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HARNESSING THE POTENTIALS OF NIGERIA'S OIL AND GAS FOR ECONOMIC DEVELOPMENT

By

C. C. Ozumba*

It may be instructive at the outset to state that Nigeria's oil and gas potentials are not too great by any standard of measure on per capita basis, for example, our crude oil reserves is one of the smallest within the Organisation of Petroleum Exporting Countries (OPEC) see Chart. Saudi Arabia with crude oil reserves of some 260 billion barrels has a population of only 14.5 million. Iraq, with a population of 17.8 million reports a level of 100 billion barrels. By contrast, Nigeria's reserves currently estimated at 21 billion barrels is controlled by a population of close to 100 million people, and apart from the deep offshore, prospect for a major oil find is remote. Similar pattern is found in gas where Iran dominates the world reserve base with a relatively small population. Nigeria's reserves are put at 164 trillion standard cubic feet with a large and growing population. Because economic development is centred on people, frequently measured as income per capita, it is immediately very clear that Nigeria's economic development potential from petroleum is limited. This limitation is exacerbated by the nature of petroleum itself being a wasting asset in the sense that once it is produced it is not replaceable in situ, and unless it is converted to an income creating asset, it may be lost for ever. Consequently, the growing over-dependence on oil for foreign exchange earnings, government revenue and energy is the direct result of failures in investing for economic diversification.

Nevertheless, some remarkable achievements have been made notably, the development of social and economic infrastructure which are now crumbling because of poor maintenance. It is important also to note that Nigeria has been able to establish a stable co-operation framework with multinational oil companies which ensures continuing oil production in the first place. More policy efforts, including strategic initiatives are however, urgent, and it is my intention in this presentation to identify the main thrusts, looking at the Upstream and Downstream of the Petroleum Sector.

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1. THE UPSTREAM

A major policy objective in the upstream sector of Nigeria's petroleum industry is the rapid expansion of the reserve base and production capacities in order to meet the anticipated long-term outlook of the oil market. With this in view, we have set the target of expanding the nation's reserves to 25 billion barrels and productivity to 2.5 mbd for the year 1997. However, doubts have been expressed as to the achievability of these targets under the current public sector financial constraints. Rough estimates put the investment requirements at about \$26 billion, of which the Government's 57% equity interest is about \$15 billion. In an attempt to resolve the funding problem, various options and opinions have been expressed, including a re-examination of current strategies.

1.1 Increasing Cost of Future Operations

Upstream activities in the Nigerian oil industry, had centered mainly on the onshore Niger Delta Zone. However, as these oilfields, which were discovered between two and three decades ago, attain maturity, and production declines in response to rapid field depletion, production costs will definitely rise, especially maintenance cost. It could be argued that new technological breakthrough may slow down the rate of decline or maturity of the older fields, but that itself will also be at a cost. Even if the relative rate is slowed down, the absolute decline of output from these fields is inevitable.

As the producing wells or fields are drilled to deeper horizons, costs will increase faster than output. This is due to the unlikelihood of more giant oilfields in the Delta Zone, and explains the current efforts to extend the frontiers of oil exploration and production to the unexplored Basins of Chad, Benue Dahomey and to deep offshore areas. These areas are believed to be geologically more complex and the terrains unfamiliar. Reservoir finds in such formations, can only but be at a higher cost. Even though existing and potential technological trends will surmount some of the challenges in these complex zones, the cost of technological acquisition, adaptation or modification will still be high. For example, in geophysical surveys, emphasis may shift to 3D or even 4D, and Integrated Data Services Limited (IDSL) - a subsidiary of NNPC plans to phase out 2D seismic surveys by 1997. The use of satellites, laser technology, desktop image processing systems and high-tech drilling techniques that may reduce the long-run cost also require initial high

capital cost. Again, the growing concerns about the environment will add to the overall costs.

Thus, the industry is faced with the inevitability of high future upstream costs either in current older oilfields or frontier areas even with modern drilling technology and given probable stringent environmental requirements. We must therefore exercise greater control over costs so that upstream margins are not seriously eroded.

1.2 Cashcall Problems

Before 1987, Government had regularly financed its share of upstream costs through direct cashcall payments to the Joint Venture Companies (JVCs), averaging about \$600 million annually. As delays and budgetary constraints started to emerge, crude dedication was introduced to meet cashcall obligations. Given the decline in crude oil prices, expansion of exploration programmes and emergence of new cost items in addition to other budgetary requirements, the dedicated crude option could no longer fully meet cashcall needs. Cashcall arrears started to mount in 1993 and had averaged about \$700 million by end of 1994. Consequently, in 1995, crude dedication was abolished and all crude oil sales receipts paid into a Government consolidated account. JV cashcalls payments were made 'first charge' on this account. So far, the monthly instalmental mechanism put in place in 1995 to meet 1995 cashcalls, the 1994 arrears and the Oso-NGL cashcalls has proved effective, except perhaps for minor issues arising from exchange rate variations which affect the local portion of the cashcalls. Although this arrangement shows government willingness, commitment and flexibility in encouraging upstream activities even in the face of serious financial constraint, the emerging issues are indicative of the cashcall obligations as a growing burden on government's expenditure patterns.

1.3 Memorandum of Understanding (MOU) as Effective Instruments

The Memorandum of Understanding (MOU) which is the basic upstream fiscal package has been very effective so far. Initiated in 1986 in the heat of oil price collapse, and revised in 1991 and due for another review in 1995, the MOU resulted in a reserve increase from 16 billion barrels in 1986 to the current reserve of about 21 billion barrels. Oil production also increased from 1.3 mbd to the

current level of 2.0 mbd. The 1996 MOU review is to streamline the complex computations into a simple tax law. It is also intended to provide additional incentives to efficient operators with overall aim of further stimulating exploration and production and encouraging inflow of foreign capital. However, fears have been expressed by the JVCs that the law may be inflexible and not susceptible to frequent reviews in tune with competitive fiscal terms in comparable oil provinces.

1.4 Alternative Financing Options and Implications

Aware of its financial limitations and the inadequacy of domestic savings, government continues to adopt other possible options of stimulate upstream financing. One of such current options is the Production Sharing Contracts (PSC), especially in the allocation of new concessions. The PSC stipulates 30% cost recovery oil, 40% tax oil and 65/35% production split on the remaining 30% production. The immediate merit of this option is that the JVC bears all the risks and costs. If a success is recorded, the JVC will then amortise these costs overtime, which means that expected future oil revenues after cost amortisation, are likely to be low. Secondly, even the expected lower future revenues will only begin to come in after about five to ten years, considering the leadtime in upstream operations. Thus, the avoidance of current exploration and production risk and costs is at the expense of higher future oil revenues, which impact the Federation Account. Another issue of a general nature is that production cost will continue to be a contentious one, creating problem of monitoring and inequity, even under existing arrangements.

'Cost of production' has ranged from between \$2.5 - \$3.5 per barrel and rising. Yet JVC, both low-cost and high cost are producing under the same fiscal terms. If we are to minimize costs consistent with crude oil conservation only low cost producers should operate. However, the wide gap between crude cost and price per barrel, in addition to our growing need for revenues require that the principle of production rationalization be compromised.

Government divestiture, total and/or partial, in the upstream sector has also been suggested. It will be recalled that Government equity sales in 1989 and 1993 led to the reduction of Government equity share in the JVCs from 60% to an average of about 57%. Government funds its 57% share of upstream costs, i.e. cashcalls, through crude oil export revenues which is a major source of Government

revenues. This means that further reduction in Government holdings, say to 51%, would mean lower cash-call commitment in addition to once and for all revenue in government equity sales. Such equity reduction would minimize the financial burden on Government, and release scarce resources for other sectors. It will also encourage the return of indigenous private capital which are in foreign banks abroad. However, it would be necessary to ensure an even spread of such sale to avoid a situation where JVCs will buy all the Government equity and thus be in a position to use it against the interest of the nation. An example is in the peak of cashcall arrears in 1994 when the JVCs reduced their operation, and almost made it impossible for the nation to meet its OPEC quota. Divestment in the upstream would also have adverse repercussions in terms of loss of control of the operations of the Exploration & Production (E & P) companies. The nation may no longer be able to flaunt its crude oil internationally as a political weapon if need be. There could also be a possible reversal of the progress so far made in technology acquisition and adaptation in the oil industry, and under such a scenario, Nigeria can only scuttle all the gains made as an OPEC member including influence on world oil price determination.

A feasible alternative to sale of government equity to the private sector is the total commercialization of the upstream in which NNPC is allowed to buy the Government equity wholly or partially and operate commercially like any other E & P company, paying royalties, PPT and dividends to Government. This of course, will need a re-capitalization of NNPC and full operational autonomy. Once divested, Government should then concentrate on its regulatory functions, operational and environmental regulations and ensuring the optimal use of the country's vast oil and gas resources.

1.5 Greater Involvement of the Oil Producing Areas

Another emerging issue in the upstream activities in particular and oil operations generally, is the increasing volatility and hostility in the oil producing areas. Perhaps, the time is ripe for these communities to have a feel of substantial stake in the oil, investments, ancillary operations, and revenues. This would enable them actively take part in the development of their environment without grudges. It is important to enhance the prospects of peace and stability in these areas so as to sustain upstream operations.

2. NIGERIA AND OPEC: ISSUE OF CONTINUED MEMBERSHIP

Nigeria joined the Organization of Petroleum Exporting Countries (OPEC) in 1971 and since then has remained a member. It is currently being argued that Nigeria has a lot to gain by leaving the Organization. Firstly, as a non-OPEC member, Nigeria would be in a position to increase oil production to whatever level she wants since OPEC production ceilings would no longer be a constraint. Consequently, Nigeria would then be able to maximize revenue from oil, especially given the current domestic economic situation. This would imply a faster depletion of Nigeria's oil reserve, which is expected to last less than about thirty years at current rate of production; it would also mean expectations of high oil price. However, Middle East countries such as Saudi Arabia and Kuwait with huge oil reserves that can last over hundred years at current rate of production, prefer to maintain stable real low oil price so as to discourage substitution of other energy varieties for oil and eventually maximize the benefit from their huge oil reserves. Such conflicting position and expectations could result in a 'production war' in which Nigeria will be the obvious casualty.

It will be recalled that OPEC came into being in 1960 to co-ordinate and unify the petroleum policies of member countries with a view to optimizing the interests of its member countries. It also aims at oil price stabilization so as to ensure steady income flows through efficient, economic and regular supply of oil to consuming nations. OPEC could be said to have relatively achieved these aims, especially in the 1970s and up to the mid-1980s before market forces began to assert themselves in a permanent way. OPEC's relative loss of control has been used by some proponents to support the view that Nigeria should opt out of OPEC in order to derive more benefit from her oil, like most non-OPEC countries.

It is further observed that Nigeria's option out of OPEC, could lead to OPEC's disintegration because other members would leave the Organization after Nigeria's withdrawal. This assertion may appear to be correct. Under such a scenario Nigeria will suffer more. Each former member of the Organization will now be fighting individually to capture part of the international oil market. Oil prices will plummet, revenue from oil will fall and the present economic situation in Nigeria will worsen. In fact, we will be back to pre-OPEC days of 1950s when oil prices were dictated by oil consuming nations through the seven multinational oil companies.

If, on the other hand, Nigeria leaves OPEC and the Organization does not disintegrate, Nigeria will then be able to produce at maximum capacity and sell at the price prevailing in the international oil market. However, this will not be for long as Saudi Arabia, with production capacity of over 10 mbd, will pump out as much oil as her production capacity could permit. This will weaken international oil price and reduce oil revenue of Nigeria, given Nigeria's oil production capacity of only about 2.5 mbd. It should be noted that Nigeria relies heavily on oil revenue and needs every dollar for the development needs of a teeming population. There is the temptation to point at Ecuador which left the Organization. However, Ecuador is a marginal oil producer and a price-taker. On the other hand, Nigeria's production capacity does not make us a marginal producer because a complete shut-down of all oils wells in Nigeria will have a significant effect in the world oil market. And so, it would be better for Nigeria to remain in OPEC to add her weight to decisions on oil production ceilings which eventually determine crude oil price. OPEC is still relevant, and will remain so in maintaining stability in the international oil market. With over three-quarters of world oil reserves at its disposal and oil production in non-OPEC countries reaching peak, and heading for a decline, OPEC's relevance and potency in the International market is therefore unquestionable. Hence, it will be in Nigeria's best interest to remain in the Organization.

3. NATURAL GAS RESOURCE MANAGEMENT AND DEVELOPMENT

Nigeria has abundant proven gas reserves estimated at about 164 trillion standard cubic feet, and expected to last over a hundred years at current rate of production. Although most of the activities in the Nigerian petroleum industry are concentrated in the oil sector, Nigeria has rightly been described as a gas province. All gas discoveries made so far are incidental to oil which has been the major focus. There has been no deliberate comprehensive policy on natural gas development and management, although a draft has been prepared for consideration. Therefore, the first major issue in natural gas resource management and development is that of the determination and quantification of Nigeria's actual gas reserves, and the institutionalization of a gas development and utilization mechanism. This requires huge investment which the government alone cannot currently handle. This then raises the question of how to make the gas sector attractive for investment, given the capital-intensity of the gas sector.

In order to attract the necessary investment to the gas sector, government should first make operating oil companies in Nigeria undertake an integrative approach to oilfields development with respect to oil and gas exploration. Oil producers should show plans of how they would commercialize gas from their fields. Fiscal incentives already granted to these oil companies to encourage them to comply with such operational requirements have been generous, but needs to be updated to make them even more attractive. There should also be a deliberate policy and special incentive to encourage companies interested in prospecting for natural gas.

From the inception of oil production in Nigeria, most of the natural gas produced was flared as there was no deliberate policy on gas utilization. At one stage, almost 100% of the gas produced was flared which amounted to 200,000 b/d of oil equivalent. However, because of the efforts of government, gas flaring has been reduced to about 75% currently, while only 13% is consumed and 12% re-injected. At 75%, Nigeria's gas flaring is one of the highest in the world. Many oil producing countries which were in similar position as Nigeria in the 1960s and 1970s have put in place strategies for reducing gas flaring or eliminating it. These countries have been largely successful. Nigeria still has to tackle this problem in order to minimize energy wastage, improve the immediate environment and contribute to the reduction of carbon dioxide emissions. A phased gradual reduction in gas flaring for a period of say ten years should be strictly followed and the present penalty rate raised for non-compliance. As much as possible all private sector projects utilizing gas that would otherwise be flared should receive priority.

However, for gas commercialization to advance, we must be able to put in place a pricing mechanism that is market-related while retaining an element of subsidy to encourage domestic consumption to grow, and, at the same time, making gas investment attractive as a profitable business opportunity. The key principle of gas pricing is ability to pay by each consumer related to alternative price of energy in use. The composite price must be at a level that allows gas producers a satisfactory margin on investment.

In order to enhance gas export, the pricing formula should be such that, as a feedstock or fuel, gas should be priced competitively in the world market. For example, the envisaged West Africa gas pipeline from Nigeria through Benin Republic, Togo and Ghana should be priced in foreign currency.

With regard to LNG, price is closely related to fuel oil price or pipeline gas in the

consuming countries. In some cases the LNG price is indexed to inflation. However, it is necessary here to note that currently, a number of projects to utilize the abundant natural gas resource are being initiated. They include Methanol/MBTE Plants, the Liquefied Natural Gas Project, the Natural Gas Liquid Project, the Pipelines Network Extension, and supply of natural gas to some countries in the ECOWAS sub-region and the Petrochemicals. The ultimate intention is to open the natural gas business to the private sector as government does not have enough funds to invest in the downstream sector. For foreign private capital injection, a marked improvement in our economic and political environment is a necessity. In addition, government is prioritising the numerous gas projects and is willing to set some funds to participate in joint ventures in order to stimulate investment activity.

4. REFINING AND DOWNSTREAM ISSUES

The combined installed capacity of the nation's four refineries is 445,000 b/d, while domestic capacity products requirements is about 300,000 b/d. The excess refining capacity of 145,000 b/d designed for export remains available to third-party processors when all the bottlenecks for product evacuation are removed. Some of our refineries are ageing. Refinery management is also beset with technical and financial problems. Recently, there have been incidents of fire outbreaks and industrial unrest, so that oftentimes, domestic products requirements are not met by the refineries, resulting in importation of petroleum products. In order to improve operational efficiency, some issues need to be addressed. These include a possible change in management structure as recently mooted. Within the framework of the 1995 Budget, government has introduced the concept of leasing which is now being examined for its full consequences. Other considerations include full commercialization by NNPC, joint ventures with foreign and indigenous oil companies and privatization.

Commercialization would give NNPC sufficient autonomy and financial control so that decisions can be made with despatch and in response to business opportunities. It would ultimately mean that product prices be set at parity with international prices for profitability. There would be a withdrawal of subsidy by Government as crude oil sold to the refineries would have to be at international prices whether the refineries are to be leased, operated as a joint venture company

or privatized. The advantage of a liberalized petroleum products market include revenue improvement which will allow early turn-around maintenance, and so reduce costs, increased capacity utilization of the refineries, ability to carry out preventive maintenance of refineries through the use of additional funds generated, and regular supply of petroleum products in the country. Much is now said about the freedom of the private sector to establish new refineries in the country, but this can only take place in a deregulated petroleum products market and within the framework of expectations for higher value added as substantial volumes of crude oil exports are displaced. The issue here is whether the country is ready for a deregulated petroleum market, in view of the socio-economic and political consequences of sharp increases in prices. Where subsidies remain, government would have to pay the operator the full equivalent loss of incomes.

It is, of course, the privilege of the government to provide petroleum products at subsidized prices especially because they are considered strategic and capable of stimulating overall economic growth and development. In this case, government would stand ready to absorb the difference between unit cost of production and pump prices. At present, NNPC margin of N1.70 per litre of products supplied is considerably less than what is required to cover the full cost of acquiring crudes, refining them, and bringing products to the depots. consequently, our revenues are insufficient to maintain ageing assets in both refining and distribution networks much less embarking on new projects. For the Corporation to regain control o. refining and distribution of petroleum products and therefore avert shortages, urgent actions must be taken along the following lines:

- Government should fund the rehabilitation and maintenance of our refineries, estimated at N13.2 billion plus \$859 million. This can be provided gradually over the next eighteen months.
- NNPC should have a total of N5/Litre out of N11/Litre current PMS price, while Marketer's margin should also be reviewed to a level consistent with cost increases in their operations.
- NNPC requires an increase in crude allocation for domestic consumption which was cut to 250,000 b/d in this year's budget.
- Foreign exchange must be made readily accessible to NNPC by a number of ways, including deregulation of NNPC banking operations.

All in all, it is intended that NNPC will remain a strong and vital national oil company, developing policies and overseeing the interests of the government in the petroleum industry. NNPC will be in operation, particularly in the downstream as full operator or in joint venture relationship with the private sector. Consequently, it is continually restructured to make it more commercial, effective, pro-active and to improve operational efficiency. In this way, costs and wastages would be drastically reduced so that the Corporation can survive, remain competitive, and make positive contribution to the society.

CONCLUDING REMARKS

Considering the limited horizon for depleting Nigeria's oil reserves, and that, gas which is relatively more abundant has hardly been exploited, a number of strategies need to be put in place if we are to realise the full potentials of our petroleum resources. These strategies can be summarized as follows:

- Increase exploration efforts to discover more oil so as to enhance the reserve base.
- Improve the efficiency of oil extraction.
- Prepare Nigeria for the gas era.
- Promote domestic gas utilization and for exports.
- Use energy efficiently and conserve oil for premium uses.
- Improve operational efficiency of our refineries.

Ultimately, however, the conduct of domestic economic and financial policies including an effective utilization of petroleum revenues will determine the extent to which petroleum policies and strategies can bear fruit.