Oil and the Future of Nigeria: Perspectives on Challenges and Strategic Actions for Sustainable Economic Growth and Development

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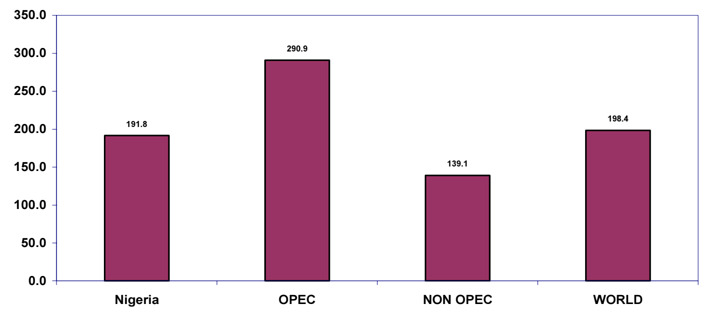
Background

The current state of the upstream petroleum industry in Nigeria portrays an optimistic outlook, *ceteris paribus*. According to the *Oil and Gas Journal* (OGJ), Nigeria ranks among the top 10 nations in proven oil and natural gas reserves, worldwide. As of January 1, 2007, the estimated crude oil and natural gas reserves are 36.2 billion barrels and 181.9 trillion cubic feet (TCF). To expand Nigeria's proven oil reserves to 40.0 billion barrels and increase its production capacity to 4 million barrels per day by 2010, the national government is willing to invest about $9-10 billion annually over the next five years [1].

The upstream oil and gas industry outlook in Nigeria is robust. Nearly 200% of proved reserves produced in Nigeria from 1970-2005 have been replaced by new reserves, indicating that the petroleum business environment in Nigeria compares favorably with the global environment (see Figure 1). The replacement ratio shows the extent to which Nigeria has pushed the reserves crunch date back in time and the willingness to remain a viable player in the global oil and gas industry for years to come.

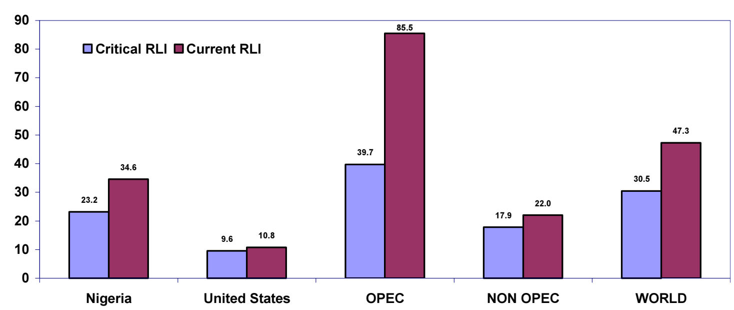
Further, the currently estimated reserves life index (RLI) in comparison to the defined historical benchmark (Critical RLI) in Nigeria is dynamically in sink with global expectations (Figure 2). In this paper, the critical RLI is defined as the minimum RLI over the last decade. By implication, if the current RLI falls below the critical RLI, unless substantial amount of new reserves are added quickly, production will decline significantly. Thus, Nigeria can sustain its current aggregate average production of 2.2 million barrels per day for 11.4 years under current operating and economic conditions. However, beyond 11.4 years, the production rate will fall below 2.2 million barrel per day unless substantial new reserves are discovered. Similarly, according to Figure 2, non-OPEC oil producers, on average, can only sustain its aggregate average production rate of 41 million barrels per day for about three years before an inevitable decline.

Figure 1
Aggregate Reserves Replacement Ratio, 1970-2005



The upstream industry performance indicator with a significant concern for Nigeria is the high rate at which recoverable oil reserves in Nigeria are being extracted (Figure 3). The ratio of the distribution of global production with respect to global reserves distribution in Nigeria is approximately twice the distribution ratio, on average, for members of the Organization of Petroleum Exporting Countries (OPEC). Nigeria seems to be producing its oil in excess of its share of world reserves and if it continues to do so, its ability to wield any significant influence in future OPEC market- sharing deliberations may be reduced drastically.

Figure 2
Production Sustainability Index (PSI in Years)



Regarding the state of Nigeria's economy, petroleum, especially oil, has been its main driver since the end of the civil war in 1970, contributing nearly 80% of government revenues and 90-95% of its foreign exchange earnings, on average, over this period. These facts not withstanding, the impact of Nigeria's industrial sector (petroleum sector inclusive) to the overall GDP remains abysmal (See Figure 4). This contention is more so if one keeps in perspective the national government (HG) investments in upstream joint venture (JV) operations in Nigeria. It is estimated that HG spent about $19 billion for JV operations in Nigeria from 2002 -2006 [1].

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With these large government investments in the upstream oil and gas sector, the potential to derive maximum wealth and a sustained economic growth from the oil and gas industry should be indubitable. So the questions to ask are what does the future hold for oil and gas in Nigeria and how can Nigeria attain its economic aspirations using oil and gas industry as the prime mover of its economy in the next five years? This paper presents perspectives on challenges facing the oil and gas business in Nigeria and proffers strategic actions to take within the context of the role of oil and gas business in fulfilling the nation's aspirations for sustainable economic growth and development.

Figure 3
Equitable Depletion Index (EDI)

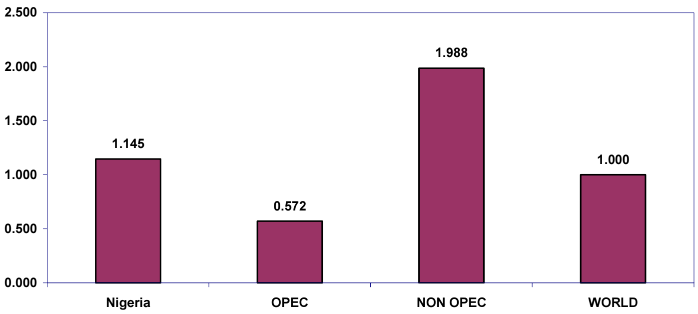
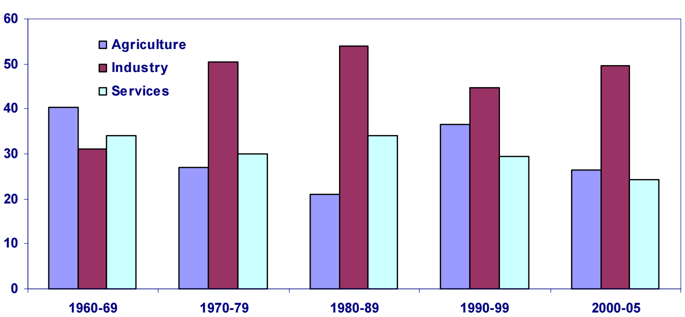


Figure 4
Structure of Output: Value Added as % of GDP



Challenges Facing the Petroleum Industry in Nigeria

The challenges facing the oil and gas industry in Nigeria may perhaps be quite difficult to resolve constructively without an amendment to the 1999 Constitution of Nigeria. The key elements of these challenges include resource ownership and the exclusive rights of the national government to grant the permission to explore and develop petroleum resources in Nigeria; effective, progressive petroleum fiscal systems; funding options for joint venture operations and the NOC; authentic indigenous participation in the domestic oil and gas industry; the rules of law and institutional empowerment; and continual membership of Nigeria in OPEC.

*Effective and Stable Fiscal System: F*undamentally, the constitution of Nigeria is the guiding principle underlying petroleum resource development and the allocation of revenue derived from all mineral extraction. Beyond that constitutional foundation, the fiscal terms governing some operational and revenue or production sharing aspects of petroleum fiscal systems in Nigeria are mostly predetermined through national legislation. On the other hand, the non-fiscal instruments are subject to negotiation and here lies some of the political risk and uncertainties to be quantified.

There is no doubt that the petroleum fiscal agreements (PFA) in Nigeria are good enough to propel Nigeria's economy to its full potential. A study published in 2004 by scholars at Louisiana State University's Center for Energy Studies, however, suggests that the type of contract offered is not as important as the design of the contract and the terms negotiated [2].

According to Table 1, the present worth of a project under production sharing contract arrangement (PSC) to an IOC is more sensitive to fluctuations in oil prices than it is for a joint venture project (JVA) projects. The sensitivity is, however, asymmetric with respect to decreasing or rising prices for both types of projects. The latter is also true for the present worth of the project for NOC. On the other hand, the present worth of a PSC project for the NOC is less sensitive to price variation than it is for a JVA project. Furthermore, Table 1 shows that hydrocarbon price fluctuations affect NOC profitability share more significantly than IOC share under PSC arrangement. The opposite effects, however, prevail under JVA arrangement. So as the debate to convert JVs to PSCs in Nigeria continues, stakeholders must pursue fiscal systems with less emphasis on regressive fiscal elements such as royalty, bonuses, or sliding scales parameters with no adequate consideration for price and cost dynamics [3].

Authentic Indigenous Participation Issue: The use of the word authentic is very deliberate. There are many policies in place since the inception of the industry to accomplish this home-grown participation in the petroleum business. Oil blocks have been awarded to indigenous firms over the years, but only a few of these firms are actually authentic. Local content development policy is also in place. It may, however, be argued that these policies are set up to continue to fail not because of the lack human skills or technical expertise, but because of inadequate financial intermediation.

Resource Ownership and Control: The exclusive ownership of petroleum resources by the Federal Government in Nigeria, in my view, creates undue leakages in the economy. Secondly, exclusive ownership has promoted inefficiency in petroleum block allocation mechanisms, corruption, and limited transparency. Third, it has rendered ineffectual every strategy to indigenize the local petroleum industry and significantly repressed the development of the local economy in each of the petroleum producing communities. There are lessons to be learned from the U.S. regarding the role of petroleum producing state or province. In Nigeria, unlike the U.S., royalties from petroleum and energy related taxation policies are centralized. No meaningful impact of petroleum taxation policies can be felt in petroleum producing communities in a sustainable way, not withstanding, the special revenue allocation to petroleum producing local governments and states. Thus, the issue of resource ownership is most likely the critical factor underlying the perpetual clash of interests among stakeholders in the Niger Delta, which has resulted in numerous damages to the nation's economy.

Table 1
Price Effects on the Present Project Worth under Different Petroleum Fiscal Arrangements

	Sensitivity of Project Worth to Price				Price Responsiveness of Project Worth			
	IOC		NOC		IOC		NOC	
%	PSC	JVA	PSC	JVA	PSC	JVA	PSC	JVA
-40	-43.8	-37.5	-41.0	-41.7	1.095	0.938	1.024	1.042
-30	-28.4	-24.5	-27.0	-27.3	0.948	0.818	0.900	0.911
-20	-16.0	-13.7	-14.9	-15.2	0.799	0.685	0.746	0.762
0	0	0	0	0	-	-	-	-
20	8.2	7.0	7.6	7.7	0.408	0.349	0.382	0.385
30	9.9	8.3	8.9	9.2	0.329	0.278	0.298	0.306
40	10.3	8.6	9.2	9.5	0.256	0.216	0.231	0.237
Source: [3]								

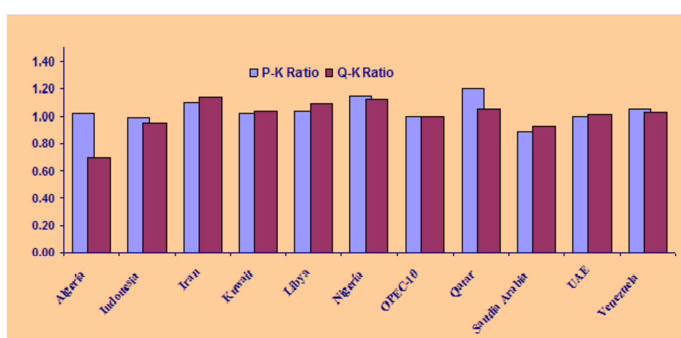
Institutional and Human Capital Development: There is a myth in the international community that the oil and gas industry in Nigeria lacks skilled oil and gas professionals, thereby justifying the flooding of petroleum professionals and contractors into the country from abroad. An audit of local and international staff to delineate jobs and skills will help to address this myth. Although there is a lack of solid data at my disposal, I can on the basis of personal observations and interviews venture to declare that Nigeria has competent workers, but they are underutilized.

Regarding institutional issues, the statutory responsibilities of the Department of Petroleum Resources (DPR) in the Ministry of Energy have never been in dispute. Yet, attaining the autonomy and independence needed to effectively perform its function continues to be elusive. While, some will argue that the level of funding to hire, train, and buy equipment for DPR workers has improved in recent years, many people will agree that much more ought to have been done, and sooner. Another institutional concern is the petroleum policy formulation process by the National Assembly through its committees and staff. There seems to be inadequate infrastructure and human capacity to independently evaluate the policy acts governing the oil and gas sector [3].

Funding Options for the National Oil Company: Currently, the funding requirements for JVA operations from the government are substantial. The government spent, on average, $3.7 billion on the JVA upstream investments from 2002-2006 and the estimated projected annual funding requirement for JV operations alone ranges between $11 and $13 billion from 2007-2011 [1]. The evidence is strong to suggest that the national government has received adequate revenue over and above its original investment. There is no reason to doubt that this will continue to be so. But is this the optimal way to use scarce resources when basic energy, transportation, sanitation and environmental infrastructures need urgent attention? Iledare suggests that host government participation in oil and gas development may not be an efficient way to spend its oil wealth [4].

Continual Membership of Nigeria in OPEC: OPEC is an intergovernmental association created in 1960. Nigeria became a member of OPEC in the early 1970s and since then the shriek for it to withdraw its membership has not ceased to be passionate. Let me venture to say that Nigeria has been good to OPEC and staying in OPEC is also good for Nigeria in terms of production within the context of the exhaustible nature of petroleum resources. This assertion is buttressed home by technical data on oil production capacity, export dependency on oil, currently estimated proven oil reserves, and measures of the economic performance of member nations. These data suggest that Nigeria's production ceiling allocation and its marketed production within OPEC have been quite favorable in comparison to other members [5]. Figure 5 shows the ratios of production share to capacity share (P-K) and Quota share to capacity share (Q-K).

Figure 5
Historical Distribution Ratios of Capacity, Production and Quota for OPEC-10 Nations



Tactical and Strategic Actions for Sustainable Growth

Nigeria has no reason to continue to allow its economy to be decimated simply because it is endowed with petroleum resources. An interesting question is whether development strategies, which Botswana, Chile, Malaysia, and Indonesia utilized successfully to avoid the phenomenon called "Dutch Disease," will work in Nigeria [6]? I think the answer is unambiguously yes, but the national psyche to share the national cake for personal consumption of final goods and services produced abroad must be redirected. There are just too many millionaires with no meaningful productive investment in the national economy, yet they wield too much political power that inhibits the implementation of good economic policies in Nigeria. Four key strategic and tactical actions for sustainable economic growth and development using petroleum wealth in the oil and gas sector in Nigeria are hereby recommended.

Domestication of the oil and gas industry in Nigeria: Domestication (not nationalization) of the oil and gas industry in Nigeria will promote active local participation in the petroleum business, not only in terms of human resources at the upper management and technical staff level, but material resources in terms of internalizing a significant portion of inputs in upstream operations. There is evidence to suggest that as the proportion of upstream expenditures spent locally increases, the contribution of the upstream sector to the gross domestic product will increase significantly. So, in order to realize the 2010 target of 70% without compromising industry standards, there must be a sustained adequate investment flow into local businesses and policy incentives to grow indigenous participation of local entrepreneurs. Thus, it may be expedient to use a portion of the excess revenue accruing from rising oil prices to provide credit facility to authentic local entrepreneurs to facilitate limiting the impact of barriers to entry in the oil business in Nigeria to home-grown firms.

Emphasize Exportation of Hydrocarbon Derivatives: In the statement of purpose submitted to the University of Pittsburgh in 1983, I stated that in order for Nigeria to grow its economy, it must de-emphasize foreign exchange earnings as the focal point of its petroleum policy. Nearly 25 years later, I am obliged to say that nothing has changed. It is ironic, that the focal point for the development of natural gas in Nigeria is still governed by how to earn more foreign currencies from gas development than from oil. Unfortunately, Nigeria's economic growth has not improved proportionately to the growth in foreign exchange earnings from primary hydrocarbons exports. Thus, a redirected focus to hydrocarbon derivatives exports will add more value and grow the economy faster than hydrocarbon exports. It will also fuel the growth of the economies of nations surrounding Nigeria. A pragmatic tactical action is to challenge the World Bank and IMF to grant loans to regional nations for intra-regional trade and development. Nigeria can also use a portion of its excess foreign reserves to grant aid and loans to nations within the region to foster trade. This is similar, I think, to what high income developed nations have done for many decades to less developed nations in the world.

Realign, Reevaluate, and Empower Institutional Agencies: The Department of Petroleum Resources (DPR) in the Ministry of Energy, the Federal Internal Revenue Services, the Department of Immigration and Naturalization Services, the National Petroleum Investment Management Services (NAPIMS) in the Nigerian National Petroleum Corporation (NNPC) group, and the Ministry of Finance, to mention a few, need a realignment and a reevaluation of responsibilities, and empowerment. There are discussions as to the expediency of NAPIMS being housed in the NNPC group rather than in the Ministry of Finance the way the Department of Petroleum Resources is currently housed in the Ministry of Petroleum. It would seem though that if NNPC is to become the benchmark of the oil and gas industry in Nigeria, a reassessment of the joint venture financing options in Nigeria is imperative. In which case, housing NAPIMS in the Ministry of Finance may be more functionally programmatic than housing it in NNPC. The awareness of the functional responsibility of the Department of Petroleum Resources (DPR) is not speculative; neither should the fact that the department is housed in the Ministry of Finance be consequential. Adequate funding of DPR is imperative for it to discharge its responsibilities as efficiently and effectively as Minerals Management Service (MMS) does in the U.S.

Effective Management of Petroleum Wealth: A country that wants its future generations to benefit from an exhaustible resource, such as petroleum, must transform this non-renewable resource into a renewable one by investing in productive capital, such as energy and transportation infrastructures and water resources and sanitation and human resource capital [8]. An amendment to the constitution to allow petroleum producing states to collect tax revenue, royalty and other taxes directly for oil extracted from offshore or onshore lands designated state or local jurisdictions will make managing the flow and expectations of petroleum revenue easy in Nigeria. It would allow the designation of only a proportion of this fund for immediate budgetary purposes and a predetermined proportion should be invested accordingly. Each state shall set up a revenue allocation committee with legislative authority to ensure that equitable distribution of such funds is attained to facilitate contentment and promote stability.

The federal government, on the other hand, shall collect corporate taxes, royalty, and other taxes directly into the federal treasury. And subject to constitutional amendment, revenue accruing from NNPC operations must be treated as revenue and not net income. This tactical action will manage federal budgetary expectations and the flow of revenue into the government coffers. This action also will reduce corruption and make transparency much easier because the only spendable money is the declared return on government investment by NNPC.

Conclusion

The sustainability of petroleum business environment compares favorably with the global ratio over the same period, an indication that petroleum industry outlook in Nigeria is very robust. This is also supported by the fact that the currently estimated reserves life index (RLI) in comparison to the defined historical benchmark (Critical RLI) in Nigeria is dynamically in sink with global expectations. The only indicator with a significant apprehension is the high rate at which recoverable oil reserves in Nigeria are being extracted. Nigeria seems to be extracting its petroleum in excess of its share of world reserves. Although, the primary focus in this position paper is on fiscal systems design and OPEC membership issues, other industry issues and concerns are also briefly reviewed including, resource ownership, authentic indigenous participation, human and institutional development, and funding options for the joint venture operations. Four key strategic and tactical actions, which can facilitate economic growth and development using petroleum wealth in the oil and gas sector in Nigeria, are discussed in the paper. Nigeria, therefore, has no reason to succumb to the phenomenon called "Dutch Disease," which has traditionally infected most natural resource dominated economies.

References

1. Delano, F. "Working with partners to maximize investment potential." Presented at Nigeria Oil & Gas 2007 Abuja, Nigeria. February 7, 2007.
2. Kaiser, M.J. and Pulsipher, A.G. Fiscal System Analysis: Concessionary and Contractual Systems. Center for Energy Studies, Louisiana State University, Baton Rouge, LA. (2003).
3. Iledare, O.O. (2004a). "Analyzing the impact of Petroleum Fiscal Arrangements and Contract Terms on Petroleum E&P Economics and the Host Government Take." Presented at the 2004 SPE Nigeria Annual Technical Conference and Exhibition held in Abuja, Nigeria. August 2-5, 2004.
4. Iledare, O.O. "Contemporary petroleum policy issues and problems affecting the local petroleum industry and the economy- the case of Nigeria." Presented at the Third Annual Petroleum Economic Workshop Sponsored by Shell and the PTDF for Nigerian Federal Legislators and Agency Director, Accra, Ghana. November 26-30, 2003.
5. Iledare, O.O. (2004b). "An empirical Analysis of OPEC quota mechanism and its determinants," paper presented and published in the proceedings of the 2004 North American Conference organized by the USAEE/IAEE. Washington D.C, July 6-10, 2004.
6. Stevens, P. "Resource Impact: A curse or a blessing?" Center for Energy, Petroleum and Mineral Law and policy, University of Dundee, Dundee, UK., 2003.
7. Egbogah, E.O. "Nigerian Content in the Petroleum Sector: Setting realistic and measurable targets and metrics." Presented at the Stakeholders seminar on Nigerian content development in the upstream sector of the petroleum industry, Abuja, Nigeria. March 24-25, 2004.
8. Hanneson, R (1998). *Petroleum Economics: Issues and Strategies of Oil and natural Gas Production.* Quorum Books: Westport, CO.

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