

PETROLEUM TECHNOLOGY DEVELOPMENT FUND (PTDF): THE JOURNEY SO FAR- SUCCESSES AND ACHIEVEMENTS.

PREAMBLE

The Petroleum Technology Development Fund has in recent times been engulfed in controversies arising first, from the initial investigation by the Economic and Financial Crimes Commission (EFCC) and secondly by the Senate Ad-Hoc Committee and later by the Senate Review Committee. In the course of these investigations, especially the public hearing conducted by the Senate Ad-hoc committee, the PTDF has been portrayed as a 'Slush Fund' and as a fund where all manner of inexplicable transactions take place.

These developments in no small measure appeared to have beclouded the noble objectives behind the setting up of the PTDF and its laudable achievements over the years.

In view of the above, the PTDF management considers it necessary to educate the general public on what the Fund is all about; its mandate, achievements and successes over the years.

2. HISTORY OF THE PTDF

Prior to the establishment of the PTDF, there existed the Gulf Oil Company Training Fund, which Act was repealed by the promulgation of Act No 25 of 1973 establishing the Petroleum Technology Development Fund(PTDF) as a Fund for the purposes of training and education of Nigerians in the petroleum industry. Section 1 of the Act provides that the following moneys shall be paid into the Fund:

- The balance of monetary assets outstanding in the accounts of the Gulf Oil Company Training Fund at the Commencement of the Act;
- All further sums payable to or received by the Minister of Mines, Power and Steel(now Minister of Energy) in terms of any agreement made by the Government and any company in relation to Petroleum Oil prospecting or mining concessions; and
- Any other sums from time to time freely donated or accruing to the Government or the Fund for the training and education of Nigerians in the Petroleum Industry as the said Minister may direct.

In addition, section 2 of the Act states that the fund shall be available for the purposes of training Nigerians to qualify as graduates, professionals, technicians and craftsmen, in the fields of engineering, geology, science and management in the petroleum industry in Nigeria or abroad. Specifically the said section 2 further provides that the fund shall be utilized for the following purposes;

- To provide scholarships and bursaries, wholly or partially in Universities, Colleges, Institutions and in petroleum undertakings in Nigeria or abroad;
- To maintain, supplement, or subsidize such training or education as mentioned above;
- To make suitable endowments to faculties in Nigerian Universities, colleges or institutions approved by the Minister
- To make available suitable books and training equipment in the institutions aforesaid
- For sponsoring regular or as necessary visits to oil fields, refineries, petro-chemical plants, and for arranging any necessary attachments of personnel to establishments connected with the development of the petroleum industry; and
- For financing of and participation in seminars and conferences which are connected with the petroleum industry in Nigeria or abroad.

Since the establishment of the Fund in 1973, it remained as a desk in the Department of Petroleum Resources(DPR) from where it was administered until in the year 2000 when the present administration decided to remove it from DPR and make it a fully independent and functional parastatal. Consequently in August 2000, an Interim Management Committee(IMC) was appointed with Alhaji Yusuf Hamisu as its pioneer Executive Secretary and four Assistant General Managers as members. The IMC on its part, operated under the general direction of a Technical Implementation Committee(TIC) headed by the then Special Adviser to the President on Petroleum Matters, while both the IMC and the TIC operated under the direct supervision of the Vice President. The Fund has since 2000 been headed by four(4) different Executive Secretaries/ Chief Executive Officers with the incumbent Executive Secretary, Alhaji Kabir A. Mohammed who assumed duty on the 9th of November, 2006 as its fourth Chief Executive Officer.

3. ACTIVITIES OF THE FUND (from 2000 to date)

In pursuance of its mandate, the PTFD has from the year 2000 to date embarked on the following activities;

- Overseas Scholarship Scheme(OSS)
- Projects Execution
 - Petroleum Training Institute, Effurun, Upgrade
 - Universities Upgrade Projects
 - Information and Communication Technology (ICT) Centers
 - Niger Delta Projects
- Universities Endowment Programme
- Nigerian Content Development
- Strategic Support and Collaboration with Stakeholders.

A. OVERSEAS SCHOLARSHIP SCHEME(OSS)

The Overseas Scholarship Scheme (OSS) which is the Fund's flagship programme, is designed to meet the long-term capacity requirements of the oil and gas industry through training of young Nigerians in related fields of Engineering, Geological Sciences, Environmental and Energy Studies both at the master's and doctoral levels. The expectation is that beneficiaries will fit in directly to the oil and gas industry and/or the academia and hence contribute positively to nation building. In the long term, this will help to meet the set targets in attainment of the Nigerian Content and also, make Nigeria the hub of oil and gas personnel development for the West African sub region and the Gulf of Guinea.

The PTDF Overseas Scholarship Scheme covers payments for tuition fees, accommodation and living expenses to successful scholars who are trained at both the Masters and Doctorate levels mainly in the best ten acclaimed Universities in the United Kingdom (UK) and a few Universities in North America and some other parts of Europe. On the average, the Fund spends £24,500 per scholar per academic year. Between 2002 and 2006, the sum of Thirteen million, One hundred and Fifty Nine Thousand, Seven Hundred and Twenty Four Pounds (**£13,159,724.38**), was spent and an additional sum of One Hundred and thirty four thousand, two hundred and thirty two dollars(**\$134,232.71**) has so far been expended by the Fund in the training of the 596 MSC and 86 PHD scholars.

Summary of Beneficiaries from 2002 to 2007

Over the past five (5) years, PTDF has trained over 600 Nigerians both at the masters and doctoral levels in the above mentioned universities abroad. Please find below a detailed summary of the number trained over the period under review.

Table 1: Summary of the number of MSC Scholars from 2002 to 2007

| YEAR | NO. OF SCHOLARS |
|--------------|------------------------|
| 2002/3 | 119 |
| 2003/4 | 115 |
| 2004/5 | 121 |
| 2005/6 | 113 |
| 2006/7 | 128 |
| TOTAL | 596 |

Table 2 Summary of MSC Scholars According to Subject Areas(2002-2007)

| SUBJECT AREA | 2002 | 2003 | 2004 | 2005 | 2006 | TOTAL |
|--------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Engineering | 48 | 38 | 29 | 38 | 46 | 199 |
| Geological Sciences | 5 | 12 | 35 | 27 | 22 | 101 |
| Environmental Studies | 8 | 13 | 31 | 16 | 24 | 92 |
| Offshore Related Courses | 9 | 4 | 8 | 2 | 6 | 29 |
| Energy Courses | 12 | 5 | 8 | 7 | 6 | 38 |
| Information Technology | 16 | 10 | 4 | 10 | 8 | 48 |
| Others | 21 | 33 | 6 | 13 | 16 | 89 |
| TOTAL | 119 | 115 | 121 | 113 | 128 | 596 |

Table 3: Summary of the number of PHD Scholars from 2002 to 2007

| YEAR | NO. OF SCHOLARS |
|-----------------|-----------------|
| 2003 (PILOT YR) | 15 |
| 2004/5 | 25 |
| 2005/6 | 18 |
| 2006/7 | 28 |
| TOTAL | 86 |

Status of the 2007/8 OSS Programme

The 2007/8 OSS programme is now in its concluding stages. A total of 167 scholars would be sponsored at the masters and doctoral levels in the 2007/8 academic year. Following the successful conduct of the Aptitude Test for the master's degree programme on 10th February 2007 and selection of successful candidates, admission into the top ranking universities in the United Kingdom are currently being sought. The screening of PhD candidates is ongoing and qualified candidates would be invited for an interview from 8 – 11 May 2007. Below, are the details of the 2007/8 OSS programme.

Summary of Scholars for the 2007/8 OSS Programme.

| | |
|--------------------------------------|-------|
| Selected M.Sc Scholars | - 113 |
| Deferred M.Sc Scholars (from 2006/7) | - 11 |
| PhD Scholars | - 25 |
| Graduate Assistants* | - 12 |
| Best Graduating Students* | - 6 |

*(one from each of the 6 Universities where PTDF
has Endowed Professorial Chairs)*

Total **167**

The Role of Univation Ltd

Univation Ltd is the commercial arm of the Robert Gordon University, Aberdeen, Scotland, which has been contracted by PTDF to act as consultant on the Overseas Scholarship Scheme. Some of the services it renders include:

i.) Pre arrival arrangements for scholars

- Obtain admission for suitably qualified scholars in the United Kingdom.
- Obtain suitable post-doctorate opportunities for suitable qualified scholars in the United Kingdom.
- Support and co-ordinate applications to the British High Commission in respect of student visa applications.
- Participate in the Funds' induction program for PTDF OSS Scholars in Abuja.

ii.) Post Arrival

- Meet scholars on arrival in the United Kingdom.
- Provide scholars and fellows with on – going support, including pastoral support and advice, for example, on issues such as Accommodation, Admission, Disability, English language, Financial Advice, Health issues, Immigration, IT problems, matriculation, Money Problems, Stressful situation, Study support, Religion, Working and studying.
- Establish and maintain a detailed database on student contact details as a networking facility to students.

The Local Scholarship Scheme (LSS)

The LSS which is expected to commence as from the **2007/2008** academic year was conceived to derive direct and maximum benefit from the Universities Upgrade and Endowment Programmes of the Fund. The scheme is designed to encourage outstanding students in Nigeria to pursue programmes relevant to the development of the oil and gas industry. There are two components of the Local Scholarship Scheme;

- The Undergraduate Component
- The Postgraduate Component

As a pilot, it will commence in the six Universities in which the Fund has already instituted endowment programmes, but will in due course be expanded to cover other Universities nationwide. For the undergraduate component, the target beneficiaries are students at the 200 level with a strong academic background in the Departments of Environmental, Civil, Chemical, Electrical Electronics, Mechanical, Industrial, Petroleum and Gas Engineering as well as Departments of Chemistry, Geology, Computer Science, Mathematics and Physics. The value of the scholarship for the undergraduate students include Tuition fees as may be charged by the University, the sum of One hundred and fifty thousand Naira(N150,000.00) for accommodation and living expenses per scholar each year. In addition, the sum of fifty thousand Naira(N50,000.00) shall be paid to the students in the final year as project allowance.

Similarly, for the MSC students, the value of the scholarship include; the tuition fees as may be charged by the University, the sum of Two Hundred Thousand Naira for accommodation and living expenses per scholar each year. In addition the sum of One Hundred Thousand Naira (N100,000.00) shall be paid to each scholar in the final year as project allowance. The target beneficiaries for the postgraduate component are students in disciplines similar to the undergraduates as described above and from the same institutions. Furthermore, under the Msc programme, it is envisaged that the scholars will be sent overseas for six months to enable them bench work with new technologies as it may relevant to their programmes.

For the PhD programme, the value of the scholarship includes: tuition fees as may be charged by the University, the sum of Two hundred Thousand Naira as accommodation and living expenses per scholar each year. In addition, a project allowance of one hundred thousand (N100,000.00) will be paid to students per year for three years. The scholars will also be sent overseas for between nine months to twelve months to enable them bench work with new technologies as it may relevant to their programmes.

B. PROJECTS EXECUTION

The following projects are being undertaken currently or have been completed by the Fund.

a. Petroleum Training Institute,(PTI) Effurum Upgrade

The Petroleum Training Institute, Effurun, Delta State was established in 1973 by the Federal Government of Nigeria as a pre – requisite for the membership of the *Organization of Petroleum Exporting Countries (OPEC)*, to train indigenous middle level manpower to meet the labour force demand of the Oil and Gas Industry in Nigeria and the West African Sub – Region.

Phase 1 of PTI Projects

Part of the programme of Action Approved by *Mr. President* for the PTDF was the Upgrade of Facilities and Infrastructure of the Petroleum Training Institute (PTI), Effurun, Delta State.

(I) Educational Upgrade includes work segments such as:

- Curriculum development.
- Staff development and training
- Academic quality development
- Organisation, organogram and systems development

The following aspects of the Educational upgrade have been completed:

- *Curriculum Review/Development
- *Review of the Institute's Organogram
- *Staff Development /Training
- *62 Staff Trained in Aberdeen, UK.
- *120 Staff Trained in Abuja
- *200 Trained in Warri

(II) The Organizational upgrade includes the following:

- Skills audit
- New Mission & Vision and New Organogram
- Staff Development & Training for strategic and Senior Management Staff
- Staff Development & Training for Management Staff
- Quality Control/Quality Assurance management system (QC/QA)
- Health Safety & Environment (HSE)

(II) Infrastructural Upgrade includes work segments such as:

- Procurement of Workshops Equipment
- Procurement of Laboratories Equipment
- Power Supply (Electrical Works)
- Telecommunications and Information Technology
- Buildings (New and Renovations), etc

The total cost of the PTI upgrade project is **=N=9,395,495,843.00 (nine billion three hundred and ninety five million, eight hundred and forty three naira)**

Phase 2 of PTI Projects

As the first phase is being completed, arrangements are on top gear for the commencement of the Phase II of the PTI Upgrade project which has the following components; building of student hostels, staff office and residence as well as the supply, installation and commissioning of laboratory/workshop equipment and machineries for the institute. The invitation for the pre-qualification of contractors/expression of interest was recently advertised in several national newspapers.

b. University Upgrade Projects

Phase 1 of the University Upgrade

The Fund's effort to develop the local capacities of Nigerian Oil and Gas related Universities programmes culminated into the conceptualization and execution of upgrade of selected departments of some universities in phase 1 as follows:

| | UNIVERSITY | DEPARTMENT | AMOUNT SPENT(N) |
|---|---------------------------------|----------------------------|-----------------|
| 1 | University of Port Harcourt | Gas Engineering Department | N350,000,000.00 |
| 2 | University of Maiduguri | Geology Department | N350,000,000.00 |
| 3 | University of Ibadan | Petroleum Engineering Dept | N350,000,000.00 |
| 4 | University of Nigeria Nsukka | Geology Department | N350,000,000.00 |
| 5 | University of Benin | Chemical Engineering Dept. | N350,000,000.00 |
| 6 | Ahmadu Bello University | Chemical Engineering Dept | N350,000,000.00 |
| 7 | Usman Dan Fodio University | Petroleum Chemistry Dept | N350,000,000.00 |
| 8 | University of Jos | Geology and Mining Dept. | N350,000,000.00 |

The components of the project include; infrastructure, laboratory equipment, books, IT facilities, power generating sets and water borehole facilities.

The total cost of the Phase 1 University upgrade project is **=N=2,800,000,000.00**
(two billion, eight hundred million naira only)

Phase 2 of the University Upgrade

Arising from the glaring benefits of the first phase in the benefiting Universities, Mr. President has graciously approved the commencement of the 2nd Phase of the University upgrade in the under-listed Universities and Departments

1. University of Uyo Akwa Ibom State - Chemical and Petroleum Engineering
2. University of Calabar, Cross River State - Applied Chemistry
3. Federal University of Tech Owerri, Imo State - Petrochemical Engineering
4. Obafemi Awolowo University, Ile Ife, Osun State - Geology
5. Abubakar Tafawa Belewa University - Petroleum Engineering
6. Bayero University Kano, Kano State - Electrical Engineering
7. Fed. University of Tech Minna, Niger State - Chemical Engineering
8. University of Ilorin, Kwara State - Geology and Mineral Science

As at now, the two (2) Consultants for the Project have been commissioned and preliminary data acquisition and architectural drawing have commenced, while the pre-qualification processes for contractors has begun. This was also advertised in several national dailies in March 2007. It is estimated that the sum of Four Hundred and fifty Million Naira(N450,000,000.00) will be spent in each of the eight Universities, giving a total of Three billion six hundred million Naira(N3,600,000,000.00) to be spent in all the Universities. The components of the phase 2 upgrade projects are the same as that of phase 1 and includes; infrastructure, laboratory equipment, books, IT facilities, power generating sets and water borehole facilities.

c. Information Technology Centres (PTDF – ICT CENTRES)

Basically, Information Communication Technology (ICT) is central to all fields of specialization in the oil and Gas industry, from Geosciences to Drilling Engineering and Petroleum Economics. ICT is presently used from the upstream exploration/appraisal of oil locations to the downstream marketing, retailing and, in the automation of various aspects of the Oil and Gas Industry.

Given the poor background of most students in ICT which affected their performance and interest in science and technology related courses, PTDF considered it necessary to strengthen the foundation of ICT for students at the intermediate and secondary levels

as a basis for training of manpower for oil and gas industry. This is similar to what obtains in India, China and other emerging ICT countries in the third world.

It is in realization of the foregoing that the PTDF obtained approval in April 2006 to establish ICT centers in **24 Universities, 20 Federal Colleges of Education and 102 Unity Schools** spread across different parts of the Country based on a list given to PTDF by the Federal Ministry of Education.

The constructions of the ICT buildings in all the schools are almost completed and the cost estimate in each geo-political zone is stated below;

Zone A – North Central comprising of 23 Unity Schools, 3 Colleges of Education and 4 Universities **(N414,906,178.62)**

Zone B – North East comprising of 15 Unity Schools, 3 Colleges of Education and 4 Universities **(N310,158,375.68)**

Zone C – North West comprising of 17 Unity Schools, 4 Colleges of Education and 4 Universities **(N350,691,803.69)**

Zone D – South East comprising of 12 Unity Schools, 2 Colleges of Education and 4 Universities **(N268,871,220.02)**

Zone E – South South comprising of 17 Unity Schools, 3 Colleges of Education and 4 Universities **(N356,402,570.89)**

Zone F – South West comprising of 18 Unity Schools, 4 Colleges of Education and 5 Universities **(N403,189,744.65)**

The components of the ICT Projects are:

- (i) Building of ICT Classrooms in 24 Universities, 20 Federal Colleges of Education and 102 Unity Schools ----- **N2.1 Billion**
- (ii) Computers, Softwares and Furniture for the 24 Universities, 20 Federal Colleges of Education and 102 Unity Schools – **N5.0 Billion**

(iii) V-Sat and Bandwith Supply and Installation - **N3.5 Billion**

(iv) Solar Energy Power supply for 102 Unity schools – **N3.7 Billion**

(v) Electric Generator and accessories for 24 Universities and 20 Colleges of Education - **N700 Million**

The total cost of the ICT project is =**N=15,000,000,000.00 (fifteen billion, naira only)**

d. Niger Delta Projects

In response to the Presidential directive following the Niger Delta Stakeholders meetings on the accelerated socio-economic development of the zone, the PTDF was mandated to intervene in the under listed projects:

1. Construction of National Technical Institute (NIT) for Gas and Petroleum Studies Bonny Island, Rivers State.
2. Establishment of a Federal Polytechnic of Oil and Gas at Ekowe, Bayelsa State.
3. Development of Infrastructure for a Secondary School and a Primary School at Okerenkoko and Oporoza, Warri South, Delta State, respectively.

1. NATIONAL TECHNICAL INSTITUTE, BONNY, RIVERS STATE

NIT Bonny is an Institution conceived by the Rivers State Government, whose foundation stone was laid in the year 2002 by *Mr. President* at the same time the NLNG, Bonny was commissioned but was abandoned. *Mr. President* subsequently directed PTDF to takeover the infrastructural development and for the Institute to specialize in the studies of Environmental issues, Gas and Petroleum Studies.

The project components at the institute include; laboratories/workshops, administrative buildings, classrooms and seminar halls, student hostels, power and water supply schemes and other ancillary services.

The estimated total cost of the projects some of which have been awarded after the Federal Executive Council approval is =**N=4,200,000,000.00 (four billion, two hundred million naira only)**.

2. FEDERAL POLYTECHNIC EKOWE, BAYELSA STATE

In response to the demand of the Niger Delta Stakeholders, Mr. President directed that the PTDF should intervene in the establishment of an Oil and Gas Polytechnic in Ekowe, Bayelsa State and hand same over to Federal Ministry of Education through the **National Board of Technical Education (NBTE)** for operations. The Polytechnic is also expected to specialize in Environment, Oil ad Gas Studies.

The components of the projects in the school include; laboratory and workshops, administrative buildings, classrooms and seminar halls, student hostels, power and water supply schemes and other ancillary facilities.

The estimated total cost of the projects some of which had been awarded after the Federal Executive Council approval is =**N=3,200,000,000.00 (three billion, two hundred million naira only)**.

3. CONSTRUCTION OF PRIMARY AND SECONDARY SCHOOLS AT OKERENKOKO & OPOROZA

These two communities were recognized by Federal Government of Nigeria to have played very positive roles in the protection of critical Oil and Gas facilities in the communities. The communities specifically requested for the establishment of these institutions, and *Mr. President* approved the intervention of PTDF.

The estimated total cost of the development of the secondary and primary schools at Okporoza and Okerenko projects is =**N247,000,000.00 (two hundred and forty seven million naira only)**. The contracts for these projects have been certified and

approved by the Federal Executive Council, and have also been awarded to deserving companies.

d. ENDOWMENT PROGRAMME

In a bid to execute one of the mandates for which it was set up, the Petroleum Technology Development Fund(PTDF) endowed Professorial Chairs in six(6) Federal Universities for the purpose of advancing indigenous research in petroleum and related disciplines for the nations oil and gas industry. The Universities and Professorial Chairs are as follows:

| S/N | Name of University | Professional Chair |
|------------|------------------------------------|---------------------------|
| 1 | University of Ibadan | Petroleum Engineering |
| 2 | University of Port-Harcourt | Gas Engineering |
| 3 | University of Maiduguri | Basinal Studies(Geology) |
| 4 | Ahmadu Bello University, Zaria | Chemical Engineering |
| 5 | University of Nigeria, Nsukka | Geological Sciences |
| 6 | Usman Danfodiyo University, Sokoto | Petroleum Chemistry |

Under this programme, each of the six universities was endowed with 'seed money' in the sum of sixty million Naira (**N60,000,000.00**). These amounts were pooled and the total sum of **N360,000,000.00** was invested with the Professional Fund Managers (**First Trustees Nigeria Limited, a subsidiary of First Bank of Nigeria PLC.**) for the purpose of ensuring maximum return on the investment. The annual yield from the investment is used to fund the programme. The total endowed funds of N360,000,000.00.has been enhanced by another Two Hundred Million Naira(**N200,000,000.00**) in anticipation of endowing further chairs in 2007 at the University of Jos, Plateau State and University of Benin, Edo State, that have also benefitted from the PTDF Upgrade projects.

Recently the Management of PTDF took a decision to further increase the total endowed sum to One Billion Naira(N1,000,000,000.00). The National Board of Trustees(NBT) made up of the Executive Secretary of PTDF as Chairman and Vice Chancellors of Endowed Universities as well as the Chair holders in each University approves the research focus as well as budget for each year for each of the chair holders. Also each University has an Endowment Management Committee(EMC) which supervises the disbursement of the funds as well as the activities of the chair holder. In 2006, a budget of fifteen million Naira (N15M) for each University was approved by the National Board of Trustees(NBT).

RESEARCH ACTIVITIES IN THE SIX UNIVERSITIES

A. UNIVERSITY OF NIGERIA, NSUKKA

The Professorial Chair endowed at the University of Nigeria, Nsukka is in Geosciences with particular interest in the Anambra Basin of South Eastern Nigeria. The research topic is:

“Geological Evolution and Hydrocarbon Potentials of South Eastern Nigerian Sedimentary Basins”

Objectives of the Research

1. To conduct detailed geological investigations, with a view to developing evolution models for the basins
2. To evaluate/ recognize characteristics of the basins that may be favourable for hydrocarbon accumulation and preservation
3. To suggest hydrocarbon accumulation and preservation

Following the objectives stated above, these core researches have already started and are on-going;

- Organic Geochemistry
- Biostratigraphy

- Geophysics/Petrophysics
- Sedimentology/Sequence Stratigraphy
- Surface Geological Field Work

Several phases of these sub-themes within the core topic had been done , while Chair plans to continue pursuing the outstanding research issued in 2007.

B. UNIVERSITY OF IBADAN

The Professorial Chair endowed at the University of Ibadan is in Petroleum Engineering.

Key areas of the research include:

- Petrophysics
- Reservoir Engineering
- Petroleum Production Technology
- Natural Gas Production
- Forecasting and control of oil field related pollution problem
- Pipeline maintenance
- Sociology of oil production communities
- Waste minimization and utilization

Several research achievements have been carried out under the PTDF Chair within the general research focus. These include:

1. " A compositional approach for calculating pressure depletion performance in Gas Condensate Reservoirs"
2. "Prediction of scale build up rate around the well bore during water flooding"
3. "Modeling wax deposition during oil production"
4. "Experimental characterization of some crude oil emulsions"

As part of the broad research focus, the PTDF Chair plans to embark on the following studies in 2007.

1. Development of Generalized Recovery Factor Models for the Nigerian Oil and Gas Reservoirs
2. Quantitative Evaluation of the Impact of Risks on Investments in the Oil and Gas Projects in Nigeria
3. An Appraisal of the Fiscal Regimes of some selected OPEC countries
4. Study on Joint Venture Participation
5. Development of a robust Gas Fiscal Regime for Nigeria

C. AHMADU BELLO UNIVERSITY, ZARIA

The Professorial Chair endowed at the Ahmadu Bello University, Zaria is in Chemical Engineering, with emphasis in Catalyst Development. The Key areas of research include:

- Research on the development of Zeolite Catalysts X and Y, for use in petroleum refining
- Data collection in the area of oil and gas
- Manpower development for the oil and gas industry

There are several ongoing research activities within the broad theme, some of which have been carried out by the postgraduate students attached to the Chair holder. These include;

1. Development and modification of pure phase zeolite Y from the Nigerian based kaoline clay and its involvement in cracking reactions
2. Development of platinum-alumina catalyst for the reformation of straight run naptha of a typical crude distillation
3. Design and fabrication of a pilot plant for the production of alum from kankara clay
4. Synthesis of ZSM-5 from locally sourced kaolin clay

D. UNIVERSITY OF MAIDUGURI

The Professorial Chair endowed at the University of Maiduguri is in Basinal Studies(Geology) with particular interest in the Chad Basin.

The broad aim of the Chair in Maiduguri includes the study of hydrocarbon potential, investigation of solid minerals for application in the petroleum industry, ground water resources, geological history and environmental issues in the Chad Basin.

Objectives of the Research

1. Finding specific geological areas highly potential for drilling and seismic modeling for oil and gas
2. Finding the mineral deposits whose properties and chemistry are suitable for application in the petroleum industry
3. Drawing up a full and more accurate stratigraphy of the area and thus giving a more detailed and accurate geological history
4. Finding and locating groundwater resources for potential use by the local communities as well as finding ways of providing the solutions to the environmental problems

E. UNIVERSITY OF PORT HARCOURT

The Professorial Chair endowed at the University of Port Harcourt is in Gas Engineering.

Key areas of research are:

- Natural Gas Utilization for Single Cell Protein Production
- Policy Framework for LNG production and development
- Gas to Liquid Conversion
- Optimization of Natural Gas Utilization in Nigeria
- Coning and cupping in Oil and Gas
- Feasibility of using Gas for power generation at Uniport
- Environmental issues in Gas Utilization Projects
- Nigeria Gas Reserve Evaluation and Database
- Estimating Air Pollutants from a Natural Gas Powered Thermal Plant

Objectives of the Research

The core objectives of the research include to:

1. Encourage and develop interdisciplinary teaching and research in gas technology
2. Interface between industry, government and the University for cooperation in research
3. Develop sound gas engineering programmes at both the undergraduate and post-graduate levels
4. Contribute to developing a Gas Policy in Nigeria

F. USMANU DANFODIYO UNIVERSITY, SOKOTO(UDUS)

The Professorial Chair endowed at UDUS is in Petroleum Chemistry. Key areas of research include:

- Development of catalyst for the partial oxidation of hydrocarbons
- Developing tests for identifying adulterated kerosene, diesel and gasoline
- Development of oil well cement
- Analysis of engine oil as diagnostic tool for detecting faulty engine parts

Objectives of the Research

1. Developing technical support services targeted at improving performance of the refining process
2. Developing , in conjunction with the oil sector, cost reduction procedures and efficient operations through (a) the introduction of quality control methods and (b) the formulation of improved refining additives
3. Developing ways of handling, utilizing and recycling spent catalysts from the refining industry
4. Exploring novel ideas in conversion of hydrocarbons fro petroleum into petrochemicals
5. Conduction studies on polymer utilization in the country and effect of ambient conditions on the polymers, with a view to developing biodegradable polymers and recycling of used polymeric materials
6. Conversion of end-product of refineries and petrochemicals industries into useful industrial products

PEER REVIEW OF THE ENDOWMENT PROGRAMME (January 21-25,2007)

After over four years of the operation of the PTDF Endowment Programme, it was considered necessary by the Management of the Fund to conduct an Interim Review of

the programme. Given that the programme is a professional programme, a peer review mechanism was adopted. This involved the selection of resource persons drawn from operators in the oil and gas industry, government and the academia to review the research activities of the Chair holders. Basically, the rationale of the peer review was two-fold:

- To assess the progress of on-going research activities of the different Chair-holders , especially in terms of industry relevance and scientific quality
- To agree on cross-cutting National Research Targets and Themes, that will be pursued by the Chair holders.

Some Recommendations from the Peer Review Process

Several recommendations were made by participants at the peer review exercise. Some of the important issues raised as part of the recommendations include:

- The need to increase the endowed sum of each chair to the tune of a minimum of one hundred and thirty million Naira(about one million dollars equivalent).
 - PTDF should conduct a nation wide survey on equipment, facilities and maintenance capabilities for carrying out research in the Oil and Gas industry
 - A PTDF Geosciences Center equipped with basic software and equipment affiliated to each chair should be set up in each geo-political zone of the country
 - A PTDF research grant should be introduced to be competed for by interested academics for projects within the framework of the National cross cutting project.
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- ***Note that these recommendations have been accepted by the PTDF Management following which machinery for their effective implementation has since been put in place.***

e. NIGERIAN CONTENT DEVELOPMENT

In November 2001, a National Committee was inaugurated to deliberate on the level of local content in the Nigerian Oil & Gas Industry. Two years later, in August 2003, a second committee spearheaded by INTSOK under the auspices of the existing Memorandum of Understanding between the Governments of Norway and Nigeria delivered a report on the state of local content in Nigeria. The main findings of both committees were:

- **that the Nigerian content development initiative requires an exhaustive systematic approach that would assess local content levels, identify constraints, develop clear policies and processes to stimulate local content growth, define clearly the roles and responsibilities of stakeholders.**

In line with the recommendation of these committees on local content development, the PTDF management in 2004 set up a Nigerian Content Desk (NCD). Its mission is to create the necessary enabling environment for the Funds' intervention in facilitating the **"assessment of local content levels, identify constraints, develop clear policies and processes to stimulate local content growth, define clearly the roles and responsibilities of the PTDF in relation to other stakeholders"**.

Subsequently, the PTDF commissioned an industry-wide skills audit and survey in 2004 to determine existing capacity vis-à-vis the existing gaps in order to put in place a robust training regime in fulfillment of the PTDF Mandate. The findings of this survey categorized the major skills gaps to be highest in the following areas: Fabrication, Engineering, Welding, Drilling, Project Management and Seismic Data acquisition. These findings constitute the basis and framework upon which the PTDF's intervention in Nigeria Content Development is premised.

Given the strategic importance of the Fund in Nigerian Content Development within the Oil and Gas Sector, the Management of the Fund in March 2007 decided to upgrade the

Nigerian Content Desk into a full fledged Department in the Fund. This was to establish the necessary framework that will assist in coping with the expected challenges.

PTDF Current Activities in the Nigerian Content Drive.

At the moment, the PTDF has attained the following milestones in the National quest for enhanced Nigerian Content Development and participation in the oil and gas industry;

(i)Enhancing the Fabrication Capabilities in the Nigerian Oil and Gas Industry Project.

Having identified the lack of Fabrication capacities as one of the major impediments to the development of indigenous capabilities and building local content, and in furtherance of the recommendations of the Nigerian Content development Committees, the PTDF in conjunction with other stakeholders is engaged in the development of the Fabrication Capabilities of major players in the oil and gas industry.

The project is being undertaken under a **PTDF/NNPC/INTSOK/IFC** MoU which entails the upgrade of the fabrication capabilities of several key fabrication yards including Nigerian Naval Dockyard, Nigerdock and the Defense Industries Corporation of Nigeria (DICON) to enable these facilities provide the requisite platform for use by the welders and for the fabrication of tools and other equipment. The PTDF had to this end contributed One Billion Naira(N1,000,000,000.00) for the rehabilitation of the Defense Industries Corporation of Nigeria (DICON), substantial part of which is dedicated specifically for the equipping of a special welders workshop in furtherance of this initiative.

This phase of the INTSOK project is estimated to cost \$2.8million and the PTDF has obtained approval to contribute 20% of the total sum.

Already, the PTDF has released \$200,000 as the first of a scheduled three installmental payments.

(ii) Engineering Design Training Program (EDTP)

As part of the strategy to ensure the optimal realization of Government's Nigerian Content targets, the PTDF initiated several strategic alliances & collaborations with the NNPC.

One of these collaborations is termed "**Job creation through partnering**" under which initiative the PTDF & NNPC would use the result of an earlier skills gaps/survey report to train Nigerians to fill identified competency gaps in relation to on-going or planned projects in the Industry.

It is in furtherance of this partnering initiative that the PTDF is currently engaged in the Training of 2,600 Nigerian Engineers to meet identified (indigenous) manpower shortfalls in the oil & gas industry, commencing with **HYSYS** (Software for process simulation), **PDMS** (Plant Design and Management Systems) and other design software to enable trainees acquire the skills to participate effectively in Front End Engineering Designs (FEED) and Detailed Engineering Designs (DEED).

250 engineers have so far been trained in a pilot scheme which commenced in the third quarter of 2006, at a cost of \$1,100,238.00 (One million, one hundred thousand and two hundred & thirty eight dollars).

The bulk of the remaining 2,350 will commence training in the main phase scheduled to begin in May, 2007. Already, the Fund has formalized the training framework (Logistics and Contractual outline) with the vendors representatives, while the sorting of the almost 9,000 applications for the main phase is expected to be concluded by April 13, 2007.

The main phase which is estimated to cost \$10, 290,100.00 (funded wholly by the PTDF), has already received the gracious approvals of the President and the Federal

Executive Council and would be spread over a three- year period in accordance with industry requirements.

(iii) Post training Attachment Program

In order to ensure total value addition through the optimal utilization of the acquired knowledge, a structured framework has been put in place to ensure continuous deployment of the skills that have been acquired by trainees during the PTDF Engineering Design Training Programme(EDTP). As part of this framework, the training program provides for attachment of the trainees to designated companies with workload for a maximum period of six months. These trainees will undergo on-the-job-training on live projects and PTDF will pay a stipend to them.

70 out of the 250 trained in the pilot scheme who are not employed have been placed with some participating Oil and Gas Design companies (OGDEN) where they are to commence the post attachment program designed to enable them practice the acquired skills **through an integrated mentoring, coaching and on-the-job training exercise**. The remaining 180 from the pilot phase are undergoing the attachment with their employers. This phase of the training is estimated to cost the PTDF over N300, 000,000. (Three Hundred Million Naira).

(iv) Welders Training and Certification Programme. (WTCP)

Preparations have also reached an advanced stage for the training of 2,500 Nigerian welders to enhance local capabilities in the area of welding and fabrication and to give them international certification to enable them fill identified gaps. A presidential approval for this program has been obtained and logistics put in place while the full implementation is scheduled to commence in May 2007 at an estimated cost of \$10,000,000.00 (Ten Million US Dollars).

f. STRATEGIC SUPPORT AND COLLABORATION WITH STAKEHOLDERS

In order to promote basic understanding of Petroleum industry operations, the Fund has an existing strategic collaboration with the following stakeholders;

Nigerian Mining and Geosciences Society (**NMGS**),

National Association of Petroleum Explorationists (**NAPE**),

Society of Petroleum Engineers (**SPE**) and

National Mathematical Centre (**NMC**).

The collaboration with these organizations include; sponsorship of their publications, annual conferences, participation in international conferences and dissemination of information relating to geosciences, mathematics, petroleum and related courses. In addition to the above, the Fund has also provided some form of assistance (especially sponsorship of members to relevant Conferences and Seminars) to the following professional bodies: Petroleum Technology Association of Nigeria (**PETAN**).Nigerian Association of Indigenous Petroleum Explorers and Producers (**NAIPEC**).

Furthermore in the area of overseas industry training, a programme designed to build capacity and competence in industry personnel within the public sector, the Fund has over the last five years undertaken the training of personnel of public sector agencies in or allied to the oil and gas industry. The benefitting stakeholders are; Ministry of Petroleum Resources, Office of the Honourable Minister of Energy, Petroleum Equalization Fund(PEF), Department of Petroleum Resources(DPR), relevant National Assembly Committees and several others related to the operations of the industry.

In this connection, the PTDF has expended a substantial part of its resources in sponsoring the training and retraining of personnel of these agencies to various training programmes within and outside the country. **In 2006 alone, the PTDF spent**

US\$730,560.00, GB£274,243 and N213,531,215.00 on such training of public sector officials.

CONCLUSION

Nigerians expect that as the dust raised by the series of investigations in PTDF settles down, there is the need for the Fund to focus more aggressively than ever before on its core mandate. Virtually every group is looking for specific signals on how the activities of the Fund would move in the coming years and how they will affect the wider oil and gas industry in Nigeria. PTDF Scholars currently studying overseas as well as prospective students are keen on seeing PTDF consolidating on its earlier achievements. The other stakeholders including the academia, the industry operators and professional associations also look forward to the continued support of the PTDF for their activities in future. They are interested in strengthening the collaboration with PTDF and also the sustainability of the achievements and growth so far recorded in the last six years.

The Federal Government on its part has constantly restated its expectations from the PTDF. The President expects the PTDF to be a principal player in achieving the Nigerian Content goal in the oil and gas sector. As a capacity building fund designed to develop the skills of Nigerians for participation in the oil and gas sector, PTDF has a longer term and more sustainable role in the Nigerian content drive. As a strategic player in the Gulf of Guinea region, Nigeria is expected to provide the bulk of indigenous manpower within the region that will facilitate petroleum activities there.

The Management of PTDF is not unaware of these expectations and challenges. PTDF will continue to pursue its specified mandate of capacity building of Nigerians in the oil and gas sector. Training and Research which though have a longer term impact is a more sustainable strategy for achieving the National Content goal in the oil and gas sector. As such, PTDF will continue to consolidate on its scholarship scheme, research endowments programmes and other short term courses and training. The Fund will also continue in its drive to uplift Universities and Institutions that are centers of research and teaching for oil and gas related courses and subjects, to international standards.

However, this requires the cooperation of all stakeholders including the relevant Federal Ministries and Parastatals, the industry and the academia, while we solicit the understanding, encouragement and support from the generality of Nigerians.

Kabir A. Mohammed, oon

Executive Secretary,

Petroleum Technology Development Fund(PTDF).