long sought after efficiency in the Nigerian electric power sector.

1.2. Structure of the Thesis

Chapter Two begins with an explanation of the general concept of a domestic supply obligation and goes on to describe such an obligation specifically within the Nigerian context as reflected in the formulation and implementation of the DGSO.

³³ This is discussed in more detail in Chapter Five.

³⁴ This study altogether aims at contributing to the efforts geared towards the attainment of significant increase in power generation and supply output through the instrumentality of the DGSO which should meet the electric power needs of the Nigerian populace reasonably.

The legitimacy of the state's imposition of the DGSO on Nigerian gas producers from the perspectives of energy security³⁵ and property theory is also introduced in this Chapter. The examination of the DGSO from these additional state interests is relevant and important to the overall discussion as these concepts form the bedrock and underlying legal justification for (and thus the legitimacy of) the formulation and imposition of the DGSO in the first place. The overall purpose of Chapter Two is thus to provide the necessary foundational knowledge base for the discussion and analysis of the DGSO that follow in subsequent chapters.

Chapter Three continues to set the stage for specific analysis of the DGSO by providing the reader with a concise historical overview of the Nigerian gas and power sectors and describes the attendant regulatory framework of both of these sectors - gas and power. A cursory explanation of the ongoing perceived challenges with these two sectors (such as pricing, infrastructure problems amongst others) and the governmental efforts that have been taken to enhance efficiency in the power sector by addressing these challenges (for example, expunging monopolies and allowing private sector participation in order to enhance optimal productivity of the power sector) will also be introduced.

The purpose of Chapter Three is to ensure a basic understanding of both of these sectors (gas and power) and to demonstrate the interdependence of these sectors particularly as it relates to electric power generation. This in turn gives a better view of the regulatory framework impacting the genesis and operation of the DGSO as the operation of the DGSO is coordinated under the auspices of both the Nigerian gas and power sectors.

Chapter Four begins with an overview of the Nigerian Gas Master Plan (NGMP) and then conducts an in-depth analysis of the DGSO (introduced pursuant to the NGMP) in order to

³⁵ Barry Barton et al, *supra* note 32; Luiz & Legey, *supra* note 32.

identify whether and how much the domestic gas market and the domestic gas pricing framework under the DGSO negatively impacts the attitude or capacity of gas producers' to adhere to the DGSO.

The purpose of Chapter Four is to identify factors that potentially impede the successful implementation of the DGSO. The identification of such factors, if any, are expected to help determine appropriate recommendations which can enhance DGSO operations in Nigeria to improve power generation and supply while balancing stakeholders' interests.

Chapter Five undertakes a comparative analysis of Nigeria's DGSO with those of Indonesia, Western Australia and Egypt. These latter three (3) countries have implemented domestic gas supply obligation policies with dynamics similar to that of the Nigerian DGSO. The purpose of this comparative analysis is to identify firstly, where opinions align and differ with the Nigerian DGSO policy regarding the implementation of these countries' respective domestic gas supply obligation policies; and secondly, to develop from these observations, regulatory reform and other recommendations that promise to have the greatest positive impact on the Nigerian domestic natural gas and power sectors, while downplaying or reducing actions with the greatest potential to jeopardize other stakeholder commitments such as export. The theory of legal transplantation is also examined for the purposes of exploring the feasibility or otherwise of importing ideas, policies and legal rules from other countries considering the differences in their socio-cultural, economic, geographical and political background.

Chapter Six introduces and discusses additional regulatory and institutional structures that impact the practical implementation of the DGSO and in turn efficiencies (or inefficiencies) in the Nigerian power sector. The aim of Chapter Six is to explore the overall impact of these additional regulatory and institutional structures with a view to developing additional suggestions for overall optimization of the DGSO.

Chapter Seven concludes the entire findings from the foregoing chapters and provides a summarized list of optimization recommendations that may assist the Nigerian government in improving the implementation of the DGSO in more pragmatic ways (as opposed to simply theoretical) particularly so as to (1) ensure the DGSO contributes to and improves power generation and supply and in turn, efficiency in the power sector as intended while at the same time (2) striking a reasonable balance between the domestic needs and interests of the country with that of other private stakeholders in the gas and power sectors.

1.3. Scope of Thesis: Natural Gas Utilization and Climate Change Considerations

As mentioned earlier, the focus of this thesis is to assess the DGSO in order to provide recommendations which may be able to assist the Nigerian government in its resolve to enhance the domestic supply and utilization of natural gas for the purposes of meeting a specific national need, namely, the improvement of electric power generation and supply in Nigeria. However, it is expedient to acknowledge trending climate change concerns especially in relation to the utilization of natural gas in Nigeria even though it is not within the scope of this thesis.

Presently, the exploitation and utilization of natural gas (as opposed to other fuels) seems to be a modest approach towards ensuring a clean and safe environment in the Nigerian state.³⁶ In fact, the flaring of natural gas in Nigeria (which has been the case for several years) actually causes more harm to the people and surrounding environment.³⁷ Hence, a better way of ensuring optimal productivity in the Nigerian power sector, economic growth and reduction of greenhouse emissions is to effectively channel the available natural gas in the

³⁶ Especially since natural gas is acclaimed to be the cleanest of the fossil fuels. See Michael J Economides & David A Wood, "The State of Natural Gas" (2009) 1 J Nat Gas Sci & Engr at 1.

³⁷ JA Sonibare, "Air Pollution Implications of Nigeria's Present Strategy on Improved Electricity Generation" (2010) 38:10 J Energy Policy at 5788 [Sonibare].

country for electricity generation which of course potentially contributes to overall social and economic development of Nigeria.³⁸

Although climate change does not fall within the scope of this thesis, the positive externalities³⁹ regarding the utilization of natural gas in Nigeria, especially for power generation in the circumstance is acknowledged. This simple acknowledgement however does not foreclose the need for further research on how the Nigerian state might work towards engaging more “environmentally friendly” energy options since the issue of climate change is a matter of ongoing global concern which needs urgent attention.⁴⁰

³⁸ See generally, AE Akinlo, “Electricity Consumption and Economic Growth in Nigeria: Evidence from Co-integration and Co-feature Analysis” (2009) 31 J Policy Modeling 681 at 691.

³⁹ For instance, reduction of gas flaring and utilization of associated gas for power generation.

⁴⁰ See Sonibare, *supra* note 37; Musiliu O Oseni “Improving Households’ Access to Electricity and Energy Consumption Pattern in Nigeria: Renewable Energy Alternative” (2012) 16 Renewable and Sustainable Energy Rev at 3971–3974, for further discussion on the issue of environmental pollution, climate change and role of non-renewable energy resources such as natural gas for electricity generation.

CHAPTER TWO

THE DOMESTIC GAS SUPPLY OBLIGATION AND THE VALIDITY OF ITS IMPOSITION IN NIGERIA

2.0. Background

The concept of a domestic supply obligation literally suggests implementing a policy making strategy in the face of a pressing need to cater to the domestic front. A vivid example is the Nigerian government's formulation of the Domestic Gas Supply Obligation (DGSO) under the Nigerian Gas Master Plan (NGMP).

The validity of the Nigerian state imposing such an obligation on gas producers cannot however be simply assumed. It is important to bring to fore the legitimacy of the adoption and imposition of the DGSO in order to put to rest issues that may question its integrity (which in turn can negatively affect compliance with the obligation). As such, the concepts of energy security as well as theory of property have been identified as key aspects of resource exploitation and management that can assist in establishing legitimacy for the state's imposition of a domestic supply obligation.

The purpose of this preliminary discussion is not to unequivocally establish the legal right of the Nigerian government to formulate and impose the DGSO, but rather to identify key concepts that do support such a right in order to establish some legitimacy for the DGSO. Furthermore, understanding the legal foundations of the DGSO provides a solid platform for the DGSO to be substantively examined in order to identify pragmatic recommendations for its optimization.

2.1. What is Domestic Supply Obligation?

In simple terms, a domestic supply obligation is an obligation concerned with the dedication of a stipulated reserve and production for the purposes of supplying the domestic market.¹

The concept of a domestic supply obligation demonstrates the desire of the state to cater for the needs of the home front by mandating an obligation to provide certain needed supplies domestically.² The obligation creates an imposition on certain product producers to provide their products in definite or calculated quantities for the consumption and utilization of persons and industries within a state.³

Generally speaking, a domestic supply obligation tends to reflect governmental efforts towards ensuring the sustainability of domestic sectors that require a particular product for growth so that the constant and adequate supply of that product is guaranteed for ongoing and efficient operation of the sectors at issue. For instance, some hydrocarbon laws or International Petroleum Agreements (IPAs) in developing countries commonly stipulate that local production first meet the domestic demand for petroleum.⁴

Apart from ensuring the basic sustainability and operation of a domestic sector, the imposition of a domestic supply obligation may also be warranted when domestic and external demand for a particular product is either increasing or predicted to increase.⁵ The obvious objective of imposing such obligation under circumstances of scarcity (actual or

¹ CM Okorie, *Can Domestic Gas Obligation (DGO) Principles be Compromised by Detailed Regulation? A Review of Nigeria's Downstream Gas Policies* (LLM Thesis, CEPMLP University of Dundee, 2010) at 29 [Unpublished].

² Domestic literally suggests home front, local, internal affairs, household etc., while obligation connotes duty, responsibility, requirement, being bound to do or forbear an imperative duty. Supply on the other hand connotes providing or making available a particular thing. To this end a combination of the three words 'domestic supply obligation' suggests the duty or responsibility to make available to the home front a particular commodity and in this case the commodity being discussed is natural gas. See Generally *Websters New International Dictionary*, 3rd ed, *sub verbo* "domestic", "obligation", "supply".

³ For example, gas producers in Indonesia and Western Australia are mandated to dedicate 25 and 15 percent of gas produced for the domestic market respectively. See Chapter Five for further discussion.

⁴ Claude Duval et al, *International Petroleum Exploration and Exploitation Agreements: Legal, Economic & Policy Aspects*, 2nd ed (New York, United States: Barrows Company, 2009) at 168 [Duval].

⁵ As in the case of Nigeria where domestic utilization of gas is increasing steadily due to unprecedented demands from the power sector, fertilizer industries and other gas dependent industries.

threatened) is to ensure proper, equitable and efficient distribution of the product to both domestic and external consumers.⁶

2.2. Nigeria's Domestic Gas Supply Obligation: An Overview

Within the context of the Nigerian state, the DGSO is defined as the obligation of every person licensed to produce petroleum to dedicate a specific volume of natural gas towards the domestic gas requirement and to deliver the gas to a [domestic] purchaser in accordance with a specified nomination procedure.⁷ The DGSO reflects the Nigerian government's deliberate and conscious regulation of the gas industry to ensure that domestic gas industries (especially the power sector) adequately benefit from the natural gas being produced in the country.⁸ Hence, the DGSO in Nigeria largely hinges on the need to improve and ensure optimal power generation in addition to enhancement of the economy.

The goal of improving the productivity of the Nigerian largely gas-fired power sector which is significantly demonstrated under the DGSO stems from the acknowledgement of the fact that the abundance of natural gas in Nigeria plays a vital role in the process of electric power generation.⁹ More so, a considerable number of gas fired power plants are already in operation in Nigeria¹⁰ and currently dominating the power generation mix.¹¹

⁶ See "Indonesia's Gas Industry: Prioritizing Domestic Demand and New Opportunities" (2013), online: *Global Business Guide: Indonesia* <www.gbfindonesia.com/en/energy/article/2012/indonesia_s_gas_industry_prioritising_domestic_demand_and_new_opportunities.php> for discussion on tension created by inequitable distribution of natural gas in Indonesia's domestic and export market.

⁷ Domestic Gas Supply and Pricing Regulation, 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008, s 10 [Regulation].

⁸ Due to the urgent need for domestic gas availability and a pricing framework to drive and sustain major gas based industrialization in Nigeria, the [Domestic Gas Supply] Policy was put in place by the Nigerian government to address domestic gas supply availability in a manner that delicately balances the need for domestic economic growth and revenue generation from exports. See Domestic Gas Supply and Pricing Policy, 2008, Published in the Federal Republic of Nigeria Gazette No. 10, Vol. 95 of 19th February, 2008, Introductory Section at 3 [Policy].

⁹ Adeola Adenikinju, "Efficiency of the Energy Sector and its Impact on the Competitiveness of the Nigerian Economy", International Association for Energy Economics at 30, online: *IAEE* <www.iaee.org/documents/newsletterarticles/408adeola.pdf> [Adenikinju].

¹⁰ Examples include: the Afam power station; Okpai thermal plant; Geregu I,II,III power stations; Olorunsogo power station; Olaoji power plant; Sapele power plant; Egbin power station etc.

That said, as briefly mentioned earlier, even with the DGSO in place since 2008, power supply in Nigeria continues to be erratic and raises many questions particularly on how to resolve the problem of inadequate power generation and erratic power supply. However, having identified that one contributor to the power problem in Nigeria is indeed the shortage of gas supply to power plants amongst others, it is apparent that the DGSO can largely and directly address the issue while it in turn enhances power generation and supply output significantly.

The NGMP, which introduced the DGSO in 2008 set out to address specific issues affecting the productivity of the natural gas sector such as gas pricing, domestic gas supply and gas infrastructure.¹² These issues affecting productivity in the natural gas sector all have significant bearing on the eventual efficiency of the Nigerian power sector which greatly depends on the utilization of natural gas. As such, the NGMP, which will be discussed in more detail in Chapter Four, has since its formulation in 2008 been the focal point from which certain regulations, policies, proposed bills and other legal considerations about the gas sector sprung up.¹³

2.3. The DGSO in the Context of Energy Security and the Theory of Property

Having introduced the general concept of domestic supply obligation within the Nigerian context as captured by the DGSO, it is expedient to explore possible legal and theoretical grounds establishing such an obligation. As such, the concept of energy security and the theory of property are briefly discussed below in order to substantiate the legitimacy of the formulation and imposition of the DGSO in Nigeria by the state.

¹¹ Adenikinju, *supra* note 9 at 30.

¹² Nigerian Gas Master Plan, 2008 [NGMP].

¹³ Such as, Regulation, *supra* note 7; Policy, *supra* note 8; and *Petroleum Industry Bill [PIB]*.

In other words, in order to discuss the substantive issues on the DGSO which is aimed at ensuring adequate supply of natural gas to gas fired power plants and in turn improving electric power generation and supply in Nigeria, it is first prudent to consider, at least to some extent, the basis upon which the state might have legitimately imposed such an obligation on gas producers to direct a certain volume of their product towards domestic purposes and/or users.

2.3.1 Defining Energy Security

Energy security has been defined as the ability of an economy to provide sufficient, affordable and environmentally sustainable energy services so as to maintain maximum welfare of a state, even when issues would press it otherwise.¹⁴ In other words, energy security is the ability of an economy to provide sustainable energy services in order to maintain the maximum welfare of a state.¹⁵

Impliedly, maximum welfare of a state in this context pertains to ensuring that the energy needs of the citizenry for example, electricity and gas are adequately provided for the citizenry. As such, energy security concerns itself with ensuring that the best energy resources and attendant services are in constant supply, in the right quantities and prices to consumers with minimal or no disruption whatsoever.¹⁶

It should however be noted that the concept of energy security does not have a universally acceptable definition.¹⁷ This lack of universally acceptable definition is due to the multi-

¹⁴ Helcio Blum Luiz & FL Legey, “The Challenging Economics of Energy Security: Ensuring Energy Benefits in Support to Sustainable Development (2012) 34 Energy Economics at 1982 [Luiz & Legey].

¹⁵ *Ibid* at 1988.

¹⁶ Achieving this state of affairs in a state in the writer’s opinion succinctly captures the meaning of “maximum welfare of a state” as espoused in the definition of the concept of energy security above.

¹⁷ “Energy security is considered a broad and evolving concept. For instance, in the seventies, it was primarily linked to enhancing conservation and developing political strategies to secure guaranteed Western energy supplies in the Middle East. Today the term has widened to include risks such as underinvestment in infrastructure, which can lead to massive power outages, and poorly designed markets, as well as disruption to energy supplies due to natural disasters, accidents, and international terrorism.” See Thierry Legendre, “The North Atlantic Treaty Organization's Future Role in Energy Security” (2007) 8 Whitehead J Dipl & Intl Rel at

dimensional and evolving nature of the concept over the years. That said, according to the World Energy Council (WEC)¹⁸ Paradigm of 3 As, the main aspects of energy security are: (1) *accessibility* (the extent to which people have access to modern energy, as distinct from dependence on traditional energy forms); (2) *availability* (the reliability and security of energy supply systems, once access has been achieved); and (3) *acceptability* (the environmental sustainability of energy supply and use).¹⁹

These three aspects of energy security are reflected by and go to the core of the DGSO as one of the identifiable goals of the DGSO is to enhance efficiency in the power sector by ensuring accessibility and availability of adequate gas for the power plants while the environmental impacts are reasonably acceptable compared to what is obtainable with other fossil fuels.

In addition to accessibility, affordability and acceptability, several components of energy security have also been identified. These include: ‘security of energy supply and demand; consistent supply of energy; security of energy infrastructure from damage or destruction by terrorist attacks and natural disasters; prevention of supply disruptions;’²⁰ and diversification of energy sources.²¹

The concept of energy security can also be understood from both domestic and global perspectives. In terms of the domestic perspective, Barton et al. describes energy security as a

29 [Legendre]; Fredrik Hedenus, Christian Azar & Daniel JA Johansson, “Energy Security Policies in EU 25: The Expected Cost of Oil Supply Disruptions” (2010) 38:3 J Energy Policy 1241 at 1242 [Hedenus, Azar & Johansson].

¹⁸ WEC is a United Nation’s accredited global energy body consisting of impartial network of leaders and practitioners who represent the entire energy spectrum by promoting an affordable, stable and environmentally sensitive energy system for the greatest benefit of all.” See World Energy Council, online: *World Energy Council* <www.worldenergy.org/about-wec/>.

¹⁹ Tatiana Mitrova, “Energy Security and Evolution of Gas Markets” at 1, online: *Energy Research Institute of the Russian Academy of Sciences* <www.eriras.ru/files/Mitrova.Energy_Security_and_Evolution_of_Gas_Markets_2008.pdf>. (Also published in - Tatiana Mitrova, “Energy Security and Evolution of Gas Markets” (2008) 19:8 J Energy & Environment at 1123, online: *Multi-Science Publishing* <multi-science.metapress.com/content/t743483127tq583u/> [Mitrova].

²⁰ *Ibid*; Legendre, *supra* note 17.

²¹ Michael Ratner et al, “Europe’s Energy Security: Options and Challenges to Natural Gas Supply Diversification” at 1, online: *Congressional Research Service* <www.fas.org/sgp/crs/row/R42405.pdf>.

condition in which a nation and all, or most of its citizens and businesses have access to sufficient energy resources at reasonable prices for the foreseeable future, free from serious risk of major disruption of service.²² Impliedly, availability, accessibility and affordability of energy resources beyond the present plays a key role in the determination of the existence or otherwise of energy security in a country.

The domestic perspective to energy security further points to the importance of energy in daily activities and its contribution to national growth and development. According to Mitrova, when national energy security prevails, it typically denotes adequacy of energy supply for a nation and its economy.²³ This adequate energy supply within a nation is usually realized by the introduction of state regulations with direct administrative interventions, price control and frequently, the nationalization of gas companies.²⁴

The global perspective of energy security on the other hand makes it glaring that energy or natural resources needed the world over are unevenly distributed across the globe and only available in few countries naturally endowed with such resources.²⁵ Accordingly, there is a high level of interdependence and interrelationship between energy resource-endowed countries and other countries of the world which oftentimes come in form of trade relations.²⁶ Hence, the concept of energy security has an important role to play in both producing (supply) and consuming (demand) countries as they all need energy resources in certain quantities to maintain and enhance their economies.

²² Barry Barton et al, *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (Oxford: Oxford University Press, 2004) at 5.

²³ See generally, Mitrova *supra* note 19 at 3.

²⁴ *Ibid.*

²⁵ Ilene Grossman, "Energy Interdependence between US and Canada will play a Major Role in both Countries' Future", online: *Council of State Government, Midwest Policy and Research* <www.csgmidwest.org/policyresearch/postmtg12energy.aspx>.

²⁶ *Ibid.*

The concept of energy security thus further draws attention to the issue of variance in supply and demand of energy resources and how such can affect the economic, social and other activities of different countries. Securing energy availability apparently requires consistently available and preferably affordable supplies of energy resources to all consumers both within and outside of producing states. In the light of the above, the next section examines the division of energy security into the categories of demand security and supply security.²⁷

2.3.1.1. Security of Energy Supply and Demand

Security of Supply

Due to the fact that the interruption of a steady and ample flow of energy can massively harm a nation's economic output, political stability and the personal wellbeing of its citizens, addressing energy security frequently targets supply security, as well as the sustainability and stability of energy resources and services.²⁸ Hence, for instance, where certain economic activities are largely dependent on the utilization of energy resources (e.g. natural gas for power generation), the issue of supply security becomes of utmost importance.²⁹

Supply security is usually the problem of an energy consumer if energy supply is disrupted³⁰ or threatened. As such, an importing government enhances its own country's energy security by ensuring a reliable supply of energy at reasonable prices to support the economy and industry (Dorian et al, 2006).³¹

It should however be noted that supply security is not only an issue for importing states since producing states also have to ensure security of domestic supplies, particularly when more

²⁷ Hedenus, Azar & Johansson, *supra* note 17 at 1242.

²⁸ Florian Baumann, "Energy Security a Multidimensional Concept" (2008) 1 at 4, online: *Centre for Applied Policy Research* <edoc.vifapol.de/opus/volltexte/2009/784/pdf/CAP_Policy_Analysis_2008_01.pdf> [Baumann].

²⁹ *Ibid.*

³⁰ Hedenus, Azar & Johansson, *supra* note 17 at 1242.

³¹ Vlado Vivoda, "Diversification of Oil Import Sources and Energy Security: A key Strategy or an Elusive Objective?" (2009) 37:11 J Energy Policy at 4615; Dorian, Franssen & Simbeck, "Global Challenges in Energy" (2006) 34:15 J Energy Policy at 1984-1991.

importance is being placed on (or a better platform is created for) energy resource exports, often to the detriment of domestic needs. In this circumstance, a producing state would have to address the issue of supply security particularly if the negative effects become unbearable and require correction.

To this end, security of supply especially in relation to natural gas means not only sufficient gas supply volumes, but also open, non-discriminatory, predictable and favorable investment climate in producing countries as well as stable legal conditions for energy investment, transparency of information on resources and production.³²

Security of Demand

On the flip side, security of demand is basically the problem of an energy supplier as uncertainty of future energy demand may lead to over-investment in supply capacity.³³ Oftentimes, producing states require a stable and predictable demand scheme for their energy resources in order to enhance the attendant economic activities. Security of demand also involves transparent, predictable and compatible energy policies in consuming countries, predictable and transparent demand, stable regulatory framework and guarantees of investment returns for suppliers.³⁴

The existing regulatory framework in a country has a major effect on energy demand and supply. Since energy plays an important role in the development, industrialization and growth of countries, it is very important to properly manage the inflow and outflow of energy resources in such a way that can enhance continuous growth and development for both producing and importing countries. Of course, energy supply and demand are also connected to market structures, political considerations and the legal regime in place, all of which must be placed within proper context(s) in order to achieve desirable goals.

³² Mitrova, *supra* note 19 at 5.

³³ Hedenus, Azar & Johansson, *supra* note 17 at 1242.

³⁴ Mitrova, *supra* note 19 at 5.

2.3.1.2. Energy Security in the Nigerian Context

Energy security is one of the most urgent public policy issues being addressed by the Nigerian government in order to meet its economic development objectives with a major focus on ensuring a reliable and stable supply of electricity.³⁵ As such, an argument can be made that as much as Nigeria (a gas rich country) should be involved in ensuring global energy security, for example by exporting natural gas, domestic demand should be given significant attention. To a large extent, this line of argument influenced the formulation of the Nigerian DGSO as contained in the NGMP – a policy which expressly seeks to address the tension created by export supplies of natural gas that appear detrimental to meeting domestic gas demand.³⁶

While trying to enhance domestic supply of gas in Nigeria, it became apparent that more importance seems to be attached to export supplies rather than to the domestic market to the detriment of strategic gas dependent domestic sectors³⁷ like the power sector. To remedy this situation, the Nigerian government introduced the DGSO in order to mitigate or correct the effects of this imbalance. Since energy security is an umbrella term that covers many concerns including energy, economic growth and political power³⁸ the DGSO largely addresses energy security issues from the point of governmental efforts seeking to ensure provision of adequate domestic gas for the enhancement of power generation and supply in Nigeria.

³⁵ H Gujba, Y Mulugetta & A Azapagic “Environmental and Economic Appraisal of Power Generation Capacity Expansion Plan in Nigeria” (2010) 38 J Energy Policy at 5649 [Gujba, Mulugetta, & Azapagic].

³⁶ Regulation, *supra* note 7 at s 2.

³⁷ “According to the FGN, the preference of the gas producers for the export market over the domestic market is driven by the rise in the price of gas which is a disincentive to Nigeria...if these issues are not tackled, Nigeria will be supporting the development of other economies at the expense of its own obligation.” See Theresa O Okenabirhie, “The Domestic Gas Supply Obligation: Is This the Final Solution to Power Failure in Nigeria? How Can the Government Make the Obligation Work?” (2009) 13 CEPMLP Annual Rev at 16, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/?news=30880> [Okenabirhie].

³⁸ “The New Energy Security Paradigm” (2006) at 9, online: *Energy Vision Update, World Economic Forum in Partnership with Cambridge Energy Research Associates* <www.weforum.org/pdf/Energy.pdf> [Energy Security Paradigm].

2.3.2. The Theory of Property

The concept of ownership is largely entrenched in the theory of property.³⁹ Property can be delineated as a private, public or common good, however, regardless of the category, there is a level of government involvement that impacts the activities and actors related to or connected with property especially where it relates to natural resources.⁴⁰

Energy resources such as oil, gas and coal are forms of property governed under various rules of property depending on the regulatory or legal framework existent in the country where they are found. For instance, natural gas in Nigeria is a public or common good of which ownership is vested in the federal government.⁴¹ Hence, regulation usually responds to various circumstances, such as monopoly, excessive competition, paternalism, moral hazard scarce resource allocation, and rationalization externalities.⁴²

Admittedly, the type of petroleum ownership which a government decides to exercise will have a profound effect on the style of petroleum legislation and on the contractual agreements that the government can adopt.⁴³

The traditional concept of private property however means that the full range of property rights and duties can be defined completely (completeness), property owners can exclude others from using their property (exclusion) and property interests can be transferred easily from one person to another (transferability).⁴⁴

³⁹ For discussion, see RS Bhalla, "Legal Analysis of the Right of Property" (1981) 10:3 Anglo-Am L Rev at 180-189.

⁴⁰ This is because development of such resources is of great importance to the economies of the countries concerned. See Peter D Cameron, *International Energy Investment Law: The Pursuit of Stability* (New York: Oxford University Press, 2010) at 3 [Cameron].

⁴¹ *Constitution of the Federal Republic of Nigeria*, 1999, Cap C24, Laws of the Federation of Nigeria (LFN) 1990, s 44(3) [*Nigerian Constitution*]; *Petroleum Act*, 1969, Cap P350, Laws of the Federation of Nigeria (LFN) 1990, s 1 [*Petroleum Act*].

⁴² See generally Joseph P Toman & Richard D Cudahy, *Energy Law in a Nutshell* (United States of America: Thomson Reuters, 2011) at 40-47.

⁴³ Michael AG Bunter, *The Petroleum and Licensing of Petroleum Prospective Acreage* (The Hague: Kluwer Law international, 2002) at 47 [Bunter].

⁴⁴ Joseph P Toman et al, *Energy Law and Policy* (Cincinnati, Ohio: Anderson, 1989) at 24-25.

On the other hand, the modern concept of national sovereignty over mineral resources is intrinsically interwoven with the concepts of freedom and democracy which has general popular acceptance and appeal.⁴⁵ Hence, the exercise of property rights in this context demonstrates the deliberate policy efforts to ensure that the ownership of natural gas resource is not just on paper but in the tangible benefits derived from it, particularly to enhance the economy of a country.

Indeed, the theory of property largely comes to play in the discourse of DGSO due to the fact that most oil and gas producing countries, including Nigeria reserve the ownership rights for their natural resources.⁴⁶ As such, in the exercise of her ownership rights, the producing country seeks to regulate the actors and activities related to the oil and gas sector as a whole.⁴⁷

In this circumstance, the role of the state in exercising her property rights is not only to designate the persons authorized to carry out exploration and exploitation of the deposits, but also to define the conditions under which investors may carry out their activities.⁴⁸

Hence, from the property rights perspective, the DGSO stems from the idea that a gas producing country such as Nigeria is sovereign, has inherent property rights over her natural gas and should make decisions in order to fairly benefit from the natural gas resource at her disposal, particularly as sovereignty is an important concept in petroleum law.⁴⁹ The obligation becomes more pressing when there are peculiar needs or vacuums that efficient

⁴⁵ John P Williams, “Global Trends and Tribulations in Mining Regulation” (2012) 30 J Energy & Nat Resources L 391 at 392.

⁴⁶ The *Nigerian Constitution* and the *Petroleum Act* vest the ownership of oil and gas resources in the Federal Government of Nigeria. See *Nigerian Constitution and Petroleum Act*, *supra* note 41.

⁴⁷ See generally Cameron, *supra* note 40 at 3.

⁴⁸ Duval et al, *supra* note 4 at 23.

⁴⁹ Bunter, *supra* note 43 at 40.

utilization and regulation of the resource can readily meet or fill which in this circumstance is in the form of harnessing the efficiency of the power sector.

Additionally, it just seems logical in some ways to address a domestic need with a local resource which natural gas presents in the Nigerian scenario for electricity generation. Just as it might be fair to say for instance that if one has a well of water in one's house, then one is first entitled to use it under normal circumstances for one's own benefit, while equally reserving the inherent right to permit external users to draw from it for various purposes or regulate activities surrounding the usage.

It should however be noted that the DGSO from a property rights perspective does not prohibit outright export supplies of natural gas. Rather, it only seeks to take advantage of the natural gas resource in such a way that external actors and activities do not jeopardize national interest.

To this end, further discussion in this thesis will examine the appropriateness of the obligation as advanced on the platform of state ownership versus individual operator rights to decide what is most economically viable and will also interrogate the scope of the obligation and its impact on various stakeholders.⁵⁰

2.4. Chapter Summary

This chapter discussed in general the concept of domestic supply obligation and particularly within the Nigerian context. Also, the concept of energy security and the theory of property were briefly introduced in order to identify some legal justification for Nigeria's imposition of the DGSO. The concepts here provide a general illustration of the fact that energy and natural resources are crucial for the growth and development of a country. As demand

⁵⁰ See discussion in Chapter Four.

increases, ways in which that demand can be met must be constantly sought. However, the matter is complex as several interests and stakeholders are involved and must be considered.

Through the lens of energy security, the justification for introducing the DGSO lies in the fact that the DGSO is aimed at promoting availability of adequate natural gas resource to enhance and improve power generation and supply in Nigeria. Essentially, improved power supply is a major demonstration of energy security in action as it contributes to maximum welfare of the state in several ways where, for instance, homes and businesses are assured of adequate power for domestic and economic use.

The chapter further established that the Nigerian government has been saddled with the responsibility of regulating the actors and activities pertaining to the country's natural gas, having been vested with ownership rights under the *Nigerian Constitution* and *Petroleum Act*. As such, the Nigerian government is justified to validly exercise her ownership and property rights through the DGSO as the welfare of the state is a paramount issue in the mandate of governance.

This justification brings to fore the fact that governments of countries endowed with natural resources usually tend to hold on to their property rights and are at liberty to deal with such resources in a way that achieves what they consider to be in their country's best interests. These interests are usually multifaceted, often ranging from local development to economic growth, export earnings and energy security. Importing countries, on the other hand, usually seek to obtain value for whatever resource they might be purchasing by getting the best deal available while they are also concerned about enjoying stable supply of the resource to meet their needs.

Hence, there is always the need by governments to ascertain security of supplies so as to prevent disruption in the chain of activities dependent on the particular resource.

Furthermore, the world being a global village requires that economic dealings regarding export, import and supply of energy resources be supported by well-considered, equitable and pragmatic laws, policies, regulations and contractual terms. This demand for adequate regulation helps in monitoring and regulating the activities and actions of stakeholders no matter where they are located.

The DGSO thus signifies a practical and legally justified regulatory response to the shortage of gas supply in the Nigerian domestic market, a factor that contributes to the inefficiency of the electric power sector. Hence, in line with the theory of property, Nigeria's introduction of the DGSO is considered an exercise of her property right to control and manage the utilization and supply of her natural gas resource with particular attention to domestic demand while not necessarily jeopardizing external demand.

Such exercise of power was necessary in the circumstance as there was apparently a need for certainty of supplies for domestic use (particularly in the power sector) which invariably contributes to the justification for the imposition of the DGSO. Essentially, countries concerned about energy security are often required to take steps in ensuring their own energy efficiency⁵¹ and that exactly is what the DGSO demonstrates.

To this end an in depth discussion about the history and workings of the Nigerian natural gas and power sectors will be the focus of the next chapter. This discussion is necessary to provide better understanding of the natural gas and power sectors and to further establish their strong interrelationship especially as it relates to the operations of the DGSO.

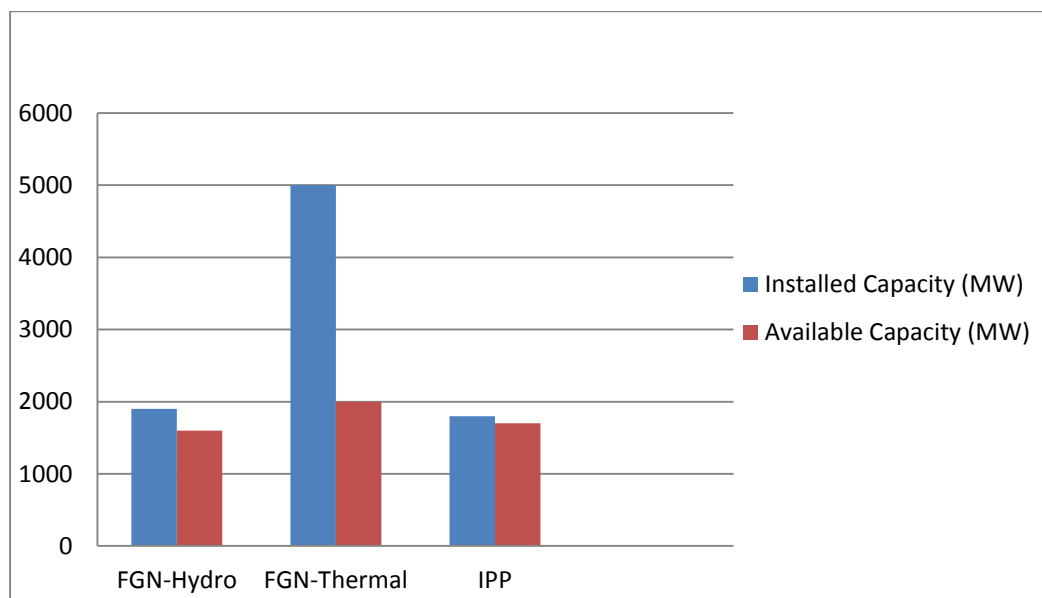
⁵¹ Gawdat Bahgat, "Redefining Energy Security in the Persian Gulf" (2007) 31 Fletcher F World Aff at 216.

CHAPTER THREE: OVERVIEW OF THE NIGERIAN ELECTRIC POWER AND GAS SECTORS

3.0. Background

The phrase “Gas to Power” simply describes the process of generating electric power with natural gas.¹ Nigeria, being a gas rich country, has been channeling her natural gas resource towards electricity generation (amongst other activities), as such, gas fired (thermal) power stations have been an integral part of her power sector.² The figure below particularly illustrates that installed capacity of gas fired (thermal) power generating facilities ranks highest amongst the power generating options available in Nigeria.

Figure 1: Installed vs. Available Capacity of power generation by type in Nigeria (FGN stands for (Federal Government of Nigeria) IPP stands for Independent Power Producers)³



It is apposite to briefly discuss the evolution of the gas and power sectors in Nigeria, because of the symbiotic relationship between the gas and power sectors in Nigeria especially

¹ Chikezie Nwaoha & David A Wood, “A Review of the Utilization and Monetization of Nigeria’s Natural Gas Resources: Current Realities” (2014) 18 J Nat Gas Sci & Engr 412 at 416-417.

² *Ibid*; See also, JA Sonibare & FA Akeredolu, “Natural Gas Domestic Market Development for Total Elimination of Routine Flares in Nigeria’s Upstream Petroleum Operations” (2006) 34 Energy Policy 743 at 744-745.

³ Abubakar Sadiq Aliyu, Ahmad Termizi Ramli & Muneer Aziz Saleh, “Nigeria Electricity Crisis: Power Generation Capacity Expansion and Environmental Ramifications” (2013) 61 J Energy 354 at 356 [Aliyu, Ramli & Saleh].

regarding electric power generation. The discussion of the evolution of both the Nigerian gas and power sectors is key to understanding the background of the Domestic Gas Supply Obligation (DGSO) and how it functions on each of the respective sector platforms.

3.1. The Nigerian Electricity Sector: A Brief History

The history of electricity generation in Nigeria dates back to 1896⁴ during the British colonial era. The first substantive legislation enacted to regulate and manage actors and activities in the Nigerian electricity sector was the *Electricity Ordinance Act of 1929*.⁵ The *Electricity Ordinance Act of 1929* established the Nigerian Electricity Supply Company (NESCO) as an electricity utility company and a hydro-electric power station, mainly serving the northern part of the country.⁶ NESCO basically operated as an electricity company and not as a regulator for the electricity industry in Nigeria.

As such, in 1946, the colonial government took over electricity governance to ensure national coverage for the benefit of the whole country by establishing the Public Works Department (PWD).⁷ The PWD took over the responsibility of electricity supply in Lagos, which was a crown colony of the colonial government at the time⁸ and the PWD remained in charge of electricity regulation and generation in Nigeria until 1950.

⁴ *Ibid.*

⁵ *Electricity Ordinance Act, 1929*; See “The Evolution of the Nigerian Electricity Industry” at 1, online: *Electrofield Solicitors* <www.electrofieldsolicitors.com/TheEvolutionoftheNigerianElectricityIndustry.pdf> [“The Evolution of the Nigerian Electricity Industry”].

⁶ C Nkiruka Maduekwe, “Unbundling and Privatization of the Nigerian Electricity Sector: Reality or Myth?” (2010) 14 CEPMLP Annual Rev at 2, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/index.php?news=31337> [Maduekwe, “Unbundling and Privatization of the Nigerian Electricity Sector”]; Yemi oke, “Manitoba Hydro and Electricity Undertakings in Developing Countries: The Case of Nigeria” (2013) 36:1 MLJ 37 at 39 [Oke, “Manitoba Hydro”]; See also *Electricity Ordinance Act, 1929*.

⁷ Yemi Oke, *Nigerian Electricity Law and Regulation*, 1st ed (Nigeria: LawLords Publication, 2013) at 3 [Oke, *Nigerian Electricity Law*].

⁸ *Ibid.*

The Electricity Corporation of Nigeria (ECN) was subsequently established in 1950.⁹ The ECN came into the mainstream of Nigerian electricity sector as a statutory public corporation pursuant to the *Electricity Corporation of Nigeria Ordinance*¹⁰ and it was established to take over the supply and management of the electricity industry in Nigeria from the government.¹¹

The ECN recorded improved electricity generation and made positive impacts in the Nigerian electric power sector through some of the activities, programs and projects it embarked upon. For example, by 1965, ECN had increased transmission lines in southern Nigeria,¹² created a western grid¹³ and opened new power plants.¹⁴ It also commissioned a feasibility survey in 1951 for the creation of a dam along the Niger River and the Niger Dams Authority (NDA) was subsequently created to provide hydro power in which the first project was the Kainji dam¹⁵ that eventually became Nigeria's main hydro power base. The NDA was statutorily responsible for generating hydro-electricity and had a mandate to develop the hydropower potential of the country.¹⁶ Altogether between 1934 and 1968, four thermal power stations (Orji-river, Calabar, Afam and Delta) and one hydro power station (Kainji) were constructed in Nigeria all of which were sources of electricity generated at the time.¹⁷

3.2. National Electric Power Authority (NEPA)

Under *Decree No 24 (Decree)*,¹⁸ the ECN and NDA were merged in 1972 to form the National Electric Power Authority (NEPA).¹⁹ At the time, there already existed a few gas and

⁹ The Electricity Corporation of Nigeria (ECN) was created by the *Electricity Corporation Ordinance*, No 15 1950 [*ECN Ordinance*].

¹⁰ See *ECN Ordinance*, *supra* note 9 at s 24.

¹¹ "The Evolution of the Nigerian Electricity Industry", *supra* note 5 at 2.

¹² A Yunus, "At 52, Nigeria Struggles with 4000MW of Electricity", *Daily Trust Newspaper* (03 October 2012), online: *AllAfrica* <allafrica.com/stories/201210030781.html>.

¹³ From Lagos-Ibadan-Ilorin axis with extensions at Abeokuta, Oshogbo, Akure, Benin and Sapele while an Eastern grid extended from Afam-Port Harcourt-Aba and Onitsha-Enugu-Nsukka axis with additional extensions at Nsukka, Calabar and Umuahia.

¹⁴ Oji River (25.5MW), Afam (20 MW), Kano (6 MW) and Ijora (86.25 MW).

¹⁵ "The Evolution of the Nigerian Electricity Industry", *supra* note 5 at 1.

¹⁶ N Manafa, *Electricity Development in Nigeria*, (Lagos, Nigeria: Rasheen, 1995) at 37-51; Oke, Manitoba Hydro, *supra* note 6 at 40.

¹⁷ Aliyu, Ramli & Saleh, *supra* note 3 at 356.

¹⁸ *National Electric Power Authority Decree No 24*, Signed on June 7, 1972 [*Decree*].

hydro powered electricity generating stations. This period was a major phase in the Nigerian electric power sector as NEPA remained in operation, managing the activities surrounding power generation and supply in the entire country for over three decades.²⁰ Hence, the establishment of NEPA through the fusion of ECN and NDA resulted in merging the functions of both separate bodies to create a new regime entirely. According to the Niger Power Review, the reason behind the merger of ECN and NDA to form NEPA is as follows:

“... It would result in the vesting of the production and the distribution of electric power throughout the country in one organization which will assume responsibility for the financial obligations. The integration of the ECN and NDA should result in a more effective utilization of the human, financial and other resources available to the electricity supply industry throughout the country.”²¹

The effectiveness of the reason for the merger as articulated above is however questionable judging from the eventual performance and subsequent reforms that succeeded the NEPA regime.

Prior to the 1972 merger of ECN and NDA, the energy produced by the NDA was sold to ECN for distribution and sales as utility voltages.²² This division represents a classical regime of electricity governance in which power generation is separated from distribution,²³ as is currently being promoted by the Federal Government under the new electric power sector reforms.²⁴ However, the *Decree*²⁵ which created NEPA, gave NEPA the statutory monopoly to generate, transmit, distribute and supply electricity throughout the federation. The objective of the *Decree* as captured in Section 1 reads thus:

¹⁹ *Ibid*; See also M Adetunji Babatunde & M Isa Shuaibu, “The Demand for Residential Electricity in Nigeria: A Bound Testing Approach” at 3, online: *Africametrics* <www.africametrics.org/documents/conference09/papers/Babatunde_Shuaibi.pdf>.

²⁰ NEPA was in operation between 1972 and 2005 when the *EPSR Act* established in its place the Power Holding Company of Nigeria.

²¹ “Niger Power Review: Development of Electricity Industry in Nigeria (1960-1989)” (1989) at 10-15; Oke, “Manitoba Hydro”, *supra* note 6 at 40.

²² Oke, “Manitoba Hydro”, *supra* note 6 at 40.

²³ *Ibid*.

²⁴ *Ibid*.

²⁵ *Decree*, *supra* note 18.

1(1) There shall be established an Authority to be known as the National Electric Power Authority and it shall be the duty of that Authority as from the vesting date to develop and maintain an efficient, coordinated and economical system of electricity supply for all parts of the Federation or as the Authority may direct, and for this purpose-

- (a) to generate or acquire supply of electricity;
- (b) to provide bulk supply of electricity for distribution within or outside Nigeria; and
- (c) to provide supply of electricity for consumers in Nigeria and as may, from time to time, be authorized by the Authority.²⁶

The *Decree* provided for the functions of NEPA which included managing, maintaining, supplying, establishing and working of the electricity undertakings vested in NEPA and such other electricity undertakings to be acquired by NEPA or under the provisions of the *Decree*.²⁷ To this end, NEPA managed all the aspects of the electricity industry ranging from generation to transmission, distribution and supply. All commercial electric supply was also the exclusive preserve of NEPA.²⁸ This task was a huge responsibility and a major restructuring which spelt out monopoly of the highest order.

At the time of its establishment, NEPA began operations with four major power stations namely: Ijora, Delta, and Afam gas fired thermal stations as well as Kainji hydropower station.²⁹ By the late 1990s, there were more hydropower stations; Shiroro and Jebba stations as well as thermal stations: Egbin and Sapele thermal stations,³⁰ all of which generated electricity for the entire country. Between 2001 and 2009, three more thermal stations were built: Geregu, Omotosho and Olorunshogo thermal power stations with a combined generating capacity of 1084MW to boost the nation's electricity capacity.³¹

²⁶ *Ibid* at s 1.

²⁷ *Ibid* at s 7.

²⁸ Oke, "Manitoba Hydro", *supra* note 6 at 41.

²⁹ Ayodele Oni, *The Nigerian Electric Power Sector: Policy, Law, Negotiation Strategy, Business* (Nigeria: Carmel and Sharon, 2013) at 13 [Oni, *The Nigerian Electric Power Sector*].

³⁰ *Ibid* at 14.

³¹ *Ibid*.

NEPA was government owned, highly monopolized, excluded from all existing tax regimes, absolved of liabilities whatsoever [even negligence]³² and poorly managed, all of which ultimately led to little or no customer satisfaction and poor electricity service delivery in the country.³³

NEPA's monopolistic status in the Nigerian electric power sector was sustained until the regime of privatization and commercialization in 1988.³⁴ Hence, the *Commercialization and Privatization Decree*³⁵ listed NEPA as one of the state-owned and controlled ventures to be commercialized. This development in turn led to the enactment of a new *NEPA Act*³⁶ replacing the old *Decree* of 1972 as recommended by the Technical Committee on Privatization and Commercialization (TCPC).³⁷ According to the new Act, NEPA was re-established as a commercial and self-accounting authority with powers to develop and maintain an efficient, coordinated and economically viable electricity supply in every part of Nigeria.³⁸

The Nigerian regime of electricity governance further witnessed a major shift towards liberalization of NEPA's monopolistic status when the *NEPA Act* was amended in 1998 by virtue of a *Military Decree*.³⁹ The amendment stripped NEPA of its monopoly of power generation to pave the way for Independent Power Producers (IPPs) in the country.⁴⁰ The

³² Section 27 of the repealed *NEPA Act* declares that NEPA is not responsible for safety either of the consumers or for the efficiency of their cables, appliances of consumers. See Oke, "Manitoba Hydro" *supra* note 6 at n 31. Also, s 12(2) of the *NEPA Act*, 1990 states that "The Authority shall in no case be under any obligation to pay damages or compensation for loss, damage or inconvenience caused to any consumer through any suspension, failure, discontinuance or whole or partial interruption of the supply of electricity howsoever caused." See Repealed *NEPA Act*, Cap 106, Laws of the Federation of Nigeria (LFN) 1990 [*NEPA Act*].

³³ "The Evolution of the Nigerian Electricity Industry", *supra* note 5 at 4; NEPA was also known to have a burden of subsidies, low service quality and woeful collection of tariff. See Aliyu, Ramli & Saleh, *supra* note 3 at 356.

³⁴ Oke, "Manitoba Hydro," *supra* note 6 at 41.

³⁵ *Commercialization and Privatization Decree*, No 25, 1988.

³⁶ *NEPA Act*, *supra* note 32.

³⁷ Oni, *The Nigerian Electric Power Sector*, *supra* note 29 at 14.

³⁸ *NEPA Act*, *supra* note 32 at s 1.

³⁹ Oke, "Manitoba Hydro", *supra* note 6 at 42; see also *Electricity (Amendment) Act*, No 28, 1998.

⁴⁰ Oke, "Manitoba Hydro", *supra* note 39.

creation of IPPs set in motion the entrance and involvement of private operators in the electric power sector.

3.3. The Electric Power Sector Reform

Due to the inefficiency of NEPA which was characterized by erratic power supply and the consequential negative effects on the country in the domestic, industrial and economic terrain,⁴¹ the government of Nigeria within the last decade or more has made and is still making vigorous and frantic efforts to put the electric power sector in order. One major and ongoing step in these government efforts is the introduction of several reform programs. The demand for improved electricity and its centrality to national growth and economic development created the ineluctable need for reform of Nigeria's electricity sector.⁴²

The current regime of power sector reform began in the year 2000 with the establishment of the Electric Power Implementation Committee (EPIC).⁴³ The National Electric Power Policy (NEPP) was put in place in 2001 as recommended and approved by the EPIC and Federal Executive Council (FEC) respectively.⁴⁴ According to the NEPP, there are three distinct stages of the reform which include: *the transition stage* under which NEPA would be replaced by a holding company, and in which private generating companies (Independent

⁴¹ See generally AE Akinlo, "Electricity Consumption and Economic Growth in Nigeria: Evidence from Co-integration and Co-feature Analysis" (2009) 31 J Policy Modeling 681 at 691. For instance, the energy crisis has crippled the industrial sector. Particularly, the use of generators in the industries has resulted in high cost of energy and consequently high cost of production. See, Aliyu, Ramli & Saleh, *supra* note 3 at 354.

⁴² Nwankwo Odi, "Impact of Foreign Direct Investment on Power Sector of Nigeria: 2000-2011" (2013) 5:3 J Mgt Research (Macrothink Institute) at 75; "The provision of an adequate, affordable, accessible and sustainable electricity-supply is critical to the attainment of the broad goals of high and sustainable human-development. Electricity interacts with human development at different levels. It helps to facilitate economic development and poverty reduction by underpinning industrial growth and enhancing productivity. It also contributes to social development by helping to fulfill the basic human needs of nutrition, warmth and lighting, in addition to education and public health... Development of the electricity sector in Nigeria therefore has a key role to play in Nigeria's economic-development process. It has the capacity to serve either as a catalyst or a fetter on the wheels of economic development" See FI Ibitoye & A Adenikinju, "Future Demand for Electricity in Nigeria" (2007) 84 J Applied Energy 492 at 494-495.

⁴³ Oke, *Nigerian Electricity Law and Regulation*, *supra* note 7 at 9.

⁴⁴ Christiana Okojie, "Decentralization and Public Service Delivery in Nigeria" Nigeria Strategy Support Program (NSSP) Background Paper No. NSSP 04, Revised September, 2009 at 20, online: *International Food Policy Research Institute* <ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/18462>.

Power Producers) would be admitted into the market; *the medium term stage* where a market is created and the seeds of competition are planted; and *the long term stage* in which competition is flourishing through economic pricing that covers the cost of supply.⁴⁵

An interpretation of these stages shows that the first stage is characterized by the opening up of the power sector to private participation while the second stage is projected to be a structured system which allows competition to thrive amongst the private companies. At the last stage, the market is expected to have transformed into a fully developed market with healthy competition and optimal productivity as positive impacts of the private sector participation.

The NEPP eventually led to the enactment of the *Electric Power Sector Reform Act 2005 (EPSR Act)*⁴⁶ which repealed the *NEPA Act* and replaced NEPA with the Power Holding Company of Nigeria (PHCN).⁴⁷ Consequent to the enactment of the *EPSR Act*, NEPA was unbundled⁴⁸ into 18 companies – 6 generating companies made up of 2 hydro and 4 thermal (gas fired) stations, 1 transmission company and 11 distributing companies.⁴⁹

According to Yemi Oke, the reform consists essentially of two main components: restructuring and privatization of which the objective was to stimulate competition and promote financial accountability by unbundling the old structure under NEPA into three constituent segments, namely generation, distribution and transmission.⁵⁰

45 Bayo Adaralegbe, “Foreign Private Participation in the Electricity Sector of Developing Countries. What Works? An Examination of Nigeria’s Reformed Electricity Sector” (2009) 10 J World Investment & Trade at 272; See also the National Electric Power Policy [NEPP].

46 *Electric Power Sector Reform Act*, 2005, Cap E7, Laws of the Federation of Nigeria (LFN), 2004 [*EPSR Act*].

47 *Ibid* at s 1 provides that “The national council of privatization shall, not later than six months after the coming into force of this Act, take such steps as are necessary under the Companies and Allied Matters Act to incorporate a company, limited by shares, which shall be the initial holding company for the assets and liabilities of the Authority.” Incorporation of PHCN was a direct implementation of this section.

48 *Ibid* at s 8.

49 Oni, *The Nigerian Electric Power Sector*, *supra* note 29 at 93.

50 Oke, “Manitoba Hydro”, *supra* note 6 at 43, n 28.

The express objectives of the *EPSR Act* were “to provide for the formation of companies to take over the functions, assets, liabilities and staff of the National Electric Power Authority; to develop competitive markets; to establish the Nigerian Electricity Regulatory Commission (NERC)⁵¹; to provide for the licensing and regulation of the generation, transmission, distribution, and supply of electricity; to enforce such matters as performance standards, consumer rights and obligations; to provide for the determination of tariffs; and to provide for related matters.”⁵² Impliedly, the *EPSR Act* was enacted to establish a new regime for the power sector as well as adopt the reform policies the government deemed necessary to revamp the sector.

Furthermore, the *EPSR Act* was designed to launch the Nigerian electricity market into a competitive regime so as to enhance productivity and promote efficiency in the Nigerian electricity market.⁵³ This insight about making the Nigerian electricity market competitive shows that the enactment of the Act was aimed at restructuring the electric power sector in terms of management, control and operations as well as stimulating healthy competition which should aid optimal productivity of the sector.

The *EPSR Act* thus expressly provides for a liberalized regime of electricity while promoting competition, private sector involvement and a level playing field in the power sector.⁵⁴ This reform reveals sharp differences with and a shift from the old paradigm of a state monopoly of electricity governance (under NEPA) to a new era of private participation in the Nigerian electric power sector.⁵⁵

⁵¹ *EPSR Act*, *supra* note 42 at ss 31-32. NERC is the regulatory agency established by the *EPSR Act* to manage, monitor, regulate and control all power sector activities ranging from generation to distribution and transmission.

⁵² *EPSR Act*, *supra* note 42 at Long Title.

⁵³ “The Evolution of the Nigerian Electricity Industry”, *supra* note 5 at 5.

⁵⁴ Oke, “Manitoba Hydro”, *supra* note 6 at 31.

⁵⁵ *Ibid.*

3.4. Independent Power Projects and Producers (IPPs)

The inefficiency of the Nigerian power sector (characterized by power outages and erratic power supply) combined with the invitation of the oil and gas companies by the Federal Government of Nigeria (FGN) to partner in power generation⁵⁶ was a major starting point for independent power projects in Nigeria. As the Chairman of Shell Petroleum Development Company (SPDC) Mutiu Sunmonu in 2011 stated, “We got into that power plant purely as a way of identifying with the aspiration of the government of Nigeria to improve the power situation in the country... Normally power business is not our business, however as a corporate citizen here, we felt that power is something that this country needs and we rose up to the challenge.”⁵⁷ To this end, private participation in power projects was a response to the need to improve the efficiency of the power sector in Nigeria.

The Nigerian government under President Obasanjo (1999-2007), made efforts to increase private participation in the electric power sector by commissioning IPPs to generate electricity and sell it to PHCN.⁵⁸ This approach of course is an offshoot of the capitalist economic model in which it is believed that private sector participation breeds competition and enhances efficiency in business as participants work towards optimal productivity and profit maximization better than the government.⁵⁹

IPPs thus came into operation as part of the privatization and decentralization strategy of the FGN and licenses were granted to different IPPs in order to generate electricity privately for

⁵⁶ Anton Eberhard & Katharine Nawaal Gratwick, “Light Inside: The experience of Independent Power Projects in Nigeria” (2012) at 11, online: *Infrastructure Consortium for Africa* <www.gsb.uct.ac.za/files/LightInside.pdf> [Eberhard & Gratwick, “Light Inside”].

⁵⁷ *Ibid* as excerpted from CNBC Africa ‘From Darkness to Light’, online: *CNBC Africa* <www.cnbc africa.com/video/?ytid=SWbnTCG1f30>.

⁵⁸ Aliyu Idris et al, “An Assessment of the Power Sector Reform in Nigeria” (2013) 2:2 *Intl J Advancements in Research & Tech* at 10, online: *International Journal of Advancements in Research and Technology* <www.ijoart.org/docs/An-Assessment-of-The-Power-Sector-Reform-in-Nigeria.pdf> [Aliyu Idris et al].

⁵⁹ Adaralegbe, *supra* note 45 at 270; See generally Whish R, *Competition Law*, 2d ed (London: Butterworths 2003).

utilities such as PHCN or the general public.⁶⁰ The electricity reform made it possible for IPPs to obtain operating licenses from NERC to generate electricity.⁶¹ The Nigerian government also provided both fiscal and non-fiscal incentives⁶² for companies using gas for power generation and it was projected that the incentives would influence and encourage IPP operators.⁶³

Some of the IPPs were also meant to implement the gas flaring reduction program established by the Nigerian government.⁶⁴ As such, some international oil companies, currently operating in Nigeria, are being engaged in power projects.⁶⁵ For instance, the Okpai combined cycle power plant of 480 megawatts capacity was built by Agip/NNPC joint venture and commissioned in 2005 with the sole aim of channeling associated gas to power plants for electricity generation.⁶⁶ This joint venture was one of the projects that came into being as a result of government efforts to reduce gas flaring on oil production sites and to encourage a better use of wasted gas. The government projects that efficient utilization of associated gas would immensely enhance and increase the generating capacity of gas fired plants which in turn would translate to satisfactory power supply in the country.

⁶⁰ Victor Okolobah & Zuhaimy Ismail, "On the Issues, Challenges and Prospects of Electrical Power Sector in Nigeria" (2013) 2:6 Intl J Eco Mgt & Social Sci at 414, online: *Academia.edu* <www.academia.edu/3832576/On_The_Issues_Challenges_and_Prospects_of_Electrical_Power_Sector_in_Nigeria>.

⁶¹ Nkiruka Chidia Maduekwe, "Combined Cycle Gas Turbine and Off Grid Power Generation in Nigeria: Is There a Feasible Market?" (2010) 14 CEPMLP Annual Rev at 1, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/index.php?news=31292> [Maduekwe, "Combined Cycle Gas Turbine"].

⁶² *Companies Income Tax Act*, Cap C21, Laws of the Federation of Nigeria (LFN) 2004, s 39.

⁶³ Maduekwe, "Combined Cycle Gas Turbine", *supra* note 61 at 9.

⁶⁴ "The bulk of natural gas produced in Nigeria right from the early days of the petroleum industry was treated as a by-product of oil exploration and oftentimes flared. However, the FGN realizing that gas flaring is a major waste of natural resources as well as a source of environmental harm made conscious efforts to stop it via regulations and establishment of gas utilization schemes." See Katharine Nawaal Gratwick & Anton Eberhard, "An Analysis of Independent Power Projects in Africa: Understanding Development and Investment Outcomes" (2008) 26:3 Dev Policy Rev at 322, online: *Overseas Development Institute* <www.regulationbodyofknowledge.org/wp-content/uploads/2013/09/Gratwick_An_Analysis_Of.pdf> [Gratwick & Eberhard "Analysis of IPPs in Africa"].

⁶⁵ *Ibid.*

⁶⁶ See "President Commissions First Independent Power Plant", online: *Nigerian National Petroleum Corporation* <www.nnpcgroup.com/PublicRelations/NNPCinthenews/tabid/92/articleType/ArticleView/articleId/220/President-Commissions-First-Independent-Power-Plant.aspx>.

Independent Power Plants under construction as of 2005 include the 276-MW Siemens station in Afam, Agip's 450-MW plant in Kwale, Exxon Mobil's 388-MW plant in Bonny, ABB's 450-MW plant in Abuja, and Eskom's 388-MW plant in Enugu, so also a number of state governments commissioned oil majors to increase generation including Rivers State, which contracted Shell to expand the 700-MW Afam station.⁶⁷ As of 2012, three large-scale IPPs produced approximately 25 percent of Nigeria's electric power,⁶⁸ while at least thirty-four IPPs have been licensed, although most of them are yet to be built.⁶⁹

3.4.1. Preliminary Observations on Nigerian IPPs

One of the major problems facing the IPPs is insecurity of gas supply to the power plants, particularly due to conflicts in the Niger Delta.⁷⁰ These conflicts in the Niger Delta arose basically in response to the environmental degradation, economic setbacks and social problems experienced by the host communities where oil and gas production takes place in Nigeria.

Also, the inadequate gas infrastructure network in the country has been identified as a major factor limiting domestic gas utilization. This inadequacy of gas infrastructure greatly affects gas demand and supply connectivity between producers and consumers around the country since the resource is concentrated within the southern region of the country. In fact, the increasing urgency to reform the Nigerian gas supply network has been highlighted by the experience of IPPs.⁷¹ The gas supply network requires a major overhauling in order to enhance security of gas supply to the gas fired power plants. An overhaul is very important as the gas fired power plants are incapacitated when there is no gas to facilitate electricity generation for the country. According to a 2011 NERC data, over 500 Mega Watts (MW) of

⁶⁷ Aliyu Idris et al, *supra* note 58 at 10.

⁶⁸ Eberhard & Gratwick, "Light Inside", *supra* note 56 at 4.

⁶⁹ *Ibid* at 7.

⁷⁰ *Ibid* at 10. Niger Delta is the major oil and gas producing region located in the Southern part of Nigeria.

⁷¹ *Ibid* at 14.

National Integrated Power Project (NIPP) capacity has been completed, however, gas supply issues are hindering projects and of that total 500MW, only 112.5MW is actually operational.⁷²

In summarizing their experience, the IPP Association of Nigeria has indicated that the disconnect between the 34 IPP licenses issued and the actual limited development on ground may be attributed to the following: implementation of domestic gas utilization policy and gas infrastructural development to ensure security of fuel supply to IPPs; execution of Gas Sale & Purchase Agreements (GSPA) with gas producers; means for back-stopping the financial exposure of the Bulk Trader to IPPs; execution/finalization of PPAs to enable IPPs to raise finance for equipment procurement; failure to attain cost reflective tariffs; and the lack of capacity within government and its agencies to develop a conducive road map for the industry.⁷³

To this end, having a well-structured gas supply mechanism, adequate security for gas facilities and adjustment of the pricing regime are important considerations for enhancing higher productivity of the IPPs as prospective investors will be encouraged to invest if these are in place. The predominance of natural gas resources in the south-south and south-east of Nigeria means that additional substantial infrastructure will be needed to link south-south/south-east and south-west, both for the use of the remainder of Nigeria and for future export opportunities.⁷⁴ Furthermore, as it is apparent that there is some form of inter-dependence between the electric power and gas sectors in Nigeria, especially regarding power generation, having compatible legal and policy framework will be one of the most effective approaches for running both sectors.

⁷² *Ibid* at 18.

⁷³ *Ibid* at 25.

⁷⁴ EU Azaino, *Gas Supply Availability: Can Nigeria Effectively Balance its need of Gas for Domestic Economic Growth and Revenue Generation from Export of Gas?* (LLM Thesis, Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee, 2012) at 16 [Unpublished] [Azaino].

3.5 National Integrated Power Project (NIPP)

In 2004, NIPP was initiated by the Federal Government of Nigeria initially comprising of seven medium gas fired power stations in the gas producing states of Imo, Edo, Cross River, Bayelsa, Delta and Akwa Ibom basically to address the issues of low power generation, to boost the nation's overall generating capacity and to end gas flaring from oil exploration in the Niger Delta region.⁷⁵ As at 2013, there were 10 power plants⁷⁶ at various stages of development spread across a number of states in Nigeria under the auspices of NIPP.

However, the fear regarding the effective operation of the 10 gas fired NIPPs which were scheduled for completion and handing over to private sector operators by June 2014 was that the NIPPs stood the risk of being starved of gas supply.⁷⁷ This fear is largely premised on the ongoing gas supply issues faced by the power plants in operation at the moment.

Ironically, it is estimated that approximately US\$5 billion has been invested by the Nigerian government in the NIPP program, which, to date, has not yet yielded significant returns⁷⁸ in terms of improving power generation and supply output in the country. The project in its entirety is comprised of 10 power generation projects, approximately 100 transmission, reinforcement and extension projects, associated sub-stations to ensure increased capacity for stability in anticipation of the increased grid power, and 11 gas pipelines and flow station projects.⁷⁹

⁷⁵ Oni, *The Nigerian Electric Power Sector*, *supra* note 29 at 18-20.

⁷⁶ Olaoji, Calabar, Egbema, Gbarain, Geregu II, Ihovbor, Olorunshogo II, Omoku II, Omotosho II, and Sapele power plants; *Ibid* at 20-21.

⁷⁷ Everest Amaefule, "Power Sector: Slowly Nigeria on The Path of Recovery" *Punch Newspaper* (01 October 2013), online: *Punch Newspaper Online* <www.punchng.com/nigeria-53/slowly-nigeria-on-the-path-of-recovery/>; True to the fear, this was not achieved at the projected date. See Fabian Tarpel, "Gas Shortage Stalls NIPP's Privatization –BPE" *Nigerian Communications Week Newsletter* (25 September 2014) online: *Nigerian Communications Week* <www.nigeriacommunicationsweek.com.ng/other-business/gas-shortage-stalls-nipp-s-privatization-bpe>.

⁷⁸ Eberhard & Gratwick, "Light Inside", *supra* note 56 at 20.

⁷⁹ *Ibid*.

These data clearly show that from the outset the Nigerian government through the electric power sector has continually tried to leverage on the abundance of natural gas at her disposal for power generation. The thermal power stations utilize natural gas to fuel more than 67% of electricity generated in Nigeria.⁸⁰ Apparently, a lot still needs to be done in terms of ensuring efficiency of generation and power supply in the country, one of which is addressing gas supply issues which is at the root of the electricity generation process.

3.6. Overview of the Nigerian Gas Industry and the Practice of Gas Flaring

Nigeria is generally referred to as “a gas region with a little bit of oil in it”.⁸¹ Nigeria has a vast natural gas reserve and none of the reserves during the early years of oil exploration was discovered because of the deliberate activity of the oil companies to search for natural gas.⁸² Natural gas discovery is oftentimes linked with oil exploration and production as such, an in depth excursion into the history of the Nigerian gas sector cannot be embarked upon without also looking into the historical discovery of crude oil.⁸³

Nigeria recorded her first commercial oil discovery in 1958 at Oloibiri village in what is presently referred to as Bayelsa State.⁸⁴ In the course of oil exploration over the years, natural gas which is also termed as associated gas was discovered in large quantities. Presently, Nigeria is said to have an estimated proven gas reserve of about 187 trillion cubic feet, and an

⁸⁰ Musiliu O Oseni, “An Analysis of the Power Sector Performance in Nigeria” (2011) 15 *Renewable & Sustainable Energy Rev* at 4769.

⁸¹ Theresa O Okenabirhie, “The Domestic Gas Supply Obligation: Is this the Final Solution to Power Failure in Nigeria? How Can the Government make the Obligation Work?” (2009) 13 *CEPMLP Annual Rev* at 10, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/index.php?news=30880> [Okenabirhie].

⁸² S Anthony, “Recent Developments in the Legal Structuring of Petroleum Investments in Nigeria” in TW Walde & GT Ndi, eds, *International Oil and Gas Investment: Moving Eastward* (London: Graham and Trotman, 1994); Azaino, *supra* note 74 at 16.

⁸³ Azaino, *supra* note 74 at 16.

⁸⁴ GE Etikerentse, *Nigerian Petroleum Law*, 2d ed (Nigeria: Dredew, 2004) at 8.

undiscovered potential of 600 trillion cubic feet, yet, as at 2011, there has been no significant independent gas exploration.⁸⁵

As a result of the incidental discoveries of gas, gas producers oftentimes resorted to flaring the gas due to inadequate infrastructure⁸⁶ amongst other constraints. Flaring of gas mixed with the crude oil thus began right at the start⁸⁷ of oil and gas exploration in Nigeria. Some of the reasons adduced for gas flaring as stated by the Colonial Secretary of State for Colonies, Lord Home in 1960 were lack of market, pipeline and storage infrastructure to enhance proper usage of gas. In his words, “until there is this worthwhile market and until there are facilities (e.g., pipelines and storage tanks) to use the gas, it is normal practice to burn off this by product from the oil wells.”⁸⁸

However, there were still some efforts made to utilize natural gas notwithstanding the general attitude of gas producers to flare gas. Some oil companies tried establishing a local market for gas, one of which was Shell BP’s agreements in 1960 to supply natural gas to some industries at Aba and to the state owned power company, the ECN for its power stations.⁸⁹ This effort of course was one of the baby steps that culminated into large scale gas fired power generation over the years.

Gradually, the Nigerian government started paying more attention to the natural gas resource such that a framework was developed for its monetization and utilization. According to Tade Oyewunmi, the strategic framework for the Nigerian gas is: gas to power which entails

⁸⁵ “Nigeria: The Gas Revolution – What about it?” *Oil and Gas Update* (June 2011) at 1, online: *Acas Law* <www.acas-law.com/cipxprobe/publications/ENERGY%20AND%20PROJECT%20FINANCE%20NEWSLETTER%20JUNE%202011.pdf>.

⁸⁶ Okenabirhie, *supra* note 81 at 10.

⁸⁷ “Gas Flaring in Nigeria: A Human Rights, Environmental and Economic Monstrosity” at 6, online: *The Climate Justice Programme, Friends of the Earth International* <www.foe.co.uk/sites/default/files/downloads/gas_flaring_nigeria.pdf>.

⁸⁸ *Ibid*; also found in United Kingdom National archives, Nigeria Oil and Gas Industry, File DO 177/33.

⁸⁹ SA Khan, *Nigeria: The Political Economy of Oil* (London: Oxford University Press, 1994); Azaino, *supra* note 74 at 16.

increase of gas for power supply as well as support of existing and future power plants and generation; gas based industrialization particularly geared towards supporting industries like fertilizer, cement and petrochemicals; and gas export which entails high value gas export, enhancement of liquefied natural gas (LNG) export operations as well as regional and cross-border pipelines.⁹⁰ Admittedly, the framework reflects a robust plan to engage the Nigerian gas largely for domestic advancement and economic development.

Gas to power is identified to be strategically significant due to the fact that it ranks highest amongst the various means of domestic gas utilization in Nigeria. It is estimated that about 80% of natural gas utilized in Nigeria is used for power generation, while the remaining 20% is utilized as industrial fuel in the cement, fertilizer, rubber, manufacturing, aluminum and steel industries.⁹¹ The nation's gas agenda puts gas-to-power at the core, while it also envisions an aggressive gas based industrial growth which in turn will drive further growth of power demand.⁹² Installed generation capacity has been scaled up from about 6000MW (4 Gas Fuelled & 3 Hydro Powered) in year 2002 to about 13,700MW (25 Gas Fuelled & 3 Hydro Powered) in 2013 – a very significant growth in gas fired generating capacity.⁹³

However, unreliable and nonexistent gas supplies for gas fired plants as at when due have contributed to a major ongoing crisis in power deliveries, crippling the nation's economy and inhibiting new investment.⁹⁴ Several power plants are down because of gas supply

⁹⁰ Tade Oyewunmi, "The Nigerian Gas Industry: Policy, Law & Regulatory Developments" at 12, online: *Acas Law* <www.acas-law.com/cipxprobe/publications/Nigerian_Gas_Industry_-_Policy,_Law_Regulatory_Developments_-_February_20131.pdf>.

⁹¹ Adegbite Adeniji & Sina Sipasi, "The International Comparative Legal Guide to: Gas Regulation 2011" at 200, online: *Global Legal Group* <[www.aelex.com/media/files/Gas11_Chapter-25_Nigeria\(1\).pdf](http://www.aelex.com/media/files/Gas11_Chapter-25_Nigeria(1).pdf)> [Adeniji & Sipasi].

⁹² Stanley Opara, "Gas Master Plan and Challenge of Inadequate Funding" *Punch Newspaper* (26 July, 2012) online: *Punch Newspaper Online* <www.punchng.com/business/energy/gas-master-plan-and-challenge-of-inadequate-funding/>.

⁹³ Adedamola A Adegun, "Fix It: Nigeria's Power Sector Is Too Exposed to Gas" *Africa Oil and Gas Report* (2014) *Africa Oil and Gas Report*, online: *Africa Oil and Gas Report* <www.africaoilgasreport.com/2014/03/opinion/fix-it-nigerias-power-sector-is-too-exposed-to-gas-by-adedamola-a-adekun-3/> [Adedamola A Adegun].

⁹⁴ Azaino, *supra* note 74 at 13.

constraints, technical faults, uncertainties and increasing regulation around gas prices, the consequence of which is a significant drop in power supply.⁹⁵

Equally, the sudden boom in gas export by the Nigerian Liquefied Natural Gas (NLNG) has influenced the emergence of gas export projects which further led to a neglect of the domestic market hence, the introduction of the DGSO to remedy the situation of unavailability of gas for domestic use.⁹⁶ This problem of neglecting domestic demands for international markets is so because gas producers prefer to leverage on rising gas prices in the international market rather than sticking to regulated pricing for the domestic market.⁹⁷ As such, gas exports seem to be posing significant threat to the domestic market, especially the power sector which is the largest domestic gas consumer.

To this end, there has arisen some noticeable tension between the export of gas and ensuring adequate domestic gas supplies in Nigeria due to the fact that both activities have varying effects on different stakeholders. For instance, gas producers want to maximize profit by selling where they could make more profit, while the government desires to get revenue from export on one hand and enhance domestic sector development for gas based industries particularly the power sector on the other hand. This complication calls for a strategic and pragmatic legal framework that puts all of these issues into consideration.

Accordingly, some of the legal and regulatory frameworks of the Nigerian gas sector operative over the years are briefly examined below. This examination of the legal frameworks guiding activities within the gas sector is essential as it brings to fore the basic historical and legal background of the Nigerian gas sector. Also, this examination further

⁹⁵ Adedamola A Adegun, *supra* note 93.

⁹⁶ Okenabirhie, *supra* note 81 at 10.

⁹⁷ *Ibid* at 16.

establishes the legal foundation of the DGSO in Nigeria, especially as it relates to government ownership and control of her natural gas resource.

3.6.1. Overview of the Nigerian Gas Sector Legal Framework

3.6.1.1. Constitution of the Federal Republic of Nigeria, 1999

The *Nigerian Constitution*⁹⁸ vests ownership and control of petroleum which includes natural gas in the Federal Government of Nigeria. It states thus “...*the entire property in and control of all minerals, mineral oils and natural gas in under or upon any land in Nigeria or in, under or upon the territorial waters and the Exclusive Economic Zone of Nigeria shall vest in the Government of the Federation...*”⁹⁹ This provision implies that the ownership rights and control are solely within the purview of federal powers. Consequently the FGN has had to make various laws to monitor and regulate the petroleum industry due to the controlling powers derived from the constitution.

3.6.1.2. Petroleum Act 1969

The *Petroleum Act of 1969*¹⁰⁰ may be regarded as the primary Nigerian petroleum industry statute which defines ‘Petroleum’ to include natural gas.¹⁰¹ The Act is fundamental and foundational as it expressly outlines the modalities for regulating activities in the petroleum industry such as exploration, prospecting and mining of petroleum, including natural gas. For example, application for an Oil Exploration License, Oil Prospecting License and Oil Mining Lease as the case may be is made by interested industry operators to the Minister of

⁹⁸ *Constitution of the Federal Republic of Nigeria*, 1999, Cap C24, Laws of the Federation of Nigeria (LFN) 1990 [*Nigerian Constitution*].

⁹⁹ *Ibid* at s 44(3).

¹⁰⁰ *Petroleum Act*, 1969, Cap P350, Laws of the Federation of Nigeria (LFN) 1990 [*Petroleum Act*].

¹⁰¹ *Ibid* at s 1.

Petroleum Resources who is empowered to grant it upon satisfaction of the requirements under the Act.¹⁰²

3.6.1.3. The Petroleum (Drilling and Production) Regulations 1969

The Petroleum Drilling and Production Regulations is a subsidiary legislation made pursuant to the *Petroleum Act*¹⁰³ and it further regulates in detail natural gas exploration and production activities.¹⁰⁴ For example, under the Regulation, a prospecting licensee is required to submit feasibility study, program or proposal for the utilization of associated or non-associated gas not later than five years after the commencement of production.¹⁰⁵ This requirement was one of the initial regulations that focused on addressing natural gas production and utilization in the country as it recognized the prospects of utilizing natural gas for example in power generation and petrochemical industries, and it sought to give it some attention.

3.6.1.4. The Oil Pipelines Act 1956

The *Oil Pipelines Act* 1956¹⁰⁶ governs the licensing and permitting processes for the construction, operation and maintenance of gas pipelines.¹⁰⁷ In other words, the Act regulates the process of transporting gas from one place to another via pipelines. It also sets out rules on gas pipeline operations from construction to transportation, maintenance and supply of gas to the consumer at the end point of the pipeline. As such, the Act regulates some aspects of the DGSO, especially as it relates to transportation of natural gas to power producing facilities via gas pipelines.

¹⁰² *Ibid* at s 2(1).

¹⁰³ *Petroleum Act*, *supra* note 100 at s 9.

¹⁰⁴ Adeniji & Sipasi, *supra* note 91 at 201.

¹⁰⁵ The Petroleum (Drilling and Production) Regulations, 1969, s 43.

¹⁰⁶ *Oil Pipelines Act*, 1956, Cap 338, Laws of the Federation of Nigeria (LFN) 1990.

¹⁰⁷ *Ibid* at s 3.

3.7. Chapter Summary

From the foregoing, it is apparent that the utilization of natural gas for electricity generation has been in existence since the early years of the electric power and gas sectors in Nigeria. The establishment of gas fired power stations over the years show the willingness of the FGN to ensure the efficient utilization of the country's natural gas resource for power generation. That said, power generation and supply has not adequately met with the teeming demand for power in the domestic and industrial circles in Nigeria due to several administrative and regulatory issues.

Inadequate Supply: One recurring and major issue has been the inadequate supply or unavailability of gas to fire the installed power plants. Apparently, Nigeria has a structure for gas to power in place and a major difference in electricity generation and supply would be evident if the installed capacities for gas fired plants are provided with adequate gas when required.

Poor Regulatory Coordination: The coordination of the natural gas sector is scattered in varying outdated statutes while there is no specific law which particularly addresses gas to power activities. The principal law, the *Petroleum Act*, to say the least is obsolete as it has been operative since 1969 and circumstances in the present era apparently require an updated law. More so, efforts to enact a new law for the purposes of providing a more suitable legal framework for the oil and gas sectors (*Petroleum Industry Bill* discussed in Chapter six) has not been fruitful as the bill has been under deliberation since 2008.

The power sector regulatory framework on the other hand is a bit more focused and traceable to a specific legislation, that is, the *EPSR Act*. This Act allows a higher level of coordination of activities within the entire power sector ranging from regulatory to licensing, generation, transmission, distribution and supply of electric power in the country. To this end,

considering the inter-dependence of both the gas and power sectors, these sectors can only be effectively run in circumstances where the needed infrastructure, legal regime, and structured administration are properly coordinated for the purpose of effective power generation and supply.

CHAPTER FOUR

OVERVIEW OF THE NIGERIAN GAS MASTER PLAN AND AN EVALUATION OF THE DOMESTIC GAS SUPPLY OBLIGATION IN NIGERIA

4.0. Introduction

Having identified that the Domestic Gas Supply Obligation (DGSO) is a major component of the Nigerian Gas Master Plan (NGMP), a discourse of the DGSO would not be complete without first examining the background issues that influenced the formulation of the NGMP in the first place. Assessment of the DGSO within the context of the enabling NGMP as well as the attendant natural gas and electric power market structures is also relevant as it reveals several immediate issues that continue to militate against the successful implementation of the DGSO (which consequently impacts availability of gas for the Nigerian power sector).

4.1. Overview of the Nigerian Gas Master Plan 2008

The NGMP is a strategic plan formulated by the Federal Government of Nigeria (FGN) in 2008 to enhance the effective monetization, development and utilization of the Nigerian natural gas resource by addressing infrastructure, pricing and supply issues.¹ It was primarily aimed at positioning Nigeria in the shortest possible time as a regional gas supply hub by making it a major player in the export market, whilst also ensuring Nigeria's energy security through the creation of a fully liberalized market.² Attainment of this aim was thus projected to play out by having a robust, scalable and fully connected gas infrastructure supportive of the domestic, regional and export markets concurrently whilst making delivery of cost effective gas possible from any source to any market within the country.³

¹ This is evident as articulated under the three components encapsulated in the NGMP namely, the Gas Pricing Policy, Infrastructure blueprint and Domestic gas supply obligation which will be discussed in greater detail in this chapter.

² Ayodele Oni, "The Nigerian Gas Master Plan - What's Cooking?" (2010) 1:1 *Aelex Q* at 1, online: *Aelex Legal Practitioners* <www.aelex.com/media/newsletter/1/march4a.html> [Oni].

³ *Ibid*; also, the NGMP was expected to provide a platform for Nigeria to make appropriate gas capacity additions to meet unprecedented domestic and global gas demand, maximize value from its abundant gas

The objective of the NGMP to assure long-term gas security for Nigeria through managed resource exploitation brought about the need to sustain a portfolio of strategic gas utilization opportunities with available and affordable supply in a manner that ensures sustainable development.⁴ Hence, the NGMP is considered a guide aimed at achieving the successful commercial exploitation and management of Nigeria's gas sector.⁵

In achieving the set goals of the NGMP, three main components were articulated and incorporated into the NGMP: the Domestic Gas Supply Obligation; the Gas Pricing Framework; and the Gas Infrastructure Blueprint. These three components were set out to facilitate the overhauling of the Nigerian gas sector by addressing specific issues. As such, these components of the NGMP will be discussed with particular reference to their varying impacts on the generating capacity and overall efficiency of the Nigerian power sector.

4.1.1. The Domestic Gas Supply Obligation

The DGSO as entrenched in the NGMP is regulated under the Domestic Gas Supply and Pricing Regulation, 2008.⁶ The DGSO requires and mandates upstream companies (gas producing companies) to make available to the domestic market, a specific volume of their total gas production, thereby creating a structured approach to ensuring availability of domestic gas.⁷ The Department of Gas is specifically responsible for the DGSO volume

resources, create multiplier effects in the domestic economy whilst optimizing Nigeria's share in the high value export market. See Gbite Adeniji, "Nigeria: Leveraging Gas for Economic Growth", online: *Expert Guides* <www.expertguides.com/default.asp?Page=9&GuideID=238&Ed=131>.

⁴ Charles Asekame Odumugbo, "Natural Gas Utilization in Nigeria: Challenges and Opportunities" (2010) 2 J Nat Gas Sci & Engr 310 at 311.

⁵ "Nigeria: The Gas Revolution - What about it?" (2011) *Oil and Gas Update* at 2, online: *Acas Law* <[www.acas-](http://www.acas-law.com/cipxprobe/publications/ENERGY%20AND%20PROJECT%20FINANCE%20NEWSLETTER%20JUNE%202011.pdf)

[law.com/cipxprobe/publications/ENERGY%20AND%20PROJECT%20FINANCE%20NEWSLETTER%20JUNE%202011.pdf](http://www.acas-law.com/cipxprobe/publications/ENERGY%20AND%20PROJECT%20FINANCE%20NEWSLETTER%20JUNE%202011.pdf)> ["Nigeria: The Gas Revolution"].

⁶ Domestic Gas Supply and Pricing Regulation, 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008 [Regulation].

⁷ *Ibid* at s 10; "Nigeria: The Gas Revolution", *supra* note 5 at 2.

allocation to every company licensed to produce petroleum⁸ in Nigeria at the beginning of every year.⁹

Some writers have also commented that the DGSO is aimed at boosting the (gas dependent) domestic sector through the domestic reservation obligation imposed on oil and gas companies¹⁰ and that it also ensures gas availability for critical domestic gas utilization projects that will advance economic growth in Nigeria.¹¹ As earlier described, availability of electricity in Nigeria is largely dependent on availability of adequate gas (due to the composition of existing power generating facilities)¹² and the imposition of the DGSO was projected to ensure a secure source of gas supply to the gas-fired power plants as well as other gas dependent industries such as cement, petrochemical, methanol etc.¹³

The allocation process under the DGSO mandates that the Department of Gas announce the annual domestic demand requirement.¹⁴ The Department of Gas subsequently allocates the volume of DGSO to gas producers at the beginning of each year¹⁵ based on the estimate of the annual domestic demand requirement. An aggregate price is further established by the Department of Gas¹⁶ and the Domestic Aggregator coordinates the wholesale and supply process of the DGSO.¹⁷

⁸ The word 'petroleum' encapsulates 'oil and natural gas' as most or all gas producers are core oil producers as well.

⁹ Regulation, *supra* note 6 at s 2(d).

¹⁰ Blessing James Laburta, "Can the Vessel of Domestic Gas Supply Obligations under the Nigerian Gas Master Plan sail Nigeria Safely to the Shores of Sufficient Electricity Supply?" (2013) 15 CEPMLP Annual Review at 14, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/?news=32332> [Laburta].

¹¹ Adegbite Adeniji & Sina Sipasi, "The International Comparative Legal Guide to Gas Regulation 2011: A Practical Cross-border Insight into Gas Regulation Work – Nigeria" (2011) at 201, online: *Global Legal Group* <[www.aellex.com/media/files/Gas11_Chapter-25_Nigeria\(1\).pdf](http://www.aellex.com/media/files/Gas11_Chapter-25_Nigeria(1).pdf)> [Adeniji and Sipasi].

¹² See discussion in Chikezie Nwaoha & David A Wood, "A Review of the Utilization and Monetization of Nigeria's Natural Gas Resources: Current Realities" (2014) 18 J Natural Gas Sci & Engr 412 at 416-417 [Nwaoha & Wood].

¹³ Laburta, *supra* note 10 at 8.

¹⁴ Regulation, *supra* note 6 at s 2(c).

¹⁵ *Ibid* at s 2(d).

¹⁶ *Ibid* at s 2(e).

¹⁷ *Ibid* at s 7.

4.1.2. The Gas Pricing Framework

The gas pricing framework under the NGMP categorizes the natural gas demand sector into three strategic sectors and applies bespoke pricing regime for each sector.¹⁸ The sectors include the strategic domestic sector basically comprising of the power sector; the strategic industrial sectors which constitutes industries that use gas as feedstock such as fertilizer, methanol; and the commercial sector which uses gas as industrial fuel of which they all have a standard pricing framework set out in the regulation for producers, sellers and consumers of natural gas.¹⁹

The gas pricing framework establishes a pricing regime that is market driven in the long run and also supportive of the growth of the Nigerian economy.²⁰ This is evident in the varying price considerations for the different categories of gas dependent sectors and the framework for establishing the minimum gas price that any category of gas buyer can be charged.²¹

The Domestic Gas Pricing Policy 2008 (the “Policy”) and the Regulation were formulated as an offshoot of the NGMP made pursuant to the *Petroleum Act*²² to administer the domestic gas pricing framework. Hence, the Policy and Regulation basically address gas pricing, gas sale and gas supplies in the Nigerian domestic gas market for the different strategic sectors.

However, there are contentions on the effect of price disparity and preferential pricing for the strategic domestic market (especially for the power sector being the largest domestic gas consumer in the country) which is significantly different and lower compared to prices obtainable in the export market. These contentions have consequently led to a series of setbacks in domestic gas development as gas producers are not encouraged by the pricing

¹⁸ Oni, *supra* note 2 at 2.

¹⁹ Domestic Gas Supply and Pricing Policy, 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008 at 4 & 5 [Policy].

²⁰ Laburta, *supra* note 10 at 14.

²¹ Policy, *supra* note 19 at 7-9.

²² *Petroleum Act*, 1969, Cap P350, Laws of the Federation of Nigeria (LFN) 1990 at Citation, s 9, & Schedule 34 [*Petroleum Act*].

framework for the domestic market. The gas pricing issues especially as it pertains to gas producers and attendant effect on the power sector will be discussed in detail later in this chapter.

4.1.3. The Gas Infrastructure Blueprint

The gas infrastructure blueprint component of the NGMP proposes an integrated infrastructure strategy to support domestic, regional and LNG export markets which is aimed at ensuring connectivity between major gas reserves and the demand centers through Central Processing Gas Facilities (CPFs) and a pipeline network.²³ To this end, the Blueprint provides for the establishment of three gas gathering and processing facilities, a network of gas transmission lines to boost gas supply.²⁴

The infrastructure blueprint became essential as there is an undeniable dearth of natural gas infrastructure which negatively affects the growth of the Nigerian gas sector. Hence setting out a blueprint on how to correct the anomaly in order to enhance the growth of the gas sector is a major step in the right direction. The Blueprint particularly sets out strategies for improving the gas infrastructure base so as to enhance optimal productivity of the gas sector and other gas dependent sectors. However, all these seem to be mere lofty plans and strategies which have not really been productive about six years after the NGMP was formulated. The persistent dearth in infrastructure has obviously done more harm than good especially in the quest for the Nigerian gas sector development which also impacts negatively on the overall efficiency and productivity of the Nigerian power sector.

²³ “Nigeria: The Gas Revolution”, *supra* note 5 at 2.

²⁴ Tade Oyewunmi, “The Nigerian Gas Industry: Policy, Law & Regulatory Developments” at 14, online: *Acas Law* <www.acas-law.com/cipxprobe/publications/Nigerian_Gas_Industry_-_Policy,_Law_Regulatory_Developments_-_February_20131.pdf> [Tade Oyewunmi, “The Nigerian Gas Industry”].

4.2. The Nigerian Domestic Gas Market

The gas market in Nigeria essentially serves about three different markets which are the regional, domestic and international export markets.²⁵ The domestic market is governed by the pricing framework under the Regulation which gives certain pricing preferences to the strategic domestic sectors especially the power sector. The preference allows for lower prices for gas sold to the strategic domestic market of which the power sector is the major consumer.²⁶

The significant price disparity between the domestic market price and export price of gas has led to the expansion of the export market almost to the detriment of the domestic market. The sudden boom in export gas for instance by the Nigerian Liquefied Natural Gas (NLNG) has seen a lot of gas export projects emerge and the domestic market has suffered neglect as a result of this as such, the DGSO was targeted at correcting this.²⁷

4.2.1. Challenges of the Nigerian Domestic Gas Market

The Nigerian domestic gas market has encountered and is still encountering myriad of challenges from both the producer and consumer sides of the coin. The challenges over the years have negatively affected the growth of the gas industry as well as other gas dependent sectors especially the power sector. The challenges of the domestic gas market also negatively impacts on the DGSO and this has affected its implementation. Some of the challenges identified by various writers include the following:

²⁵ See Laburta, *supra* note 10 at 12.

²⁶ The actual average price paid for gas in 2011 and 2012 (by the power sector) was \$0.3/mmBtu and \$1.0/mmBtu, respectively. See Nwaoha & Wood, *supra* note 12 at 413-414.

²⁷ Theresa O Okenabirhie, "The Domestic Gas Supply Obligation: Is this the Final Solution to Power Failure in Nigeria? How Can the Government make the Obligation Work?" (2009) 13 CEPMLP Annual Rev at 10, online: Centre for Energy, Petroleum and Mineral law and Policy, University of Dundee <www.dundee.ac.uk/cepmlp/gateway/index.php?news=30880> [Okenabirhie].

4.2.1.1. Gas Shortage and Unavailability

There has been an unprecedented pace of growth in demand of gas in Nigeria ranging from domestic to regional and export.²⁸ This rise in gas demand is attributed to a lot of factors including the increase in natural gas utilization home and abroad, environmental advantages derivable from the utilization of natural gas²⁹ and governmental policies tailored at fully monetizing natural gas resource in Nigeria. Hence, supply has not adequately met with the demand for natural gas from different quarters because the available gas is limited and cannot adequately cater for the increasing demand.

4.2.1.2. Inadequate Infrastructure for Delivery of Gas

Inadequate gas transportation and processing infrastructure³⁰ is a phenomenal problem in the Nigerian domestic gas market. The dearth of infrastructure for transmission of gas from the point of production to the various consumers in different parts of the country has particularly whittled down the growth of the gas market.³¹ Besides, the natural gas resource is majorly situated in the southern region of the country³² while users of gas are spread across the country without a standard and robust system of transmitting the gas. This of course largely affects sales and delivery of gas to varying consumers. Particularly, the power sector is greatly affected as electricity is needed in all parts of the Nigerian state and having a limited gas infrastructure network to facilitate the electricity generation process is definitely a major disadvantage.

²⁸ Tade Oyewunmi, "The Nigerian Gas Industry", *supra* note 24 at 14.

²⁹ In terms of lower carbon emissions compared to other fossil fuels; See Damien Geradin, ed, *The Liberalization of State Monopolies in the European Union and Beyond*, (The Hague: Kluwer Law International, 2000) at 51.

³⁰ Tade Oyewunmi, "The Nigerian Gas Industry", *supra* note 24 at 14.

³¹ Bolaji Osunsanya, "Gas Investments Should Be Private Sector-Driven", *The Nigerian Voice* (2 April 2010), online: <www.thenigerianvoice.com/nvnews/16885/1/gas-investments-should-be-private-sector-driven-bo.html> [Osunsanya].

³² Bayelsa, Delta and Rivers States.

4.2.1.3. Gas Affordability and Commerciality

The gas market has also witnessed significant rise (and instability) in global gas price vis-à-vis the varying capacity of domestic gas buyers to pay³³ and this has posed a major challenge to the domestic market as domestic gas consumers seem not to be fully able to bear the costs. Consequently, the productivity rate of the Nigerian power sector is distorted as gas producers are not encouraged to keep supplying gas to the power generating facilities if prices for the supplies are low³⁴ and payment is not guaranteed as at when due.

In fact, there is a history of poor commercial performance in the domestic gas sector characterized by low prices, unpaid bills, weak and unenforceable Gas Supply & Purchase Agreements (GSPA).³⁵ Also, since the export of gas seemed to be more financially beneficial and secure, the gas producers have been making business decisions that favour gas exports over domestic supplies. In the same vein, the price paid to the upstream producers for gas is not commercially attractive enough to compensate the production risk they bear, hence their continued apathy towards the domestic market.³⁶

Furthermore, the rising gas price in key international markets has created a preferential pull for exports to the detriment of the domestic gas market.³⁷ As such, the government has claimed that if the situation is left unchecked it may result in Nigeria supporting the development of industrialized economies at the expense of her own economy.³⁸

³³ Tade Oyewunmi, “The Nigerian Gas Industry”, *supra* note 24 at 14.

³⁴ Osunsanya, *supra* note 31.

³⁵ Tade Oyewunmi, “The Nigerian Gas Industry”, *supra* note 24 at 14.

³⁶ Osunsanya, *supra* note 31.

³⁷ Policy, *supra* note 19 at 2.

³⁸ *Ibid.*

4.2.1.4. Youth Restiveness in the Gas Producing Region

Militant attacks, illegal bunkering and pipeline vandalism have accounted for various force majeure events and production shut-ins in the Nigerian gas market.³⁹ There has been a high rate of youth restiveness in the gas producing region over the years which was resorted to in order to register gas producing host communities' displeasure on the massive environmental deterioration caused by various oil and gas exploration activities. Hence, pipelines are oftentimes vandalized which of course affects the transportation of gas to the end users. This makes utilization of gas resources a challenge on account of the violent situation in Niger delta and the environmental and social issues surrounding it.⁴⁰ Generally, gas pipeline vandalism has slowed down the Nigerian government's gas revolution, more especially in the power sector, and damaged Nigeria's reputation with potential foreign investors.⁴¹

4.2.1.5. Regulatory Inconsistency

The prolonged absence of a holistic enabling regulation (specifically) for the Nigerian gas sector has been the bane of its development.⁴² The Nigerian gas sector until recently has always been in the shadow of the oil industry in terms of the applicable legal framework. As such, the unavailability of regulations and laws specifically addressing the peculiarity of the gas sector has contributed to the problems and challenges of the domestic gas market.

4.3. The Domestic Gas Supply Obligation and Attendant Constraints on Gas Producers⁴³

One of the resultant effects of the foregoing challenges of the Nigerian gas market is inadequate domestic gas supplies which has had grave impacts on the gas dependent sectors

³⁹ Laburta, *supra* note 10 at 17.

⁴⁰ Prasad VSN Tallapragada, "Nigeria's Electricity Sector- Electricity and Gas Pricing Barriers" *International Association for Energy Economics Newsletter* (1st Quarter 2009) at 32, online: <www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.iaee.org%2Fen%2Fpublications%2Fnewsletterdl.aspx%3Fid%3D72&ei=HGDpU53fGOX5iwKswYGoDA&usg=AFQjCNFc8fl0qi2-rCdwVjcyvDmz_VwLtg&sig2=seDnClcP8aysWRV3oocpFg> [Tallapragada].

⁴¹ Nwaoha & Wood, *supra* note 12 at 425.

⁴² Osunsanya, *supra* note 31.

⁴³ Okenabirhie, *supra* note 27 at 12.

in the country especially the power sector. In order to address the problem of inadequate gas supplies to the domestic market, gas producers were mandated to reserve certain volume of gas produced for domestic supplies under the DGSO which was earlier discussed. The DGSO has however not been strictly complied with as expected by gas producers and they have articulated some reasons to justify their non-compliance.

The figure below reveals the volume of gas allocated to some oil and gas companies under the DGSO scheme for the purposes of supplying the domestic market and the level of compliance. The statistics particularly shows that a massive shortfall was recorded in the compliance level of the oil and gas companies between 2008 and 2013.

Figure 2:

DATA SHOWING DOMESTIC GAS OBLIGED AGAINST GAS SUPPLIED AND 2008-2013 PROGRESSION

	2008		2009		2010		2011		2012		2013	
GAS PRODUCERS	GAS SUPPLY	DSO	GAS SUPPLY	DSO	GAS SUPPLY	DSO	GAS SUPPLY	DSO	GAS SUPPLY	DSO	GAS SUPPLY	DSO
SPDC JV (Shell Petroleum Development Company)	355	849	379	1100	530	1364	553	1559	538	1753	156.69	1948
CNL JV (Chevron Nigeria Limited)	185	351	185	455	168	564	268	644	358	725	318.28	805
MPN JV (Mobil Producing Nigeria)	0	459	0	517	0	640	0	732	0	823	0	915
NAOC JV (Nigeria Agip Oil Company)	176	245	188	328	97	415	101	479	120	544	87.29	608
TEPNG (Total Exploration and Production Nigeria)	0	217	0	270	0	327	0	368	0	410	0	452
NPDC (Nigeria Petroleum Development Company)	0	45	0	120	0	120	0	120	65	120	321	120
ADDAX	0	0	0	140	0	140	0	140	0	144	0	160
POOC (Pan Ocean Oil Company)	0	65	0	65	8	65	44.4	65	36	65	17.39	65
SEPLAT	0	0	0	0	0	0	0	0	0	0	130	0
Total DSO Supply/Obligation	716	2231	752	2995	803	3635	966.4	4107	1117	4584	1030.65	5073
% Domestic Gas Supplied	32.09		25.11		22.09		23.53		24.37		20.32	

Source: The Department of Petroleum Resources, Nigerian National Petroleum Corporation

From the figure above, it is apparent that since the inception of the DGSO scheme in 2008 to 2013, none of the oil and gas companies ever met up to 50% of their DGSO allocation neither was there a positive progression in compliance over the years.

The gas producers have alleged that they had no prior consultations or negotiations with the government to reach a commercially driven price structure for the domestic gas commitment, as such they have been reluctant to make the investments necessary to establish the requisite supply infrastructure to deliver gas to domestic end users.⁴⁴ This attitude of gas producers has not helped with the effective implementation of the DGSO since the needed infrastructure is not adequately provided for. It is thus apparent that stakeholder involvement is key for the successful implementation of the DGSO as varying interests should be appropriately considered before final decisions are made. In the circumstance, such was sidelined and the gas producers clung to the anomaly as a justification for non-compliance.

Another reason why it seems the gas producers have not been complying with the supply of gas for domestic consumption as prescribed under the DGSO is their commitment to long term gas supply or export contracts which usually contain “take or pay” clauses of which breaching them would be detrimental to their businesses.⁴⁵ As such, adhering to the DGSO to channel more gas into the local market was going to put pressure on the long term export projects.⁴⁶

The gas producers are also largely dissatisfied and discouraged with the pricing framework for the DGSO.⁴⁷ This is because the FGN regulates domestic gas prices for the strategic

⁴⁴ *Ibid.*

⁴⁵ *Ibid* at 12-13.

⁴⁶ *Ibid* at 12.

⁴⁷ Osunsanya, *supra* note 31.

domestic sector. As such, the price disparity when compared to what is obtainable in the export market is a disincentive to gas producers.⁴⁸

Additionally, gas producers are not well disposed to meeting their DGSO or even investing in the domestic gas market due to the credit risk involved. The strategic domestic consumers particularly the power sector has a history of inability to pay for gas supplied to it for electric power generation even though it is sold at a reduced price.⁴⁹ As such, the gas producers can only be encouraged to get deeply involved in the domestic market if there is some form of credit risk guarantee from reliable entities. This has been a recurring problem and continued supplies to the major consumer (the power sector) with the problem unresolved would amount to a huge loss of revenue or even business collapse which the gas producers are not ready to risk.

Also, questions as to whether the DGSO is a form of disguised expropriation has been raised in some quarters.⁵⁰ The Nigerian government at some point through her laws put foreign investors' mind to rest by assuring them of a no expropriation policy.⁵¹ Expropriation involves the taking over of the proprietary and ownership rights of a business by the state for public purposes. According to the Black's Law dictionary, expropriation means governmental taking or modification of an individual's property rights.⁵² Hence, deeming or seeing the DGSO as a form of expropriation has led to some form of resentment and consequent breach of the DGSO by the gas producers. This issue is particularly significant as the investors (gas producers in this context) have been validly protected from expropriation by the *NIPC Act* coupled with the fact that the DGSO was not part of the long term producing contracts they had with the government at the inception of their business activities in the country.

⁴⁸ *Ibid.*

⁴⁹ See generally Okenabirhie, *supra* note 27 at 13.

⁵⁰ Laburta, *supra* note 10 at 16.

⁵¹ *Nigerian Investment Promotion Commission Act*, CAP N117 Laws of the Federation of Nigeria (LFN) 1990, s 25 [*NIPC Act*].

⁵² *Black's Law Dictionary*, 9th ed, 2009, sub verbo "expropriation".

4.4. Gas Pricing in the Nigerian Market and its Effects on Gas Producers

The pricing of domestic gas is a major issue in Nigeria and is very central to electricity generation, its availability and retail prices.⁵³ The domestic gas prices are said to be heavily regulated and set below market prices the justification for which is that the government is using it to protect domestic consumers against risks of volatile international markets or supplier monopolies considering the potential economic value that can be created when a significant amount of gas is utilized domestically.⁵⁴

It has however been pointed out by a commentator that holding prices below export parity levels to benefit the domestic market is likely to lead to lower gas supplies, lack of investment, falling output and worsening supply shortages.⁵⁵ In fact, A. G. Bunter stated that the deliberate policy of cheap fuel creates market distortion while cheap energy creates wastage and then ultimately shortage.⁵⁶

To some extent this analysis is playing out as Nigeria is definitely experiencing some domestic gas supply shortages due to the huge disparity in gas pricing between the domestic and export market. Consequently, gas producers are more disposed to supplying external consumers than domestic consumers since it is more profitable to do so. Oil and gas companies which are the primary producers of associated gas want a commercial price for gas supplied to the domestic market that matches export prices.⁵⁷ However, the government's argument for the existing domestic pricing framework stems from the assertion that gas is a

⁵³ Tallapragada, *supra* note 40 at 32.

⁵⁴ Montty Girianna, "Regulated Gas Prices put the Domestic Supply at Risk" *Jakarta Post* (19 December 2013), online: *Jakarta Post* <www.thejakartapost.com/news/2013/12/19/regulated-gas-prices-put-domestic-supply-risk.html>.

⁵⁵ *Ibid.*

⁵⁶ Michael AG Bunter, *The Petroleum and Licensing of Petroleum Prospective Acreage* (The Hague: Kluwer Law international, 2002) at 78.

⁵⁷ Tallapragada, *supra* note 40 at 32.

national asset and should be priced low, especially for the power sector in an attempt to keep the retail electricity prices low.⁵⁸

Thus, there is a clamour for deregulation of domestic gas prices which will assure gas producers of recouping investments as well as prevent a regime of gas shortages, vandalism and perennial power outages.⁵⁹ It should be noted that the major incentive for gas producers is a market driven gas price and the worry of the oil and gas majors is informed by the fact that the power sector which requires about 70 percent of the gas produced in the country cannot afford a market driven gas price.⁶⁰ As such, for gas supply to be sustainable, to reduce joint venture operator export-domestic gas portfolio conflict, to encourage reserves growth and to have credible buyers and suppliers of gas, a bankable commercial framework is imperative because companies will only respond to the right mix of penalties and incentives.⁶¹

The Chairman, Shell Nigeria, commented that “If you cajole the private investor to gather gas for power, he can only move so much, but if you actually have the right commercial price, he will be the one chasing the investment. I think we must move to the position where the investor will be the one chasing the investment and not trying to pull them when they are not ready.”⁶²

A company executive also pointed out that the domestic gas pricing framework is so unappealing that some Nigerian companies completely write off associated gas when they

⁵⁸ *Ibid.*

⁵⁹ “Madam Minister Free Gas for Power” Editorial, *Businessday* (27 March 2014), online: *Businessday Newspaper Online* <www.businessdayonline.com/2014/03/madam-minister-free-gas-for-power/>.

⁶⁰ Okenabirhie, *supra* note 27 at 14.

⁶¹ *Ibid*; M Ayankola, “Moving Nigeria’s Gas Industry Forward”, online: *Businessday Newspaper Online* <www.businessdayonline.com/index.php?option=com_content&view=article&id=1479:movingnigerias-gas-industry-forward&catid=69:gas&Itemid=195>.

⁶² Okenabirhie, *supra* note 27 at 14; O Ezeobi, “Gas Policy: Confronting the Electrifying Challenge”, online: *Punch Newspaper Online* <www.punchng.com/Articleprint2.aspx?theartic=Art20080302548729>.

value oil assets they are buying or have bought.⁶³ The government on the other hand fears that raising the price would push up power bills though analysts say that the fear is unfounded considering the fact that operating cost of diesel generators which is being resorted to is way higher than the projected rise in gas price and electric power bills.⁶⁴

4.5. The Nigerian Electric Power Market

The electric power market is very strategic as it is a major source of energy for the Nigerian state. The generation of electric power in Nigeria is dominated by the utilization of natural resources such as natural gas, oil, hydro and coal.⁶⁵ However, this discussion of the electric power market is focused on gas fired electric power generation as the DGSO only comes to play where utilization of gas for power generation is concerned.

The Nigerian electric power sector, as mentioned earlier, faces acute efficiency problems which culminated into a prolonged state of inadequate power generation and erratic power supply. Some factors identified to have contributed to the major reduction in overall electricity generation and poor utilization of existing power generation capacity in Nigeria include, inadequate and erratic availability of gas, lack of investments in infrastructure, poor planning and sabotage of pipelines,⁶⁶ low gas pressure, poor infrastructure maintenance,⁶⁷ huge metering gap etc.⁶⁸

⁶³ Tim Cocks, "Analysis - Nigeria hopes its Gas can keep the Lights On", (21 March 2014) online: *Reuters* <<http://in.reuters.com/article/2014/03/21/nigeria-gas-idINL6N0MI1IT20140321>>.

⁶⁴ *Ibid.*

⁶⁵ Abubakar Sadiq Aliyu, Ahmad Termizi Ramli & Muneer Aziz Saleh, "Nigeria Electricity Crisis: Power Generation Capacity Expansion and Environmental Ramifications" (2013) 61 *Energy* 354 at 355.

⁶⁶ Tallapragada, *supra* note 40 at 32.

⁶⁷ Engr DJ Obadote, "Energy Crisis in Nigeria: Technical Issues and Solutions" (Paper delivered at the Power Sector Prayer Conference, 25–27 June 2009) at 4, online: <www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.obadote.com%2Fpgm-download_media.php%3Fname%3DENERGY_CRISIS_IN_NIGERIA.pdf&ei=7HHpU4jHKsSLjALJ44HoCQ&usq=AFQjCNHz7SHsykosfpcE41hYEhoLBjh2Ag&sig2=rKVqnBBYOSCIEzTgk1Nd0w> [Obadote].

⁶⁸ Okechukwu Nnodim, "Nigerians to Pay More for Electricity - FG", *Punch Newspaper* (16 May 2014), online: *Punch Newspaper Online* <www.punchng.com/news/nigerians-to-pay-more-for-electricity-fg/> [Nnodim].

Also, the transmission grid has been experiencing some major problems such as vandalization of power towers, huge transmission losses (about 30 - 35%) and power evacuation problems.⁶⁹ Furthermore, the distribution system experiences network problems (especially during raining season), illegal electricity connections either to the national grid or the existing residential/industrial electricity outfit,⁷⁰ overloaded transformers (which results in very low voltages), over/under billing, payment via unscrupulous business collusion, cash collection problems, illegal manipulation of installed meters, corrupt practices of distribution staff (e.g. illegal sales of electricity meters to prospective consumers, vandalization of equipment, resold in most cases to public/private electricity institutions, etc.).⁷¹

The residential share of the customer base is about 60% of the total revenue share however, in terms of revenue collected, the share of residential customers is not proportionately as high due to the low tariff for residential customers, absence of proper metering, billing and collection system.⁷² Generally, analysts have pointed out the low rate of electricity tariff as a major problem in the Nigerian power sector as it is insufficient to meet operating or capital investment costs of the unbundled companies along with the gas supply and IPP payments.⁷³

The *Electric Power Sector Reform Act (EPSR Act)* mandates Nigerian Electricity Regulatory Commission (NERC) to ensure that the prices charged by licensees are fair to consumers and sufficient to allow the licensees finance their activities and make reasonable earnings for efficient operation.⁷⁴ Also, NERC is empowered to establish one or more tariff methodologies for regulating electricity prices to prevent abuses of market power.⁷⁵ As such,

⁶⁹ Obadote, *supra* note 67 at 4.

⁷⁰ *Ibid.*

⁷¹ *Ibid* at 5.

⁷² Tallapragada, "Nigeria's Electricity Sector", *supra* note 40 at 30.

⁷³ *Ibid.*

⁷⁴ *Electric Power Sector Reform Act* 2005, CAP E7, Laws of the Federation of Nigeria (LFN) at s 32(1)(d) [EPSR Act].

⁷⁵ *Ibid* at s 76.

pursuant to the mandate to regulate electricity prices under the *EPSR Act*, NERC formulated a pricing framework termed the Multi-Year Tariff Order (MYTO) in 2008 which has undergone various modifications over the years. The MYTO pricing framework is further discussed hereunder.

4.5.1. Multi Year Tariff Order (MYTO)

MYTO I

The first MYTO was stated to be based on the principles of operational cost recovery, return on investment for new capital investment and replacement capital investment.⁷⁶ These principles indicated the quest of NERC to ensure proper, adequate and stable pricing of electricity which would allow for cost recovery, reasonable profit and encourage more private investments.

MYTO I was further structured to provide for periodic review of the cost parameters through the minor (annual) and major (five-yearly) review windows, of which the former takes into cognizance changes in gas price, inflation and exchange rates while the latter considers holistic changes in major parameters.⁷⁷

In implementing MYTO I however, it seemed NERC was more particular about protecting consumer interests as such, electricity was underpriced and consequently did not reflect the true cost of electricity production.⁷⁸ This underpricing of electricity became a major stumbling block in the quest to adequately meet the demand for electricity in the country.

⁷⁶ Tallapragada, “Nigeria’s Electricity Sector”, *supra* note 40 at 31.

⁷⁷ “An infrastructure action plan for Nigeria: Closing the Infrastructure Gap and Accelerating Economic Transformation” at 27, online: *African Development Bank Group* <www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/An_Infrastructure_Action_Plan_for_Nigeria_-_Closing_the_Infrastructure_Gap_and_Accelerating_Economic_Transformation.pdf>.

⁷⁸ Multi -Year Tariff Order for the Determination of the Cost of Electricity Sold by Distribution/Retail Companies for the Period 1 June 2012 to 31 May 2017 at 15 [MYTO for the Determination of Cost of Electricity].

MYTO I also faced issues of gas pricing and exchange rates which were not attractive to investors and consequently led to a major review and the introduction of MYTO II in 2012.⁷⁹

MYTO II

There were two (2) major changes to MYTO I and these were brought about by the need to be more flexible in wholesale generation pricing and the need to consider a number of other variables during the minor reviews.⁸⁰ Hence, MYTO II was intended to be a cost-reflective platform which provides financial incentives for immediately-needed increased investments in the industry.⁸¹ MYTO II has however not particularly solved the problems that led to its formulation. This is evident in the state of the power sector despite all the reform programs, pricing formulation and modification. One is left to wonder if there will ever be any stability in electricity pricing as there continues to be changes every now and then.

In June 2014, barely two years after MYTO II was introduced, NERC came up with additional modifications to the framework. The modification basically touched on elimination of fixed charges for low income consumers and reduction of fixed charges for other customers which assured the populace that any consumer who does not receive electricity supply for half a month will not pay fixed charge for that month.⁸² This move will hopefully challenge power companies to supply adequate electricity so that they can obtain the fixed charges payable by the consumers. The exclusion of payment of fixed charge if a customer is not supplied power for up to half a month cumulatively also reflects that the interests of and fairness to consumers are of utmost importance to the regulatory authority.

⁷⁹ *Ibid* at 13.

⁸⁰ *Ibid*.

⁸¹ *Ibid* at 15.

⁸² “NERC Lowers Fixed Charge for Electricity Consumers”, online: *Nigerian Electricity Regulatory Commission* <www.nercng.org/index.php/media-and-publicity/public-notices/228-nerc-lowers-fixed-charge-for-electricity-consumers>.

It is projected that on the long run, the Nigerian electric power market will grow and evolve to a market-based system whereby generators and electricity retailers will be free to contract with each other for the supply of electricity.⁸³ To realize this projection, retail tariffs need to reflect the costs of the entire value chain for the electric power industry, beginning with natural gas (fuel for generation plant), on to wholesale generation, through to transmission, distribution, metering, billing and finally to the consumer.⁸⁴

There doesn't seem to be good enough pricing framework in the power sector to ensure that money invested in the whole process of power generation, distribution and transmission is recouped. Also, the poor credit history of the power sector and the weak balance sheet of government – owned power generation utilities required that their payment obligations under their respective gas sale contracts be backstopped by a credible financial guarantee.⁸⁵

To this end, the Nigerian government is considering increase in gas prices supplied to power plants and it is envisaged that the price increase will lead to an upward review of electricity tariffs across the country.⁸⁶ The ultimate goal of these increases is to attain optimal productivity of the power sector especially in the area of adequate fuel supply, power generation, distribution and transmission to the final consumers.

4.6. Preliminary Conclusions

This chapter has touched on various issues starting from the background of the DGSO under the NGMP in Nigeria; the DGSO pricing mechanism and impacts on the gas producers; as well as the gas and electric power markets in Nigeria. The NGMP was formulated for

⁸³MYTO for the Determination of Cost of Electricity, *supra* note 78 at 16.

⁸⁴ *Ibid* at 19.

⁸⁵ Gbite Adeniji, "Nigeria: Leveraging Gas for Economic Growth", online: *Advisory Consultants* <www.advisoryng.com/wp-content/uploads/2013/11/2010.09.28.-NIGERIA-Leveraging-gas-for-economic-growth.pdf>.

⁸⁶ The Minister of Power, Prof. Chinedu Nebo, on the 16th May, 2014 disclosed that the price of gas to the power plants was likely to rise from the current \$1.5 per million British thermal unit to \$2mmmbtu and that this might affect the electricity tariffs. See Nnodim, *supra* note 68.

obvious reasons basically to enhance the growth and development of the gas sector which would greatly impact domestic market growth and the export market. It was however necessary to pay particular attention to the domestic market due to the “trampling” effect of export market development on the domestic gas market.

Hence, the components of the NGMP as discussed earlier reiterate the focus on the need to restructure the domestic gas market for maximum utility. The imposition of the DGSO in particular recognizes that the electric power market is the core consumer of natural gas in the Nigerian domestic gas market and due to the ongoing need to work towards optimal productivity within the electric power sector, the interplay between the gas and power sectors cannot be undermined.

The inadequate supply of gas for power generation, dearth in gas and power infrastructure as well as low domestic gas pricing and electricity tariffs are some of the major issues that have been identified as affecting the optimal implementation of the DGSO. These in turn have negatively impacted on the efficiency of the power sector particularly power generation which the DGSO was intended to address amongst other things.

So also, as much as gas producing host countries (Nigeria in this context) seek to maximize their natural gas for the welfare of the citizenry in terms of ensuring availability of gas supplies in low prices, it is obvious and essential to point out that the DGSO can only be attractive to gas producers where it does not jeopardize the economic viability of gas production. Hence, a more market driven pricing framework for domestic gas is imperative. Pricing should be cost reflective and good enough to guarantee reasonable return on investment as these will encourage influx of investment and increase in capacity. Commendably, the Nigerian government seems to be working towards a gradual increase of

domestic gas prices competitive with international market prices basically to attract more investment that will tackle the supply crisis in the country's power sector.⁸⁷

Generally, it seems the DGSO will have a significant positive impact on the overall efficiency of the power sector if the shortcomings in the other components of the electricity chain (distribution and transmission) are also addressed. Availability of adequate gas supplies for power generation enhanced by the DGSO requires concurrent adequacy of the transmission and distribution network infrastructure. Nonetheless, the adoption of the DGSO is a commendable regulatory step as it purports to address the root of the problem in terms of enhancing optimal generating capacity via the availability of the requisite resource - natural gas.

⁸⁷ "Nigeria to Raise Domestic Gas Prices to par with International Market: NNPC" 17 Mar 2014, online: *Platts McGraw Hill Financial* <www.platts.com/latest-news/natural-gas/lagos/nigeria-to-raise-domestic-gas-prices-to-par-with-21345204>.

CHAPTER FIVE: COMPARATIVE ANALYSIS: INDONESIAN, WESTERN AUSTRALIA, AND EGYPT DOMESTIC GAS SUPPLY OBLIGATION EXPERIENCE

5.0. Introduction

As earlier described in Chapter Two, a domestic gas obligation is an obligation imposed by the state on gas producing companies for various reasons. Oftentimes, gas producing host countries are inclined to adopt such an obligation when there are foreseeable risks that threaten to jeopardize domestic market interests.¹ Incorporating a domestic obligation in a country's legal framework is thus a way of securing the interests the host country's domestic market.² However, one central reason for implementing a domestic obligation is to ensure security of gas supply for the purposes of achieving sustainable national economic development.

Most countries recognize that energy resources are owned or regulated by the producing nation thus through a Domestic Gas or Market Obligation (DGO or DMO),³ it is expected that all business activities pertaining to the resource, whether domestic or international, are beneficial to the host producing state.⁴

In particular, the recurring problem of natural gas shortage in gas producing host countries due to preference of gas producers for long term Liquefied Natural Gas (LNG) export

¹ As in the case of Nigeria, see National Domestic Gas Supply and Pricing Policy, 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008 at 2 [Policy].

² Government policies and plans are more secured and guaranteed when backed with the force of law.

³ In this Chapter Domestic Gas Obligation (DGO) is to be used interchangeably with Domestic Reservation Policy, DMO (Domestic Market Obligation) and Domestic Gas Supply Obligation (DGSO as in the case of Nigeria) due to the language employed by various writers in the literatures consulted though they all refer to the same thing.

⁴ The global acceptance of the principle of permanent sovereignty of states over their natural resources is a vivid reflection of this assertion. Also, "a new wave of 'resource nationalism' with regards to international energy supply security is apparent, in which countries are seeking to preserve their resources to ensure the supply of the domestic market for future generations and to influence foreign policy". See D Noelle Leonard & Martin West, "Domestic Energy Reservation Policies: An International Comparison" at 1, online: *Area of Research Excellence in Oil & Gas Management, School of Economics and Finance, Curtin University, Australia* <www.iaee.org/en/publications/proceedingsabstractdoc.aspx?id=1071>.

contracts, for example, is a major factor that influenced the adoption of a DGO/DMO in various states.⁵ The obligation considers the importance of security of supply, as it underpins national security, economic prosperity and global stability.⁶

To this end, some countries namely, Indonesia, Western Australia and Egypt which have DGO/DMO policies similar to that of Nigeria's Domestic Gas Supply Obligation (DGSO) will be examined. The purpose of this examination is to understand what constitutes these DGO policies, how they are implemented and subsequently, analyze side by side with what might be obtainable in Nigeria. This comparative analysis is expected to serve as a pointer to the ways in which Nigeria can avoid problems that have been identified with respect to the implementation of DGO in these countries as well as provide useful suggestions on how the implementation of the Nigerian DGSO can be enhanced for overall improvement of the electric power generation and supply in Nigeria.

A brief discussion on the theory of legal transplantation will also be undertaken. This discussion is essential as it interrogates the feasibility and applicability or otherwise of some of the suggestions and practices that may be drawn from the comparative analysis of these countries considering each country's socio-cultural, political and geographical peculiarities.

5.1. Indonesia

5.1.1. Background

Indonesia is known to be a country greatly endowed with large quantities of natural gas. In fact, Indonesia's natural gas industry holds significant potential for both international exports and the domestic market as natural gas production in 2011 was about 8,460 million cubic feet

⁵ For example, Nigeria, Indonesia and Western Australia; See also, Policy, *supra* note 1 at 2.

⁶ Theresa O Okenabirhie, "The Domestic Gas Supply Obligation: Is this the Final Solution to Power Failure in Nigeria? How Can the Government make the Obligation Work?" (2009) 13 CEPMLP Annual Rev at 6, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/index.php?news=30880> [Okenabirhie]; HJ Kalichi & LD Goldwyn, *Energy and Security: Toward a New Foreign Policy Strategy* (Washington, DC: Woodrow Wilson Centre Press, 2005) at 51-52.

per day (mmcf).⁷ The nation's most prolific blocks of gas reserves are located far from its major demand markets, and regulatory uncertainty delays investment needed for exploration.⁸ Nevertheless, as at 2014, Indonesia is recorded to possess 104.4 trillion cubic feet (Tcf) of proven natural gas reserves.⁹

As in the case of Nigeria, natural gas associated with oil production was often flared in Indonesia due to lack of infrastructure.¹⁰ Also, there were complaints by gas producers regarding the low pricing of gas which is a disincentive as the fertilizer, petrochemical and power generation industries are the principal domestic consumers of natural gas in Indonesia.¹¹ Hence, it took an electricity crisis coupled with the discovery of a large gas field offshore of East Java in the Kangean Block, by ARCO and BP, to bring home to the government of Indonesia the realization that truly commercial terms were needed to make development of gas for the domestic market economically viable to the producer.¹²

Domestic demand of gas in Indonesia has been growing steadily such that by 2012, 1,329Bcf of natural gas was recorded to have been consumed domestically.¹³ This notwithstanding, Indonesia is a major exporter of pipeline and LNG¹⁴ to various countries and the tension of

⁷ "Indonesia's Gas Industry; Prioritizing Domestic Demand and New Opportunities", online: *Global Business Guide*

<www.gbgingonesia.com/en/energy/article/2012/indonesia_s_gas_industry_prioritising_domestic_demand_and_new_opportunities.php> [Indonesia's Gas Industry].

⁸ "EIA Country Report: Indonesia", online: *US Energy Information Administration* <www.eia.gov/beta/international/analysis.cfm?iso=IDN> ["EIA Country Report: Indonesia"].

⁹ *Ibid.*

¹⁰ *Ibid.*

¹¹ Fitriana Mahiddin & Syahdan Z Aziz, "A Legal Guide to Gas Regulation in Indonesia: Overview", online: *SSEK Indonesian Legal Consultants*

<www.blog.ssek.com/index.php/2012/03/a-legal-guide-to-gas-regulation-in-indonesia-overview/> [Fitriana Mahiddin & Syahdan Z Aziz].

¹² TN Machmud, "Production Sharing Contracts in Indonesia: 25 Years' History" Notes And Comments, (1993) 11:3 J Energy & Nat Resources L 179 at 183-184.

¹³ "EIA Country Report: Indonesia", *supra* note 8.

¹⁴ *Ibid.*

ensuring security of supplies for the Indonesian domestic market led to the inclusion of a domestic market obligation in the oil and gas legal framework.¹⁵

5.1.2. Domestic Market Obligation in Indonesia

A fundamental principle, entrenched in the *Indonesian Constitution*¹⁶ is that all natural resources of Indonesia are controlled by the state and ownership of resources remains vested in the state until the point of delivery to a customer.¹⁷ For the Indonesians, the state ownership of the petroleum resource was a matter of supreme constitutional importance which touched upon deep sentiments of sovereignty and ownership of natural resources and of freedom from colonial domination.¹⁸

Hence, the legal framework clearly showed that the welfare of the state is paramount especially when it relates to utilization of her natural resources. Consequently, the need to particularly take advantage of the natural gas resource for the welfare of the state (as entrenched in the *Indonesian Constitution* amongst other reasons led to the formulation of the DMO.

In 2001, the Indonesian government passed its *Oil and Gas Law*¹⁹ which mandated gas producing companies to dedicate up to 25 percent of gas production for the domestic market.²⁰ The Indonesian DMO was put in place to secure and guarantee domestic gas supplies for the sustenance of the country's industries such as power plants and other gas

¹⁵ *Ibid.*

¹⁶ *Constitution of Indonesia*, 1945, art 33(3) [*Indonesian Constitution*].

¹⁷ John Tivey, Mufti Habriansyah & Fauzul Abrar, "Overview of the New Indonesian Oil and Gas Law" Comment, (2003) 22:4 Australian Resources & Energy LJ at 444.

¹⁸ *Indonesian Constitution*, *supra* note 16 at Preamble, art 33(3); Michael AG Bunter, *The Petroleum and Licensing of Petroleum Prospective Acreage* (The Hague: Kluwer Law international, 2002) at 46.

¹⁹ *Indonesia Oil and Gas Law, No 22, 2001* [*Indonesia Oil and Gas Law*].

²⁰ *Ibid* at art 22(1). It states that "business entities or permanent establishments shall give up maximally 25% (twenty five percent) of their portion resulting from the production of petroleum and natural gas to meet the domestic need".

dependent industries.²¹ A certain writer in asserting and affirming the importance of the DMO further stated that the government must give priority to domestic needs in the utilization of natural gas.²²

Due to global shift towards the use of natural gas in place of oil, demand for Indonesian gas increased both from the domestic and international markets.²³ This shift and increase in demand geared Indonesia's gas strategy towards export markets making Indonesia a leading country in gas exports however, the *Oil and Gas Law* streamlined the process for domestic gas supply sales by creating a new DMO for gas.²⁴

The conflict of domestic and export interests made the Indonesian government take radical steps in ensuring that domestic gas supplies were not jeopardized in order to meet gas export. Hence, there was a renewed focus by the Indonesian government to limit gas exports in an effort to ensure domestic supply as there were complaints that Indonesia's power plants and industries lack gas resources at the expense of international exports.²⁵

In July 2012, the Indonesian government announced that it was considering a moratorium on future gas export contracts arguing that safeguarding gas for the domestic market will have a multiplier effect on the economy despite the loss in revenues on the short term.²⁶ This move indicates that the Indonesian government recognizes the effect and importance of ensuring adequate gas supplies for its domestic needs especially power and other gas dependent industries though this might be considered extreme in certain circumstances. Hence, the

²¹ *Ibid*; See also, Fitriana Mahiddin & Syahdan Z Aziz, *supra* note 11.

²² Mark Newbery, "New Indonesian Oil and Gas Law" (2002) 20 J Energy & Nat Resources L 355 at 357 [Newberry].

²³ Fitriana Mahiddin & Syahdan Z Aziz, *supra* note 11.

²⁴ "Indonesia Oil and Gas Law", *supra* note 19 at art 22(1); "Global Approach to Gas Planning Case Studies" 2014 June, Sweetcrude Reports at 25/7 ["Global Approach to Gas Planning Case Studies"].

²⁵ "Indonesia's Gas Industry", *supra* note 7.

²⁶ *Ibid*.

current gas strategy intends to limit exports and not extend contracts that will shortly expire, as part of the government's policy to increase supply to the domestic market.²⁷

5.2. Western Australia

Australia can be termed as a country with substantial gas resources,²⁸ however, local industries over the years were said to be experiencing serious gas shortages and sharply rising prices as major gas producers were focused on maximizing LNG exports and signing 25 year contracts to supply gas to customers in China, Japan, Korea and India.²⁹

Hence, in 2006, Western Australia announced its Domestic Gas Policy³⁰ to ensure that domestic consumers have continued access to supplies of natural gas by securing domestic gas commitments up to the equivalent of 15 percent of LNG production from each export gas project.³¹

It was reported that the Government consulted widely in order to obtain stakeholder input for the policy development process and to enable it achieve a balance amongst the interests of the gas producers, gas consumers and the Western Australia community at large.³² Also, the obligation was seen as reasonably flexible enough for gas producers to comply with as the market mechanism is quite encouraging, and there is a relief clause that allows for deferral of DMOs if it is not commercially viable for the gas producers at certain periods.³³ The DMO is basically allowed to run according to how the market plays as the government did not dabble into domestic gas pricing of the DMO.

²⁷ "Global Approach to Gas Planning Case Studies", *supra* note 24 at 25/7.

²⁸ "Australia's Domestic Gas Security" at 3, online: *Domgas Alliance* <www.domgas.com.au/pdf/Alliance_reports/DomGas%20Report%202012.pdf> ["Australia's Domestic Gas Security"].

²⁹ *Ibid* at 5.

³⁰ Western Australia Consultation Paper on Domestic Gas Reservation Policy, 2006 [Western Australia Consultation Paper on Domestic Gas Reservation Policy, 2006]; Okenabirhie, *supra* note 6 at 8.

³¹ Okenabirhie, *supra* note 6 at 8.

³² *Ibid*.

³³ *Ibid*.

There were however concerns from certain quarters as to the negative effect the domestic supply obligation might have on investment.³⁴ This was feared as gas producers might not be encouraged to invest in a business that does not promise the highest possible revenue. Interestingly, this concern is being laid to rest as there seem to be evidence that the fears are unfounded. A writer particularly commented that the evidence in Western Australia is overwhelming, reinforcing that a national reservation policy will not discourage investment or make Australia a less attractive place to invest rather, it will promote energy security³⁵ evident in adequacy and availability of domestic gas supplies.

To this end, domestic gas reservation is said to be working in Western Australia, particularly due to the commitment and compliance demonstrated by the Wheatstone Project and other projects which further rebuts the contentions that a national reservation policy will discourage investment and LNG developments or increase sovereign risk.³⁶

A further inquiry into the effects of the reservation policy in Western Australia indicates that gas producers tend to engage in developing the gas infrastructure base needed to enhance the fulfillment of the reservation policy.³⁷ For example, as part of the Wheatstone project, Chevron and its partners committed to build a domestic gas processing plant with capacity and production equivalent to 15 per cent of LNG sales.³⁸ Hence, instead of gas producers complaining about inadequate infrastructure to supply gas to the domestic market, the reservation policy influenced them to engage in infrastructure development projects.³⁹

³⁴ “Australia’s Domestic Gas Security”, *supra* note 28 at 25.

³⁵ *Ibid* at 18, 25.

³⁶ *Ibid*.

³⁷ *Ibid* at 20.

³⁸ *Ibid*.

³⁹ *Ibid*.

5.3. Egypt

5.3.1. Background

According to OGJ⁴⁰ estimates as of January 1, 2014, Egypt's proven natural gas reserves registered at around 77Tcf, an increase from the 2010 estimate of 59 TcF.⁴¹ The decline in oil production has been offset by the rapid development of the natural gas sector for both domestic consumption and export as such, Egypt holds the third largest proven gas reserve in Africa after Nigeria and Algeria.⁴² The Egyptian Natural Gas Holding Company (EGAS) oversees her natural gas development, production, and marketing.⁴³

As in many other gas producing countries, initially the natural gas associated with oil production in Egypt was flared since there was neither a market for it nor a network to collect and ship the gas from producing fields.⁴⁴ This resort to flaring has reduced drastically, and a vibrant gas industry has been established while natural gas is now projected to be the primary growth engine of the energy sector for the foreseeable future.⁴⁵

Oil-fired power generation used to account for a large portion of oil consumption but due to the decline in oil production, natural gas has increasingly replaced oil.⁴⁶ As such, in recent times, the Egyptian power generation chain is characterized by a prevalence of natural gas.⁴⁷ In fact, the Egyptian electricity sector is said to be by far the largest gas consumer, accounting for more than half of the total gas consumption.⁴⁸

⁴⁰ Oil and Gas Journal.

⁴¹ "EIA Independent Country Analysis: Egypt", online: *US Energy Information Administration* <www.eia.gov/beta/international/analysis.cfm?iso=EGY> ["EIA Independent Country Analysis: Egypt"].

⁴² Gawdat Bahgat, "The Impact of the Arab Spring on the Oil and Gas Industry in North Africa: A Preliminary Assessment" (2012) 17:3 J North African Studies 503 at 505 [Bahgat, "The impact of the Arab Spring"].

⁴³ "US EIA Independent Country Analysis: Egypt", *supra* note 41.

⁴⁴ Gawdat Bahgat, "Egypt's Energy Outlook: Opportunities and Challenges" (2013) 24:1 Mediterranean Q 12 at 16 [Bahgat, "Egypt's Energy Outlook"].

⁴⁵ *Ibid.*

⁴⁶ *Ibid* at 15.

⁴⁷ Paul H Suding, "Struggling between Resources-Based and Sustainable Development Schemes: An Analysis of Egypt's Recent Energy Policy" (2011) 39 Energy Policy at 4434.

⁴⁸ Bahgat, "Egypt's Energy Outlook", *supra* note 44 at 20-21.

With the existence of huge natural gas reserves in Egypt and declining oil production, the Egyptian government and gas producers had reasons to explore the export market for natural gas as it was quite promising both in the domestic and export circles. As such, Egypt, in partnership with international companies, undertook significant exploration and established itself as a major regional natural gas producer and exporter⁴⁹ such that by the early 2000s, Egypt had emerged as an important producer, consumer, and exporter of natural gas.⁵⁰ This market status was attained because significant discoveries in the late 1990s enabled Egypt to produce more natural gas than it consumed and the surplus was naturally earmarked for export.⁵¹

5.3.2. Domestic Market Obligation in Egypt

The increasing domestic demand and consumption particularly by the power sector and other gas dependent industries has influenced the Egyptian government to prioritize gas supplies to the domestic gas market over exports.⁵²

As such in 1999, the Egyptian Government announced an Integrated Gas Strategy, or a master plan, that highlighted the main guidelines for the natural gas industry which include the following: export ceiling pegged at 25 percent of total production; no foreign or domestic gas operator would be allowed to export gas from Egypt prior to investing in the domestic gas market; special incentives were established to encourage foreign and private exploration and production companies to establish marketing franchises; incentives were also established to encourage diversification within the gas industry; and all businesses within Egypt, whether

⁴⁹ *Ibid* at 13.

⁵⁰ *Ibid* at 16.

⁵¹ *Ibid* at 21.

⁵² In fact Egypt's total gas exports have declined substantially by an annual average of 30% from 2010 to 2013. See "US EIA Independent Country Analysis: Egypt", *supra* note 41.

state controlled, private, or mixed were encouraged to convert to natural gas for energy needs.⁵³

To this end, government policies are gradually been directed towards stalling natural gas export expansion plans.⁵⁴ In fact, foreign companies operating in Egypt's gas sector were mandated to direct all or a portion of their current production to the domestic market, and the government demanded that new discoveries be earmarked for the domestic market.⁵⁵ The government also enacted a two-year moratorium on new gas export deals in 2008 which was put in place to remedy growing local demand for natural gas.⁵⁶ As a result, Egypt's LNG exports was cut in half from 496 Billion Cubic Feet (Bcf) in 2008 to 237 Bcf in 2012, according to BP Statistical Review and it was projected to decline in the following years.⁵⁷

As such, upon commercial discovery of gas in Egypt, the International Oil Company (IOC) informs Egyptian General Petroleum Corporation (EGPC) consequent of which a Development Agreement is reached and EGPC executes a long term Gas Supply Agreement (GSA) for over 20 years with a 75% Take or Pay (TOP) arrangement.⁵⁸

If upon commercial discovery of gas, the EGPC fails to enter into a long term GSA with the IOC, the latter is free to develop such a find strictly for export purposes and find a market for

⁵³ "Egypt Integrated Gas Strategy: Exports Won't Exceed 25% of Output", online:

<www.thefreelibrary.com/EGYPT+-+Integrated+Gas+Strategy%3B+Exports+Won%27t+Exceed+25%25+Of+Output.-a058670246>; See also Bahgat, "Egypt's Energy Outlook", *supra* note 44 at 16-17.

⁵⁴ "Global Approach to Gas Planning Case Studies", *supra* note 25 at 23/5; For instance, "in 2012, Egypt halted natural gas exports to Israel by canceling its long-term contract to supply Israel with natural gas because of a payment dispute. The move also underlined Egypt's need to divert natural gas supply away from exports to its local market to meet demand". See "EIA Independent Country Analysis: Egypt", *supra* note 41.

⁵⁵ "US EIA Independent Country Analysis: Egypt", *supra* note 41.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.*

⁵⁸ CM Okorie, *Can Domestic Gas Obligation (DGO) Principles be Compromised by Detailed Regulation? A Review of Nigeria's Downstream Gas Policies* (LLM Thesis, Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee, 2010) at 77 [Unpublished] [Okorie]; See also, Gerald B Greenwald, "Exploration and Production Agreements for Natural Gas" in *International Bar Association Series, Energy Law* (UK: Graham & Trotman, 1988) 776 at 785 [Greenwald].

it.⁵⁹ This provision propelled the construction of numerous gas development facilities including pipelines for both domestic and export purposes which should be workable in Nigeria as well.⁶⁰

5.3.3. Gas Pricing in Egypt

The domestic natural gas market in Egypt as in other gas producing countries is characterized by low pricing compared to what is obtainable in the export market.⁶¹ The low pricing for the domestic market is rooted in a logic that is peculiar to gas-rich developing countries and it is not without adverse consequences for the gas sector, the economy as a whole and for social equity in these countries.⁶² In fact, investors are not readily encouraged to conduct business under not too viable pricing framework, for instance, substantial gas discoveries in the deep offshore Mediterranean Sea and in other areas in Egypt remain undeveloped as a result of low pricing.⁶³

For this reason, Egypt considered increasing her gas prices. In early 2003, Egypt increased gas prices for energy-intensive users up to \$6/MMBtu in the hope that this would make the development of deeper offshore reserves more economic and reduce the fiscal burden of subsidies on the government.⁶⁴

⁵⁹ *Ibid.*

⁶⁰ *Ibid* at 76.

⁶¹ “The price that Egypt pays foreign operators for natural gas that they produce in Egypt is capped at \$2.65 per million British thermal unit (Btu) and the price has presented a major obstacle for foreign operators wanting to develop gas projects in Egypt because it makes some of the projects economically unviable.” See “US EIA Independent Country Analysis: Egypt”, *supra* note 41.

⁶² For example, “low prices result in distorted consumption patterns, inducing greater demand for gas than would otherwise result if consumers paid the (higher) opportunity price. They also produce a bias in terms of investment in favour of gas export infrastructure at the expense of the domestic market, in cases where exports of gas are allowed. They can affect government fiscal and trade balances, especially in countries with relatively limited fiscal headroom and resource endowments, and even the long-run growth potential of an economy. And, as is well known, universal subsidies are not the most efficient means of redistributing income, or improving access to energy for the poor.” See Hakim Darbouche, “MENA’s Growing Natural Gas Deficit and the Issue of Domestic Prices” (2013) 2 Energy Strategy Rev at 118 [Darbouche].

⁶³ “US EIA Independent Country Analysis: Egypt”, *supra* note 41.

⁶⁴ Darbouche, *supra* note 62 at 117.

Also, under the domestic gas pricing, Egypt introduced a sector based pricing structure where suppliers get a single pre-determined aggregate price and EGAS operates as the single buyer of gas from suppliers.⁶⁵ The introduction of the intermediary EGAS institution enabled the Egyptian government to balance the affordability challenge of customers with commerciality of supply concern of suppliers and this model is being adopted in Nigeria.⁶⁶

A writer has thus suggested that the Nigerian government has an option to adopt the Egyptian model wherein the DGO was very high and all gas is sold to EGPC under a long term contract at 85% of the average price for some low quality export crude.⁶⁷

5.3.4. Preliminary Observations

The 25 percent peg on gas export and the long term government involvement and negotiation with gas producers upon commercial discovery of gas in Egypt is a strategic way to guarantee reasonable development of the Egyptian gas sector as it encourages influx of investors and investments knowing that there is a ready market to consume the gas produced for a determinable number of years.

While the upfront long term agreement between the host nation state and gas producers to ensure development is laudable, it is important to point out that it requires immediate and corresponding development of gas dependent industries in the nation such that the markets are ready to optimally utilize the natural gas being produced and sold under the agreement considering the take or pay clause implications.

Bringing this scenario home to Nigeria, it is apparent that gas resources are available and constantly being produced while there are a myriad of gas dependent industries that require

⁶⁵ “Global Approach to Gas Planning Case Studies”, *supra* note 24 at 22/4.

⁶⁶ David Ige, “Gas Aggregation Company Nigeria Limited (GACN): Strategic Aggregator Roles and Functions in the Nigerian Domestic Gas Market” at 15, online: *Gas Aggregation Company of Nigeria Limited* <www.gacn-nigeria.com/images/stories/download/PresentationRoleofAggregatorinDomgasMarket.pdf>.

⁶⁷ Okorie, *supra* note 58 at 50.

gas for survival and optimal production. As such, as part of the DGSO scheme, the power sector being the highest consumer of natural gas can negotiate directly with highly reputable gas producers that have promising gas fields for long term supply agreements for up to 20 years like the Egyptian state. This should be easier for the gas producers to oblige since there is a Partial Risk Guarantee (PRG) by the World Bank⁶⁸ already in place to mitigate payment defaults if it ever occurs.

The long term agreement will be advantageous in a lot of ways: it will improve the efficiency capacity of the power generating system; it will propel gas producers to invest in domestic gas infrastructure development and probably collaborate with other investors as well as the government; it will also allow for improved power generation which should significantly reduce erratic power supply; constant power supply would boost the overall efficiency of other sectors of the economy; where the domestic gas price is cost reflective and relatively competitive with the international market price, shortage of natural gas for power plants will be eliminated while it will be easier for the power sector to charge reasonable electricity prices based on improved service and this will consequently help to meet up with its contractual requirement under the gas purchase agreement.

It is a cycle that if properly managed will create a win-win scenario for gas producers and gas consumers particularly electricity producers and electricity consumers. This cycle might however, warrant some form of price hike which if properly managed also should be reasonable enough and still very low compared to what electricity consumers currently spend to meet their electric power needs individually using diesel fired generators and other means.

⁶⁸ “The World Bank Partial Risk Guarantee (PRG) is a tool used by the World Bank to catalyze private debt finance in support of host governments’ developmental objectives. In June 2009, a two-pronged approach was approved by the World Bank such that PRGs to support PHCN’s gas supply payment obligations to International and domestic companies of up to US\$400 million was adopted.” See Ayodele Oni, *The Nigerian Electric Power Sector: Policy, Law, Negotiation strategy, Business* (Nigeria: Carmel and Sharon, 2013) at 130.

5.4. Other Countries

The United States of America and Canada also have a domestic reservation policy and monitoring mechanism to protect the domestic gas market reasonably. In fact, the US Energy Department has warned United States gas producers that it would closely monitor the impact of LNG exports on the domestic market and that it will take any necessary action, including revoking future export approvals⁶⁹ if the interest of the domestic market is threatened.

Canada which has been a large exporter of gas to countries such as Mexico and the United States also require export permits and export price tests to ensure that the domestic market is not disadvantaged in any way by export of gas.⁷⁰ In fact, the export market is served as a second priority to the domestic market in terms of reliability of supply and so far Canada has not defaulted in its export commitments⁷¹ which demonstrate that prioritizing domestic supply can co-exist with supplying international customers.⁷²

5.5. Liquefied Natural Gas Export Commitments

The major factor influencing the formulation of the DGO/DMO in various gas producing countries is the export of LNG to different countries of the world.⁷³ International trade in LNG is apparently quite lucrative and economically viable as such it creates a major tension in the producing country's domestic market especially where gas is an integral part of the country's energy mix.⁷⁴

⁶⁹ "Australia's Domestic Gas Security", *supra* note 28 at 11.

⁷⁰ *Ibid.*

⁷¹ In fact, statistics show that Western Canada has exported over half of its gas production to the US market over the past 25 years, while serving Canada's domestic market on a first priority basis and Canada has yet to default on deliveries to its US gas customers. See Innovative Energy Consulting Submission to the Western Australia Strategic Energy Initiative 2030, (2011) at 5, online: *Innovative Energy Consulting Pty Ltd* <www.innovativeenergy.com.au/wp-content/uploads/2013/06/IEC-submission-to-WA-Office-of-Energy-April-2011.pdf>.

⁷² "Australia's Domestic Gas Security", *supra* note 28 at 11.

⁷³ For example, Nigeria and Egypt.

⁷⁴ International gas trade is usually a source of foreign revenue earnings for exporting countries while gas producers earn a lot due to rising gas prices in the international market.

For instance, in Nigeria, Nigerian Liquefied Natural Gas (NLNG) commenced export of gas in 1999 and rapidly expanded to the 6th train.⁷⁵ The rise in global gas prices and demand has also stimulated interest in export oriented projects such as West African Pipeline (WAPG) and Trans Sahara Pipeline, conversely, local demand for gas has continued to expand rapidly, driven mainly by the considerable investment in gas fired power plants to increase the nation's electricity generating capacity.⁷⁶

The situation is compounded by the fact that about 40% of current gas reserves in Nigeria are unavailable, trapped in gas caps and inaccessible until after production of oil which underscores the need for considerable investments in exploration and production for non-associated gas.⁷⁷ The available gas obviously cannot meet up with the demand from domestic and international markets and considering the fiscal and legal framework, domestic gas prices seem unappealing to gas producers. Hence, in the circumstance where domestic and export demands are competing for limited available resources, tension is created. A well-considered respite might however be that the investment climate is set to encourage large scale non-associated gas production.

5.6. Theory of Legal Transplantation

The theory of legal transplantation is premised on the fact that law does not fully reflect the society within which it operates; instead, much of it is borrowed from other legal systems.⁷⁸

Alan Watson, a major proponent of legal transplantation theory described legal transplantation as the moving of a rule or a system of law from one country to another or

⁷⁵ Oyetola Oshobi, "The Challenge of Pricing Domestic Gas Under the Petroleum Industry Bill (PIB)" (Paper delivered at the Gulf of Guinea Conference, November 2009), online: *Babalakin & Co Legal Practitioners* <www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.babalakinandco.com%2Fpresentations%2FGOG%252012%2520Presentation%2520WORK%2520ON%2520Copy.pptx&ei=3vHmU9XRJZCJiwLQ5IDIBw&usg=AFQjCNGB_VSaqgAOuHfHg1kuBFRhbpR_3g&sig2=vt9RjU80mQwwmcolfAIppQ> [Oshobi].

⁷⁶ *Ibid.*

⁷⁷ *Ibid.*

⁷⁸ Alan Watson, "The Birth of Legal Transplants" (2012-2013) 41 Ga J Intl & Comp L 605 at 607.

from one people to another.⁷⁹ Theorists have also stated that since legal transplantation inevitably generates the transfer of the normative dimension of the law, it is inextricably linked with the transfer of legal culture.⁸⁰ Hence, the workings and operations of the theory of legal transplantation mirrors a strong inter relationship of law and culture in the course of developing laws and it recognizes the potential suitability of such legal culture within other legal systems that seek to adopt such laws to address similar issues in their jurisdictions.

One of the reasons underlying the adoption of legal transplantation is the assumption that because a rule (or system of law) worked in one country, there should be no problem adapting it in another.⁸¹ This assumption is often put to test through comparative legal studies which helps to enhance the understanding of legal cultures in various jurisdictions⁸² in order to determine the transferability or otherwise of such legal cultures from one jurisdiction to the other. Hence, countries tend to adopt the legal cultures which they deem suitable from other countries dealing with similar situations.

Pierre, an opponent of the theory of legal transplantation, contends however that legal transplantation according to Watson is impossible nor can rules of law travel across jurisdictions due to the nature of law as it is usually tied to historical, epistemological, or cultural baggage.⁸³ According to Pierre, the fact that rules are culture specific makes it difficult for their meanings to survive the journey from one legal system to another.⁸⁴ In fact he believes that as it crosses boundaries, the original rule necessarily undergoes a change that

⁷⁹ Alan Watson, *Legal Transplants: An Approach to Comparative Law* (Edinburgh: Scottish Academic Press 1974) at 21.

⁸⁰ Pier Giuseppe Monateri, ed, *Methods of comparative Law* (Uk: Edward Elgar Publishing 2012) at 192.

⁸¹ Rosaline Baidou Cowan, "The Effect of Transplanting Legislation from one Jurisdiction to Another" (2013) 39:3 Commonwealth L Bulletin 479 at 485 [Cowan].

⁸² Pierre Legrand, "The Impossibility of Legal Transplants" (1997) 4 Maastricht J Eur & Comp L 111 at 124 [Legrand].

⁸³ *Ibid* at 114.

⁸⁴ *Ibid* at 117.

affects it *qua* rule.⁸⁵ Hence, viewing law as a culturally-situated phenomenon makes legal transplantation impossible.⁸⁶

O Kahn-Freund further argued that an institution could only be designed to suit one country, and it is very difficult to use it to suit another, hence legal transplantation is impossible.⁸⁷ However, in 1974, Watson refuted O Kahn-Freund's opinion stating that history did not prove that legal transplantation is impossible giving some examples such as the French law serving as the model for the Japanese penal code and the code of criminal procedure that were enacted in 1882.⁸⁸

Legal transplantation is also seen as a haphazard means of legislating, as a complex and difficult situation arises if the drafter cannot harmonise the laws being transplanted with that of the recipient country.⁸⁹ This perception of legal transplantation indicates that social conditions not only play an important role in transplanting but may even decide the success or failure of the texts or laws, for instance the effect of transplantation in Sierra Leone and other countries has led Cowan in her critique of the theory of legal transplantation to conclude that transplanted laws cannot settle in the recipient state like it did where it came from.⁹⁰ Also, the economic situation, political situation and geographical location of a recipient country are of utmost significance if legal transplantation is to be successful and effective.⁹¹

⁸⁵ *Ibid* at 120.

⁸⁶ *Ibid* at 124.

⁸⁷ Cowan, *supra* note 81 at 480.

⁸⁸ *Ibid*.

⁸⁹ *Ibid* at 479.

⁹⁰ *Ibid* at 484; Cowan based this assertion on the fact that transplanted laws are not necessarily done to suit the culture of the people or their system but to benefit the international organizations or original state that the law came from. For instance, Cowan asserts that the Child Rights Act of 2007 (Sierra Leone) had sections (Part vii - Institutionalized Care and Miscellaneous Matters) that are not workable in Sierra Leone but nonetheless incorporated due to the requirements of the Convention on the Rights of the Child (CRC) and the African Charter on the Rights and Welfare of the Child which Sierra Leone sought to meet up with.

⁹¹ *Ibid* at 485.

Having briefly considered the arguments for and against the theory of legal transplantation, it suggests that the movement of law from one jurisdiction to another, in any event, is not necessarily impossible. The concern, however, of the opponents of the theory seem to largely lie in the fact that the success of such transplantation is not guaranteed due to the culture – specific nature of law and the difference in culture of recipient states.

To this end, it will be safe to say that when considering the adoption of a legal rule from a country, the recipient country need not copy such rule or idea verbatim, rather recourse should be taken to ensuring its adaptability within the socio-cultural and economic background of the recipient country in order to make it efficient and operative. This perspective of legal transplantation would thus encourage taking cues from other states but with the intention of making it original enough to fit and meet the specific needs of the recipient state.

In terms of domestic supply obligations, the jurisdictions of Indonesia, Western Australia, Egypt and Nigeria possess similar basic features such as: a vast natural gas reserve;⁹² desirability to enhance the productivity of domestic natural gas dependent industries;⁹³ and intense competition between the domestic and export market.⁹⁴ Accordingly, these countries have similar reasons to adopt a domestic market obligation within their legal framework. These similarities to a large extent bring to bare the applicability of the theory of legal transplantation as they form the basis for the transferability of legal cultures amongst these countries for the enhancement of their domestic markets. However, it is important to note that

⁹² “EIA Country Report: Indonesia”, supra note 8; “Australia’s Domestic Gas Security”, supra note 28 at 3; “EIA Independent Country Analysis: Egypt”, supra note 41.

⁹³ See “Indonesia’s Gas Industry”, supra note 7; Western Australia Consultation Paper on Domestic Gas Reservation Policy, 2006, supra note 30; Okenabirhie, supra note 6 at 8; Bahgat, “Egypt’s Energy Outlook”, supra note 44 at 16; Adeola Adenikinju, “Efficiency of the Energy Sector and its Impact on the Competitiveness of the Nigerian Economy”, International Association for Energy Economics at 30, online: *IAEE* <www.iaee.org/documents/newsletterarticles/408adeola.pdf> [Adenikinju].

⁹⁴ “EIA Independent Country Analysis: Egypt”, supra note 41; “Australia’s Domestic Gas Security”, supra note 28 at 3; “EIA Country Report: Indonesia”, supra note 8; Policy, supra note 1 at 2.

the socio-cultural and economic background of each country needs to be put into proper perspective in order to ensure the workability of transferred legal cultures relating to the domestic supply obligation.

As much as none of the countries have a hundred percent success in implementing the obligation, there are still great lessons and cues Nigeria can pick from their experiences in order to optimize her DGSO. For instance, the recommendation that stakeholders be involved in the negotiation of the DGSO allocation as it was done in Western Australia is feasible as Nigeria has a democratic legal culture that resonates with such practice. Such stakeholder involvement makes for a robust deliberation and consideration of possible or foreseeable facts and figures which oftentimes helps decision makers. In this circumstance for instance, gas producers and regulatory institutions have a major role to play in providing adequate information to the Nigerian government on the terrain of the gas industry and how government policies will effectively enhance the development of the domestic market.

5.7. Summary and Observations

This chapter focused on domestic gas reservation policies obtainable in certain other countries apart from Nigeria. Such comparative analysis is helpful to obtain a better picture of how DGO/DMO policies similar to the Nigerian DGSO work across various countries considering the similarities and differences in the business, political, legal and energy sectors of such economies and from which to extrapolate certain observations and recommendations for the Nigerian DGSO.

Reasonable Pricing and Infrastructure: Having considered the mode of operation for DGO/DMO in Indonesia, Western Australia and Egypt, one common issue was pricing of domestic natural gas. This analysis makes it clear that the successful implementation of the DGSO can only thrive on reasonable cost reflective pricing for both gas produced and

electricity generated. Also, it is glaring that the DGSO in Nigeria cannot be complied with as it has been experienced so far if the requisite gas infrastructure is not available to process and transport the needed gas to the power plants.

To this end, steps should be taken to review the domestic gas pricing and infrastructure issues in order to enhance the successful implementation of the DGSO in Nigeria. In doing this, the FGN is encouraged to involve all stakeholders like its Western Australian counterpart, in the review and negotiation process especially the gas and power producers such that a reasonable and acceptable framework will be arrived at.

Allotment Mechanism: Another issue worthy of mention is how the DGSO in Nigeria is allotted to the gas producers by the Department of Gas based on an estimate of the total domestic gas demand in the country. However, considering the Indonesian and Western Australian models, it seems having a stipulated percentage of the entire production dedicated for DGSO purposes would help with better implementation and compliance of the DGSO. This approach should be considered by the FGN as it seems fair to all producers across board and creates a platform for certainty of obligation.

In summary, the successful implementation of the DGSO is largely hinged on pricing mechanism, available gas and power infrastructure, government policies and effects on economic viability for gas producers. To this end, the DGSO can only thrive when all these factors are jointly addressed. The Nigerian government has a role to play in ensuring that the domestic gas pricing framework is fair for both producers and consumers. This can be achieved by having a strong and uncompromising implementation and monitoring framework just as the US and Canada. Clearly, there is also a need to consciously synchronize power and gas policies in Nigeria as it is essential for the successful implementation of the DGSO. In line with the theory of legal transplantation, it is expedient that any adoption of the practices

obtainable in the countries that were examined should be tailored in such a way that the socio-cultural peculiarities of the Nigerian state are taken into consideration.⁹⁵

Where all the aforementioned issues are considered and structured to enhance the implementation of the DGSO there is bound to be a consequential improvement on electric power generation and supply in Nigeria. To this end, the other DGSO related regulatory and institutional framework obtainable in the Nigerian gas and power sectors will be discussed in the next chapter.

⁹⁵ See generally Cowan, *supra* note 81 at 484 and Tay-Cheng Ma, “Legal Transplant, Legal Origin and Antitrust Effectiveness” (2013) 9:1 J Competition L & Economics at 65-88 on the importance of considering socio-cultural background and factors in the process of transferring or borrowing legal cultures from one jurisdiction to another. The theory of legal transplantation though beyond the scope of this thesis was brought to fore in order to substantiate the comparative analysis of the domestic gas supply obligation as obtainable in the various countries which were examined.

CHAPTER SIX

OTHER REGULATORY AND INSTITUTIONAL FRAMEWORK RELEVANT TO THE DOMESTIC GAS SUPPLY OBLIGATION IN NIGERIA

6.0. Introduction

The Domestic Gas Supply Obligation (DGSO) in Nigeria reflects deliberate government initiatives implemented within the purview of clear cut policies, laws and regulations.¹ Previously in this discourse the laws and regulations under which the DGSO directly operates have been described as the context warranted. This chapter seeks to dig a little deeper into the broader policy, regulatory and institutional framework regarding the natural gas and electric power sectors in Nigeria which are also relevant to the operation of the DGSO.

This further examination is essential because the extant legal framework legitimizes government policies and actions as it relates to DGSO and it behooves on the writer to consider how far and well the DGSO has been implemented in order to deduce how it can be enhanced. The chapter is divided into three sections: Policies and Roadmaps; Legislation and Regulations; and Proposed Laws.

6.1. Policies and Roadmaps

6.1.1. The National Electric Power Policy 2001 (NEPP)

The NEPP was prepared to define government's direction for the electric power sector in 2001 and it was primarily aimed at liberalizing the electricity industry, attracting private sector investment and enthrone competition amongst participants in the electricity market.²

¹ Such as the National Domestic Gas Supply and Pricing Policy, 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008 [Policy]; National Domestic Gas Supply and Pricing Regulation 2008, Published in the Federal Republic of Nigeria Gazette No 10, Vol 95 of 19th February, 2008 [Regulation].

² National Electric Power Policy 2001 [NEPP]; Godfrey Ijebuwa, "Resolving the Power Conundrum in Nigeria", *Punch Newspaper* (2 February 2014), online: *Punch Newspaper Online* <www.punchng.com/opinion/resolving-the-power-conundrum-in-nigeria/>.

Since the adoption of the NEPP, the comprehensive reform and reengineering of the electricity supply industry has been central to the thinking of the Nigerian government.³ The NEPP outlined some of the following key objectives: to ensure a system of generation, transmission, distribution and marketing that is efficient, safe, affordable and cost-reflective throughout the country; to ensure that the power sector attracts private investment both from Nigeria and from overseas; to develop a transparent and effective regulatory framework for the power sector; to develop and enhance indigenous capacity in electric power sector technology; to ensure that the Government divests its interest in the state-owned entities and entrenches the key principles of restructuring and privatization in the electric power sector; and to promote competition to meet growing demand through the full liberalization of the electricity market.⁴

The Federal Government of Nigeria (FGN) has been able to follow through with some of the objectives of the NEPP to some extent as the *Electric Power Sector Reform Act, 2005 (EPSR Act)*⁵ gives effect to the propositions and now serves as the platform for the enabling legal and regulatory framework for power sector operations in Nigeria.⁶ Several other policies regulating the natural gas and electric power sectors in Nigeria were formulated some of which will be discussed below.

6.1.2. The Energy Policy of Nigeria 2003

The FGN having accepted that the energy sector particularly the oil and gas industry play a significant role in the country's economy formulated a robust Energy Policy in 2003 which touched on various energy resources and energy utilities. For the purpose of this discourse

³ Roadmap for Power Sector Reform, Revision 1 of August, 2013 [Roadmap].

⁴ NEPP, *supra* note 2.

⁵ *Electric Power Sector Reform Act, 2005*, Cap E7, Laws of the Federation of Nigeria (LFN), 2004 [*EPSR Act*].

⁶ Roadmap, *supra* note 3.

however, the natural gas and electricity policies alone will be examined in relation to the implementation of the DGSO and the impact on the Nigerian power sector.

Natural Gas Policy

The natural gas policy was largely aimed at the following: harnessing the nation's gas resources; optimally integrating it into the national economy, energy mix and industrial processes; and increasing gas production level and infrastructure base which was sought to be achieved by putting incentives in place to encourage indigenous and foreign investors.⁷

In addition to the above, specific objectives were outlined for the natural gas sector. Some of the objectives include: expanding the utilization of natural gas as industrial and domestic fuel, as well as for power generation; utilization of gas to diversify the foreign exchange earnings of the nation; determining the level of gas reserves available to the nation amongst others.⁸

From these objectives there is a conscious effort by the FGN to enhance power sector productivity via the efficient utilization of natural gas in the country.⁹ Also, there is a strong effort directed towards maximizing the export potential of natural gas. To this end, strategies for the achievement of the set out objectives and implementation of the above mentioned objectives were outlined.

The articulated strategies included encouraging the oil-producing companies to gather and utilize associated gas in order to eliminate flaring; imposing appropriate and effective penalties to discourage gas flaring;¹⁰ formulating suitable urban and regional planning regulations needed for the effective distribution of natural gas to, and its utilization by, domestic and industrial consumers; providing necessary incentives to indigenous and foreign

⁷ National Energy Policy, 2003 at 13 [Energy Policy].

⁸ *Ibid.*

⁹ *Ibid* at 14.

¹⁰ *Ibid.*

entrepreneurs to facilitate their participation in the gas industry; and ensuring that the price of natural gas is cost-effective, while giving due attention to the effect on local consumption.¹¹

Having outlined some of the natural gas policies, objectives and strategies for attaining such objectives, it is clear that the FGN is quite committed to developing the natural gas sector which is a laudable step in the right direction. However, the appalling issue which comes to bare is the stagnant or snail crawling state of the gas sector after over a decade of formulating the policies and objectives. In particular, the above highlighted policies, objectives and strategies largely influence the implementation or otherwise of the DGSO which consequently impact on the power sector and to say the least, little or no positive impact has been recorded so far.

The current state of affairs makes it more obvious that policies only function as plans, roadmaps or better still toothless bulldogs if they are not given the force of law no matter how robust they may seem. Hence, in the writer's opinion, there is a loophole which is traceable to the implementation mechanism of the natural gas policy. As such, it is recommended that the Petroleum Industry Bill which already incorporates some of these laudable objectives be passed into law without any further delay.

Electricity Policy

The Energy policy for electricity in Nigeria makes it the responsibility of the nation to: make steady and reliable electric power available at all times, at economic rates, for economic, industrial, and social activities of the country; continue to engage intensively in the development of electric power with a view to making reliable electricity available to 75% of

¹¹ *Ibid* at 15.

the population by the year 2020; and promote private sector participation in the electricity subsector, while ensuring broad-based participation of Nigerians.¹²

Several objectives for the above policies were also set out some of which include; stimulating industrialization in the rural areas in order to minimize rural urban migration; providing reliable and stable power supply to consumers, especially to industries;¹³ attracting adequate investment capital, both foreign and domestic, for the development of the electricity industry amongst others.¹⁴

The strategies for achieving the set out policies and objectives are the following: rehabilitating existing power plants in order to derive optimum power from the installed capacity; completing on-going projects designed to enable the National Electric Power Authority (NEPA) satisfy the national demand; reinforcing the transmission and distribution networks necessary to allow consumers to enjoy steady and reliable supply of electricity; developing other potential sites for hydropower, gas and coal-fired power plants for electricity generation; providing appropriate incentives to entrepreneurs to ensure adequate returns on investment among several others.¹⁵

Admittedly, the FGN has made visible efforts with regards to the above policies, objectives and strategies. Some of such efforts include liberalizing the power sector, enactment of the *EPSR Act* in 2005, establishment of an independent regulatory body, Nigerian Electricity Regulatory Commission (NERC) and commissioning of more power projects of which the major goal is to ensure constant and adequate power supply to majority of the citizenry if not all in a record time. However, despite all these, there still seem to be a long way to trudge before the set out goal can be achieved. There is the need to keep at these efforts while more

¹² *Ibid* at 37.

¹³ *Ibid* at 36.

¹⁴ *Ibid* at 37.

¹⁵ *Ibid* at 37 & 38.

efforts should also be directed towards providing a legal framework with appropriate incentives to entrepreneurs that will ensure adequate returns on investment in the power sector. This will go a long way in facilitating higher productivity from the power generating stations.

6.1.3. National Domestic Gas Supply and Pricing Policy (the “Policy”)

The Policy basically seeks to achieve the following: to provide solutions to the issue of gas pricing; address domestic gas supply availability in a manner that delicately balances the need for domestic economic growth and revenue generation from exports; and to provide an implementation approach for gas pricing that enables the full participation of all gas suppliers in the country in a manner that ensures sustained gas supply to the domestic market.¹⁶

The Policy was foundational and pivotal in the grouping of the country’s gas dependent sectors: strategic domestic sector (power for residential and light commercial users); strategic industrial sector (methanol, GTL, fertilizer); and other commercial sectors (cement, steel, CNG, other domestic industries, power for heavy industrial users).¹⁷

The grouping further articulated the intricacies of each strategic sector and their impacts on the economy in the long and short run. The strategic domestic sector particularly the power sector is said to have a significant direct multiplier effect on the economy, as such it required some concessions in terms of gas pricing so as to spur rapid economic growth.¹⁸ The Policy also set out a pricing framework and methods for determining the floor prices while the regulated pricing regime (cost of supply basis) applies specifically to the strategic domestic power sector.¹⁹

¹⁶ Policy, *supra* note 1 at 3.

¹⁷ *Ibid* at 5.

¹⁸ *Ibid*.

¹⁹ *Ibid* at 7.

In implementing the pricing framework under the Policy, it was stipulated that the domestic reserve obligation (referred to as the DGSO in this thesis) would help facilitate having sufficient and available gas for the various demand sectors.²⁰ The obligation was going to be based on annual calculations of domestic needs estimates of which periodical reviews were expected to take into consideration changing demographics of the demand and supply landscape.²¹

The establishment of a Strategic Gas Aggregator (Aggregator) was also proposed under the Policy to manage the implementation of the domestic reserves and production obligation as well as the aggregate price.²² The aggregate pricing for the strategic domestic market was intended and designed to create a platform wherein all suppliers of gas will be paid the aggregate domestic price set by the gas regulator on the basis of the known portfolio of domestic demand.²³

According to the Policy, the Aggregator acts as a one stop intermediary point between the suppliers and the diverse demand sectors ensuring that gas is supplied at the aggregated price.²⁴ In all, the Policy was aimed to align the gas sector with the economic growth aspiration of the nation which will be applied in conjunction with the gas pricing regulation.²⁵

The Policy seemed to be quite well outlined especially as it pertains to ensuring the availability and pricing of gas for the domestic power sector. Apparently, the conditions are quite favourable to the power sector compared to what is obtainable under the strategic

²⁰ *Ibid* at 10.

²¹ *Ibid* at 10.

²² *Ibid* at 11.

²³ *Ibid* at 11.

²⁴ *Ibid* at 11.

²⁵ *Ibid* at 12.

industrial and commercial sectors.²⁶ This speaks volume on the recognition and conscious effort to bring the power sector to a very productive position in the economy.

A look at this Policy reveals that it has been guiding several activities in the domestic gas market. As such, several questions beg for answers, one of which is: is the strategic grouping and low pricing of gas for the domestic power sector effective considering the little impact that has been recorded on gas fired power generation and supply since inception? The grouping was basically done so as to enhance the optimal productivity of the power sector and ultimately boost the economy but this has not particularly increased the volume of gas supplied to power plants in order to facilitate increased power generation and supply.

One is tempted to also ask if the implementation strategy and the pricing framework is really the way to go. Would an increase in price of gas to power plants enhance a more sufficient supply outcome? Or what other contributory factors need to be addressed in order to achieve the much sought after improvement in electric power generation and supply in Nigeria?

6.1.4. Roadmap for the Power Sector Reform, 2010 (Revised in 2013)

In August 2010, the FGN issued the Roadmap for Power Sector Reform (the “Roadmap”) which stated that the FGN intended to fast track the power sector reforms by: removing obstacles to private sector investment; clarifying the government’s strategy on the divestiture of the PHCN successor companies; and reforming the fuel-to-power sector.²⁷

The Roadmap is a set of policy plans that are expected to ensure a more reliable electric power sector that guarantees stable power supply to homes and businesses in Nigeria.²⁸ The Roadmap does not, in essence, introduce new policies but rather sets strategies to fast-track

²⁶ This is due to the regulated and consequent lower pricing of gas supplied to the power sector.

²⁷ Roadmap, *supra* note 3 at 5.

²⁸ David A Aderibigbe, “Power Supply to Industries: Pros and Cons of Available Options” (Paper delivered at the Conference of the Nigerian Society of Chemical Engineers, held at Ikeja Sheraton Hotel and Towers, Lagos, 7 October 2010) at 37 [Unpublished].

actions for achieving the objectives of the NEPP as enshrined in the *EPSR Act* with the primary objective of creating a private-sector-driven electricity supply industry.²⁹

In reforming the fuel- to- power issues, the Roadmap stated that significant reforms in the gas industry in particular are expected to have a direct and positive impact on the power sector.³⁰ This largely suggests the importance of the smooth running of the gas sector as it greatly impacts on the power sector. To this end, the DGSO being one of the policies formulated to enhance the growth of the domestic gas industry needs to be nurtured to fulfill the aim for which it was designed.

The potential of natural gas in harnessing a more efficient power generation and supply regime in Nigeria was prioritized in the Roadmap. As such, deliberate efforts are being made to provide incentives for investors to exploit the resource to the fullest.³¹ The robust Roadmap sought to tackle the fuel-to-power, generation, transmission and distribution issues in the power sector such that the entire electricity chain is on board for optimal productivity.³²

According to the Roadmap, by April, 2011, it was expected that there will be enough gas supplied to power producers to support the targeted increase in generation capacity.³³ However, as at December 2014, this target has not been met.³⁴ As such, one is left to wonder what went wrong or what is still wrong. A major observation and issue which need to be addressed in our well laid out policies is the way in which projected outcomes will be achieved strategically in bits and pieces to make a whole on the long run. Our policies have a loophole of containing generic projections which if not broken down into pragmatic and systemic pieces might never work out.

²⁹ *Ibid.*

³⁰ Roadmap, *supra* note 3 at 8.

³¹ *Ibid* at 10.

³² These were the four major issues the Roadmap extensively dealt with.

³³ Roadmap, *supra* note 3 at 36.

³⁴ This is evident as a major complaint by power producers is the insufficient or shortage of gas supply to power plants.

For instance, the April, 2011 target was just a goal. Specific and practical ways to achieve it were not carefully set out. Needless to say that by the projected date, the goal was not achieved neither has it been achieved as at December 2014.

6.2. Regulations, Legislation and Proposed Laws

6.2.1. The National Domestic Gas Supply and Pricing Regulation 2008

The National Domestic Gas Supply and Pricing Regulation 2008 (the “Regulation”)³⁵ is a subsidiary legislation made pursuant to the *Petroleum Act*.³⁶ The Regulation established the Department of Gas (DOG) which was empowered to regulate the gas sector; monitor and advise the government on gas pricing; announce the annual domestic demand requirement; allocate the DGSO to the petroleum licensees at the beginning of every year; establish domestic aggregate gas price; and determine the domestic and export saturation for all sectors amongst others.³⁷

The Regulation further empowered the DOG to establish the domestic gas Aggregator to implement a gas management model through which the demand and supply of gas for utilization within Nigeria is monitored, as well as ensure the supply of gas to the strategic sectors in accordance with the approved gas pricing framework.³⁸

An offshoot of the proposition in the Policy was the establishment of the procedure for meeting the domestic gas demand requirement. As such, persons or companies licensed to produce petroleum (i.e. oil and gas) were mandated to: submit a gas production plan consistent with its obligation under the domestic gas demand requirement to the DOG; when required, supply a specific volume of gas to a purchaser in the order issued by the domestic

³⁵ Regulation, *supra* note 1.

³⁶ *Petroleum Act*, 1969, Cap P350, Laws of the Federation of Nigeria (LFN) 1990 Title, s 9 & Schedule 1 & para 34.

³⁷ Regulation, *supra* note 1 at s 2.

³⁸ *Ibid* at ss 3(a) & 4.

gas Aggregator; and pay compensation to any purchaser, for any losses suffered as a result of default to supply gas in compliance with the order of the domestic gas aggregator.³⁹ The Regulation also stipulates penalties for default⁴⁰ and procedure for the supply of the allocated DGSO gas volumes to the domestic market.⁴¹

Pursuant to the Regulation, the minister was empowered to identify and prioritize specific export projects that have strategic impact on the development of the domestic gas market for consideration and inclusion in the domestic gas demand requirement.⁴² This approach seems to be a strategy to balance and accommodate both export and domestic projects especially when the long run impact will be beneficial to the domestic sector. What readily comes to mind is the possibility of fortifying the infrastructure base for the gas sector which can effectively serve both the domestic and export markets as it played out for Western Australia. However, so far, there has not been a major step in this direction to take advantage of this possibility. Rather, the export market is developing rapidly and independently while the infrastructure base for the domestic market still remains pathetic, discouraging to investors, and inimical to the growth of the gas sector which invariably impacts on the power sector.

6.2.2. The Petroleum Industry Bill, 2012

The *Petroleum Industry Bill*⁴³ was proposed and designed to regulate the entire petroleum industry in Nigeria. The first draft of the PIB was presented to the Nigerian National Assembly in 2008, however, there has been series of modifications and the latest 2012 version is still currently under deliberation.

³⁹ *Ibid* at s 6.

⁴⁰ *Ibid* at s 7.

⁴¹ *Ibid* at s 8.

⁴² *Ibid* at s 9(e).

⁴³ *Petroleum Industry Bill, 2012 [PIB]*.

Having categorized natural gas as a form of petroleum, the PIB dedicated specific sections to the regulation of the natural gas sector. Some of the objectives of the PIB which are relevant to the natural gas sector and particularly the DGSO include the following; creating a conducive business environment for petroleum operations; *optimizing domestic gas supplies (power generation and industrial development)*;⁴⁴ establishing a progressive investor-friendly fiscal framework; establishing a commercially oriented and profit driven oil and gas entities; downstream deregulation and liberalization; and establishing efficient and effective regulatory agencies.⁴⁵

Clearly from the stated objectives, there is an indication that the PIB when passed into law is expected to enhance the optimization of gas supplies for power generation and industrial development in the country. As such, specific sections in the bill are meant to determine, monitor and direct the gas industry activities so as to achieve the set out objectives. Some of the sections addressing the DGSO will be examined shortly.

Under the PIB, the DGSO is allocated to gas producers by the Upstream Petroleum Inspectorate (UPI) according to estimated need of the domestic gas market⁴⁶ which is derived from the volume of gas production and proven gas reserves.⁴⁷ The country's overall estimate of the Domestic Gas Demand Requirement determines the eventual allocation of the DGSO⁴⁸ to various gas producers and failure to comply with the DGSO may lead to suspension or revocation of gas producers' licenses from gas export operations and production as the case may be.⁴⁹ Clause 183(5) of the *PIB* provides that:

“Any lessee who fails to comply with the Domestic Gas Supply Obligation as directed by the Inspectorate shall not be entitled to supply gas to any gas

⁴⁴ Emphasis mine.

⁴⁵ *PIB*, *supra* note 42 at cl 1(a) (c)(d)(f)(g).

⁴⁶ *Ibid* at cl 183(1).

⁴⁷ *Ibid* at cl 269(4).

⁴⁸ *Ibid* at cl 183(1).

⁴⁹ *Ibid* at cl 183(5) & 272.

export operations in addition to such other penalties as may apply under this Act and where the lessee is only supplying gas to gas export operations, the lessee shall be directed by the Inspectorate to suspend production.”⁵⁰

While Clauses 272(1) and (2) of the same *PIB* provides that:

“(1) Any supplier who does not comply with the Domestic Gas Supply Obligation shall (a) pay a penalty as prescribed by regulations, (b) not supply gas to any export project for the period that the supplier is not complying with the DGSO unless it can demonstrate to the satisfaction of the Agency that (i) the non-compliance is caused by force majeure or (ii) has made reasonable commercial endeavors to make gas available.

(2) Where a supplier continues to fail to comply with the Domestic Gas Supply Obligation for a period in excess of three months, the gas export license of such supplier may be revoked.”⁵¹

From the foregoing, it is apparent that determination of the penalty payable by defaulting gas producers was left within the purview of regulations made pursuant to the *PIB* when passed into law neither was there a yardstick prescribed for the determination of such penalties. Hence, it is suggested that a model for determining the penalty such as consideration of quantity and price of gas not supplied and period of non-compliance be factored into such model and imputed in the *PIB*.

While the force majeure exception for non-compliance of the DGSO is reasonably acceptable, it is suggested that “a time frame of not more than three months after the effect of the force majeure has been reasonably contained” be given the gas supplier to make good the DGSO. Also, the requirement to demonstrate reasonable commercial endeavors to the satisfaction of the Agency for non-compliance of the DGSO is ambiguous, indeterminable and unrealistic. It only provides an easy way out for non-compliance by suppliers as what constitutes “reasonable commercial endeavors” can be interpreted in several ways. The gas supplier is only expected to convince the Agency and the Agency is obviously not armed with a model to determine the criteria for meeting such “reasonable commercial endeavors”

⁵⁰ *Ibid* at cl 183(5).

⁵¹ *Ibid* at cl 272.

requirement. Hence, it is suggested that the exception for non-compliance on grounds of the supplier making reasonable commercial endeavors be scrapped or the Agency should be armed with pragmatic and firm criteria to determine the acceptability of such reason for non-compliance.

Regarding the possibility of revoking gas export license of a supplier who continues to fail to comply with its DGSO, it is suggested that a maximum period of six months be given to such supplier to make good the obligation after which such license will be unequivocally revoked. This in the writer's opinion will make gas producers/suppliers sit up and comply with the DGSO which is only going to be in operation for not more than 20 years.

Clause 273(3) of the *PIB* further provides that export licenses may be refused by the Agency where the Agency has determined that the exports of gas from Nigeria are not in the national interest due to insufficiency of available proven gas reserves' supply to long term domestic market provided that the Agency shall not interfere with contracted gas export capacity being undertaken under an export license.

As much as this provision is laudable, a loophole would be that it does not apply to already existing export licensees. This means that even if the *PIB* is passed into law in 2015, any export license held by a gas producer with which a contract to supply gas to another country till 2035 has been undertaken cannot be revoked for the purposes of saving the domestic market. However, the provision is forward looking and could effectively guide the process of issuing export licenses in the future.

The DGSO as encapsulated in the *PIB* is obviously a transitional mechanism adopted by the FGN to stabilize the gas sector and gas dependent industries pending the maturity of the gas market. It is projected that the operation of the DGSO will not exceed maximum of 20 years

as the markets should have been stable before the time elapses all things being equal.⁵² Hence, when the domestic gas market and the export market reach a level of maturity that is reflective of fully competitive conditions, the Agency is saddled with the responsibility of recommending to the minister the process and activities aimed at deregulating the unwinding regulated gas market.⁵³

To this end, investors may find it comforting that the *PIB* 2012 clearly indicates that the DGSO regime is a temporary arrangement as the Nigerian gas market will be fully deregulated when it matures enough to compete with the export market, provided the DGSO regime shall not exceed 20 years.⁵⁴ However, all these observations and recommendations are only going to be effective if and when the *PIB* is eventually passed into law.

6.3. Institutions

6.3.1. The Gas Aggregation Company of Nigeria (Aggregator)

The Gas Aggregation Company of Nigeria Limited (GACN, otherwise known as Aggregator or Strategic Aggregator) was created to manage DGSO volumes and coordinate streamlined process for wholesale gas supply from gas producers to eligible gas purchasers within Nigeria in order to ensure a balanced growth of all critical sectors of the economy such as power, gas based industries and Local Distribution Companies.⁵⁵ It was incorporated in 2010 basically to manage domestic gas supply obligations volumes and to act as first point of contact for gas buyers to access gas for domestic market use.⁵⁶

⁵² *Ibid* at cl 269(3).

⁵³ *Ibid* at cl 273(4).

⁵⁴ Oghogho Akpata & Olayemi Anyanechi, “Commercial Issues, Institutional and Regulatory Framework” *Petroleum Industry Bill (PIB) Newsletter Series: New Dawn or False Hope?* (7 August 2012) at 4, online: *Templars Legal Practitioners* <www.templars-law.com/media/PIB%20Newsletter%20series%20No.2%20-%20Commercial%20Regulatory%20Issues.pdf> [Akpata & Anyanechi].

⁵⁵ Regulation, *supra* note 1 at s 3-5; See also “Nigerian Gas Industry Operations & The *Petroleum Industry Bill* 2012” (Paper delivered at the National Extractive Industry Transparency Initiative (Neiti) Stakeholders’ Engagement On The Petroleum Industry Bill, 2012, held at The Oriental Hotel, Victoria Island, Lagos, 20 & 21 September 2012), [Unpublished] [“Nigerian Gas Industry Operations”].

⁵⁶ Tade Oyewunmi, “The Nigerian Gas Industry: Policy, Law & Regulatory Developments”, online: *Acas Law* <www.acas-law.com/cipxprobe/publications/Nigerian_Gas_Industry_-

The GACN in managing the allocation of the DGSO to all suppliers of gas is the single point of contact for any purchaser of wholesale gas in Nigeria, thereby resolving an old problem in Nigeria whereby intending purchasers of gas are never sure where to start the process of gas supply.⁵⁷

The core aims of the GACN includes coordinating a streamlined process for wholesale gas supply from gas producers to eligible gas purchasers within Nigeria; ensuring a balanced growth of all critical sectors of the economy: power, gas-based Industries etc.; conducting due diligence assessment on eligible gas buyers; allocation of available gas from the DGSO to credible buyers successful on assessment; and facilitating the expeditious execution of the Gas Sale and Aggregation Agreement and Gas Transportation Agreement between the buyers, sellers and transporters amongst others.⁵⁸

Under the *PIB*, the Aggregator is also saddled with the responsibility of establishing an aggregate price for gas (“Aggregate Gas Price”) for only the volume of the Domestic Gas Demand Requirement, which shall be based on the weighted average of the purchase prices and supplied volumes of the purchased gas, and shall be used by the Domestic Gas Aggregator as a basis for gas supply to the domestic market.⁵⁹

According to David Ige, one of the Nigerian gas industry practitioners, there are 4 distinct roles for the Strategic Aggregator: Demand Management; Aggregate Price / Securitization / Escrow Management; Network / System Administration; Trading Platform.⁶⁰ Each of the roles have a different life span: Demand management will continue until the end of FGN

_Policy_Law_Regulatory_Developments_-_February_20131.pdf> [Tade Oyewunmi, “The Nigerian Gas Industry”].

⁵⁷ Gbite Adeniji, “Nigeria: Leveraging Gas for Economic Growth”, online: *Expert Guides* <www.expertguides.com/default.asp?Page=9&GuideID=238&Ed=131>.

⁵⁸ Tade Oyewunmi, “The Nigerian Gas Industry”, *supra* note 56.

⁵⁹ *PIB*, *supra* note 42 at s 269(5).

⁶⁰ David Ige, “Gas Aggregation Company Nigeria Limited (GACN) ‘Strategic Aggregator’ Roles and Functions In the Nigerian Domestic Gas Market” at 18, online: *Gas Aggregation Company of Nigeria Limited* <www.gacn-nigeria.com/images/stories/download/PresentationRoleofAggregatorinDomgasMarket.pdf>.

intervention through the D[G]SO; Aggregate Price / Securitization / Escrow Management will continue until the expiry of the foundation GSPAs; Network/system administration will be a core and life-long activity; Trading platform will commence in the future when the market is fully mature commercially.⁶¹

To a large extent, the Strategic Aggregator is involved in the entire process of implementing the DGSO for every gas producer in Nigeria as it sets the gas management model, opens and manages the escrow account, ensures payment of purchasers and subsequent payment to gas suppliers and manages the demand and supply of domestic gas.⁶² To this end, it is essential that the Strategic Aggregator be run with a high level of transparency and efficiency in order to aid gas supplies to gas dependent industries especially power generating facilities.

6.3.2. Nigerian Electricity Regulatory Commission (NERC)

Pursuant to the enabling *EPSR Act*, the objects of NERC include the following: To create, promote, and preserve efficient industry and market structures, and to ensure the optimal utilization of resources for the provision of electricity services; to maximize access to electricity services, by promoting and facilitating consumer connections to distribution systems in both rural and urban areas; to ensure that an adequate supply of electricity is available to consumers; to ensure that the prices charged by licensees are fair to consumers and are sufficient to allow the licensees to finance their activities and to allow for reasonable earnings for efficient operation; to ensure the safety, security, reliability and quality of service in the production and delivery of electricity to consumers; and to ensure that regulation is fair and balanced for licensees, consumers, investors and other stakeholders.⁶³

⁶¹ *Ibid.*

⁶² Regulation, *supra* note 1 at ss 3 - 6.

⁶³ *EPSR Act*, *supra* note 5 at s 31(1).

NERC's function under the *EPSR Act* also includes the licensing and regulation of persons engaged in the generation, transmission, system operation, distribution and trading of electricity.⁶⁴ This implies that NERC typically manages the whole electricity chain from generation to supply to the final consumer. It monitors and regulates the processes involved and takes necessary steps to ensure quality service delivery in the Nigerian power sector.

Undoubtedly, NERC has been on top of issues pertaining to the workings of the Nigerian power sector since its establishment. However, it still has a lot to deal with one of which is shortage of gas supplies to power generating facilities. As such, it is recommended that NERC continually seek ways to improve on the status quo and hopefully through its various management programs take the Nigerian power sector to a state of adequate, sufficient and stable power supply in the near future.

6.4. Conclusion

The Regulation and Policy were aimed at ensuring domestic gas affordability, availability and long term supply security in a manner that delicately balances the need for domestic economic growth, revenue generation from gas exports, and ensures the delivery of a fair rate of return on investments to both the user and supplier of gas.⁶⁵

The above review of the Policy and the Regulation reveals that the current Nigerian Government has linked the growth of the nation's power sector and the overall rapid development of the nation's economy to the availability and affordability of gas supply to the domestic sector.⁶⁶

⁶⁴ *Ibid* at s 31(2).

⁶⁵ "A Review of the Nigerian Gas Pricing and Supply Framework", *Oil and Gas Update* (January 2009) at 2, online: *Acas Law* <www.acas-law.com/cipxprobe/publications/OIL%20UPDATE.pdf>.

⁶⁶ *Ibid* at 4.

The *PIB* as well as other policies and institutions examined in this chapter further reveals that the DGSO has a robust regulatory framework under the *PIB* when passed into law. It seems that the *PIB* out of all best captures the whole gas value chain as it incorporates the implementation and operating mechanism in one document compared to the present legal framework which is scattered in the several laws, regulations and policies. Hence, better results are envisaged in terms of positive impacts of the implementation of the DGSO under the *PIB* after it is passed into law.

As one commentator puts it “there is no gainsaying the fact that the passage of the *Petroleum Industry Bill* is the way forward for the gas to power program of the Federal Government.”⁶⁷ This assertion is premised on the fact that the *PIB* to a large extent was designed to manage the operation of the gas sector in such a way that would facilitate the growth of the power sector on the short and long run.

In summary, the alignment of the regulatory and institutional framework for the gas and power sectors with the objectives of the DGSO will go a long way in enhancing the effective implementation of the DGSO and eventual improvement of the power generation and supply output in Nigeria.

⁶⁷ “Gas Supply: An Albatross or Driver for Nigeria’s Power Sector” (19 November, 2013), online: *Electrofield Solicitors* <www.electricpowerforum.com.ng/?p=280>.

CHAPTER SEVEN

TOWARDS A MORE EFFECTIVE IMPLEMENTATION REGIME OF THE DGSO FOR IMPROVED POWER GENERATION AND SUPPLY IN NIGERIA

7.1. Summary

The previous chapters in this discourse have largely dealt with varying issues which pertain to the Domestic Gas Supply Obligation (DGSO) in Nigeria and the corresponding factors worthy of interrogation in the power and gas sectors. To this end, it is essential that certain observations, conclusions and recommendations be made as some form of way forward for the improvement of power generation and supply in Nigeria through the DGSO.

The end result this assessment seeks to achieve is a significant contribution to the conversation geared towards the overall efficiency of the Nigerian power sector. This efficiency in simple terms is basically the realization of constant and sufficient power supply in the Nigerian state for businesses, households and other electric power consumers which will ultimately boost the economy.

Clearly, there is no one-size-fits-all best practice approach to regulatory reform in resource-led economies, given the diversity of political structures, institutional capacities and population characteristics among countries.¹ As such, it is necessary to decipher what reforms or recommendations that would be most appropriate in a particular clime. To this end, this chapter will bring out some of the salient issues earlier discussed in the previous chapters with the major aim of proposing some pragmatic approaches to improve on the existing legal framework and state of affairs of the DGSO.

¹ John P Williams, “Global Trends and Tribulations in Mining Regulation” (2012) 30 J Energy & Nat Resources L 391 at 422 [Williams].

Taking a cue from the submissions of the Nigerian Ministry of Power and NERC that decrease in gas supply to gas fired power plants is a major cause of the poor electricity supply and that with 80% of power fuel sources being gas, the expectations on power, directly translates to expectations on gas,² it is important to acknowledge that all issues surrounding the shortage of gas supply need to be tackled.

7.2. Recommendations

7.2.1. Improved Gas and Power Infrastructure³

The infrastructure problems as identified in the course of this discourse are basically with regards to the natural gas and electricity sectors both of which are meant to work hand in hand in bringing about the expected result of improved power generation and supply under the DGSO. If electricity must be available, accessible and affordable to every Nigerian, a goal in tandem with energy security, then massive natural gas and electricity infrastructure construction and upgrade⁴ is pertinent.

The domestic gas market is still largely underdeveloped with demand being constrained by inadequate gas supply infrastructure.⁵ In fact, the international oil and gas companies argued that the DGSO imposed on the gas producers did not address the real issues of infrastructural deficit or the inability of the customers to take gas volumes.⁶

² “Gas to Power Issues”, online: *Edward Ekiyor & Co* <www.edwardekiyorgroup.com/index.php/publications/newsletters/127-gas-to-power-issues> [“Gas to Power Issues”].

³ See Discussion in Chapter Four at 52, 54, 62, 66 & 67.

⁴ Eyo O Ekpo, “Electricity Tariffs: Low or High, Right or Wrong?” *Elecoblogs* online: <www.eyoekpo.com/page/3> [Ekpo].

⁵ Bolaji Osunsanya, “Gas Investments Should Be Private Sector-Driven”, online: *The Nigerian Voice* <www.thenigerianvoice.com/nvnews/16885/1/gas-investments-should-be-private-sector-driven-bo.html> [Osunsanya].

⁶ “Dissecting Petroleum Industry Bill from Government, Operators Perspectives” *This Day Live*, (09 April 2013), online: *This Day Live* <<http://thisdaylive.com/articles/dissecting-petroleum-industry-bill-from-govt-operators-perspectives/144430/>> [“Dissecting PIB”].

It is apparent that the DGSO particularly goes to the root of the power chain that is, power generation which is only a part of a larger electric power process. However, all aspects of the power chain require adequate infrastructure in order to achieve the ultimate goal of adequacy of power supply. Just as one commentator rightly pointed out that “it is not enough to generate power, it is apt that government and the electricity companies note the fact that existing transformers and lines are highly insufficient to accommodate the required generation and transmission targets.”⁷ Hence, a move towards open access and collective development of gas and power infrastructure⁸ would better impact on the optimization of the DGSO and consequently enhance significant power generation and supply in Nigeria.

7.2.2. Investment Stability and Certainty⁹

Having mentioned the need to scale up the infrastructure base for the gas and power sectors in Nigeria, it is evident that huge investment is required to meet such need and facilitate the successful implementation of the DGSO. Clearly, investors and investments can only be attracted to such sectors in Nigeria where the investment climate is stable and favorable enough to guarantee return on investment and reasonable profit. This perception is justifiable because gas development is highly capital intensive and potential investors will require certainty of their returns.¹⁰

Apparently, massive investments are needed across the gas and power value chain in order to increase Nigeria’s relatively low power generation per capita.¹¹ As such, incentive for

⁷ Christie Doyin, “The Challenges Facing Electricity Market in Nigeria” *The National Pilot* (3 April 2014), online: *The National Pilot* <www.thenationalpilot.com/03%2004%202014/The%20challenges%20facing%20electricity%20market%20in%20Nigeria.html>.

⁸ Osunsanya, *supra* note 5.

⁹ See Discussion in Chapter Four at 63; Chapter Five at 80 & 81.

¹⁰ “Gas to Power Issues”, *supra* note 2.

¹¹ “Dissecting PIB”, *supra* note 6.

investment in infrastructure is essential to attract investors. Also, investors need some form of regulatory certainty, stability and assurance that their investment will be worthwhile.

Moreover, in order to ensure guaranteed investment, it is essential that electricity tariffs are set right¹² which simply means it being cost reflective. Furthermore, it is very necessary for the Federal Government of Nigeria (FGN) to create the right political, planning and regulatory conditions for investment in gas storage, infrastructure and new gas reserves.¹³ The FGN is also encouraged to synchronize private investment in the gas sector with that of the power sector if it wants to meet the power reformation plans.¹⁴ This synchronization is essential because a high level of investment, regulatory and organizational cooperation is required between both the gas and power sectors to achieve visible transformation in the power sector. More so, investors will be buoyed by greater transparency of the government and a level playing field for all parties.¹⁵

There are concerns that the *Petroleum Industry Bill (PIB)* if passed into law might scrap the current incentives available to companies that invest in gas production.¹⁶ These concerns are premised on the assumption that scrapping such incentives will be inimical to independent gas production and negatively impact electric power generation and supply since the country relies heavily on gas-fired plants.¹⁷ Hence, these concerns need to be addressed as it is believed that an incentive-based approach to domestic obligations is the best way to achieve

¹² Ekpo, *supra* note 4.

¹³ Theresa O Okenabirhie, "The Domestic Gas Supply Obligation: Is this the Final Solution to Power Failure in Nigeria? How Can the Government make the Obligation Work?" (2009) 13 CEPMLP Annual Rev at 16, online: *Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee* <www.dundee.ac.uk/cepmlp/gateway/index.php?news=30880> [Okenabirhie].

¹⁴ "Gas to Power Issues", *supra* note 2.

¹⁵ Opeoluwa Sangosanya, "Examining Nigeria's Domestic Gas Sector: A Legal, Policy and Regulatory Framework Perspective" *Orient Energy Rev*, online: <www.nigerianorientnews.com/?p=3509> [Sangosanya].

¹⁶ "A Guide to the Nigerian Power Sector" (December 2013) at 23, online: *KPMG* <www.kpmg.com/Africa/en/IssuesAndInsights/Articles-Publications/Documents/Guide%20to%20the%20Nigerian%20Power%20Sector.pdf> ["A Guide to the Nigerian Power Sector"]; The extant *Companies Income Tax Act*, CAP C21 Laws of the Federation of Nigeria (LFN) 2004 s 39[CITA] provides tax incentives for gas utilization companies including power plants while the proposed *PIB* sets out a new fiscal regime.

¹⁷ "A Guide to the Nigerian Power Sector", *supra* note 16.

gas development, which Nigeria so clearly needs to jumpstart the gas revolution.¹⁸ As such, it is recommended that the existing regulatory incentive (especially fiscal incentives¹⁹) for production and utilization of associated gas be incorporated into the *PIB*.

Clearly, the funding of gas developments and infrastructure²⁰ require huge investments which can only be secured when the regulatory, political, environmental and economic factors are all favourable to investors within and outside the country. As long as the issue of return on investment remains unresolved, the major oil and gas companies may not change their policy nor begin massive investment in gas production, processing and supply infrastructure for power generation.²¹

7.2.3. Appropriate Gas Pricing and Electricity Tariff²²

The concerns regarding domestic gas pricing and electricity tariff in Nigeria are worthy of urgent and considerable attention. This is because pricing goes to the root of the market status of the attendant products and services. To this end, it is suggested that the FGN ensure a market driven price for the domestic gas to act as an incentive to the gas producer.²³ This price reevaluation is expected to prevent wastage and ensure efficiency in the utilization of domestic gas. As Bunter claims that the deliberate policy of cheap fuel creates market distortion and cheap energy creates wastage and then ultimately shortage²⁴ which is undoubtedly being experienced in the Nigerian state currently.

¹⁸ “Petroleum Industry Bill: In Whose Interest?”, online: *Centre for Petroleum Information* <www.petroinfo.org/index.php/latest-news/8-petroleum-industry-bill-in-whose-interest> [“PIB: In whose Interest?”].

¹⁹ *CITA*, *supra* note 16.

²⁰ See generally, Engr Abubakar L Yar'adua, “The Nigerian Gas Master-Plan” (Paper delivered at the Gas Stakeholders Forum Abuja, Nigeria, 26 November 2007) at 11, online: <www.resourcedat.com/wp-content/uploads/2013/07/New-Nigeria-gas-master-plan.pdf> [Yar'adua, “The NGMP”].

²¹ “A Guide to the Nigerian Power Sector”, *supra* note 16 at 23.

²² See Discussion in Chapter Three at 52, 59-62; Chapter Five at 88 & 89.

²³ Okenabirhie, *supra* note 13 at 14.

²⁴ Michael AG Bunter, *The Petroleum and Licensing of Petroleum Prospective Acreage* (The Hague: Kluwer Law International, 2002) at 78 [Bunter].

The FGN's "gas to power" initiatives laid out in the Nigerian Gas Master Plan (NGMP) are sound and it is expected that with the right pricing mechanism, investors can earn returns that provide sufficient incentives for constructing gas gathering, processing and distribution facilities, as intended under the NGMP.²⁵

Even though Nigeria is abundantly rich in energy resources, it is clear that unless appropriate pricing is adopted both for electricity and gas, its energy sector growth will not be sustainable.²⁶ Particularly, as natural gas price contributes significantly to the final cost of power generated by gas-fired plants and the larger the capacity of gas-fired generation, the stronger the link between gas and electricity markets.²⁷ As such, a commercial gas pricing framework that would enable investment for sustaining and growing gas supply, especially for power generation is needed.²⁸ An effective pricing framework is necessary because even in a situation where the infrastructure does exist, the suppliers will be unwilling to supply in the absence of price incentives offered by a deregulated market and such will continue to constitute a bottleneck for the availability of gas domestically.²⁹

7.2.4. Enhancement of Private Sector Participation³⁰

The current FGN policies have been encouraging private sector involvement in the natural gas and electric power sectors. However, there is still need for more private sector

²⁵ Simon Gosling, "Nigerian Power Sector: Reaching the Base of the Pyramid", online: *Nigeria Development and Finance Forum*

<www.nigeriadevelopmentandfinanceforum.org/PolicyDialogue/Dialogue.aspx?Edition=132>.

²⁶ Prasad VSN Tallapragada, "Nigeria's Electricity Sector- Electricity and Gas Pricing Barriers" *International Association for Energy Economics Newsletter* (1st Quarter 2009) at 33, online:

<www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CB4QFjAA&url=http%3A%2F%2Fwww.iaee.org%2Fen%2Fpublications%2Fnewsletterdl.aspx%3Fid%3D72&ei=HGDpU53fGOX5iwKswYGoDA&usg=AFQjCNFc8fl0qi2-rCdwVjcyvDmz_VwLtg&sig2=seDnClcP8aysWRV3oocpFg> [Tallapragada].

²⁷ Modassar Chaudry et al, "Combined Gas and Electricity Network Expansion Planning" *Applied Energy* (2014)113 at 1171 [Chaudry].

²⁸ Anthony Uche, "Towards Maximizing Natural Gas Potential" *Nigerian Oil & Gas* (16 August 2013), online: <www.nigerianoilgas.com/?p=1035> [Uche, "Towards Maximizing Natural Gas Potential"].

²⁹ "Gas Supply: An Albatross or Driver for Nigeria's Power Sector" (19 November 2013), online: *Electrofield Solicitors* <www.electricpowerforum.com.ng/?p=280> ["Gas Supply"].

³⁰ See Discussion in Chapter Six at 92, 95 & 96.

participation in the gas production, gas transportation, gas supply, power generation and power distribution systems in order to enhance competition and optimal productivity. As such, it is recommended that the development of infrastructure be private-sector led and government involvement should be limited to creating appropriate legislation to enable the mobilization of private capital.³¹

7.2.5. Domestic Market versus Export Tension³²

There is obviously a major tension between export of gas and the implementation of the DGSO. This tension basically boils down to the huge revenue accruable from exports as well as possible rise in electricity tariff if gas producers are to jerk up their prices for the strategic domestic market amongst others. The concerns about possible rise in electricity tariff due to export of gas seem to be an issue not only peculiar to the Nigerian state. The USA has had to deal with it at some point in her growing economy such that analysis was carried out to determine its effects.

The analysis subsequently showed that where there is expanded production of gas adequate for both domestic and export market, price increase in electricity will be moderate while the domestic market interest will be secured regardless of export commitments.³³ In fact, some argue that allowing export of Liquefied Natural Gas (LNG) could mean making maximal use of domestic gas because producers are finding a market for gas that would otherwise not be produced.³⁴

Hence, Nigeria needs to expand the production margin of her natural gas by encouraging increased production that will sufficiently cater for both the domestic and export markets. In

³¹ Osunsanya, *supra* note 5.

³² See Discussion in Chapter Two at 20 & 21; Chapter Three at 44; Chapter Four at 54 & 56; Chapter Five at 83 & 84.

³³ “The Economic Impact of LNG Exports from the United States” A Report by the Deloitte Center for Energy Solutions and Deloitte Market Point LLC at 19, online: <www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/Energy_us_er/us_er_MadeinAmerica_LNGPaper_122011.pdf>.

³⁴ *Ibid.*

fact, it has been stated that investment in the gas sector to encourage non-associated gas production will help boost gas supply.³⁵ In this regard, the earlier raised issues of encouraging more investments and private sector participation as well as provision of adequate infrastructure would have to be on board for increased production to take place.

With increase in demand from different quarters, it is only logical for the government to increase production by encouraging investment in the gas sector for both associated and non-associated gas so that the supply capacity of gas producers to meet domestic and external supply obligations can be enhanced.³⁶

7.2.6. Proper Regulation and Monitoring³⁷

Admittedly, regular monitoring of gas supply and enforcement of the DGSO can improve gas supply especially to power plants.³⁸ As such, it is expedient to implement the necessary institutional and contractual arrangements as well as establish the necessary infrastructure to make this obligation work.³⁹ There is particularly a need for steady strategies and regulatory mechanisms to control and synchronize some peculiar overlapping activities especially ‘gas to power’ in the gas and power sectors where necessary.

There have been several attempts at refining the regulatory framework for the gas industry but these attempts have at best been inconclusive and it is suggested that policies and regulation be broadly discussed, stable and consistently implemented by the executors.⁴⁰ Furthermore, [proposed] policies should encourage pragmatic follow-through using a mix of

³⁵ “Gas to Power issues”, *supra* note 2.

³⁶ OA Green, *Gas Monetization: How Viable is Gas to Power Investment in Nigeria?* (MSC Thesis, University of Dundee, Centre for Energy, Petroleum and Mineral Law and Policy, 2012) [Unpublished].

³⁷ See Discussion in Chapter Three at 47 & 48; Chapter Four at 54 & 56; Chapter Six at 100-105.

³⁸ Tallapragada, *supra* note 26 at 34.

³⁹ *Ibid.*

⁴⁰ Osunsanya, *supra* note 5.

attitude-changing incentives rather than strict sanctions alone.⁴¹ As such, the writer suggests a right mix of the stick and carrot approach to the implementation of the DGSO to encourage and discipline gas producers accordingly rather than just the existing stick approach of suspending their export activities and fines in case of a breach.

The *PIB* needs to be passed for the NGMP and the attendant DGSO to become law, so also, gas pricing for power generation needs to be agreed upon under the Gas Pricing Policy while the difference between the prices of the DGSO gas - which has a fixed pricing framework- and Non Domestic Gas Supply Obligation (NDGSO) gas - that has no fixed price - needs to be fixed.⁴²

The need to have a determinable pricing framework for all gas produced is important because it is not certain if the gas supplied under the DGSO mechanism is able to sufficiently cater for the gas supply needs of the power plants. If not, the power producers after exhausting the DGSO supplies will be forced to pay for the remaining needed supplies at the negotiated rate which might be same as or close to what is obtainable in the export market. To this end, it is expected that proper consideration is put in place as to how the NDGSO gas will be gotten at a reasonable price to enhance power generation.

Currently, all the gas-fired power stations are operating below half of their installed capacity because of the inadequacy in gas supply.⁴³ The shortage has been blamed on the sabotage on the Escravos-Warri-Lagos Gas Pipeline network by vandals [amongst others], as such, there has to be [effective] monitoring of available and upcoming infrastructure from

⁴¹ *Ibid.*

⁴² "Gas to Power Issues", *supra* note 2.

⁴³ Anthony Uche, "Hitches in the Power Sector Reforms" *Nigerian Oil & Gas* (9 May 2014), online: <www.nigerianoilgas.com/?p=1218>.

vandalization.⁴⁴ The security of gas and power infrastructure in Nigeria needs to be scaled up with strict regulatory measures to curb vandalism.⁴⁵

There is also need for robust stakeholder and expert involvement in reshaping the policies affecting the DGSO especially as it relates to the gas and power sectors. This involvement will in a major way give room for proper consideration of all interests in a reasonable manner rather than unilaterally rolling out policies or regulations which might not be implemented.

7.2.7. Credit Risk Mitigation⁴⁶

The poor credit history of the power sector and the weak balance sheet of government owned power generation utilities required that their payment obligations under their respective gas sale contracts be backstopped by a credible financial guarantee.⁴⁷

Though most of the power generation facilities have been privatized in Nigeria, future investments in gas development could [still] be affected by concerns relating to security, securitization package, and gas price, the power sector being the major domestic gas consumer in the country.⁴⁸ Gas producers demand payment security apart from what they perceive as adequate prices to commit investments in gas supply to power plants, or in the case of Joint Venture power generation, plants supplying their own gas, for the sale of electricity.⁴⁹ To this end, the risk accruable to investors and gas producers need to be reduced to the barest minimum before any reasonable business decision can be made by them.

⁴⁴ *Ibid.*

⁴⁵ See Brief Discussion on Vandalization of gas supply infrastructure in Chapter Four at 57.

⁴⁶ See Discussion in Chapter Four at 56, 60 & 67; Chapter Five at 82.

⁴⁷ Gbite Adeniji, "Nigeria: Leveraging Gas for Economic Growth" *Expert Guides*, online: <www.expertguides.com/default.asp?Page=9&GuideID=238&Ed=131>.

⁴⁸ Tallapragada, *supra* note 26 at 33.

⁴⁹ *Ibid.*

7.3. Conclusion

The DGSO is an offshoot of the FGN's exercise of her sovereign and property rights for the benefit of the Nigerian state particularly as it impacts on the effective functioning of the power sector.

This thesis has assessed the existing framework of the DGSO in Nigeria and considered what is obtainable in a few other countries. The entire assessment thus influenced the recommendations provided which can be used as a roadmap to enhance the present state of affairs of the DGSO and ultimately improve power generation and supply in Nigeria.

Also, it is apparent that, better coordination between gas pipelines [operations/operators] and electric generators [the entire power value chain] offers the most hope for improving the performance of both wholesale gas and electric markets.⁵⁰ Hence, if all hands are on deck with all the required mechanisms such as cost reflective electricity and natural gas pricing, investment incentives and stability, adequate and secured infrastructure, effective implementation and monitoring institutions, backed up by a pragmatic regulatory framework, strict implementation of penalties to defaulters and a strong willed government, the Nigerian state can attain the position of having sufficient and stable power supply via the platform, instrumentality and significant contribution of the DGSO.

⁵⁰ Ken Costello, "Efforts to Harmonize Gas Pipeline Operations with the Demands of the Electricity Sector" (2006) 19:10 Electricity J at 8, online: <www.ac.els-cdn.com/S104061900600128X/1-s2.0-S104061900600128X-main.pdf?_tid=1c104374-37a4-11e4-9f88-00000aacb35f&acdnat=1410214051_9fc2009ab4f43f8c5249e9934dc34218>.

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