Nigerian Local Content Act: The Role of the Petroleum Training Institute, Effurun in Human Capital Development

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Abstract
This paper examines the impact of the Nigerian Local Content Act on petroleum industry human capital development and the role the Petroleum Training Institute is playing and could play in the effective implementation of the Act. Although, the main objective of the act is to provide the legal foundation for the domestication of certain engineering and technological projects, fabrication and construction, thereby training local nationals and enhancing the transfer of technology, it also provides the framework for rapid transformation of the industry human capacity development, and it challenges institutions like the Petroleum Training Institute, Effurun to greater roles in the effective implementation of the human capital development policy envisaged by the Act. The paper recommends that the policy framework will have to incorporate increased training to create economy wide linkages for sustainable local content.

Keywords: Nigeria, Local content ACT, Human Capital, Development, Petroleum Industry, Petroleum Training Institute.

Introduction
The Nigerian Petroleum industry has no doubt contributed tremendously to the overall growth of the Nigerian economy. It is the mainstay of the economy, pivoting other sectors and accounting for about 90% of the country's foreign exchange earnings. The country also derives about 41% of her Gross Domestic Product (GDP), and 88% of the Federal Government collectable revenue. Despite this impressive profile, however, the Nigerian oil and gas sector's contribution to national GDP has continued to decline. According to energy reports in 2008, the sector accounted for less than 38% of national GDP. This has been as a direct consequence of the noticeable absence of indigenous participants in the industry, given that over 80% of the goods and services needed for projects were imported from foreign countries. The domination of the International Oil Companies (IOCs) in the Nigerian oil and gas industry and the huge amount invested in servicing expatriates has resulted into huge capital flight. Available statistics shows that, only $190 million dollars out of the $4.7 billion spent in the industry in 2002 remained in Nigeria, the rest were spent abroad.

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2 Local Content Development Law and Policy in the Oil and Gas sector: www.scribd.com/doc/59739415/Local-Content-Law-In-Nigeria...
on procurement of goods and services for the industry.\(^3\) More recent studies also show that the Nigerian Government invests as much as US $10 billion per annum in the sector with 5.5 billion USD spent annually on procurement and services, less than 20% of this investment is domesticated resulting in a net overflow of about 4.4 billion USD from the country through technical services executed and goods procured from abroad. Before the promulgation of the Nigeria Local Content legislation, of the estimated $12 billion USD annual budget spent in the upstream sector of the Nigerian oil and gas industry, over 80% by value of work was carried out abroad, this accordingly contributed insignificantly to the nation’s GDP\(^4\).

The Nigerian National Petroleum Corporation asserts that while only 14% is invested in Nigeria content, 25% is invested in Indonesia, 50% in Norway and 70% in Malaysia and Brazil\(^5\). This is a sad development, and therefore calls for serious attention.

For the greater part of the last four decades, the Nigerian oil and gas industry domination by major international oil companies came with its large numbers of expatriate workers deployed to carry out projects in various onshore and offshore locations in the country. This situation was at a time seriously abused by IOCs that it was soon referred to, as a season of ‘slave labor’ in the industry where expatriate workers were paid thrice their Nigerian counterparts. Cleaners were brought in as Engineers or Doctors, amidst prevailing unemployment in the country and where operators were declaring huge profits without improving the working conditions of local staff\(^6\). This preponderance of expatriate workers has resulted in a paucity of jobs, skills development, capacity building and utilization for the indigenous workforce and in the long run, a lack of sustained national economic development.

It was observed that previous attempts at harmonizing laws for the sector were ineffective primarily because the guidelines were ad-hoc, inconsistent and sometimes incoherent and remained more or less impotent\(^7\). The local content ACT seeks to correct the low levels of indigenous participation especially in exploration and production, which


\(^4\) Local Content Policy and SME Sector promotion: the Nigerian Oil and Gas industry. Culled from http://journal.ccsenet.org/.../4693


\(^7\) Aderemi Ogubanjo, Op. Cit
resulted in capital flight, excessive use of expatriate staff who are in Top-Management positions, unemployment of Nigerians, lack of technical capacity and overall stunted economic growth\(^8\). Government realized that, the domination by the international oil companies in the oil and gas industry, inordinate dependence on foreign fabricated goods, preference for expatriate staff among other factors were major obstacles in the nation’s path to economic emancipation and development, and that it was imperative to arrest this situation through a deliberate government policy that would enhance increased participation of local indigenous companies in all aspects of the Nigerian oil and gas industry via a comprehensive industrial and economic growth strategy for the country.

In recognition of this deficiency, the Nigerian government has in the past made efforts to domesticate a significant portion of economic derivatives from the oil and gas industry by encouraging the development and deliberate utilization of Nigerian human and material resources in the Nigerian oil and gas sector. Such efforts led to the formulation of a number of local content friendly policies in the oil and gas industry, the establishment of the Nigerian Content Division of the Nigerian National Petroleum Corporation (NNPC) to monitor and give effect to the government's Nigerian content policy; and the formation of the Nigerian Association of Indigenous Petroleum Exploration Companies\(^9\).

The Nigerian Local Content Act establishes the Nigerian Content Development and Monitoring Board with the mandate to oversee the implementation of the provisions of the law. The Board is expected to draft procedures to guide, monitor, and co-ordinate and implement the Act to ensure and enforce measurable and continuous growth of the Nigerian content in all oil and gas operations in the country\(^10\). In other to address the issue of skill shortages in the industry, the ACT clearly stipulates that “operators must give Nigerians first consideration for employment and training in any project executed in the Nigerian oil and gas industry whilst ensuring that a reasonable number of personnel are employed from areas with significant operations. In the event that Nigerians are not employed because of their lack of training, operators are required to make reasonable efforts to supply such necessary training locally or elsewhere”. In fact, the ACT is so robust that on the section on expatriate quota, “operators are clearly required to submit a succession plan for every position held by an expatriate. Expatriate can only occupy any position for a maximum of 4 years during which the expatriate occupying that position is obligated to have procured a Nigerian understudy who will fill in the position at the end of the stipulated 4 years time period”\(^11\). The ACT is also unambiguous in its policy direction on local content component. It provides that “an allowance of a maximum of 5% expatriates for Management position in respect of the operator for each of its operations” and requires that the Board must pre-approve any application for expatriate quota with the relevant authority. Operators are also mandated to employ only Nigerians in their junior and intermediate jobs. Failure to comply with the Act attracts sanction. The ACT provides that, “failure by operators and their contractors and sub-contractors to comply with the provision of the ACT in their operations is an offence.

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\(^8\) Nigerian Content Board 2008  
\(^9\) ibid  
\(^10\) ibid.  
\(^11\) ibid
punishable by a fine of 5% of the contract value for each of the projects in which the violation occurs or the total cancellation of the project\textsuperscript{12}.

The section of the ACT on training of Nigerians is in tandem with the vision of establishing the Petroleum Training Institute, Effurun. The Institute is charged with specific mandate to train the human capital required in the oil and gas industry. The Institute has strived to bridge this gap through its regular and customized programs. Although, the situation at present shows that the IOCs have lost interest in the Institute, as unstable academic calendar and frequent interruptions of schedules due to both internal and external factors seems to be interfering with the training programs, this has led to the establishment of several affiliated Institutes like the Institute of Petroleum Studies Kaduna, Shell Intensive Training Program (SITP) and several others operated by the IOCs. Unfortunately, these institutions cannot be compared to the Petroleum Training Institute, in terms of technological equipment for training. For purpose of emphasis, none of these institutions and by extension the whole of African sub-Saharan region, can boast of a demonstration rig, a mini flow station, ultra modern research laboratory, training vessel, simulation equipment, thin section analysis laboratory among others, for training\textsuperscript{13}. The importance of the Institute cannot be overemphasized. This is demonstrated in the attempts by African countries, especially, the Democratic Republic of Sao Tome and Principe, and more recently Ghana to understudy the Institute with a view to establishing similar Institutions to train technical manpower required for their emerging petroleum industries. Also the Institute staffs are highly trained and competent with varied experience in all aspects of human capital development required in the oil and gas industry.

Local content as applied in this paper can be defined as, \textit{the development of local skills, technology transfer, and use of local manpower and local manufacturing}. Practically, local content is building a workforce that is skilled and building a competitive supplier base\textsuperscript{14}. According to the Nigerian National Petroleum Corporation, (NNPC) report, it is “the quantum of composite value added or created in the Nigerian economy by a systematic development of capacity and capabilities through the deliberate utilization of Nigerian human, material resources and services in the Nigerian Oil and Gas Industry\textsuperscript{15}. A UNCTAD report stated that “the Nigerian local content policy is to attain targets of 40% by 2007 and 70% by 2010. If successfully implemented, it will have multiplier effects on the supply chain of other related industries in the country. Depending on their source, estimates vary as to the current value of the total annuals spent for services accruing to the local companies. It ranges from 3.5% to 11.5%, which is very low when compared to over 45-75% in Malaysia, Indonesia, Brazil and Venezuela\textsuperscript{16}.”

\textsuperscript{12} ibid.
\textsuperscript{16} UNCTAD Report: Skills Shortages in the Oil and Gas Industry: Case studies of Nigeria, Angola,… culled from www.cres.ch/skills%2520SHORTAGE%2520...
The ACT as envisaged in the Nigerian Content Development, plans to build capacity to among others: train 1000 engineers in basic engineering design in 2006 in collaboration with PTDF, petroleum facility certification and training of 1000 welders, work with industry stakeholders to enable local manufacture of steel plate and pipes, and to work with PTDF and INTSOK to commence upgrade of selected fabrication yards in readiness for increased local fabrication.

Local content in the petroleum industry has become a very important issue due to the fact that every country is desirous of its citizens to capture the commanding heights of its economy and thus assist to keep its wealth within its borders, as well as providing jobs to the ever growing population. This is achieved through capacity building, creating small and medium scale enterprises, (SMEs), as well as offering products and services locally.

It can be argued that in developing countries, small and medium enterprises are the drivers of economic activity and development. Whereas the technology gap between developed and developing countries is widening, the spread of local technologies in developing countries is being fast-tracked, to enhance the much desired development. Also, technological advancement underpins the rise in incomes as seen in developing countries, and has assisted to reduce poverty levels from 29 percent in 1990 to 18 percent in 2004.

In Africa, countries like Ghana and Uganda, which have lately found oil in commercial quantities, are crafting local content bills. This poses a lot of challenges to Nigeria whose discovery of oil spanned over five decades. Norway is assisting several developing countries with the indirect development of local content through an initiative called Oil for Development (OfD). The OfD initiative is predisposed to assisting developing countries, on the basis of their request. This initiative is to enhance the bid to administer petroleum resources in a way that create economic growth; and encourage the welfare of the whole population in an environmentally sustainable way.

In Nigeria, the idea of local content is not new. It is almost as old as the industry itself. As early as the 1950’s some multinational companies operating in Nigeria attempted to promote local content but abandoned the idea midstream. For instance, an American oil services company, Magcobar, who engaged the services of an indigenous clay mining company, Denchukwu, to supply raw material for preparing drilling mud for exploration and production companies abandoned the use of the local raw materials in preference to imported mud just about the time the industry was witnessing expansion.
Other attempts made to address the issue of local content, was the establishment of the Petroleum Technology Development Fund formally known as the Gulf Oil Company Fund Act. The funds utilised for training Nigerians for service in the industry under the Act were provided by Gulf Oil Company Nigeria Limited, an American company that later became Chevron Nigeria Limited. This Gulf Act which was repealed by the promulgation of Act No. 25 of 1973 was replaced with Petroleum Technology Development Fund (PTDF or the Fund). The purpose for the establishment of the PTDF among others is the training and education of Nigerians in the Oil and Gas industry. Specifically, the Fund was established to train Nigerians to qualify as graduates, professionals, technicians and craftsmen and women in the fields of engineering, geology, science and management in the Oil and Gas industry. In addition to these, the Fund is also expected to make suitable endowments to faculties in Nigerian institutions. Until year 2000, the Fund had remained as a desk in the Department of Petroleum Resources (DPR). As an independent Parastatal now, the Oil and Gas industry has witnessed an unprecedented rise in the development of human capital by the PTDF.  

The PTDF’s vision is “to serve as a vessel for the development of indigenous manpower and the domiciliation of oil and gas technology in the Nigeria Petroleum industry as well as to make Nigeria a human resource centre for the West African Sub-region. In other to get cracking on its mandate, the PTDF conducted an industry-wide skill gap audit and survey to determine skill shortages in the oil and gas industry. The study revealed that the necessary human resource capital required to achieve compliance with the 70% Nigerian content Government policy by 2010 must include: stimulation of technology transfer, training in skills, mentoring and apprenticeship for designing engineering works, fabrication, construction, services, maintenance and upgrade of existing organizational and educational facilities for Nigerian’s vast but unskilled human resources.

Table 1 below shows summary of the skills gap audit as conducted by PTDF: 

<table>
<thead>
<tr>
<th></th>
<th>45% BY 2006</th>
<th>75% BY 2010</th>
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<tbody>
<tr>
<td>DEEP WATER</td>
<td>2430</td>
<td>4050</td>
</tr>
<tr>
<td>FABRICATION</td>
<td>11,820</td>
<td>19,700</td>
</tr>
<tr>
<td>WELL SERVICE</td>
<td>1680</td>
<td>2800</td>
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<tr>
<td>EPCI</td>
<td>9210</td>
<td>15,100</td>
</tr>
<tr>
<td>FACILITIES</td>
<td>3000</td>
<td>5000</td>
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<tr>
<td>TOTAL</td>
<td>38,700</td>
<td>46,950</td>
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Source: Kabir A. Mohammed (2009)

21 History- The Petroleum Technology Development Fund: www.ptdf.gov.ng/index.php...
The PTDF went into collaboration and signed a memorandum of understanding with the NNPC (NCD), in order to achieve Government’s Nigerian Content target of 70% by 2010.

Unfortunately, despite these performance of the Fund the Nigerian oil and gas industry still lacks worldwide reputation for technical capacity, reliability, integrity and professionalism in terms of local content. This is a major setback in the drive to attract foreign investments. The Nigerian’s petroleum industry is currently dominated by the production of crude oil with a proven reserves of about 36.22 billion barrels of crude as at February 2011, which accounts for about 2.6% of the world’s oil reserves (about 1.35 trillion barrels) and occupying the 10th position on the global scale. Nigeria also possesses very large natural gas resources. Nigeria occupies second position after Algeria in known gas reserves in Africa and it has become one of the principal exporters of liquefied natural gas (LNG). The new gas pipelines in West Africa and across the Sahara are great window of opportunities for Nigeria to increase its gas exports.

Despite the richness of natural oil resources, Nigeria is ranked among the 20th poorest country in the world, and more recently, the Transparency International ranked Nigeria the 35th most corrupt country in the world. Poverty level and underdevelopment can be attributed to poor governance, mismanagement of human and natural resources, various political issues and lack of infrastructure. Nigeria’s level of GDP per capita until recently was below the level at independence, and income inequality is widening. The oil and gas industry is, however, a major contributor to the Nigerian economy. It accounts for about 90% of the Federal government’s annual revenue.

The Nigerian oil and gas Industry content act as conceived by stakeholders seeks to increase indigenous participation in the oil and gas industry. This was by prescribing minimum thresholds for the use of local services and materials and to promote transfer of technology and skill to Nigerians in the industry. The Nigerian oil industry was originally the exclusive domain of the International Oil Companies (IOCs) in areas ranging from exploration to production, refining and trading. Even the downstream operations were initially controlled by expatriate companies such as Shell, Esso and BP. Intervention by the Federal government resulted in the nationalization of assets of the foreign major oil players in the downstream.

Upstream, in 1991, the Federal government awarded onshore and offshore oil blocks to Nigerian entrepreneurs through competitive bidding. Despite this progress, the “Nigerianization” process in the lucrative upstream sector has been comparatively negligible. Research done in 2008 concludes that although the oil and gas industry accounts for 90% of Nigeria’s revenue, it

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24 World Poorest countries: www.infoplease.com/world> world statistics> economic statistics
25 www.nigeria70.com/.../514996
contributes less than 38% to the Nation’s GDP\textsuperscript{27}. In real terms, as earlier indicated, the upstream sector has for decades functioned as an enclave economy with minimal impact on the entire economy.

Nigeria’s main obstacles to development of local content, according to Shirley\textsuperscript{28}, are its thin industrial base, lack of adequate power, water and other infrastructure to support an expanded manufacturing base, cumbersome bureaucratic obstacles to development of small and medium sized enterprises, and underdeveloped capital markets. Compared to other countries with similar histories of petroleum development, Nigeria lags on almost all metrics from gross domestic product (GDP) per capita to local participation in the industry. The challenge therefore is to create the proper framework within current economic, political and industrial constraint.

**Theoretical Framework**

Human capital, particularly in the petroleum industry, is the key input to the research and development in the sector which generates new products or ideas that underlie technological progress. Earliest economists like Adam Smith in his book: “An Inquiry into the nature and causes of the wealth of nations”\textsuperscript{29} in the late 30s, recognised the importance of education and specifically included the acquired and useful abilities of all the inhabitants or members of the society in his concept of fixed capital. Alfred Marshall\textsuperscript{30} also emphasizes the importance of education and training as a national investment and in his view, “the most valuable of all capital is that invested in human beings. In spite of this awareness, most early economists still regard physical capital as the main component of a country’s productive wealth; they still relegate natural and human resources to the background. However, some development economists have re-emphasised the importance of human resources, and this has led to some effort to incorporate investment in education into the mainstream of economic analysis.

Human capital refers to the aggregate stock of a nation’s population that can be drawn upon for present and future production and distribution of goods and services. It comprises the essential variables (i.e. knowledge, skills, and attitude) available within each unit of a nation’s human resource stock. The United Nation’s Economic Commission for Africa (UNECA) describes human resource as the knowledge, skills, altitude, physical and managerial effort required to manipulate capital, technology, and land among other things, to produce goods and services for human consumption. In other words, human resources are the totality of human potentials (knowledge, skills, attitudes, energy and technology, inherent within a nation’s human resource stock and whose combined effort, if properly developed and harnessed, would yield a high level

\textsuperscript{27} Akindelano- review of nigeria's local content legislation: www.akindelano.com/dl/OD\%20Local\%20Content\%20Act.pdf

\textsuperscript{28} Shirley Neffi, (2005),” Memorandum on International Best Practise in Development of Local Content In The Energy Sector”, Nigeria National Stakeholders Working Group.

\textsuperscript{29} The Wealth Of Nations | Adam Smith Institute www.adamsmith.org/wealth-of-nations

\textsuperscript{30} Marshall: Principles of Economics, Book vi, Chapter iv | library of... www.econlib.org/library/marshall/marp46.html
of labour productivity. Human resource development can, therefore, be conceived as the process of developing the skills, knowledge and the capabilities of all the people of the society and which are needed in the labour market for the production of goods and services. A recent study asserts that, Okojie’s estimates of aggregate production function from inter-country data, strengthened speculations that human capital is an important determinant of modern economic growth and a critical factor in explaining the convergence in growth across countries. Therefore human capital she concludes is the ability and skills of the human resources of a country. While human capital formation is the process of acquiring and increasing the number of persons who have the skills, education and experience which are critical for the economic and political development of a country.

Harbison and Yesufu have both observed that human resources constitute the ultimate wealth of a nation, while Myrdal and Okoh attributed one of the causes of the poverty of nations to lack of education. In fact Lewis, and Okoh have identified human capital development as one of the major determinants of income distribution because individuals with little education and training have low marginal productivities and earn low income. Low levels of income and productivity would affect the aggregate demand that would result to low levels of economic growth and development. Improvement in income and productivity would bring about improvement in human welfare.

It is then obvious that the Nigerian government is not compliant with its own policy thrust for education as enunciated in the National Economic Empowerment and Development Strategy policy which among others; professes the provision of unhindered access to compulsory basic education to all its citizens as a bridge to improved productivity and incomes geared towards the future socio-economic transformation the economy craves. According to a recent UNDP assessment report of 2009, the Human Development index (HDI) recorded in 2007 for Nigeria was a meagre 0.511, which ranks the country 158th out of 182 countries sampled. Enhanced

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31 Motivation and Productivity in the Library. www.webpages.uidaho.edu/ugah5.htm
34 Harbison, F (1973), Human Resources and the Wealth of Nation, Oxford University Press (London).
1. 40 The Political, Economic and Social Dynamics of Nigeria: A Synopsis
quality and a sustainable industry-based academic standards can however be achieved through the development of competency based curricular, and an effective quality control.

**Empirical Evidence of Lessons to be Learnt From Local Content Development in Other Oil Producing Countries as Analyzed by Shirley.**

**United Kingdom**
The United Kingdom experience shows a hands-on and direct approach to development of its oil and gas resources including explicit policies to build local content. The U.K. was a leading industrial country with a well educated and technically trained workforce, when oil was discovered in the North Sea. The economy was well supplied with manufacturing, shipbuilding, and engineering firms. While significant oil and gas production was new to the U.K, there were British companies with international expertise, including British Petroleum, which was partly owned by the government. To protect its economic interests in the North Sea, the government developed policies for awarding exploration and production licenses to companies to ensure that domestic companies and labour would participate in the development. Proactive government policies enabled domestic labour and industry to develop the specialized skills and capacity to service the offshore oil and gas industry.

**Norway**
Norway, on the other hand, adopted a more proactive approach by establishing a national oil company, ‘STATOIL’. Government enacted a deliberate policy which ensures that international oil companies develop the Norwegian industry as a condition, and by-product, of their own operations.

As in the U.K., when oil was discovered in Norway in the 1960’s, the country was economically stable with considerable industrial technical capacity, notably internationally renowned shipyards. The combination of its well developed economy and its technical capacity in other fields gave Norway considerable bargaining power in its relations with the private oil companies. The Norwegian petroleum law, enacted in 1965, is based on the British model of structuring and awarding licenses through individual negotiations with the IOCs. This enabled the government to choose which international companies it would work with to maximize the resulting domestic benefits. In the beginning, preference was given to companies who would join with Norwegian interests. By 1967, government equity participation in offshore development was required. The percentage could be reduced if Norwegian interests were included as part of the group licensed to develop a specific field.

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42 Ibid
43 Ibid
In 1972, the Goods and Services Office (GSO) was established by the Ministry of Industry. The goals and responsibilities of the GSO, were to monitor the number of Norwegian companies being awarded contracts throughout the procurement process. Statoil was created at the same time and policies that would ensure technology transfer and personnel training were imposed. Norway set a new precedent with the Stat fjord field by leasing it to an operating group led by Mobil with the provision that Statoil had the right to eventually take over as the operator. The producer group was required to cooperate in developing Statoil’s expertise to the point it would be in a position to carry out the operator role on its own.

According to Oystein Noreng, in Shirley Neffi “International oil majors were placed in the role of technical assistants and joint teams were used to fast-track the Norwegian companies into fully-fledged operators, unlike in the “Nigerianization” bid in which a reversed condition where oil majors hold a larger percentage of the about 40 percent so allotted to them on the basis of the joint operational venture proposition and Nigerians are also offered positions less than technical assistants, while expatriates hold sway in the industry. Consensus in Norway was that operatorship was needed to learn the tools of the trade and to be able to meet foreign oil companies as equals. Since development was at an early stage in the North Sea, the international oil companies provided Norwegian personnel on-the-job training at operations in other parts of the world. The trained professionals were then brought back home to “Norwegianize” the industry. By requiring joint operating ventures, Norway ensured the rapid transfer of knowledge, expertise and technology the Norwegian firms would not have otherwise had.

By the late 1970’s the government also required the international majors to fund research and technology development at Norwegian institutions. Companies were required to conduct at least 50 percent of the research for technology needed to develop prospects in Norway at local institutions. This requirement for cooperation on technology development was instrumental in developing Norwegian companies that today are globally competitive in various aspects of offshore development. (For Nigeria, this aspect of the Norwegian experience may be difficult to fully replicate since Norway already had a strong maritime industry and was able to take advantage of existing intellectual capital and world class and acclaimed academic institutions).

There were downsides to Norway’s aggressive local development effort, however, as economic activity that developed from the exploitation of oil and gas resources diverted resources from other areas of the economy. Growth of the domestic petroleum industry put pressure on wages in other sectors. It also made the economy of such a small country vulnerable to the swings in economic activity in the oil and gas sector, especially in the 1980’s.

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Local content in Norway today is roughly 50 percent. For a country with a small population relative to the size of the resource, that level of local content is probably as much as can be expected given the specialized nature of the industry. Perhaps as important as the local content metric is the success of Norwegian companies internationally.

In addition to establishment of a “local content” office within the government, the Norwegian model of active operating joint ventures and engaging the IOCs in the training of local professionals and companies could be an effective approach for Nigeria today. The focus on in-country research and technology development should also be replicated in Nigeria using a pre-established forum, the Petroleum Training Institute

Brazil
Brazíl nationalized its industry in the 1950’s by creating a state owned oil company, Petrobras. Until the 1990’s, Petrobras, with the engagement of local support and supply companies, was the sole developer of all Brazilian oil and gas industry. By virtue of these protectionist policies, the local content in the Brazilian petroleum sector has always been very high. Brazil has been an oil producer since the 1930’s, but increased its production significantly after the discovery and development of offshore resources began in the 1970’s. Petrobras used some foreign contractors in the early years of offshore development.

But, by the 1980’s, the focus shifted almost exclusively to development of domestic technology using licensing agreements with international suppliers. By licensing technologies developed by other companies, Brazilian industry had access to state of the art technology it could then adapt to specific domestic requirements. Technological progress in the oil industry internationally has been an evolutionary process, by adapting proven tools and techniques to different circumstances and challenges. This approach worked well for the Brazilian industry. At one point, Petrobras held the world record for the well drilled in the deepest water. By developing the engineering plans for deepwater projects and using and adapting technology, the Brazilian industry has become a global leader in deep-water and ultra-deep water exploration and production.

The amount of local content varied from well above 90 percent to as low as 80 percent during the development stage of the domestic offshore industry, depending on Petrobras’ need to reach out to international technology leaders. However, rigid government policies that protected the domestic supply and service companies and prevented outside participation contributed to delays and underdevelopment of domestic resources.

47 Shirley Neffi, Op. Cit
48 http://en.wikipedia.org/wiki/nationalisation/brasil...
49 www.geoexpo.com/..../94209e7a.aspx
In 1997, national policy changed to partially privatize Petrobras and allow foreign companies to acquire concessions for oil and gas exploration and development. An independent agency, the National Petroleum Agency (ANP), was established to manage a competitive leasing scheme and to regulate the industry. The initial lease awards were based primarily on upfront bonus bids with lesser consideration for local content. As local content declined to around 80 percent, the policy was modified to put greater weight on local content. Detailed local content percentages are specified – a minimum of 30 percent in the offshore and 70 percent onshore. With the increased focus on local content, interest from international oil companies fell off rather significantly in subsequent lease sales.

Recent political exigencies even led to cancellation of bids for some deepwater platforms to enable local shipyards to certify their engineering and technical capabilities. One significant, but not necessarily negative outcome has been that foreign investors have purchased equity in Brazilian firms as a way to increase local content in the formerly locally-owned service and supply industry. For example, firms from Norway and Singapore acquired stakes in Brazilian shipyards, and other U.S. and U.K. vendors set up or expanded businesses in Brazil.

While the international industry has become active in Brazil since restructuring, the dominance of Petrobras ensures that a large measure of local content will continue. Importantly, though, involvement of the IOC’s has resulted in needed expertise and technology transfer, extended reach drilling, for example, from specialized firms with no previous presence in Brazil.

The Brazilian experience is in direct contrast with Nigeria’s history. By keeping the sector closed for decades, Brazilian labour and companies were protected while they developed skills and capabilities. The lack of competition led to higher costs and some delayed technological development, but ensured the economic activity and spin off benefits from the petroleum sector were internalized. Nigeria has looked to Brazil to model changes to its leasing regime. The local content experience, however, may have limited applicability.

The Petroleum Training Institute and Human Capital Development
The Petroleum Training Institute, Effurun was established by Decree No. 37 of 1972 subsequently amended by Decree No. 52 of 1975. It was established under a bilateral agreement between the Federal Government of Nigeria and Union of Soviet Socialist Republics (U.S.S.R) in 1972. In pursuance of the agreement a number of Soviet experts and training equipment were brought in at the initial stages. The number of Soviet lecturers and instructors gradually decreased, as more indigenes became available. This is a clear demonstration that the idea of local content particularly in human capital development had been domiciled at the Petroleum Training Institute.

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50 www.offshore-mag.com> Home> More Oil Production News
Training Institute, Effurun since its inception. The Institute is charged with the following responsibilities:

a) To provide courses of instruction, training and research in oil technology and to produce technicians and such skilled personnel normally required for oil production.

b) To arrange conferences, seminars and study groups relative to the field of learning specified in paragraph (a) above, and

c) To perform such other functions as in the opinion of the governing council may serve to promote the objective of the Institute, including, without prejudice to the generality of the foregoing. The making of such regulations as may be necessary for entry into any type of courses approved by the Institute, the duration of such courses and their academic standards, and the recognized equivalents of such certificates and diplomas that the Institute may award.

There is no doubt that the Institute has made tremendous progress in accomplishing the aims and objectives of the indigenization Decree, and by extension, the local content Act, which emphasizes, among other things, the effective control of the Nigerian economy by Nigerians themselves and also the promotion of active indigenous participation in all aspects of the economy. The Institute trains personnel specifically for the petroleum sector by serving as an industrial training centre, offering job oriented training to meet the specific needs of the sector. The Institute was among others, expected to ensure that trained Nigerians are available for the replacement of the expatriate technicians (operators and supervisors) in the petroleum sector. This is also a step towards ensuring that the Federal Government’s objective of acquisition of necessary technology by Nigerians, and conservation of foreign exchange is achieved. This is one of the main policy thrust of the local content Act.

Human capital development is one of the most important requirements to ensure sustainable growth in the oil and gas industry. The petroleum industry is highly capital intensive. Most oil producing countries in developing economies are faced with similar developmental challenges ranging from infrastructural development, political stability, good investment climate, project financing. Other challenges include among others, transparency, high educational standards, legal policy, resource management, research & development, fiscal policy, environmental policy etc. It becomes imperative therefore that these countries must consider the domestication of all Oil and Gas activities with a view to conserving its scarce foreign exchange, and also in the process provide employment to its ever increasing population through technological transfer. The Petroleum Training Institute is anchored to address the issue of manpower needs of the oil and gas industry.

This can be seen in recent government’s attempt through the Petroleum Technology Development Fund, (PTDF), to upgrade the Institute to a first class Institute to meet up with the

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52 Petroleum Training Institute Effurun Graduation Ceremony Brochure, 2009
requisite manpower needed to cope with the challenges in deep water oil exploration and production activities, including the establishment of the Kaduna National College of Petroleum Studies, all in the bid to address dearth of inadequate middle and high level technical manpower in the oil and gas industry. PTDF has invested massively in the Institute through provision of modern technology and relevant infrastructure required to train Nigerians who will be expected to take over 70% of jobs in the Oil and Gas industry.

In terms of human capital development, the PTI has equally benefited. Although the human capital development required by the Institute is far more than what it gets from the PTDF, the Institute needs more focussed and targeted training programs for its staff at regular intervals to cope with the dynamic nature of the industry. Also required by the Institute, in our own opinion, is active collaboration with the Nigerian petroleum industry and the international oil and gas industry for regular industrial attachment to promote on-hands experience. This, the staff can bring to bear in the course of training.

Despite its limitations, the Institute can boast of its competence in courses of instruction in the following areas: Electrical Engineering, Instrumentation and Control, Electronics and Telecommunications, Power and Machine. The Institute has the expertise to train Nigerians in Electrical Engineering Technology with specialization in Power and Machines. Such graduates will be able to design and build Electric Generators, Transformers, Electric motors, and other high powered equipment, that may be required in the Nigerian oil and gas industry. In addition to that, those with specialization in Electronics and Telecommunications, Instrumentation and Controls will be able to design and build Radios, Televisions, Computers, and Communication equipment, Instrumentation equipment, controllers and automatic control systems, modern domestic and industrial life tools which largely relied on diverse electrical and electronic devices and equipment, also required in the oil and gas industry.

The Institute also offers courses in Petroleum Engineering. And since engineering is about innovation, creativity and diversity, graduate Nigerians from this programme should be able to address the need of the industry in this regards. Other courses offered by the Institute include: Mineral Resources Engineering, Petroleum and Natural Gas Processing Technology, Mechanical Engineering, Manufacturing Technology, Power plant Technology, Welding Engineering, Commercial diving I & II, Industrial Safety and Environmental Technology, Petroleum Marketing and Business Studies, Science Lab Technology. In other to fulfil its mandate, the Institute also offers “Tailor-made” training for organisations.

The Nigerian Local Content Act should be further amended to include a mandatory provision that will compel the International Oil Companies to fund special training programmes for technicians and technologists through the Institute on regular bases. The experience of Yemen readily comes to mind when Total’s US$4.5 billion Yemen LNG project, was launched in
August 2005. This was by far the largest in the nation’s history. The company aims for 90% Yemenization of staff by 2015. To achieve this, Total set up an integrated strategy to recruit, train, retain and motivate a world-class Yemeni workforce, all on employment terms and working conditions that are highly competitive within the region.

Also, to compensate for the scarcity of local personnel competent in LNG operations, Yemen LNG set up training Centres that offer an intensive, high-calibre training programme for Technical specialists, Engineers and Supervisors. To populate that scheme, Total launched an advertising campaign to attract candidates through radio, television and the national press. Out of 16,000 application forms submitted for technical specialist level, the company chose 200 candidates. Training began with an intensive three-month English programme, followed by eight months of training in oil and gas techniques. This was followed by 13 months of hands-on training.

In 2003, the Institute trained some nation ale of the Democratic Republic of Sao-tome & Principe under the Nigerian – Sao Tome & Principe Joint Development Authority (JDA) for the management of the activities with respect to the exploration and development of the hydrocarbon resources in the Joint Development Zone (JDA). Since Portuguese is the official language in Sao Tome, the students had intensive English language training before the commencement of academic work.

The PTI can organise intensive programs with on-hands training on behalf of the international oil companies. The PTI Consultancy Services Unit, a commercial arm of the Institute, liaises with academic departments of the Institute to organise specialised skill programmes for youths and employees of IOCs, thereby making them relevant in terms of employee efficiency and human capital development. The Institute has under the auspices of the Consultancy Unit trained over a 1000 youths on various skill acquisition programmes for the oil and gas industry. This is quite low compared to the Institute’s capabilities. The Institute recently provided a six months intensive training programme on Petroleum drilling operations for 26 youths on skill acquisition programme by Nigerian Agip Oil Company. Other oil companies, organizations and government organs the Institute has trained for in collaboration are presented below:

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54 PTI Consultancy Services Unit 2012 (Researchers Collation).
### A Summary of PTI Consultancy Services Unit Training on Skill Acquisition for International Oil Companies and Other Government Organizations

<table>
<thead>
<tr>
<th>Name of Companies/organization</th>
<th>No. of youths on skill acquisition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell Petroleum Development Company (SPDC)</td>
<td>110</td>
</tr>
<tr>
<td>Brass LNG</td>
<td>75</td>
</tr>
<tr>
<td>OSOPADEC</td>
<td>224</td>
</tr>
<tr>
<td>Chevron</td>
<td>34</td>
</tr>
<tr>
<td>Rivers State Government</td>
<td>120</td>
</tr>
<tr>
<td>UNOPS/UNDP</td>
<td>137</td>
</tr>
<tr>
<td>Presidential Amnesty Trainees</td>
<td>114</td>
</tr>
<tr>
<td>Scottville Consortium</td>
<td>128</td>
</tr>
<tr>
<td>Ministry of Niger Delta Affairs</td>
<td>40</td>
</tr>
<tr>
<td>Nigerian Agip Oil Company (NAOC)</td>
<td>26</td>
</tr>
</tbody>
</table>

**Source:** PTI Consultancy Service Unit, 2012 (Researchers Collation).

It is quite embarrassing to note that, these skill acquisition training programmes were not awarded directly to the Consultancy Services Unit of the Petroleum Training Institute. Training contracts of youth’s skill acquisition were acquired through a third party arrangement. We wish to emphasise that, the Institute has the competence to train skills required in the oil and gas industry on behalf of the government. Therefore, government must as a matter of urgency patronise its own organ in other to accelerate local content development in the industry. However, for the Institute to perform optimally, government must empower it to fulfil this objective. This can be achieved through government’s review of PTI financial/funding status. International oil companies should be mandated to reserve a dollar for every barrel of crude oil produced to fund the Institute. There is also need to encourage the International oil companies to establish a comprehensive Research & Development department as practised by the local content and training models presented in this paper.

The Yemeni experience also shows that, out of 7,058 applicants for the supervisory training levels, 82 engineers and supervisors ultimately joined the ranks of Yemen LNG. Many of the
supervisor trainees for this specific level had acquired skills and knowledge working abroad. Total offered competitive packages to these expatriates to attract them back home and to participate in the development and the operation of the LNG project. The training programme for the Yemeni LNG plant was first for the country. Based on this success, Yemen LNG ran more programmes to train technicians to fill vacant positions as the first batch of trainees move on to assume senior and supervisory roles. Although these fundamental requirements add to the time required to train local employees, the results provided a lasting legacy of improved educational levels.

Also the experience of Trinidad and Tobago training model is also worthy of emulation. Its educational efforts, with government support, cover a range of areas, from expanding the geosciences program at the University of the West Indies (UWI) to the establishment of the National Energy Skills Centre/T&T Institute of Technology (NESC/TTIT). The academic programs all have collaborations with universities in the U.S. and Canada and with industry and professional societies. There is need for collaborative synergy between the PTI and the industry. This can be extended to some Institutes of technology also in the U.S and Canada. The NESC/TTIT, created in 1998, has a program focusing on theory, practice and management skills for technicians and undergraduate engineers. The regular curriculum is supplemented with a continuing education program of technical workshops. The energy programs go beyond the upstream oil and gas business to include the needs of the downstream gas sector. For example, the National Gas Company of Trinidad and Tobago Limited (NGC) sponsored a training program in conjunction with NESC to train new welders and to upgrade welders’ skills in anticipation of construction of a major cross island transmission pipeline.

The Petroleum Training Institute has a well developed welding programs covering welding and fabrication including underwater operations. It is equipped with the following workshops and laboratories: a non-destructive testing Lab, a gas Welding Workshop, a Manual Metal arc welding workshop, a TIG welding workshop a machine tools workshop, a MIG/MAG welding workshop, a fabrication workshop, a submerged arc welding workshop, plastics welding workshop, diving tank and decompression Chamber, etc.

The Nigerian local content act appears to be in line with the Angolan model which requires that (i) preference be given to the employment of Angolan workers at all levels; (ii) equality of rights be granted to Angolan and expatriate employees in the areas of social and professional benefits; (iii) plans are prepared for the recruitment and training of national workers, at the beginning of each contract and annually; and (iv) expatriates are gradually replaced by national employees, subject to the sanction of contract cancellation and/or fines. This decree further obliges oil

55 Local Content Strategy-IPIECA: www.ipieca.org/_local_content.pdf
companies to contribute annually an amount in foreign currency for the training of the national workforce. From those contributions a percentage was allocated to Universidade Agostinho Neto and the Universidade Católica and for state professional training (one cent in the dollar per barrel produced).

**Recommendations.**

1. Nigerian policy makers should consider the British model of structuring and awarding licenses through individual negotiations with the multinational oil companies. This will enable the government to choose which company it would work with to maximize the resulting domestic benefits.

2. Only policies that would ensure technology transfer and personnel training should be imposed on multinationals. These companies should fund research and technology development at Petroleum Training Institution. At least 50 percent of the research for technology needed to develop prospects in Nigeria should be conducted at local institutions, with special reference to the Petroleum Training Institute.

3. Joint operatorship should be considered as against the current practise of joint venture agreement which is only limited to financial obligations. This will enable Nigerians learn the tools of the trade and to be able to meet multinational oil companies as equals.

4. Also, the Brazilian model of developing domestic technology using licensing agreements with international suppliers should be adopted. By licensing technologies developed by multinational oil companies, Nigeria like Brazilian industry would have access to state of the art technology it could then adapt to specific domestic requirements.

5. Nigeria should develop and implement a comprehensive framework to achieve an increase in local content with measurable, realistically achievable milestones. There is therefore the need to review the models presented for possible adaptation, or re-structured to fit the Nigerian local content model.

6. The Petroleum Training Institute’s academic programs should have collaborations with universities in the U.S and Canada and with industry and professional societies. Training programs, supplier development and in-country R&D could be encouraged as early compliance mechanisms.

7. Government should consider the review of the Petroleum Training Institute’s financial status, where International oil companies will be encouraged to reserve a dollar for every barrel of crude oil produced as this would provide the needed fund for training and research development in the institute.
8. Government should also review its industry based training programs, such that the Petroleum Training Institute is made the cog in the wheel of the human capital development process, by making all training programs in the oil and gas industry domiciled in the institute.

9. International oil companies should be encourage to collaborate with the Petroleum Training Institute to fast track the Nigerian local content target of 70% in human capital development by 2015.

10. The letters of the Local Content Act should be enforced; and all international oil companies operating in Nigeria compelled to domicile a minimum of 10 percent of their annual profit in Nigerian banks. With that, Nigerian banks will have more money to fund investment within the system and other sectors of the economy.

11. In terms of technology, government must empower its relevant institutions like the Petroleum Technology Development Fund (PTDF) to holistically address the issue of Human Capital development in the Oil and Gas industry.

**Conclusion**

A well articulated local content Act is desired if Nigeria must meet up with the 21\textsuperscript{st} century challenges of the oil and gas industry. There is need for the domestication of at least 90 percent of the oil and gas activities in Nigeria, as is obtainable in some oil producing nations. Nigerian government needs to muster the political will to ensure full and unreserved implementation of the Act by the relevant bodies without interference.

Petroleum Training Institute is already in the “vineyard” for training technical manpower for the industry. However, the Institute still needs more empowerment in terms of training of her staff in the key technical positions as is compliant to global best practices.