NIGERIA'S PETROLEUM INDUSTRY BILL

AND

THE ZERO-CARBON FUTURE

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INTRODUCTION

Experts with the **Columbia Center on Sustainable Investment** (New York), being Solina Kennedy, Martin Dietrich Brauch, Perrine Toledano and Tehtena Mebratu-Tsegaye, published an important blog entitled: "*Nigeria's Petroleum Industry Bill: A Missed Opportunity to Prepare for the Zero-Carbon Future".*

The blog gives an overview of some of the matters dealt with in the Bill and is supportive of various issues. However, the blog argues that the Bill should provide the Nigerian National Petroleum Company (NNPC) with a much more comprehensive role to prepare for a zero-carbon future, similar to other (partially) state owned companies from Norway (Equinor), Saudi Arabia (Saudi Aramco), Brazil (Petrobras), Malaysia (Petronas) and Algeria (Sonatrach).

In particular after the new recent IEA report *"Net Zero by 2050 – A Roadmap for the Global Energy Sector"* the matter of a zero-carbon future is now certainly a central focus of many energy discussions and policy developments.

On the Van Meurs Energy website, an extensive PowerPoint is available entitled *"World Petroleum Industry Perspectives"* which tracks the evolution of the energy transition in detail and is updated monthly with the latest developments.

As consultant, I assisted NNPC in the development of the Petroleum Industry Bill.

The question is then: Why is there no framework for a zero-carbon future enshrined in the Bill?

This memo is a response the expert blog. In this context, I like to emphasize that the opinions expressed in this paper are entirely my own. Also, the projections of Nigerian energy demand are based on my own analysis and do not represent official forecasts. However, an important IEA report entitled *Africa Energy Outlook, 2019"* was taken into account.

As can be understood, I strongly recommend that the Petroleum Industry Bill should pass as soon as possible.

The Nigerian Energy Framework

Before going in detail on the Bill, it is important to provide energy statistics about Nigeria in comparison with other countries, including the five that are mentioned above.

The table below provides the overview of these countries, organized according to the level of GDP per capita (PPP).

For the purpose of discussion, the table can be divided in high-income countries (Norway, Saudi Arabia, Oman, Malaysia), middle-income countries (Brazil, Egypt, Algeria) and low-income countries (Angola, Bangladesh, Ivory Coast and Nigeria)

COUNTRY COMPARISON: NIGERIA							
	GDP/capita	Population	Fertility	Access to	Energy consumption per day per capita		
	(PPP)			Electricity	Electricity	Natural Gas	Oil Products
COUNTRY	($)	(million)	(rate)	(%)	(kWh)	(CuM)	(Liter)
Norway	67171	5.4	1.74	100.0	74.6	2.28	6.4
Saudi Arabia	48099	34.8	1.67	100.0	30.2	8.82	17.4
Oman	30404	5.1	2.55	100.0	19.9	13.43	9.3
Malaysia	29340	32.3	2.02	100.0	14.2	3.56	4.2
Brazil	15643	212.6	1.76	99.7	8.9	0.46	2.3
Egypt	13043	102.3	2.66	100.0	5.4	1.61	1.2
Algeria	11433	43.9	2.81	99.3	4.7	2.68	1.7
Angola	6878	32.9	5.12	42.0	0.5	0.07	0.7
Bangladesh	5812	164.7	2.00	68.2	1.3	0.57	0.2
Ivory Coast	5642	26.4	4.50	64.1	1.0	0.24	0.3
NIGERIA	5280	206.1	5.11	52.5	0.4	0.28	0.4

What is immediately obvious is that the level of commercial energy consumption per capita of the low-income countries is dramatically lower than for the middle-income countries or the high-income countries.

In fact, in Nigeria, about half the rural population has no access to electricity. At the same time, there is almost no access to clean cooking fuel, such as LPG. As a result, families are forced to gather fuelwood and cut the forest down in order to be able to cook a meal. The main goal for these families is to get access to electricity and commercial fuels, so they can become more productive, increase their wealth and protect their health. Much of the urban population, with access to electricity, is struggling to survive and their objective is to have access to the cheapest possible electricity and fuels and increase their wealth. In fact, the labor unions are threatening to bring the country to a halt if there would be increases in the cost of gasoline. Low-cost energy is the main way in which the urban Nigerian population perceives to be sharing in the petroleum wealth.

The economic growth in Nigeria is severely hampered by lack of electricity and natural gas. The total generating capacity in the country is about 12 GW, which is equal to Hong Kong. Only about half of this capacity is actually operational and services are highly irregular with frequent interruptions. At the same time the local domestic natural gas market is very small and limited to the South of the country. Therefore, in most of the country, the creation of agricultural, commercial and industrial activity is hampered by lack of utility scale electricity and natural gas.

Yet, Nigeria has large and mostly cheap natural gas reserves of more than 200 Tcf that are being produced at a very low rate; mainly for LNG exports. Significant volumes of gas are still being flared to produce crude oil. The potential for low-cost solar power generation in Northern Nigeria is huge. Yet, there is no effective overall electric power policy to encourage its generation and distribution through an expanded electrical grid based on large scale private investment; although the government is supporting off-grid developments.

The petroleum policy of Nigeria is furthermore guided by the expectation of rapid population growth. The Nigerian population is projected to double in the next 30 years. This means that by 2050, the population of Nigeria will be larger than that of the European Union. Some forecasts indicate a population of 700 million by the year 2100.

This is the background to the Petroleum Industry Bill.

Nigeria has set an economic growth target of 5% per year. This consists basically of 2.5% growth of GDP per capita and 2.5% growth in population per year. Based on this target, the GDP per capita would double by 2050 and the total GDP would increase four-fold.

The IEA Africa Energy Outlook considers a so-called "Africa Case" which involves 5.3% overall economic growth for Nigeria. The Africa Case assumes accelerated efforts to improve access to electricity and strong improvements in healthy cooking fuels, in particular LPG. The projections are only to 2040. Projecting the IEA for Nigeria forwards to 2050 would result in the following increases of energy demand: a 7-fold increase of electricity consumption, a 3-fold increase in natural gas consumption and a 3-fold increase in oil product consumption. Electricity production would be largely natural gas based. Oil product use would be mainly in the transport sector. (It should be noted that these IEA forecasts are not based on the recent Net-Zero report)

Given the experience in Nigeria in terms of the lackluster performance of the electricity and natural gas sectors during the last 10 years, the above growth scenario seems challenging. Economic growth per capita and/or energy consumption growth rates may end up being less. In fact, the Stated Policies Scenario of the IEA in the same report only assumes 3.4% economic growth for Nigeria. However, it is difficult to conceive of a scenario that involves GDP growth per capita and population growth without very significant increases in electricity, natural gas and petroleum product consumption.

This is the energy demand scenario that underpins the Petroleum Industry Bill.

Nigerian political leaders are well aware of the international climate change issues. Nigeria signed the Paris Agreement. The Intended Nationally Determined Contribution (INDC) of Nigeria, approved by the current President of Nigeria, calls for 5% economic growth per year (as indicated above), improvements in the standard of living and access for all to electricity. Specific objectives for 2030 include the end of gas flaring and the creation of 13 GW of off-grid solar energy capacity.

Nigeria has so far not formulated an overall energy policy calling for net-zero carbon emissions by a specific date. In the above table only Norway (2050 or earlier) and Brazil (2060) have established such dates. The nine other countries have so far not committed to any net-zero policy. So, therefore, the Nigerian policy is not a-typical compared to similar countries. In the hypothetical case that Nigeria and other low-income countries would commit to becoming carbon neutral, it would have to be well beyond 2060, in order to be credible. For discussion purposes the year 2075 will be assumed.

However, there is a strong realization in Nigeria that countries representing 70% of the world GDP have now committed to being carbon neutral by either 2050 or 2060. Even if these objectives are only partially achieved, these commitments will have significant impacts on the Nigerian economy.

A very significant negative impact will be on the level and price of crude oil exports from Nigeria by 2050 and beyond. Export volumes and crude oil prices can be expected to decline significantly towards 2050. Also, LNG exports will be affected by that date. The Columbia Center report correctly describes the current strong dependence of Nigeria on the export of crude oil, which represents a very high percentage of the export earnings and government revenues. Therefore, Nigeria has no option but to lessen the dependence on income from oil and gas exports.

Major exports of oil and gas may not be possible after 2050 and Nigeria runs the risk that a share of its oil potential and its natural gas reserves will be stranded and not contribute to the economic growth of the country.

On worldwide basis, vehicles based on internal combustion engines will be replaced with EVs. Nigeria will therefore be forced to move into EVs during the next 30 years regardless of its own policies. This will make the creation of sufficient power generation capacity even more challenging.

Apart from exports of oil and gas, also other exports may be negatively affected. Nigeria aspires to increase its exports of products from gas-based industries. However, it is likely that during the coming decades importing countries will impose obstacles on products such as ammonia and fertilizers or other natural gas intensive products in order to avoid promoting CO2 emissions in exporting countries. Obstacles could be import restricting measures such as the Carbon Border Adjustment Mechanism ("CBAM") being developed by the European Union.

Apart from negative impacts, the external net-zero policies may also create some new opportunities for Nigeria. Similar to Alberta, Saudi Arabia and Russia, Nigeria may seek to become a "blue" hydrogen and "blue" ammonia exporter, based on production from natural gas with carbon capture of CO2.

The above forecast of Nigerian energy demand in 2050 may therefore need adjustment to feature higher electricity requirements and less oil product demand.

In summary, regardless of the internal energy policies in Nigeria, the country will be dramatically impacted by the international net-zero policies primarily implemented by high and middle-income countries.

Dealing with the huge impacts of external net-zero policies will therefore be the priority for Nigeria for the coming two or three decades, rather than prioritizing an internal transition to net zero carbon neutrality. Anyway, as is clear from the above table there is no important amount of commercial energy to transition from.

The Petroleum Industry Bill deals with the required restructuring of the Nigerian petroleum sector to deal with the huge impacts of the external net-zero policies.

What then is the focus of the Petroleum Industry Bill?

It should be noted that the Petroleum Industry Bill is not an Energy Bill. The Bill is not intended to solve all energy issues of Nigeria. It can only deal with the petroleum sector and the related energy transition issues for this sector. The Bill is an important step in the context of an overall energy policy. However, such a policy needs to be developed further after the promulgation of the Petroleum Industry Act.

The main policies enshrined in the Bill will be discussed below.

1. *Strong promotion of the domestic gas market and acceleration of gas production.*

The Bill provides for a strong promotion of the domestic gas market in order to provide the energy required for the economic growth of the country, promote the production of electricity, increase the availability of clean cooking fuels, diversify the economy through the support of new industries, lessen the dependence on oil export revenues and avoid that significant reserves of natural gas will become stranded and unused for lack of a domestic market.

The Bill includes a wide variety of measures to achieve this goal, including conversion of oil mining leases to petroleum mining leases (permitting the production of gas), a flexible gas pricing system, ultra-low fiscal terms for gas production, revised gas delivery obligations, strong anti-flaring provisions and support for midstream gas infrastructure.

Based on very significant increases in the domestic use of natural gas, Nigeria may be able to create a framework where most of the current natural gas reserves and possible additional discoveries can be effective produced over a period lasting until 2075 (the year of assumed Nigerian carbon neutrality) thereby avoiding that these reserves become stranded. In other words, the natural gas reserves will make a major contribution to the economic growth of Nigeria.

2. *Accelerate exploration and production of crude oil.*

Nigeria still has various crude oil development projects that companies are “sitting on”, in particular in deep water. At the same time there is still significant unexplored potential. Given the fact that the future viability of crude oil exports and production may have a short time horizon, it is crucial for Nigeria to ensure that the maximum benefit is obtained from these resources in the near future by accelerating their exploration, development and production before it is too late to do so.

It should be noted that despite the recent call of the IEA to stop all new oil and gas development projects, in fact a large number of countries is actually promoting new exploration and production through licensing rounds and concluding new upstream petroleum contracts.

During 2020 and 2021 examples of these countries are the following: Norway, the UK, Austria, Australia (Queensland), various states and the federal government of the United States, emirates of the UAE, Russia, China, Timor Leste, Malaysia, Argentina, Brazil, Colombia, Suriname, Uruguay, Syria, Oman, Liberia, Botswana and Zimbabwe. Therefore, Nigeria is in line with the policies of other nations accelerating the oil and gas developments.

The Bill will achieve increases in investments in oil exploration and development by amending the fiscal terms which are excessively onerous compared to other nations and have impeded the development of the petroleum resources. Development of new already known existing projects and new exploration will be done under new fiscal terms which are highly competitive and favorable, provided companies make the necessary development and exploration commitments. It is contemplated that this will result in significant new activity and an acceleration of the development and production of the oil resource base over the next three decades.

The Bill also provides for highly attractive fiscal terms to explore the frontier acreages, which so far have not yet seen development.

Based on these measures Nigeria can prevent stranded crude oil reserves through increased exports and by promoting domestic use in the next decades. Promoting domestic use will decrease the dependence on crude oil exports. The entire crude oil potential can be effectively produced prior to 2075 (the year of assumed Nigeria carbon neutrality); thereby ensuring the full benefit from these resources for the economic growth of Nigeria.

3. *Create a viable National Petroleum Company.*

The Bill contemplates the incorporation of NNPC Limited under the Companies and Allied Matters Act and transfer the current operations of NNPC that are viable to this new company. The goal is to create a self-financing company which would operate like any private oil company in Nigeria. The ability for NNPC Limited to retain its cashflow for reinvestment would be a major step forward in making the company a possible viable partner in the current joint ventures.

It is contemplated that NNPC Limited would primarily orient its operations to the achievement of the above two policy objectives. However, the Bill specifically permits that the company could be involved in the development of renewables in competition with the private sector.

The main goal is to turn NNPC Limited into a profitable company contributing to the economic growth of Nigeria, rather than being a money loosing entity.

4. *Creation of an Effective Regulatory Framework.*

The objective is to establish a clear and transparent regulatory framework, with shorter approval cycles and a clearer focus. The Bill proposes the creation of two regulatory entities:

- The Commission, responsible for the upstream petroleum sector, and
- The Authority, responsible for the midstream and downstream petroleum sector.

The main focus of the new framework is to ensure a strong midstream sector. The overall strategy is to reduce the dependance on exports of crude oil. This is being done by significantly increasing the use of petroleum domestically, creating economic growth and new industries.

However, this cannot be done without a significant strengthening of the midstream and downstream sectors in order to connect the petroleum producers to the domestic consumers and enhance the processing of natural gas to produce LPG and marketable natural gas. It is for this reason that a separate Authority is created with the main function of achieving this goal.

5. *Create transparency and a non-discriminatory environment*

Currently most transactions in the upstream petroleum industry in Nigeria are confidential. Confidentiality facilitates corruption.

It is therefore, that pursuant to the Bill, petroleum contracts, petroleum data and payments to government will be no longer confidential. The Bill proposes the strict requirement to grant all petroleum prospecting licenses and petroleum mining leases through competitive bidding processes. This will promote investment and economic growth.

6. *Protect Health, Safety and Environment and Assist Host Communities*

As mentioned in the Columbia Center document, the Bill brings Nigeria up to date in health, safety and environmental practices, including stronger anti-flaring provisions, stronger decommissioning and abandonment provisions and environmental management programs.

In addition, the Bill will remove fiscal stability provisions for payments and taxes related to modern health, safety and environmental provisions and climate change measures. The Bill also provides for significant improvements in the benefits to host communities.

In summary, the Bill seeks to achieve the required economic growth with acceptable environmental and social impacts and removes some obstacles in case Nigeria would want to start implementing a more aggressive climate policy.

The Petroleum Industry Bill and Climate Change.

As correctly mentioned in the Colombia Center blog, the Bill does not emphasize climate change issues. There are no provisions, as recommended in the Net Zero IEA report, to stop granting further petroleum licenses and leases. There is no emphasis on NNPC Limited to become a major vehicle in creating a net-zero economy.

However, this is not a missed opportunity. It is by design. The main focus of the Bill is to deal with the massive negative impacts on Nigeria as the world moves to net zero carbon neutrality. The priority for Nigeria is to survive as a nation while this is taking place.

The world should appreciate that much of the international negative impacts of moving to net-zero carbon neutrality are affecting Nigeria. Being a low-income country with a large and rapidly growing population, Nigeria has far less resources to deal with this than countries such as Russia, Norway, Saudi Arabia or Malaysia. Nigeria cannot expect help from high income countries to mitigate these impacts. Therefore, the country needs to rely on its own efforts and policies; as reflected in the Petroleum Industry Bill.

Obviously, it would be very beneficial for Nigeria, if the country could exploit at a rapid pace its huge solar energy potential. The current costs of creating solar electricity in Northern Nigeria can be estimated to be 2 – 6 cents per kWh and these costs are expected to come down significant during the coming years. Ideally a large share or most of the new power capacity should be solar. Billions of dollars of investment would be required to achieve this goal. Many innovative off-grid small-scale activities are already taking place.

However, achieving solar generation on a large scale in Nigeria, requires a broad energy policy approach well beyond the objective of the Petroleum Industry Bill.

NNPC Limited, a company that may be barely profitable, should not be the chosen vehicle to prepare Nigeria for the zero-carbon future. The development of the solar potential should be done by profitable highly efficient low-overhead companies, capable of attracting large scale debt financing and thereby operating at a low blended rate of return; delivering solar energy at the lowest possible costs. Nevertheless, under the Bill, NNPC is welcome to make whatever contribution they decide to make in competition with private investors.