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PTDF Digest

A Quarterly Publication of the Petroleum Technology Development Fund

PTDF PIONEERS LOCAL PRODUCTION OF CATALYST FOR CRUDE OIL REFINING

"Zeolyte Y and ZM5 are very important catalysts used in the oil and gas industry. We have been able to develop good quality Zeolite from Kaolin and we have carried out performance test and discovered that the Zeolite we have produced actually outperformed the catalyst being used by Nigeria's oil and gas industry. By this breakthrough, which has been patented and upscaled to a pilot plant level, the oil and gas industry will now be able to obtain their catalyst locally."

- **Prof. Abdulkareem Salahu Ahmed**,
PTDF Chair in Chemical Engineering, Ahmadu Bello University, Zaria

Ahmed Aminu Galadima takes over management of PTDF in acting capacity

PTDF Tower

Plot 1058 Memorial Drive, Central Area, Cadastral Zone A00, Abuja

www.ptdf.gov.ng

IN THIS ISSUE

From the Editor

Our eureka did not come easy but when it did it was with resounding success. The Zeolite Catalyst discovery from Kankara clay came after many years of painstaking research and funding, involving a team of diligent researchers led by Professor Ahmed of the department of chemical Engineering, Ahmadu Bello University, Zaria.

Since after the celebrated discovery, several other researches sponsored by PTDF have followed with remarkable discoveries some of which have received patent rights. PTDF is therefore proud to proclaim that it is achieving its core mandate of developing petroleum technology using local researchers and material inputs aimed at solving current problems in Nigeria's oil and gas industry.

We welcome our readers to the year 2016 with this cheering development in PTDF. As the curtain opens for 2016 offerings, PTDF will certainly continue to play significant roles in ensuring that government aspirations in local content development and application in the oil and gas industry are optimally achieved. Part of the new focus in the year will be the intensification of advocacy to address the distortions created by the non-engagement of PTDF scholars and vocational skills trainees, in the oil and gas industry as intended by extant legislations and regulations on local content in the oil and gas industry

The fact that PTDF lacks the power to compel oil companies to engage its scholars and trainees should not consign it to hopelessness and despondency. This legislative lacuna in the enabling law of PTDF, though enervating, should not be an excuse for the Fund to stand idly by and allow government investment on capacity development go to waste. PTDF as a leading government agency in capacity building has an implied role to lead advocacy on the issue of engaging Nigerians in the oil and gas industry since no other agency of government has the means of knowing what skills and competencies exist.

This implied role will see PTDF evolve from being only a capacity building agency (i.e building capacity and siddon look) to being a capacity building and promotion agency, thus becoming a critical agent in the fulfilment of the Nigerian content policy of government.

And as this publication was set to go to bed, a breaking development redefined the focus and perspectives and that is the disengagement of Femi Ajayi as Executive Secretary of PTDF and the takeover of the management of the Fund by Ahmed Aminu Galadima in Acting capacity. He was until his appointment the General Manager, Education and Training Department.

Kalu Otisi Esq.

PTDF Digest

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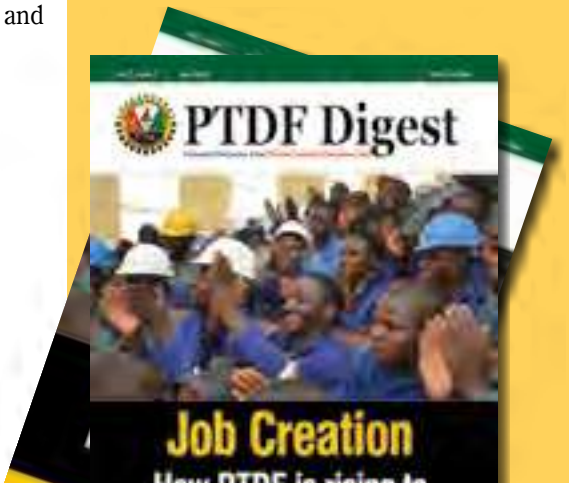


MR. AHMED AMINU GALADIMA TAKES OVER THE MANAGEMENT OF PTDF IN ACTING CAPACITY

...as Femi Ajayi is disengaged

The Petroleum Technology Development Fund (PTDF) is among Federal Agencies whose Chief Executives were disengaged by the Federal Government on the 15th of February, 2016. As a consequence, the 20-month tenure of Mr. Femi Ajayi as Executive Secretary of PTDF came to an end. He was appointed to the position on June 18, 2014.

On Friday, the 19th of February, 2016, Femi Ajayi handed over the leadership of PTDF to Ahmed Aminu Galadima, General Manager, Training and Education Department of the Fund. *"Following the specific directive from the Secretary to the Government of the Federation, Engineer. B.D Lawal and my discussion with the supervising Minister of the Petroleum Technology Development Fund (PTDF), Dr Emmanuel Ibe Kachikwu, I hereby hand over to Mr. Aminu A Galadima, the General Manager (Education and Training) to serve as Acting Executive Secretary. And I've been asked to tell you during the cause of your standing – in as Acting Executive Secretary, you are supposed to preside over all the affairs of the agency, but you are not expected to carry out any administrative restructuring, transfer or posting without directives or approvals by the honourable Minister of State, Petroleum Resources".*

In an emotion laden voice, the former Executive Secretary of PTDF, Femi Ajayi thanked the management and staff of the Fund for the support and co-operation they extended to him which made it possible to surmount difficult challenges in the course of his tenure. *"My dear brothers and sisters, separation from the people you have worked with is never a very easy thing, no matter how lion hearted you are, some person must have touched your life one way or the other, some people must have impressed you by their action and their inactions, one way or the other you feel like you are about to loose a part of yourself. So if I say I am speaking with mixed feeling I mean every word. I know I am somebody who can be very emotional on occasions. But I want to say that, I have had a very exciting time here, very eventful time too. PTDF is a challenging place to work. Somehow with your support, with your cooperation, we have been able to meet the challenges one way or the other to the best of our ability, giving the circumstances. We wish we could do more, given the laudable objectives and the mandate of this agency. But I don't think we have done so badly".*

Being the last time he addressed the management and staff of PTDF in his official capacity, Femi Ajayi used the opportunity to outline some of the achievements of his administration. These include the diversification of education partners for the training of PTDF Overseas Scholarship beneficiaries and the drive to

domesticate the scheme.

"We have tried to move from our traditional partners which is basically UK to ensure that, we have more flexibility and to ensure that the product of our sponsorship become more versatile. We have moved to Germany and Brazil, our people are talking to Australia. Of course we have also engaged the US, that is with respect to diversifying our partners and this has implications, because we may be able to make the scholarship much cheaper for us, in the sense that, some of the partners are ready to give us tuition free Opportunities or lower tuition than we used to experience with our traditional partners. Then there is also the domestication drive. We engaged our training partners, telling them that, going forward any of our partners who want to continue to work with us should be ready either to come and set up shop here in Nigeria or to come and do what we call Split Side PhD and such other ones that will promote more use of our local institutions and our well trained academic experts and professors here"

Under Nigerian Content Development Initiative, the former Executive Secretary said the Welders Training and Certification Programme succeeded in developing fully qualified and certified professionals in manual metal arc welding and shielded metal arc welding. He said that beyond these, the Fund under his leadership ventured into advanced and specialised welding training programme. *"We raised the bar by introducing advanced and specialized welding when we took 20 people to Turkey though only 19 got trained at the end of the day so in a way it was a trail blazing experiment because before that exercise we didn't have welders trained in Nigeria who have the full complement of some of these advanced and specialized skills like MIG, MAG, Oxycytelin welding etc. you didn't have the 5 of them together in one person, until that our training program, so at this point in time you are aware that, those 19 people that we trained in Turkey are training other people, I am aware they are training 130 young Nigerians on this specialized and advanced welding skills. So that is something that we can be very proud of, gone are the days when the oil and gas companies particularly the 10C's will say , Yes, it's because your people only have rudimentary skill in welding, now we have people who can compete favorably not just with their colleagues in the country here but with their colleagues also internationally"*.

The Fund he said also forayed into helicopter piloting programme in which 15 young Nigerians qualified for private pilot licences and commercial pilot licences. 12 of them he said further scaled through the type-rating course during an internship as cadets with Caverton Helicopters. The 12 qualified pilots have already been given employment in Caverton Helicopters. They were fully absorbed into the company because of the agreement between PTDF and Caverton Helicopters.

The novel discoveries made by researchers under PTDF endowment of professorial chairs and annual research grant competitions some of which have received patent rights are also sign posts of the success story of the Fund under the leadership of Femi Ajayi. He therefore solicited the co-operation of management and staff to the Acting Executive Secretary, Ahmed Aminu Galadima to enable him sustain and even improve on the present achievements.

In his response, the Acting Executive Secretary, Ahmed Aminu Galadima expressed his appreciation for the team work displayed by the former Executive Secretary which gave rise to many successful business outcomes.

He pledged his commitment towards improving the performance of the Fund in its areas of responsibility, and called for the support and co-operation of staff.

"I call on your continued effort and support in stepping up our business performance and also that we continue to imbibe the spirit that this organisation 'belongs to all of us'. With your collective support; we will work as a team in order to achieve the mandate and vision of this organisation.

Most importantly, we shall put our effort towards ensuring that our work in PTDF contributes directly towards the developmental plans of the present administration. We must be committed in raising the game in tandem with the current expectations of Mr. President. These undoubtedly will ensure that we remain practically relevant and strategic in the oil and gas industry. Through our core mandate of capacity building,

human capital development and local content drive".

He said that as a matter of urgency, his administration will prioritize its many capacity building obligations and come up with quick wins that will have immediate and direct impact on the oil and gas industry.

"Within this short period, we will look critically at the action plans of the organisation and prioritize them, and thereafter we come up with those quick wins that would have immediate and direct business impact on the industry.

The task ahead of us is enormous, staff are therefore expected to continue to put in their best at all times through excellent professional behaviour, with sound ethical conduct to enable us achieve long term sustainable performance.

Other plans are expected to come on board so that PTDF's contributions to the industry can have the "spill-over" effect towards the development of other critical sectors of the economy.

I would like to reiterate here that, every staff has a role to play and every role is important towards the achievement of the overall organisational objectives. In view of this, you are always welcome to share your ideas with us through the appropriate channel. You are expected to continue to work-hard, efficiently and effectively towards achieving the critical objectives of the organisation"

The Ag. Executive Secretary, Petroleum Technology Development Fund (PTDF) **Mr. Ahmed Aminu Galadima** who took over the Leadership of the Fund on Friday, February 19, 2016 was until his appointment, the General Manager, Education and Training Department of the Fund. He joined PTDF in 2002 and served variously as Manager Administration and Personnel; Manager Training Department; Assistant General Manager, Education and Training; and rose to the position of General Manager in charge of Education and Training Department in 2012.

He holds multi-disciplinary academic qualifications; a Bachelor of Science in Agriculture and Master of Science in Banking and Finance.

Ahmed Aminu Galadima has attended several international courses and conferences and is an alumnus of Wharton Business School Pennsylvania, (USA) Chicago Booth Business School, USA and Columbia Business School (USA). He is a member, Nigerian Institute of Management, and member African Business School.

He is credited with facilitating the automation of PTDF Overseas Scholarship Scheme through the introduction of electronic aptitude exams which enhanced the transparency and integrity of the process.

He made a mark in introducing cost-cutting measures, which saved resources for the Fund. Under his watch, the Education and Training Department took over the UK operations of the Overseas Scholarship Scheme (OSS) from Univation Ltd. This led to huge savings in cost.

The OSS has also been refocused to operate based on partnerships which attract free tuition fees and joint funding in some cases hence the collaboration between PTDF/Brazil/ Germany and France.

Ahmed Aminu Galadima Hails from Yola South Local Government Area of Adamawa State ■

ACTING PTDF EXECUTIVE SECRETARY MEETS WITH STAFF ...SEEKS SUPPORT, COOPERATION

The Acting Executive Secretary, Petroleum Technology Development Fund (PTDF), Mr Aminu Ahmed Galadima met with the entire staff of the Fund, to seek for collective support and cooperation towards the renewed task of moving the institution forward and charting a new direction in the execution of the Fund's mandate.

In his address at the staff forum, Mr Aminu Galadima enjoined all staff to join him in re-enacting the lost glory of the Fund when all activities of the agency were being carried out in a structured manner and within the enabling law that set up the Fund.

This is the second time a staff of the agency is being appointed to act as the Executive Secretary of the Fund. Mr Galadima therefore urged the staff to maximize the opportunity and not to allow the mistakes of the first experience to repeat again. "*As human beings, we are not perfect; hence we may have offended one another in the past, but the test of a truly great person is in the ability to let go of all misgivings when occasion demands*".

The Acting Executive Secretary promised to work within the mandate of the Fund by adhering to extant

rules and regulations in all official transactions. A committee he said will be set up to streamline all projects and programmes of the Fund with a view to redesigning the focus and recommending areas of priority.

"*Without any attempt to reduce the achievements of previous Chief Executives which are very well acknowledged, we cannot deny the fact that PTDF has been overstretched beyond its limit with the little resources at its disposal. In order to move from this level, a committee will be set up shortly to take a holistic look at our activities with a view to streamlining them and to recommend areas of priority to enable us focus on achieving them within the mandate of the Fund and the funds at our disposal*"

Mr Galadima promised to place priority on staff welfare and trainings, while calling on staff to be disciplined and obey extant rules and regulations.

"*We shall demonstrate this through punctuality, discipline and commitment to duty and I urge all the staff to demonstrate absolute loyalty and cooperation in the discharge of your official duties to enable us move the Fund forward. I call on you to give me your unflinching support in the discharge of the enormous responsibilities that lie ahead of us*" ■

PTDF ASSURES SCHOLARS OF FUNDING

The Acting Executive Secretary, Petroleum Technology Development Fund(PTDF) Mr. Aminu Ahmed Galadima has assured beneficiaries of its scholarship programmes studying in foreign universities abroad that the Federal Government through the Fund will continue to meet its financial and other obligations that will ensure that existing scholars complete their study and research programmes and get the full benefit of PTDF Overseas Scholarship Scheme which is to develop the capacity of Nigerians to effectively operate and manage the oil and gas sector.

Mr. Aminu Galadima who gave the assurance in an interview in his office, said that although the Fund is vigorously pursuing its domestication drive to satisfy the local content aspiration of the Federal Government, it was however not resting on its oars to keep the existing beneficiaries of the Overseas Scholarship in school.

He said that in appreciation of the existing constraints in accessing funds to sustain the programme, PTDF acted proactively by engaging relevant stakeholders such as the Central Bank of Nigeria, the scholars, and representatives of the universities abroad. This he said resulted in creating a positive window for the Fund.

"*I am happy to say that over the past few months, we have been meeting all our obligations. Before then, we engaged the universities where we have students, to assure them that we are on top of the situation and will try as much as possible to meet our obligations and that has been done. So far we don't have much problems in terms of payments, our scholars are receiving their payments as at when due, so too are the universities; so government is doing everything possible to ensure that we meet our obligations*".

The Acting Executive Secretary also made known his desire to chart a new direction in the implementation of the Fund's education and training programmes by concentrating more on in-country trainings. "*We are looking at some other cost reduction programmes like the split-site PhD where our students will spend two years here in Nigeria and maybe a year outside the country to do some laboratory work. In essence what we are saying is that in the future we will look at focusing more in-country training and less overseas trainings. Don't forget we have an understanding with some other universities in Brazil and Germany among others for tuition free programmes that we will only pay cost of living allowance which is just about a quarter of what we usually spend on our sponsorships. So we will promote in-country capacity development without compromising global standard*" ■

NEW DIRECTIONS FOR PTDF

As paucity of funds due to shortage and irregularity of signature bonuses (the main source of PTDF funding) has become a daily reality for PTDF, the management of the Fund took the pragmatic step to prioritize Education and Training programmes. This led to more priority and concentration on human capacity-building activities, particularly:

1. Local Scholarship Scheme (LSS)
2. Overseas Scholarship Scheme (OSS)
3. Welder's Training and Certification Programme (WTCP)

As a result, the Fund has de-emphasized infrastructural development or institutional capacity-building activities. However, on-going projects are being implemented in phases as funding level permits while suspending capital-intensive projects.

The Fund is working towards cost-reduction to achieve more with less resources through diversification of training institutions and the search for new training partners and more cost-effective training opportunities. For instance, the Fund has reached advanced stages in partnership arrangement with training institutions in America, Brazil, and Germany. PTDF is about to sign agreements and MOUs with these new development partners with a view to breaking the monopoly of UK-based training partners. Some of the new training partnership will lead to free or lower tuitions, shared accommodation fees and lower living expenses etc.

To cut down costs, PTDF has had to remove the fat from benefits that accrue to its scholars. For instance, married PhD scholars used to enjoy the luxury of PTDF buying air ticket not just for the scholars themselves but also for their spouses and two children. To reduce costs of and increase the number of scholarships that the Fund can provide, PTDF has restricted funding to only scholars.

In line with the Federal government's enunciated policy objectives of local (Nigeria) content development and evidenced-based sustainable development, the Fund put in place the following policies and practices in order to achieve the stated objectives within the Agency.

- Clear critical criteria for award of scholarships and deployment of institutional capacity-building projects;
- Evidence-based development interventions, planning and project execution to be based on verifiable statistics;
- Transparency to ensure that the scholarship programmes and infrastructural development projects and processes of the Fund are open, accessible and predictable(announcement/ relevant information always posted on the PTDF website)
- Efficiency drive which prescribes that practices should be geared towards higher efficiency and more effectiveness by "doing more with less resources"
- Targeting quick wins and low hanging fruits;
- Result- based management: ensuring that the Fund is mandate-focused and result-oriented.

In line with the above policies, the Fund carried out a Skills Gap Audit of the oil and gas sector in order to get appropriate statistics (facts and figures) on the manpower requirements and gaps in the petroleum industry. This was to ensure that educational and training activities of the Fund are appropriately targeted and relevant to the manpower needs of the sector.

The skills gap audit revealed that to promote local content development and promote local participation in the oil and gas sector, the Fund needed to engage in aggressive training of artisans and technicians through deliberate promotion of technical and vocational education and training even as the Fund continues to implement the sponsorship of overseas and local scholarships for undergraduates, Masters and PhD scholars.

Following this, there was a need for audit and capacity assessment of available welding and fabrication training centres across the country. PTDF in collaboration with the Nigerian Institute of Welding embarked on the Audit and Technical Capacity Assessment of identified welding and Fabrication Training Centres/Yards in the six geopolitical zones of Nigeria. This will naturally be followed by capacity enhancement

and equipment assistance where necessary as funding becomes available.

To ensure that PTDF's programmes and projects are better appreciated and more patronized by the target audiences, PTDF Management embarked on cost-effective outreach programmes towards telling the PTDF story better. PTDF is gradually being seen as the leading government agency for developing competent manpower for Nigeria's oil and gas industry.

To promote the employability and versatility of PTDF scholars, the Fund is not only providing academic and technical education to the beneficiaries of its sponsorship, it is also integrating internship, apprenticeship, practical attachments and entrepreneurial skills as compulsory components of its training programmes. As the funding level of PTDF improves, provision of start-up funds to graduates of it technical and vocational education (welding and fabrication training) will become a policy to empower those who wish to go in to self-employment

PTDF is currently working on effective utilization and proper management of some of the key training institutions it has established around the country for gradual domestication of capacity building for the oil and gas sector. For instance, it is proposed that the National Institute for Petroleum Policy and Strategy (NIPPS), Kaduna will serve as the National Coordinating Centre for Alternative Energy Training, Research and Development ■

PTDF is currently working on effective utilization and proper management of some of the key training institutions it has established around the country for domestication of capacity building for the oil and gas sector.

APPA EXHIBITION 2016

Ag. Executive Secretary PTDF Ahmed Aminu Galadima conducting the Vice President Prof. Yemi Osinbajo and Minister of State, Petroleum Resources Dr. Ibe Kachikwu round PTDF Exhibition Stand at the recent APPA Conference and Exhibition in Abuja.

PTDF HOSTS 2016 OLOIBIRI LECTURE SERIES AND ENERGY FORUM

The Petroleum Technology Development Fund (PTDF) provided a platform for oil and gas professionals to deliberate on current global realities in the industry, with particular emphasis on technological advances in hydrocarbon exploration and exploitation as panacea to global oil price instability.

This was under the auspices of the Society of Petroleum Engineers, Nigerian Council which organised the 2016 Oloibiri Lecture series and Energy Forum at the PTDF Tower, Abuja.

The Honourable Minister of State, Petroleum Resources, Dr. Ibe Kachukwu who was the guest of Honour, was received at the PTDF premises by the Acting Executive Secretary Ahmed Aminu Galadima and officials of the Nigerian Council, Society of Petroleum Engineers. There were representations by the National Assembly, Department of Petroleum Resources, SNEPCO, Petroleum Technology Development Association of Nigeria, NNPC, private operators as well as experts in the oil and gas industry and the academia.

The Oloibiri Lecture and Energy Forum is an annual lecture series focused on contributing to oil and gas policies development for Nigeria in commemoration of the first oil well drilled in Nigeria by Shell Darcy at Oloibiri, Bayelsa State in 1956.

According to the convener of the event, Chairman SPE, Nigerian Council, George Kalu, the 2016 lecture series reviewed advances in oil and gas activities aimed at mitigating the effect of low oil prices and how these will help chart the right course towards a sustainable future for the Nigeria oil and gas industry.

The Acting Executive Secretary, Petroleum Technology Development Fund Ahmed Aminu Galadima in his address explained why PTDF is serving as the official host of the event. He also used the opportunity to enumerate the achievements of the various intervention programmes of the Fund. *"The mandate of PTDF is to develop capacity in Nigerian oil and gas industry through the building of human and institutional resources, as well as the promotion of research and the acquisition of relevant technologies. We have, since inception, actualised our vision and mission through many initiatives, some of which are: Provision of local and foreign scholarships to deserving Nigerians at undergraduate and postgraduate levels in study areas relating to the oil and gas industry. Complete upgrading of study facilities in selected faculties, related to oil and gas, in universities across all the geopolitical zones of Nigeria. Development of oil and gas institutions to cater for low, medium and senior level manpower needs of the Nigerian oil and gas industry. Strategic collaborations with stakeholders in the industry, towards building their capacities and enhancing their contributions to the growth of petroleum resources. The endowment of Professorial Research Chairs in oil and gas related faculties in Nigerian Universities. Promotion of research through the Annual Oil and Gas Grant Competition. Provision of specialised training in oil and gas related fields such as welding and fabrication, engineering design, drilling, geosciences software, piloting, and security. Promotion of innovation in the teaching of oil and gas related courses in our universities through the University Lecturers Skills Enhancement Training Programme (ULSETP), in collaboration with some European Universities. Industry based training, targeted at personnel in government, professional associations and other stakeholders in the oil and gas industry. It is on this premise that we have, in alliance with the Society of Petroleum Engineers, undertaken to host this annual event and subsequent monthly technical meetings of the SPE Abuja Section".*

The Minister of State, Petroleum Resources, Dr. Ibe Kachikwu said the occasion provides the opportunity to interact with key players in the industry especially now that Nigeria and the global oil industry need new types of technology that will achieve the best value chain out of the sector. Dr. Ibe Kachikwu said that although the oil price situation has been very challenging, his shuttle diplomacy to major oil exporting countries like Saudi Arabia and Russia is beginning to yield positive results as for the first time both countries and others in the cartel are agreeing to work together, the result of which is the inching up of oil prices ■

"PTDF IS TOO RELEVANT NOT TO BE IN THE NEW PETROLEUM INDUSTRY BILL (PIB)"

...Minister of State, Petroleum Resources

The Petroleum Technology Development (PTDF) is one of the agencies of government under the supervision of the Minister of State, Petroleum Resources. The Minister of state, Dr Emmanuel Ibe Kachikwu in an interview spoke on the relevance of PTDF in the Petroleum Industry Bill.

Q: May we know the current status of PIB. Is there a place for PTDF? Does PTDF have any relevant role in PIB?

A: First, it's the National Assembly that is in charge of driving PIB, we are working on collaboration with them. I am unable to answer questions in terms of what PTDF status is going to be because it's still a work in progress. For what I know, there are a lot of institutions that have been created that are going to be saved under the structure to enable us work together. There are configurations here and there, the supervisory and the regulatory levels, but most of the institution so far are saved in there, but you know this is just the beginning. We are just at the draft stage, after that, they are going to have a debate, so I am unable to say categorically, since I am not a member of the assembly. But my push, if you ask what will be my own suggestion is that, the place of PTDF should have come to stay by now. Even though we are going to have a lot more inclusive management in terms of whether they are going to fall under a particular department in the Ministry or not, but in terms of independence that they have enjoyed to be able to drive the things that they do drive, It's very critical for the industry, it's too early to begin to think otherwise. So I will encourage it, and will work towards its survival.

Q: Some time ago you were quoted as saying that, there is necessity to bring in some foreign nationals to also take part in our local companies particularly NNPC. As PTDF and a capacity building agency, we are a bit apprehensive, could you clarify exactly what your thoughts are on the issue?

A: NO! I did not say that we should bring in foreigners, to work in NNPC. We are dealing with a specific branch of NNPC which is the NPDC. If NPDC is going to compete, it will compete on the universal level, it can't play as a local Nigerian company, to want to take part in mainstream oil exploration, and production and so far, we haven't done it right and so what I said, was that we are going to bring-In experienced hands, experienced hands could be Nigerians not necessarily expatriates, that will bring more value to the table than Nigerians do, but we are looking at being able to get outside the NNPC box and bring in, they may well be Nigerians, they may well be in critical areas where we think in collaboration with technical foreign organizations is essential to drive this sought of skill sets, so we are not saying we are going to bring from outside to run NNPC. NNPC has enough hands to run itself, it just requires efficiency and policy direction ■

PTDF, ACADEMIA CONVERGE TO CHART A RENEWABLE ENERGY PATH IN ADDRESSING NIGERIA'S FUTURE ENERGY CHALLENGES

Finding alternatives to hydro-carbon based energy systems has become a matter of economic and environmental expediency. Nigeria's huge oil and gas reserves has been the basis for monetary and fiscal policy plans and projections. There is an estimated 35 billion barrels of oil, 187 trillion cubic feet of gas and 4 billion metric tons of coal and lignite. Notwithstanding this huge profile of untapped oil and gas deposits, the fact that Petroleum Crude is a finite resource that will one day be exhausted makes it imperative to look into the future and plan ahead to meet this imminent challenge.

The Petroleum Technology Development Fund (PTDF) in line with its mandate to finance and participate in Seminars and Conferences that are connected with the Petroleum industry in Nigeria and abroad organized a very successful seminar with the theme "Addressing Future Challenges of the Energy Sector – The Renewable Path". The event organized in collaboration with Cranfield University, London took place at the Corporate office complex of the Fund. It was attended by major stakeholders in the oil and gas industry particularly members of the academia with bias for alternative energy sources and resources, assembled to chart a new course in exploring renewable energy sources.

Acting Executive Secretary, Petroleum Technology Development Fund, Aminu Ahmed Galadima, said that the drop in oil price which provides for more than 90% of Nigeria's revenue makes a critical examination of future energy challenges even more significant with renewable energy being a viable way out. In developing, promoting and implementing Petroleum Technology, PTDF has over the years sponsored M.Sc and PhD scholars in oil and gas related courses and research including renewable energy.

In addition PTDF under its university upgrade programme established a centre for renewable energy and research at the Umaru Musa Yar'adua University, Katsina as well as endowed Professorial chairs in renewable energy. This is part of its desire to shift emphasis from the normal petroleum resources and focus more on exploration of other unconventional petroleum and energy resources with huge potentials for creating job opportunities, boost Nigerian's revenue base and ensure full diversification of the economy.

Mr Galadima said that, the PTDF and Cranfield University have been in collaboration since the inception of the Fund's flagship programme, the Oversea Scholarship Scheme (OSS), in which 250 MSc and 49 PhD scholars have so far been trained at Cranfield University with 14 scholars currently undergoing studies at the university. He said that, the collaboration with Cranfield University is coming at the right time when PTDF is considering a domestication of its training programmes which will encourage more partnership with institutions that are willing to come and partner with our local institutions for in-country trainings.

"*The framework will be such that the collaborating institutions will jointly fund the research and in some cases other components of the scholarship. Those are just part of PTDF's passionate commitment to effectively discharge its responsibilities in developing not just international scholarship but also to impact the Nigerian educational sector through our numerous programmes with schools, polytechnics and universities for in-country knowledge importation*".

The Fund has through its OSS

programme sponsored many Msc and PhD scholars in oil and gas related courses including renewable energy.

PTDF he said, proposes to train fifty (50) more scholars in renewable energy made up of 30MSc and 20PhD students who on graduation are expected to return to Nigeria and impart the knowledge in-country.

In a keynote, the Minister of State, Petroleum Resources, Dr Ibe Kachikwu represented by the Director, gas ministry of Petroleum Resources, Alhaji Armaya'u Kurfi enumerated the declining price of fossil fuel/crude oil, massive energy shortages, high rate of unemployment and the grim reality of a changing climate as justifications for the need to build capacity in renewable energy.

While accepting that the Petroleum Technology Development Fund (PTDF) has within its short time of existence as a fully functional agency of government made substantial contributions to capacity building of Nigerians in the oil and Gas sector, it is necessary for the institution to invigorate the building of necessary capacities in the renewable energy sector value chain. To fully harness and transform the potentials of renewable energy sources in Nigeria into catalysts of economic development, the Minister of state petroleum resources said more capacities must be built to identify, explore and manage the renewable options.

They were presentations by notable scholars and energy experts at the workshop.

In a lead presentation, which addressed the theme of the workshop, Head of Energy theme, Cranfield university, London Professor Feargal Brennan, said for Nigeria to achieve success in renewable energy development, it should not rely on models of renewable infrastructure that were developed elsewhere. He said it is impracticable to rely solely on renewable as energy source.

There were other presentations of academic papers on the subject matter of the workshop. These include "*an overview of the workshop expectations towards research that will drive economic development*" by Professor Obilano of the department of crop, soil and pest management, Federal University of Technology Akure, "*Solving the Nigerian power problem with distributed clean power generation*" by Professor Olulafe,Director, Centre for Renewable Energy, Technologies, Federal University of Technology Akure, and "*overview of the achievements and challenges of the centre for renewable energy and research, Umaru Musa Yar'adua University, Katsina*" by the PTDF chair holder and Director, Dr Abdullahi Mati.

This is the first time PTDF as a capacity building agency is organizing a workshop devoted exclusively to current issues on renewable energy which cuts across petroleum energy to electricity and power generation. The idea being to harvest ideas, identify pathways for development and skill set for the exploration and management, determine the gaps and define critical milestone towards the attainment ■



Leading Advocacy for the Engagement of PTDF Scholars and Beneficiaries of its Training Programmes

The establishment of the Petroleum Technology Development Fund by the Federal Government was a response to the failure of international oil companies to transfer knowledge, skills and technology to Nigerians after years of oil and gas exploration in Nigeria. The increasing capital flight coupled with little linkage between the economy and the oil and gas industry made it more imperative for the Federal Government to step in and take effective control of capacity building in the petroleum sector. The goal was to produce well-trained Nigerians that would take over the roles that were being played by expatriates in the oil and gas industry, thus ensuring the effective deployment of Nigerian professionals in the management and operational segments of the industry. The establishment of PTDF in 1973, was therefore the first major step by the Federal Government at institutionalizing the policy of local manpower development for the oil and gas industry.

PTDF has made heavy investments in its indigenous capacity building programmes over the years with corresponding significant results. Based on industry skills gap audit, thousands of Nigerians have been trained in world class institutions. Over 1200 welders have been trained and certified. Other trainings have produced certified helicopter pilots, under water welders, drilling engineers and the list goes on.

The Fund's achievements in its core mandate of capacity building may be legendary, and illuminate government's Nigerian content aspirations, but it suffers a deficit when the products of the Fund's training and education programmes are placed against the employment index in the oil and gas industry.

The clear message is that PTDF mandate is not an end to itself. It is apposite to look beyond the capacity building core of the Fund's mandate to the end result for which capacity is being developed.

Indeed answers to the following questions will not only present a coherent appreciation of the situation, but will give a proper perspective on the dilemma which requires enforcement of specific provisions of existing legislations on local content and of course the political will to apply the law appropriately. These (questions) include:

- What fraction of PTDF Scholars and graduate trainees get absorbed into the oil and gas industry on completion of their courses and training programmes?
- Since PTDF investment was based on an industry skills gap audit, why are the oil companies not engaging the products?
- After investing heavily in training Nigerians, what becomes of them and the investment?

PTDF is obviously incapacitated as far as compelling oil companies to engage its trainees, but this doesn't mean that the Fund must stand idly by and allow government investment on capacity development go to waste. As a leading government agency in capacity building PTDF has an implied role to lead advocacy on the issue of engaging Nigerians in the oil and gas industry since no other agency of government has the means of knowing what skills and competencies exist within Nigeria.

In doing this, PTDF would need to collaborate with government agencies like the Nigeria National Petroleum Corporation NNPC, National Petroleum Investment Management Services, NAPIMS, Nigerian Content Development and Monitoring Board, National office for Technology Acquisition and Promotion, the Raw Material Research and Development Council, Industrial Training Fund, and the Nigeria Immigration Service to form a common front for promoting and guaranteeing Nigerian Content. This coalition, would represent a synergy between capacity development in the oil and gas sector, regulatory power of the oil and gas industry operations, the management arm of all PSC's and JV's and the body responsible for issuance of expatriate quotas and work permits, without which oil and gas companies cannot bring in foreigners to work in Nigeria ■

PTDF currently funds Capacity building, but beyond that capacity promotion is next…

Dr. Mohammed Ibrahim, mni
Oil and Gas industry expert

What are your expectations from the Fund with regards to its name Petroleum Technology Development Fund?

I think PTDF should get a catch phrase that would make it to be seen as an agency of government that is promoting sustainable capacity development in the industry rather than just building capacity in the petroleum industry.

Do you think PTDF has done well in addressing these expectations?

If you know the history of PTDF, it used to be just a table in the Department of Petroleum Resources (DPR), till it was brought out as a fully-fledged agency in 2001, under the Ministry of Petroleum Resources. Clearly PTDF has done exceptionally well in achieving the mandate for which it was set up. It has provided scholarship to quite a number of Nigerians and today you have a lot of PTDF scholars all over the world contributing their quota to the development of the hydrocarbon industry globally. Even though the main objective of PTDF is to build capacity for the Nigerian oil and gas industry, but because of the global nature of the industry, quite a number of PTDF scholars have found their way out of the country into different theatres of the hydrocarbon industry worldwide and in years to come many will come back with their wealth of experience to contribute and be a part of the new generation of leaders in the industry in Nigeria.

There's no doubt whatsoever that in building capacity in the oil and gas industry, PTDF has done exceptionally very well. PTDF has financed researches in the various aspects of the industry and even moving to the renewable, that is also building capacity and deepening our knowledge and control of the oil and gas industry through research findings. And the good thing is that most of these researches are coming out to become patents, and once you get to the point of patenting outcomes of researches, obviously you are contributing to knowledge, but most importantly you are contributing to the development of the industry because you are addressing industry specific needs. With these, there is no doubt PTDF is doing exceptionally well.

What about the issue of engagement of qualified Nigerians in the oil and gas industry, particularly PTDF Scholars?

PTDF currently funds capacity building, but beyond that capacity promotion is the next. For example if you look at your data base you will see thousands of Nigerian experts that are PTDF scholars, but thousands of them are in the job market not because there isn't opportunity for them to contribute their own quota to the industry and to bring to bear those skills and knowledge they have acquired. But there's no linkage, no inter agency relationship between the various agencies that should have encouraged this promotion of the use of PTDF scholars in the industry, For example the National Office for Technology Acquisition and Promotion (NOTAP), what NOTAP does is this, if for instance an oil company were to come and say we require 1,000 expatriate petroleum engineers and geologists, what they do is to go to the Ministry of Internal Affairs, specifically the Immigrations and apply for expatriate quota.

The Ministry of Internal Affairs might probably go ahead and grant them approval, however they should by law consult with NOTAP to find out if we have these experts in this country? And what NOTAP should do is to come to PTDF and say we have a request for a thousand geologists, do you have in your data base Nigerians who are qualified, who meet the requirements, and if PTDF has they would make this known to NOTAP who would forward it to the Nigerian Immigration Service and Ministry of Internal Affairs, who would in turn contact the company with the list, and also ask them to interview the experts. It's only when you don't have them in the country that we can allow you bring in expatriates. If at the end of the day out of the 1000 we can only provide 950 Nigerians that would mean 950 Nigerians that would be employed.

PTDF should also create a linkage with the Nigeria National Petroleum Corporation (NNPC) for instance; I am aware in this country even the downstream sector of some companies that have no basis to, but yet bring in expatriates. If there's a linkage between PTDF and NNPC through NAPIMS because they are the management arm of NNPC that manages the JV's and PSC's, therefore they know the needs and requirements within the JV's and PSC's in terms of manpower. Therefore there's need for more collaboration between the NNPC, PTDF, NOTAP, NAPIMS, Ministry Of Internal Affairs and Nigerian Content Development & Monitoring Board so that PTDF scholars that keep coming can gain employment ■

The Need to Engage PTDF Scholars

Nigeria today has a recognizable number of trained manpower in relevant fields to fit into the oil and gas sector. This situation cannot be compared with what was obtainable in the past where there was a shortage of supply of relevant manpower in the sector. For example, PTDF has over the years trained not less than 1600 Nigerians in welding, fabrication and machining skills. Over 4000 have acquired higher degree in relevant oil and gas disciplines in the oversea scholarship scheme. International oil companies no longer have reason to continue to engage foreigners to the detriment of well trained Nigerian Professionals.

Aside from the increased manpower in technical skills, PTDF has made tremendous impact in training quite a number of Nigerians in undergraduate, Masters and PhD studies in areas such as Chemical Engineering, Environmental Technology, Petroleum Engineering, Geo-Physics and Geology. Surprisingly, the impact of PTDF's intervention is also felt abroad. Most companies in Scotland, Aberdeen have Nigerians trained by PTDF manning their facilities. Some PTDF ex-scholars have also found work engagement in Houston, Texas and in Canada.

The international recognition and utilization of PTDF Scholars proves that PTDF is contributing immensely to the improvement of the local capacity requirement of the oil gas sector. Though we have qualified Nigerians engaged in the industry here in Nigeria, there are challenges which have to do with the International Oil Companies (IOCs) preferring to bring in workers from their countries even where such required skills abound in Nigeria. This can be curbed if the expatriate quota and the Local Content Act are strictly enforced. This argument is re-enforced by the fact that in some instances it is cheaper for the IOCs to have Nigerians with relevant qualifications in positions rather than importing their people. It is glaring that counting on the goodwill of the IOCs to have qualified Nigerians employed cannot work. It can only be achieved by compulsion.

The fact is that the oil and gas resource is a natural endowment, we have a duty to ensure that, value is added to it by ensuring that Nigerians are involved in the technical operations of converting the crude into refined products; by ensuring that the inputs used in the processing are largely locally sourced, and that the managers are Nigerians.

Processing crude oil into several petroleum products, adds significant values, one of which is the creation of employment and by-products such as DPK, PMS, AGO. When the crude is exported in its raw state, it means jobs are being exported. So also is the export of hard currency creating capital flight. PTDF is helping to empower Nigerians by imparting knowledge, the technical know- how to transform what is a gift of nature from a crude form to a more refined form where it can attract more revenue to them ■

Implementation of programmes, projects and activities of PTDF in the year 2016

The General Managers of PTDF Head Departments whose collective implementation of programmes, projects and activities will aggregate the success of PTDF in the year 2016. How do they plan to do this? PTDF Digest spoke to them.

Ahmed Galadima Aminu, *Ag. Executive Secretary PTDF/General Manager, Education and Training Department*

"We run the flagship program of the Fund, ie the Overseas Scholarship Scheme. Advertisement for the next award was done around September/October 2015, and we have just completed the screening to shortlist qualified candidates for aptitude test for the Master's Degree awards. We plan to conduct the test in three (3) centers across Nigeria; Abuja for the North, Lagos for the West and Port- Harcourt for the South and South-East.

The aptitude test would be conducted sometime next month after which we select successful candidates based on merit and reflecting federal character. We also hope to conduct interviews for the PhD scholarship in April this year. For the local scholarship scheme which we instituted in about 23 PTDF upgraded universities across the country, we are working towards the next award cycle. Indeed we have gone far in our preparation, and hope to conclude within the first quarter.

Apart from the scholarship schemes we also have the University Lecturers Skills Enhancement Training Programme.This is designed for lecturers in training positions to improve the quality of teaching and research in our higher institutions. We have trained about 90 Nigerians both in the United Kingdom and France. In the UK 40 beneficiaries were sent to the University of New Castle, while fifty (50) were trained in Grenoble Graduate School of Business, France. This year we are concentrating in domesticating the programme. We couldn't do that last year due to some issues with our partners, but this year we intend to run the program in-country.

This year we also hope to conduct some vocational training programmes for young Nigerians. We have tried to collaborate with the United Nations Office for projects (UNOPS) for some short, hands-on training programs for our youths. We hope to conduct this training this year too.

We are also reaching out to other countries for training partnerships because in the past we have concentrated on only the United Kingdom and United States. Now we are reaching out to countries like Brazil (where higher education is tuition free) for the overseas scholarship scheme. So we only have to take care of accommodation, living allowances and tickets. The amount of money we will spend is small compared to what we have been spending on students in the UK. What we spend on one student in the UK can be used to fund about five students in Brazil. We are also working on similar arrangements with German Institutions where the tuition fee is also free. The focus this year is to collaborate with other countries where we do not have to pay tuition so that we can take advantage and send more students there. We also plan to commence an annual or bi-annual policy dialogue series, to address topical issues such as the dwindling oil price.

Jacqueline Guyil, *General Manager, Nigerian Content Department*

"For year 2016, the Department plans to strengthen its capacity training programmes with a view to making beneficiaries more employable in the oil and gas sector. The Fund will collaborate with Nigerian Content Development and Monitoring Board in the training of 100 Geoscientists under the Geosciences Training Programme (GTP).

For the Engineering Design Training Programme (EDTP), the Fund is looking at training 80 Graduate Engineers this year, to acquire proficiencies in the use of Engineering Design Softwares for the execution of engineering projects in the oil and gas industry.

The Oil & Gas Field Training Programme (OGFTP) is a new offering that will provide specific training in oil and gas field and production operations. The Department plans to train 20 Engineering Graduates and 50 Technicians this year under the programme.

Other training programmes that the Department hopes to run this year include Drilling Engineering Training Programme to build capacity in well and reservoir operations technology, offshore vessel operations training programme, process engineering software training programme and project management and certification programme.

A major accomplishment for the year 2016 will be the tracking of all our trainees to create a data base of competencies developed by PTDF with a view to launching a portal of PTDF professionals in the oil and gas industry.

In order to deepen capacity in advanced welding in Nigeria, the department has commenced training of 130 Nigerians in

advanced welding in-country, while 70 more trainees will commence the programme in the second quarter of the year. We shall also flag-off a train-the-trainer programme on non-destructive testing, an aspect of advanced welding competence. Nigeria at the moment lacks competent instructors in non-destructive testing. 20 Nigerians will be trained as instructors in this field in Turkey to fill the gap.
These and many more programmes are the Department's projections for the year 2016 and we will make sure they come to fruition".

Mr. Jide Adebulehin - *General Manager, Strategic Planning, Research and Documentation Department, PTDF*

"In the year 2016, the Department of Strategic Planning and Documentation intends to review the responsibilities of other Departments in the Fund, improve inter departmental relationships and ensure that all the programmes and activities of every department, add value to the oil and gas industry and properly position the Fund to be more relevant in the industry. Specifically in the area of research and development, the department intends to review all the research programmes to ensure that only research topics and areas of specialization whose output will add value to the oil and gas industry are sponsored by the Fund. Also, the Department this year intends to pursue the commercialization of our Research outcomes such that all researches that are closed out will be properly commercialized".

Mr. Balarabe Z Ahmed - *General Manager, Legal and Secretariat Services Department, PTDF*

"Our expectation for 2016 is that we are going to consolidate on the gains of last year 2015.That is putting ourselves on our toes so that we can remain above board and remain the conscience of the Fund, ensure that we key into the new government zero tolerance for corruption and insistence on due process. We see us this year assisting all departments, because the Legal and Secretarial Services Department is a support department. So we make sure that all the departments are assisted in such a way that they carry out their activities whether concerning staff or third parties in line with the rules and extant procedures established by the public service rules and PTDF conditions of service.

This year we plan to bring our stakeholders together with the sole purpose of finding out how we can generate more money for the Fund. We have seen that over the years we only rely on one source of funding that is money coming to PTDF as a result of agreement between oil companies and the Federal government for the purpose of oil exploration or mining concessions, but there are other sources like monies that are set aside by the Federal Government for the purpose of training and education in oil and gas industry. We have never been able to capture that, and there are monies that are freely donated by the IOCs for the purpose of training and education in oil and gas. So we intend to bring in stake holders like DPR, NNPC, IOCs and staff of the Ministry of Petroleum Resources and of course the National Assembly, to see how we can broaden and widen our sources of income because the last five (5) or six (6) years, there has not been any oil licensing round. So because of that, the money available for PTDF activities have actually been dwindling by the day, so we have to be ready to be active. As part of our Plans this year, we will organize a conference to explore within the context of our law how much we can get outside our traditional source of our Funding.
It is our expectation that this year PTDF will ensure that all the entitlements and rights of staff are settled without much ado. We are going to ensure that laid down procedures are followed in treatment of staff matters without discrimination. So by and large we have a lot of expectations this year".

Mrs. Ifeoma Nwokike - *General Manager, Project Department, PTDF*

"Project Department is the arm of PTDF that handles institutional capacity building aspect of the PTDF mandate and is currently executing lots of infrastructure development projects across all the geopolitical zones of the country. We intend to complete majority of them in 2016 and hand them over to the beneficiaries who will put them to use.
In terms of new infrastructure development projects, we are looking to commence upgrade of technical colleges in Nigeria. From the review of the skills gap audit that was carried out by PTDF we realized that there is a dearth of technical skills comprising low and middle level manpower that feeds the oil and gas industry. Technical Education in the country is almost extinct and PTDF will want to be part of the process to reviving technical education in Nigeria given its importance in the provision of skilled low and middle level manpower for the oil and gas industry. We hope to commence this in 2016".

Mr. Ahmed Nasiru Dannupawa - *General Manager Administration and Human Resources Department, PTDF*

"Essentially the Administration Department is responsible for procuring all office equipments and assets of the Fund e.g. pool of vehicles, store items, the building, equipments, machineries, furniture etc. Basically this year the department intends to facilitate the smooth operation of the Fund. We will ensure adequate security for the Fund in both the old office in Area 11 and the new one in Central Business District.

For the Human resources department its main function is to recruit the best hands, the best brains as staff for the Fund. We also have responsibility of motivating and training them so they can be highly productive.

As it's the culture in PTDF we strive to improve on the capacity of staff through training programmes. We also plan in-house workshops to train staff in various identified areas in which the staff are not competent. We also plan to carry out the conversion of junior staff who have met the criteria to become senior staff. We also intend to promote staff that are due for promotion this year"

THE PTDF STRATEGY

In executing its mandate, the Petroleum Technology Development Fund employs a multifaceted strategy to building indigenous capabilities. These include:

- Identifying and upgrading in-country facilities & capabilities to meet international standards
- Developing and channeling indigenous human capabilities into needed competencies
- Funding of research and professorial chairs for knowledge and technological acquisition and development

PTDF DEVELOPS A PETROLEUM POLICY AND STRATEGY INSTITUTE FOR TOP MANAGERS IN THE OIL AND GAS INDUSTRY

International Conference Centre, NIPPS, Kaduna

There are indications that the multi billion Naira National Institute of Petroleum Policy and Strategy (NIPPS) project being developed by PTDF in Kaduna, Kaduna State since 2009 will eventually be completed and put to use in a matter of months.

Construction of the various components of the project sitting on 90 hectares of land has suffered several delays and abandonment due primarily to funding constraints and non-performance by some contractors.

Life is gradually returning to the site with different contractors handling various components of the project moving back to site. The Project consultant, Arc. Mohammed Dewu, said the initial concept of the project is to provide executive education to top managers in oil and gas institutions in the form of specialized training and refresher courses of between 3 weeks to six months duration. NIPPS is not designed to be a degree awarding institute, but a policy institute covering all segments of the oil and gas industry.

With expansion in the scope of the project a graduate school was added to provide vocational and technical skills to prepare fresh university graduates in oil and gas related disciplines, for practical engagement in the oil and gas industry.

In addition, a five star hotel was incorporated into the design to host oil and gas industry managers who will be attending different courses in the institute at intervals.

Generally the institute is divided into academic area and ancillary facilities. These are made up of Management wing, Administrative block, Library, Technology Development wing, a Central Arcade, Mosque, Graduate School, Estate Department, Student Hostels, Chapel, Clinic, International Conference Centre, residential buildings and sewage treatment, laboratories and staff school.

Most of the structures have reached advanced stages of completion while majority of the equipment and infrastructure required to effectively operate the institute have been procured but awaiting installation.

The 5 star hotel Component of the International Conference Centre is fully completed. A 33KVA transformer for dedicated public power supply has been provided. Other facilities already on ground include; Cameras for CCTV monitoring of the entire facility, 3 Generating sets of 4,500 KVA each, while equipment for the academic area such as process laboratory, training rig, training refineries and workshop equipment are awaiting delivery.

Other components of the project that are nearing completion include the shopping complex, clinic and the library. The facilities for the academic wing will be IT driven with about 4 laboratories dedicated to online

Inside view, International Conference Centre, NIPPS, Kaduna

real time transmission of lectures to participants from outside the country.

Three (3) of the academic blocks are also nearing completion while 3 out of the 4 hostels are between 60-80% completed. Work is also advanced in the multipurpose indoor sport hall, central sewage system, boreholes and reservoirs.

"THE PROJECT IS ON COURSE"

- Arc. Dewu, Project Consultant

"Once in a while there are hiccups in project implementation but that does not mean abandonment. We are almost at the completion stage. By and large we have come a long way and we have overcome the major difficulty in that the civil works are 80-90% completed. What we have are some finishings here and there. We will now have to phase the completion of the different components. The ones that are almost completed will be given priority while the completion of those that are less than 70% will be phased. Gradually we will complete all the structures and then the full benefit of the project will be appreciated. The relevance of the institute as a training and research facility for oil and gas managers cannot be overemphasized; it will have a positive impact on the economy of Kaduna state. It is also expected to be hosting oil managers from Sudan, Cameroun, Algeria, Mali and many other African Countries who recently found oil in commercial quantity. It will also increase phenomenally the employability status of Nigerian graduates of oil and gas related disciplines".

Management Wing, NIPPS, Kaduna

Administrative Building, NIPPS

PROJECT HISTORY

The Institute began as National Centre for Petroleum Studies, Kaduna established by the Nigerian National Petroleum Corporation (NNPC). It operated from a temporary site along Yahaya Road within Kaduna town, but was allocated land by the Kaduna State Government for the development of its permanent site at the Trade Fair Layout.

Subsequently, the Federal Government sought to develop the center into a college of international standard to be known as National College of Petroleum Studies Kaduna (but later renamed National Institute of Petroleum Policy and Strategy - NIPPS), for the training of senior technical and management staff in the nation's oil and gas industry. This was approved by the Federal Government as part of the programme of action for the Petroleum Technology Development Fund (PTDF).

The Fund consequently took steps to ensure the successful implementation of the project, which included wide consultations, benchmarking visits to similar institutions abroad and engagement of consultants, with a view to providing appropriate facilities and infrastructure for the College.

Work on the project commenced in July, 2009 and will on completion, provide training for executive, top management and technical personnel of the nation's petroleum industry and the entire Gulf of Guinea region.

PROJECT LAYOUT

The National Institute of Petroleum Policy and Strategy (NIPPS) is laid out to depict a typical academic environment. The institute is divided into three major areas as follows:

- Core Academic Area comprising administration block, management development wing, technology development wing, library and graduate studies wing.
- Ancillary Buildings comprising students' hostels, residential buildings, staff school, clinic, maintenance yard, mosque, chapel and indoor sports hall.
- International Conference Centre comprising a hotel, auditorium and shopping arcade.

Shopping Arcade, NIPPS

Technical Wing, NIPPS, Kaduna

The following components of the project have attained practical completion level:
Library, staff quarters, lnternational Conference Centre, Mosque, Chapel, Staff School and Shopping arcade
The on-going projects which are at various levels of completion include the Administrative Block, Technology Wing, Management Wing, Graduate School, auditorium, Multi-purpose Sports hall, maintenance unit, gate house and gates.

The ancillary facilities for the project include Independent Power Generating Plants, Transformers and Power Reticulation facilities, Boreholes and Water Reticulation, Road Network and Drainage system, Sewage and Sewage Treatment Plant, Fire Hydrant System, Surveillance System, Street Lights, Fire Detection and Alarm System, IT Backbone and Infrastructure, Public Address System and Electronic Display Boards.

OWNERSHIP AND ADMINISTRATIVE STRUCTURE

The ownership, administrative structure and curriculum for the institute are yet to be concluded. Part of efforts made in that regard was the setting up of an advisory project implementation committee, responsible for developing the structure and curriculum. However, the facility will serve as the institutional framework for domesticating some of the Fund's training programmes in-country. In this regard an Alternative Energy Research and Development Centre to drive research in Renewable Energy Resources and a Centre of Excellence for welding and fabrication training will be established in the institute.

Kaduna State Governor, **Malam Nasir El-Rufai** also visited the project site. The Governor's attention was drawn to a major problem frustrating the progress of construction work i.e. encroachment. A lot of illegal structures have encroached into the layout of the project, whose land size of about 90 hectares is covered by Kaduna State Government title. Another area requiring the immediate attention of the Governor is the bad condition of the access road to the main entrance of the institution. The Kaduna State Governor gave his impression of the project "*This is quite impressive, I have been driving by and noting the facility that stands out. I didn't know that so much work has been done here, I am quite impressed. A lot of work has been done, billions of naira has been sunk, but what is sad is that the investment is being allowed to remain uncompleted and not put into use, and this is a sad Nigerian story. What I hope is that in the next few months, there will be accelerated completion of this facility, so that it is put to use, because for us in Kaduna it is not only a source of pride but also a source of jobs for our people, as well as bringing more and more oil and gas professionals to Kaduna to appreciate the beauty of our city and the peaceful nature of our state. So I am going to take it up with the Federal Government to see to the early completion of the project.*

On encroachments, we will look at it, if they violate the law, we will take care of it. We don't allow those that break the law to get away with it in Kaduna State, but it requires some investigation and study. We will ensure that the college is protected. We will stretch our resources to see that this college gets the attention it deserves"

With the advanced stage of developing the project and the heavy financial investment already made on it by the Federal Government through PTDF, the only way forward is to immediately complete it. However, completing the project and deriving maximum value from it, calls for careful planning and prioritization. Though the facility could be used for a lot of things, the project was conceived to be a research and development centre in the area of oil and gas. The strategy at this point in time is to complete the structures that are close to completion and put them to some use. It is therefore very important for the resources required to complete it to be set aside, to avoid wasteful deterioration.

The project has the potential of advancing the achievement of the Funds overall capacity building mandate by providing short term refresher courses in the areas of oil and gas.

The Fund is also working on the possibility of partnering with schools in the United Kingdom to use the facility as a Nigerian branch of their institutions as well as utilizing part of the facility for the Funds Alternative Energy Research Centre.

GOVERNOR NASIR EL-RUFAI SPEAKS ON THE KADUNA PROJECT

Governor Nasir El-Rufai gave the commitment of the state government to support the immediate completion of the National Institute of Petroleum Policy and Strategy being developed by the Petroleum Technology Development Fund (PTDF) in Kaduna, the state capital.

The Petroleum Policy and Strategy Centre will on completion serve as a one stop institute for training senior management personnel in oil and gas companies and agencies in Nigeria and abroad by providing refresher courses of between three weeks to six month duration. Fresh graduates in oil and gas disciplines will also undergo vocational and technical internship trainings in the institute to gain hands on experience that will prepare them for engagement in the industry.

The Governor who inspected the NIPPSK project site appreciated the Fund's commitment towards the speedy completion and take off of the institute, a development he said will be of immediate benefit to the state.

"*I have been very much interested in seeing to the completion and take-off of the institute as well. In fact I have been thinking of how we can collectively ensure maximum utilization of it. The two adjoining projects, that is, the National Teachers*

Institute (NTI) and the International Trade fair complex are underutilized, so NIPPS is a very important project to us and I am very happy with the effort being demonstrated by PTDF to make it a reality, you can be rest assured of our support"

The governor directed the state Ministries of Works, Land and Water Resources to form a committee that will work with PTDF to formalize the disbursement of compensation and other matters affecting the completion of the institute. He promised that the state will assist in completing the access roads, water and electricity facilities. The committee will examine the problems militating against the completion and take off of the institute and recommend ways of overcoming them to the state government.

PTDF has proposed compensation in the tune of 105 million Naira to property owners whose lands were appropriated to accommodate some project expansion on the site of the Institute. The Fund envisages a timely disbursement of the compensation to enable the completion of the affected components of the project, especially the perimeter fence and security of the site.The vision of the Fund is to utilize the facilities in the institute to domesticate some of its training programs, establish an Alternative Energy Research and Development Centre given the current drive for alternative energy as well as the abundance of raw materials for bio energy production around the location of the institute, intensify on-going efforts towards oil prospecting in the inland basin. The Fund also desires to set up a Centre of Excellence for training in welding and fabrication given the fact that, indigenous manpower in advanced welding competencies is not only grossly deficient in the country but non-existent in most cases.

The presentation of the N105million compensation to Kaduna State government clears the way for expedited completion of the multi billion Naira National Institute of Petroleum Policy and Strategy Project being developed by PTDF in Kaduna ■

Library building, NIPPS

Graduate School, NIPPS

Back view of International Conference Centre, NIPPS

PTDF COMMISSIONS PILOT PLANT FOR THE PRODUCTION OF ZEOLITE CATALYST

The tenure of PTDF Professorial Chair holder in Chemical Engineering, Ahmadu Bello University, Zaria ended on a promising note with the unveiling of a pilot plant for the production of Zeolite catalyst, an important chemical substance for petroleum refining and for a variety of applications in the petrochemical industry. The major raw material used in the development of the product is the Kankara clay, obtained from Kankara local government area of Katsina state.

The plant located in the university premises was commissioned shortly after the close-out and end of tenure lecture by the PTDF chair occupant, Professor A.S Ahmed, who discovered the novel technology.

The General Manager, Nigerian Content Department, PTDF, Ms Jacquelin Guyil, congratulated the chair occupant for a successful tenure and described the chair endowment in the university as one of the laudable programs and projects initiated and implemented by PTDF to develop relevant indigenous technology for the oil and gas industry. She reiterated the Fund's resolve to continue to invest in research as a vehicle to achieve PTDF mandate.

"In Ahmadu Bello University, Zaria, the issue of Zeolite development is today a success story. It is with delight and high sense of fulfillment to note the tremendous breakthrough in application of novel technology in Zeolite development for industrial use in the country. I congratulate the chair occupant Professor A S Ahmed whose tenure is coming to an end as well as Ahmadu Bello University, Zaria for this great feat. In recognition of this breakthrough, PTDF filed for and obtained the intellectual property right and patent on Zeolite Y catalyst, while the patent certificate for Zeolite ZSM-5 is being processed by the Ministry of Industry, Trade and Investment".

She said, the Fund has commenced the process of developing an acceptable and implementable template on research commercialization with a view to reaping dual benefits of achieving the Fund mandate and opening a window for additional source of revenue. *"Further to this sound success, our humble expectation is that oil and gas operators will buy-in and collaborate with PTDF in a bid to effectively standardize this noble research product for national use by the existing four refineries. In line with the vision of the present administration of President Muhammadu Buhari, PTDF will continue to fund and support the production of locally synthesized Zeolite for both national and international use. It is our desire to ensure that our hard-earned foreign exchange is saved by making the Zeolite catalyst locally available for industrial use".*

She disclosed that, already PTDF has successfully patented five researches and is processing three more that have met the highest standards for commercialization. *"Let me appeal to the next chair occupant to ensure that the successes recorded in Zeolite development and deployment is sustained. PTDF is willing to collaborate with all stakeholders to domicile research products of high standard for global use, while developing the capacity of our local researchers' in-country"*

The Vice Chancellor, Ahmadu Bello University, Professor Ibrahim Garba while thanking the Fund for endowing a professorial chair in the university, described the effort as a practical demonstration of a collaboration that provides solutions to problems. He pointed out that, PTDF epoch making effort in research has strong potential in realizing Nigeria's dream of becoming an industrialized nation using local content."*We have taken time to develop this idea, conceived and executed it, we are happy that after five years we are able to bring a unique product through a novel process on Zeolite Y and ZM-5 to reality and we are happy with the collaboration between PTDF and ABU. We hope that, PTDF will continue to give us support, we have all the potentials to develop any other kind of novel process for the growth of Nigeria's oil and gas sector and the country as a whole"*

The Vice Chancellor appreciated PTDF's active support for research in oil and gas related disciplines which also impacts other sectors of the economy.

He described the Zeolite production plant as a project that has the potential to save millions of dollars that are spent in importing the Zeolite catalyst. This is in addition to creating employment opportunities and revenue generation when the pilot plant is scaled-up to industrial stage.

The National President, Nigerian Society of Chemical Engineers, Professor E.N Wami, thanked PTDF for supporting research as a vehicle for industrial growth and development of the country. He also thanked the management of the University for supporting the chair occupant to undertake a research, the outcome of which is very significant to not only the oil and gas industry but the university and the country as a whole.

"*We know that one important raw material that needs to be exploited is Zeolite derived from clay that is found everywhere in the country and used to develop different aspects of our industry. Nigeria as an oil producing country has been criticized for exporting its crude oil without making good effort to refine them. One of the basic materials needed for refining, to add value to our crude oil is this catalyst*".

The PTDF Professorial chair occupant in Chemical Engineering, Ahmadu Bello University, Zaria, Professor Abdulkareem Salahu Ahmed disclosed that, the team undertook a survey to assess the viability of the Zeolite and discovered that it has the potential of generating substantial foreign exchange to both the university, PTDF and the Nigerian economy. "*This pilot plant is about translating the research finding from bench scale to a mini plant where the plant produced is similar to a commercial plant. It's our hope that, after economic analysis, we will go ahead and commercialize the process, may be to build a scale plant around Kankara clay and begin to produce Zeolite because there is a huge market even in Nigeria for the Zeolite catalyst*".

He said, the involvement of PTDF in research is not only helpful to the academia but is also improving the quality of local content in the oil and gas industry. He urged the Fund to continue to support and fund similar chairs across universities in Nigeria.

The occasion was attended by various stakeholders from within and outside the university including representatives of the Raw Materials Research and Development Council (RMRDC), National Research Institute for Chemical Technology (NARICT), Nigerian Material Research Society and other professionals from within and outside the industry ■

"We have taken time to develop this idea, conceived and executed it, we are happy that after five years we are able to bring a unique product through a novel process on Zeolite Y and ZM-5 to reality and we are happy with the collaboration between PTDF and ABU. We hope that, PTDF will continue to give us support, we have all the potentials to develop any other kind of novel process for the growth of Nigeria's oil and gas sector and the country as a whole"

- Professor Ibrahim Garba

PROFESSOR IBRAHIM GARBA
Vice Chancellor, Ahmadu Bello University, Zaria

"I do not know of any agency of government in Nigeria that is actively supporting Research like PTDF"...

The commissioning of this Zeolite plant climaxes the research work conducted by ABU under the sponsorship of PTDF.How do you feel about the achievement?
I think, we have taken time to conceive this idea, develop it and execute it and today we are very happy that at the end of all these efforts spanning over five years, we are able to produce a unique product through a novel process on Zeolite Y and ZM-5. We are all happy and it is a very remarkable collaboration between PTDF and ABU Zaria and for us it is only the beginning and we hope that PTDF will continue to give us all necessary support. We have all the potentials here to develop many other kinds of novel processes to solve industry problems in Nigeria.

How has PTDF's involvement in research helped the academia and the oil and gas industry?
I will say, I do not know of any agency of government in Nigeria that is actively supporting research like the PTDF.The argument will only be that maybe PTDF is only supporting research in oil and gas industry but even then oil and gas also impacts on a number of other sectors of the economy. So it is gratifying and I salute PTDF for all these efforts and they should just continue.

Do you have any idea of how much can be generated from this research?
You know this is still at a laboratory pilot scale to be migrated into industrial scale. This is a multimillion dollar project to help Nigeria save the millions of dollars spent in importing these products from abroad.It will create a number of employment directly and indirectly around the process, so it is difficult to say X amount, but on the whole it is going to be a huge contribution to Nigeria's oil and gas industry.

To what extent do you think it can help in sustaining the university?
Oh yes! If we succeed in getting it where it ought to be, certainly that amount of revenue is going to dramatically change the landscape of the university because at the moment there is no other outfit in the university that is likely to provide us with the kind of money we expect to derive from this project.

MS. JAQUELIN GUYIL
GM, Nigeria Content Department, PTDF

"ABU has more than justified the purpose for ptdf endowment..."

With the commissioning of the zeolite catalyst pilot plant, would you say ABU has justified the purpose for endowing the chair?
To be honest, I think we are more than satisfied. They have done a lot more than we expected them to do. Even the plant wasn't part of the research but they've gone to do over and above what we expected of them and we are quite pleased with the progress made as far as this research is concerned.

Now that you have successfully closed-out the research. What next?
You know research is always on going. We've only closed this phase of it, we are going to continue, this is not the end, they have to work on the processes and see how they can continue to improve on all they've come up with now, and see how they can do it at the best level. So it's just a stage, it continues, we need to continue the research and keep improving to get to that level where you have attained all the optimal possible position as far as the research is concerned.

What is the ultimate objective?
Well the crux of the matter, they've been able to produce these catalysts from this Zeolite, but then they have to keep at

it and see the best combination they can come up with to achieve the best result, so far they've met the expectations for the research in the first place, but it's still ongoing, you have to get to that level where you have the best outcome that is globally accepted.

What are the expectations with regard to revenue generation for the benefit of both partners?
So far this is just the first step. As you know it's been patented, but they still have to work out the economic aspect to see how profitable it will be.

Are you doing something like forming a committee of stakeholders to explore the commercial viability?
Yes! We are looking at that, but at the same time, I think there is more work that needs to be done, but that doesn't stop us from working on commercializing the whole thing, we can work on the two at the same time.

PROFESSOR A.S AHMED
Department of Chemical Engineering, A.B.U, Zaria

"There is a huge market for Zeolite Catalyst in Nigeria..."

What next for you after the successful close-out and end of your tenure as PTDF professorial chair occupant in ABU, Zaria
After submitting the final reports, i intend to apply for a one year sabbatical leave, so as to resume back in the office after one year of study.

You made a case for appointing career professorial chair holders, why?
With the experience of PTDF in this matter, I think it will be nice to begin to think about career appointment of chair occupancy, that means that when you give a chair appointment to somebody, he remains there till he retires from active service. In the mean time, they can increase the tenure from five to ten years and thereafter, they can make it a career appointment.

What next after the production of this pilot plant?
Yes; I expect that, after the economic analysis, a scale up plant should be built around Kankara clay source and begin to produce Zeolite in commercial quantity because there is a huge market for the catalyst in Nigeria.

But what is the plant all about?
The plant is about translating the research finding from bench scale to a mini plant, in the sense that, exactly the way we have made the plant now, so we will make it on a larger plant on a commercial scale, so the economic viability of this plant can be better assessed from this pilot than from the bench scale.

Did you in the course of your research undertake the commercial viability of the plant?
Yes, we did some market survey and we discovered that, all NNPC refineries across the country will use any suitable material found within the country. It is because of the problems our local refinery operators are having with crude supply, and operational challenges, that they are using low quantity catalyst as of 2011. If the refineries are to be operating in full scale, the consumption will be much greater and there are some refineries that are upcoming now, we have Dangote refinery, the modular refineries, the Chinese and presently we have GTL, that is gas to liquid programme, so definitely they will be able to buy if we can produce quality materials within the country.

What about the purity of the material?
More development work is needed in the pilot plant to produce better quality materials. I will only encourage PTDF to keep sponsoring research in tertiary institutions in the country and to improve on the funding of their endowed chairs in the universities, but we thank them for what they have done so far. I think this is just one of the research cases sponsored by PTDF, though most of the researches they sponsor are oil and gas related but you see their successes are able to improve on the quality of production in the oil and gas industry.

What International Oil and Gas Industry Experts and Academics say about the Zeolyte Catalyst innovation

Professor Joydeep Dutta
Sultan Qaboos University, Oman

Commercializing research is not a child's play. Many a time in developing countries we believe that just making a patent is good enough to have a product. I have made over 20 patents and only a fraction of it has gone to the industry. So in order to do that you need commercial licensing officers which probably you don't have. As professors we think that we have done our job by patenting it but the main part of any commercial development happens only when you are able to bring people to do the job of up scaling it from the lab into a prototype and into the market and that is the learning curve you have to go through.

You have already done the prototyping, which is excellent news, but the day I will think you have been successful is if you can implement this zeolite in another refinery out side the country.

Professor Lesley Petrick
University of Western Cape Town, South Africa

Certainly it will help you to use some parts of your fractions and beneficiate your oil instead of just exporting it as a resource. I think its very important for the country not to just be a resource exporter but to become a beneficiator and also to move towards the knowledge economy where you actually are patenting your own processes and using your own processes instead of buying technology from external sources.

It is essential that government and industry invest in developing research because of your countries future. You need to build up a skilled workforce if you're going to be able to use your resources effectively and not just export them raw. For me, the advice to the government will be that they need a sustained program to support science in Nigeria and make it possible to educate students to the level of skills that these high tech type of developments require.

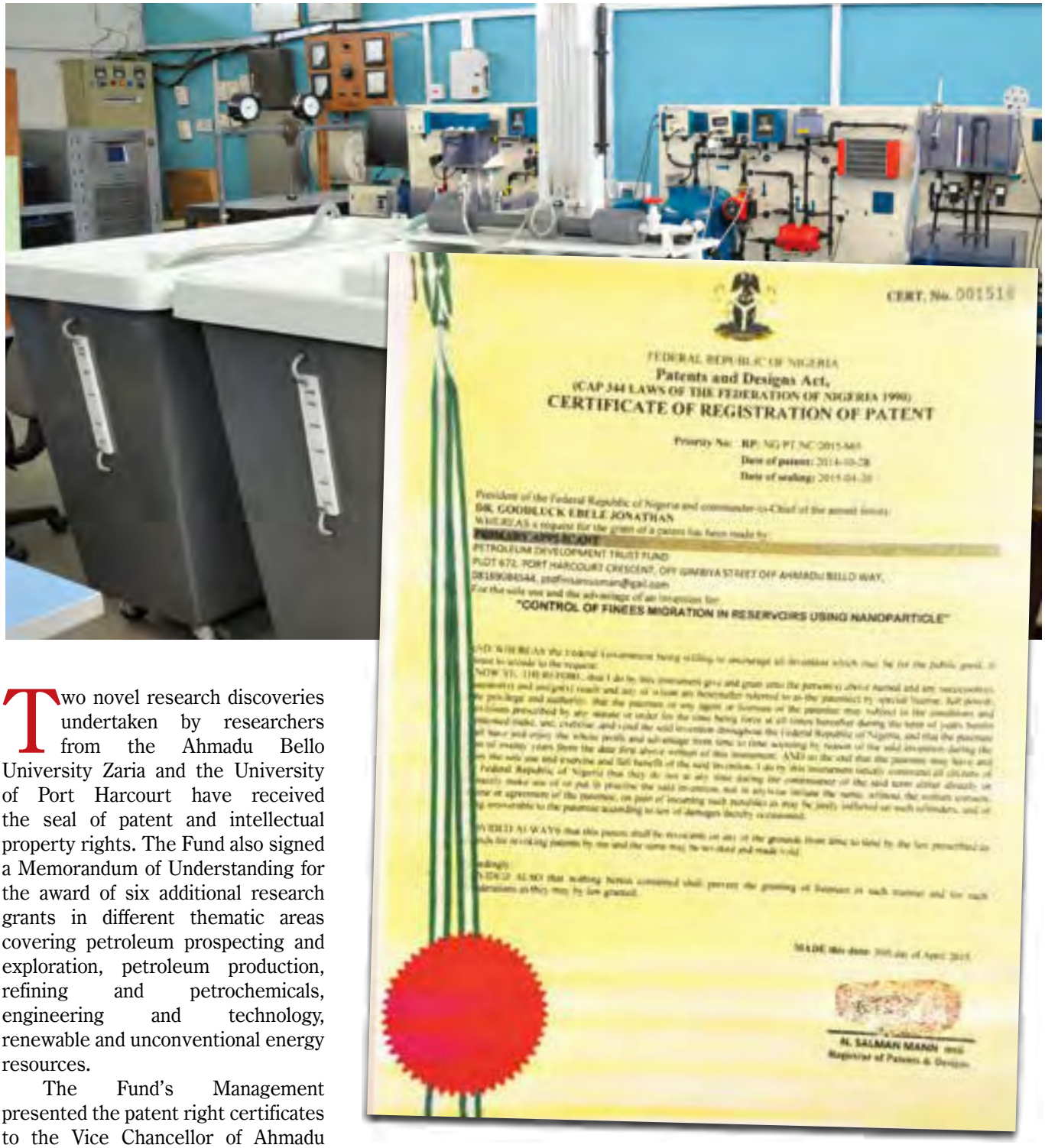
Dr. Russell Sartbaeva
University of Bath, United Kingdom

So far everything that I have seen was very good. I'm very proud of organizations like PTDF to be funding research, that's very good, I think it's very good that they are putting money into research because the more we can research the more knowledge we can bring the better every body's life will be, so I think that's very good.

I think it can help directly because obviously the petrol companies are looking for more efficient processes, so the more efficient we can make the processes, the better it will be because we want to make them environmentally friendly, we want to reduce the temperatures of the processes. For example, we want to reduce the waste and as long as we can achieve all of that, that will be good for everybody.
At the moment Nigeria imports zeolite from other countries, so instead of importing, if you can research into making the zeolites here, it's much better. This is because it creates jobs, it uses local resources, so it is a much better way of doing it for the country, so to me it's much better.

DISCOVERIES FROM PTDF SPONSORED RESEARCHES RECEIVE PATENT RIGHTS

NEW INDUSTRY BASED RESEARCH GRANTS AWARDED



Two novel research discoveries undertaken by researchers from the Ahmadu Bello University Zaria and the University of Port Harcourt have received the seal of patent and intellectual property rights. The Fund also signed a Memorandum of Understanding for the award of six additional research grants in different thematic areas covering petroleum prospecting and exploration, petroleum production, refining and petrochemicals, engineering and technology, renewable and unconventional energy resources.

The Fund's Management presented the patent right certificates to the Vice Chancellor of Ahmadu Bello University, Professor Ahmed Garba and Professor Joseph Atubokiki Ajienca former Vice Chancellor, University of Portharcourt during an occasion at the PTDF office complex in Abuja. The research on "*Development of Zeolite Y and Zeolite ZMS-5 catalyst from locally sourced kaolin using novel processing technique*" was carried out by Professor A.S Ahmed, the erstwhile PTDF Chair in Chemical Engineering, Ahmadu Bello University Zaria, while the research on "*Software Development for Wellbore stability management*" was carried out by Professor Adewale Dosumu of the University of Port Harcourt. The Fund commended their

tenacity and display of high sense of professionalism in the midst of various challenges experienced during the research projects.

The Petroleum Technology Development Fund filed and obtained the patent and intellectual property rights from the Federal Ministry of Industry, Trade and Investment which protects the value of the intellectual work undertaken by the researchers and also marks a significant step towards the commercialization of the research findings. The Fund followed up with the appointment of a research commercialization consultant, Dr Omojola Moses to midwife the commercialization process to achieve optimum utilization of the research work for the overall benefit of the oil and gas industry.

The implication of the patent right, is that all materials produced or acquired under the terms of the agreement either written, filmed or however recorded shall remain the exclusive property of the Fund which retains the right to disseminate information arising from such materials and no person shall publish or circulate such information unless with prior written permission of the Fund.

Responding on behalf of the recipients of the patent certificate, Vice Chancellor, Ahmadu Bello University, Zaria, Professor Ahmed Garba thanked PTDF for its continued support to universities in the sponsorship of trainings and research, a feat achieved by no other government agency in history. The Vice Chancellor emphasized that, the Fund should be supported to sustain the tempo. "*we have the honor to receive the patent certificate as a mark of breakthrough from the researches we have done with the Petroleum Technology Development Fund. We can only thank PTDF for continuing to support trainings, research and development in Nigerian universities and we can only hope that, the Fund continues to have faith in the Nigerian universities as the reservoir of expertise for the development of our dear nation. We thank PTDF for its role in sponsoring training and funding research and development. There is certainly no other government agency that has come this far in our nation. We will therefore ask PTDF to sustain and retain its lead*".

SIX RESEARCH PROPOSALS RECEIVE PTDF GRANT

Six Researchers whose proposals scaled through extensive screening were awarded grants under PTDF Annual Oil and Gas Research Grant Competition. The research proposals of the awardees were subjected to a rigorous selection process and found to be relevant in the field of petroleum prospecting and exploration. The awardees proved beyond doubt that, the research outcomes will have direct implication for petroleum exploration, production and environmental bio-remediation of petroleum polluted sites in the Niger Delta.

The completion period for the various researches is twenty four (24) calendar months in line with milestones and specified tasks outlined in the researcher's written proposals. The researchers were reminded of the need to exercise care, diligence and responsibility in the administration of the grants, having due regard to the highest standard of integrity, transparency and probity in the administration of public funds.

The Fund appealed to national and international oil companies to co-operate with the researchers by providing them with relevant data and reasonable assistance that will enable them contribute towards solving specific industry problems, enhance spin-off of job creation and knowledge transfer in-country, thereby assisting PTDF in fulfilling its mandate of developing indigenous manpower in Nigeria through effective engagement of local researchers in solving industry problems.

The screening process for the Research Grant Award was quite rigorous and commenced with the placement of advertisement in national dailies and on the Fund's website in June 2013 for a period of 3months. At the end of the advertisement period in September 2013, ninety five (95) proposals were received. These proposals were subjected to in-house pre-screening and selection process to ensure that the proposals received met the set standard as contained in the advert. Thirty Six (36) proposals were shortlisted for a blind peer review out of which Fifteen (15) were selected for technical and budget line defense. At the end of these rigorous selection processes, the six proposals were recommended by the steering committee for the award. The six new research proposals that received awards are:

- ✓ **Evaluation and Control of Wax Deposition during Production of Crude Oil in an identified Niger – Delta Waxy Oilfield,** *by Prof. Godwin Chukwu.*
- ✓ **Engineering Design and Production of Oil & Gas Facilities Using Plastic Reinforced with Plantain Fibres,** *by Prof. Christopher C. Ihueze*.
- ✓ **Geochemical Evaluation and Mapping of the Potential Source Rock in Sokoto Basin in Nigeria,** *by Dr. Umar Z. Faruq*.
- ✓ **Development of Zeolite Catalyst for Light Alkanes Aromatization,** *by Dr. Abdulaziz Y. Atta*.
- ✓ **Modeling Well – Burst Stability by Chemical Method: Niger – Delta a Case Study,** *by Prof. Ogbonna Joel*.
- ✓ **Biodiesel Production from the Algae Chlorella Vulgaris Using Locally Formulated Growth Media,** *by Prof. Gideon Abu*.

The 2012 research cycle of the Fund recorded huge successes. This is because of the five (5) outstanding researches awarded, three were found to be commercially viable for patenting. These include research on "*the Production of Fuel Briquettes and Biogas from Water Hyacinth Cow-dung Mixture*" by Dr. Frank Oroka and his team, Software Development for Wellbore Stability Management carried out by the research team led by Professor Adewale Dosunmu and "*the Control of Fine Migrations in Reservoir using Nano Particles*" by Professor Mike Onyekonwu.

Head, Research and Development PTDF, Dr. Jacob Neeka expressed his gratitude to all those who contributed to the success of the research cycle. According to him "*what we started in 2013 through to 2014 has actually come*

to fruition today. It was not an easy exercise, several times we had to gather people of intellectual power to screen, to examine, to analyze and to see the value addition to what we have selected today. I want to thank specifically the steering committee members for their diligence, for their hard work, for their level of commitment. Above all, I want to remember the dynamic leadership, the level headedness of late Professor Ebeule Robert who just passed on. He was a good man to work with, an erudite scholar and an administrator".

He expressed optimism that there will be credible breakthroughs in the researches awarded going by the caliber of experts selected for the supervision. Dr. Neeka gave an assurance that PTDF will continue to drive research to a level where it can be a source of additional income. .

Vice Chancellor Ahmadu Bello University, Zaria, Professor Ahmed Garba speaks on the research that earned the institution a Patent Right.

The research actually commenced some years back and is a breakthrough. We have tried to create something out of practically nothing. So what we have done is to create an artificial substance from the natural substance that can be used in petro chemical industry, specifically in crude oil refining. So it's no doubt a breakthrough and we are all happy about it.

Q: How do you feel with the patent certificate issued on the research finding?

A: No doubt this is an encouragement, we have other researches in the pipeline and we are hoping it will help us do more in the next coming years to be able to attain this kind of standard in other research fields. Ahmadu Bello University is known for research and development in a number of fields, this is actually one of the areas that we do researches.

Q: What is the likely impact on crude oil refining in Nigeria?
A: Oh yes, no doubt, the outcome of the research shows that we can be able to create within Nigeria a substance to refine our crude oil which otherwise would have been imported into this country. And once you rely on importing basic things like catalyst in oil and gas industry, which no doubt is very expensive, it reduces the security of the industry itself. So we are happy this is going to be Nigerian born and it will now give us more security for our own technological development.

Professor Abdulkareem Salahu Ahmed, is the lead Researcher of the work on Zeolite Y and Zeolite ZM5 Catalyst which received Patent right. He is also the outgoing PTDF Chair holder in Chemical Engineering at Ahmadu Bello University, Zaria.

Q: What is the research all about?
A: Our research is about developing Zeolite Y and ZM 5 catalyst from Kaolin that is natural clay. Zeolite Y and ZM 5 are very important catalysts used in the oil and gas industry. We have been able to develop good quality Zeolite from Kaolin and we have carried out performance test and discovered that the Zeolite we have produced actually outperformed the catalyst being used by Nigerian oil and gas industry at the moment. So we hope to commercialize the invention.

Q: What impact will this have on the oil and gas industry in Nigeria?
A: In Nigeria, the oil and gas industry will now be able to obtain their Zeolite Catalyst locally. The logistics will be easier and also the price will be lower so they will be able to produce fuel cheaper.

Q: What is your view about PTDF intervention in Research?
A: I think PTDF is doing very well. They have consistently given research grants to researchers in the country and they have also maintained the activities of PTDF Chairs. So I think they are doing very well compared to other research grant awarding bodies in the country.

Former Vice Chancellor, University of Port Harcourt, Professor Joseph Ajienca speaks on the research on "Software development for wellbore stability management" carried out by the university which also received Patent Right.

Q: You have received a patent

certificate on the research conducted in your university. Please can you share with us the journey to this stage?
A: You can only receive patent for a breakthrough, for new knowledge and we are indeed happy that this patent is in the area of well bore stability management in the oil and gas industry. My colleague Professor Adewale Dosumu who had been working in this area, developed a software application that will help the industry to drill wells in very stable and successful manner, and this will add a lot of value to the operations of the oil and gas industry. So this patent is simply a confirmation of the good work that had been done and it also shows that our university is a Centre of excellence in oil and gas technology.

Q: What impact will this have on the oil and gas industry in Nigeria?
A: Like I said, this work enables the oil companies to drill well successfully because if you don't have all the knowledge to drill a well successfully and your well collapses on you, then your investment is wasted. To drill an oil well is very expensive, infact it's the most expensive part of the petroleum industry. To drill an oil well particularly an oil well in deep sea, you need the knowledge to ensure that you drill the well successfully. The well bore is stable and that at the end of the day you don't lose the well. This work he has done has been proven to be useful in the industry, it has been tested by the industry and the industry is already benefiting from the work he has done.

Q: What do you think of PTDF focus on research?
A: It is a step in the right direction. Without research we cannot make progress. Am an advocate of research and development because sustainable development in any nation comes through research and development. This is why Israel is very successful, Israel has just a few universities but they are very active in research and development and today Israel is described as a start-up nation. You need research and development to develop technologies that you will now take through the various stages of development. Once there is an innovation in research, you take it through technological development, develop the technology, have a pilot scheme, test it. Once it is successful, you go to the next stage, which is business development to create a start-up company that can then go and implement the new technology that will offer goods and services. So we will like to congratulate PTDF for supporting academic research and development in such a way that in the near future, the country will begin to appreciate the value of research and development and PTDF will be glad that it is part of that history of innovation in this country.

Professor Adewale Dosumu, a Professor of Petroleum Engineering, University of Port Harcourt is the lead Researcher of the work on Software development for wellbore management which received a Patent Right.

My research was actually in the area of preparing a data base for well bore stability management in the Niger Delta. We need this, it's very crucial because we found out that a large amount of money is being lost due to the fact that wells that are done in the Niger Delta cost a lot more. A lot of problems occur because we don't understand the subsurface, so the essence of this tool is to provide a ready-made access to companies so that if they want to construct wells they can have information and get data on the subsurface with a view to planning their wells and reducing cost. Like you know the government is involved with a lot of the companies in joint ventures. Federal government pays about 60% of the cost of all these losses. So if we can reduce these losses, what it means is that the profit to Federal Government in terms of revenue to government will certainly increase, so this was the bottom line in terms of the work we did.

Q: How will this research affect the oil and gas industry in Nigeria?
A: You find that drilling oil and gas well consumes close to 60% of the budget, so when you find out that you can make a lot of savings in terms of the way the wells are constructed then it translates to better profitability. Oil and gas companies will benefit from this particular venture. You know they sink a lot of money into this and this is what we refer to as non-productive time. Each part of this non-productive time is attributed to problems of hole collapse, casing collapse and pipes getting stuck in the hole when we are constructing wells. So the essence is for us to understand the subsurface with a view to designing the right environment for well construction and minimize the cost of well construction.

You find that drilling oil and gas well consumes close to 60% of the budget, so when you find out that you can make a lot of savings in terms of the way the wells are constructed then it translates to better profitability. Oil and gas companies will benefit from this particular venture.

- Professor Adewale Dosumu

Professor Christopher Ihueze, from Nnamdi Azikwe University Awka is one of the winners of the six new research grants awarded by PTDF

Q: What is your research proposal all about?
A: My research is all about design and production of oil and gas systems using plastic reinforced with plantain fibres. This project is aimed at reducing the cost of oil and gas pressure vessels and pipe lines. We intend that by the time we reinforce plastics with our natural fibres which is almost wasted, we believe that the cost of producing materials will reduce. Corrosion is an ionic process, so we believe that when we use plastic reinforced with natural fibres that the issue of corrosion in oil and gas pipe lines will be reduced.

Q: How will this research affect the oil and gas industry in Nigeria?
A: Now, right here in Nigeria, you know that corrosion is a very important factor in the management of oil and gas systems and with the new material we are producing with natural fibres the issue of corrosion will be a thing of the past.

Q: What are your thoughts about PTDF research programmes?
A: You see personally, why am happy about this programme, when you become a professor you need to research but you don't have funding, therefore you cannot project your research to the environment, but with the programme that PTDF is sponsoring, you find out that a professor can now market his research so that people can buy it and a professor can equally help in securing the patent of the research he has been conducting.

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- Professor Christopher Ihueze
Recipient of PTDF Research Grant Award

Professor Umar Faruk Saddiq, is of the Chemistry Department, Usman Dan Fodio University Sokoto and one of the six recipients of PTDF research grant award.

Q: Give us an overview of your research work?
A: My research is a geo-chemical evaluation in the mapping of potential source rock in Sokoto basin. Actually there is the information that there is oil in Sokoto basin and in the past, in the 50s when the oil exploration started in Nigeria, that was one of the areas where the oil companies started exploring but later they left that area to the Niger Delta when the oil was discovered there in commercial quantity. So there is indication that the oil is still there but not enough research was done. Now the basin is called illumined basin and along the same basin there is oil in Niger, oil is

also there in Libya. It's the same basin from Libya down to Agadez in Niger republic and to Sokoto. Now if there is oil within the basin there is every tendency that there is oil in Sokoto. But in order for it not to turn to a political issue and to know if there is oil or not, we want to investigate, to find out whether truly if the oil is there or not. Off course we are using geo-chemical method. There are different methods, some use geo-physical method, some seismic method but we are using the geo-chemical method and it is a very good method in determining if the oil is there or not.

My research is a geo-chemical evaluation in the mapping of potential source rock in Sokoto basin. Actually there is the information that there is oil in Sokoto basin and in the past in the 50s when the oil exploration started in Nigeria that was one of the areas where the oil companies started exploring but later they left that area to the Niger Delta when the oil was discovered there in commercial quantity.

- Professor Umar Faruk Saddiq
Recipients of PTDF Research Grant Award

Q: Clearly, the finding of oil in Sokoto will have an impact in the oil and gas industry here in Nigeria?
A: You see, you have to look for the oil to know what amount of reserve you have and in the world the reserves are actually drying. I think they are estimating that what is called peak oil has already been reached. The peak oil is a period when the maximum production of oil is reached and it will start declining and once it starts declining all the industries that depend on oil either for energy or for raw materials will have to scale down. So the search for oil is very important within this period. In Nigeria there is oil in some areas and it is also creating some political problems in the country. Now this inland basin that is the Sokoto basin, the Chad basin the Benue trough, there is need now to ascertain if there is oil or not there and if it is there, certainly it will impact not only on the Nigerian economy and Nigerian politics, it will also impact on the world oil and gas politics.

Q: What do you think about PTDF focus in sponsoring research?
A: PTDF is pioneering this and over the years this should have been done. It is only PTDF that has started it and it is doing it in the best possible way. Let me give you a little example; sometimes you get some research grant in the university maybe amounting to a million or two million, these research grants are too meagre to do any meaningful work, but now with the PTDF you are having meaningful amount of money for the research and it has already started fruiting, because some of the researches are being patented, breakthroughs are coming and that is what we are really hoping for. What PTDF is doing, no other organisation is doing it in the country and that is the only way you can get real research findings, breakthroughs and then translating the same to the industry for development.

Professor Baba El-Yakubu Jibril, is of the Chemical Engineering Dept. Ahmadu Bello University Zaria. He is one of the Six 2015 PTDF research grant award winners

My research topic is on the development of Zeolite catalyst for aromatization of alkaline, so essentially we are trying to look at alkaline's raw materials for production of aromatics using a catalysts that is based on Zeolite

Q: How can this research impact on the oil and gas industry in Nigeria?
A: Well! It's a very important research and it has been going on for a long time, but up till today nobody has succeeded in producing the right catalyst. Aromatics means benzene, taurine and other derivatives that are produced from crude oil. Our crude is very expensive, forget about the recent decrease in price, it is generally very expensive, that is number one, number two, you are competing with crude oil and the source of fuel, so the drive is towards why don't we produce the same material from natural gas, Nigeria has abundant supply of natural gas. Infact, people call Nigeria a natural gas country not oil and gas country. We have large amount of natural gas, some of which are converted to natural gas as LPG, Profane and Butane through aromatics. But we have to develop a catalyst, a material that speeds up the chemical reaction.

It can take a longtime to produce aromatics from LPG or natural gas, but with catalyst, it will be faster to produce the same product, and at the same time you can design the catalyst to improve the yield. I can design my catalyst to go towards benzene, or taurine depending on the demand in the market. So at the end of the day petrochemical industry will rely on this natural gas, not on the crude oil for this particular product.

Q: What inspired your choice of research?
A: If you look at the spectrum of research, after you develop local material from kaolin to zeolite, the next question is how do you apply your zeolite for other reactions? So our motivation is to use the current material that has been developed in the department, using the same experience, we can take a zeolite material that has been developed in the department based on the ideas that we have over the last 6 years and then modify this zeolite because the beauty about it is that, you can take this zeolite and modify it.

Q: What is your take on PTDF's focus in awarding this research grant?
A: So far so good, PTDF is doing a wonderful job in developing capacities which is very important. I have worked outside Nigeria for 20 years, and what I have observed is we lack capacity, so if PTDF will focus on capacity development, it will be very good for Nigerians and the research community because you may have the research idea and the research topics but you don't have the hands, the capable hand to help you in actualizing your idea. So PTDF has gone a long way in developing capacities. In my laboratories now we have many researches that have been sponsored through PTDF chair in my department. There are many young researchers who developed their talent in the process of producing this zeolite. My own research is going to be for 2 years, I have 2 PhD students and 2 Masters students that are going to be attached to this research. So PTDF is doing a very good job in building capacities in Nigeria.

Prof. Gideon Abu, is a Professor of Microbiology, University of Port Harcourt and one of the 2015 PTDF research grant award winners.

Q: What is your research all about?
A: My research is to provide bio-diesel from the micro-organism called algae, specifically clopila bulgaries, it is a green algae that we will cultivate and then extract oil from there and then process it as bio-diesel.

Q: What inspired your research on this topic?
A: In the area of bio-fuels, we have what is called the first generation bio-fuels which involves use of things like wood and other plant materials that could easily be burnt as bio fuels, then we have a second generation bio-fuel where oil is extracted from plant materials which are essentially considered as food crops as well. So the problem is, are we satisfied in getting energy when we don't have food to eat? So we are now in what we call the third generation bio-fuels and that is the use of micro-organisms, the algae which are unicellular photosynthetic organisms that have very high promising potentials. They are among the organisms we have singular highest lipid cells. So that is part of what is driving my interest in this area of research.

Q: How will your research impact on the oil and gas industry in Nigeria?
A: Now, renewable energy sustainability is one of the areas in the PTDF focus of research. This is an area of renewable energy and the fact that we could produce bio-diesel is one of the ways that we will be cutting back some fossil fuels which we know have other environmental problems like emission, sulphur content and all of that, so we know that, the prospects for this research are very good in the area of environmental sustainability in renewable energy services.

Q: What do you have to say about the research award programme conducted by PTDF?
A: it is a very good programme, The fact that they have kept faith, they were able to go through a long process of screening, advertising and making sure that they kept to the rigorous selection process. Over 90 applications, being reduced to 6 is quite tasking on them, imagine, so it's hard work on their part and then culminating in the award. I think they are doing a good job and there seem to be reasonable focus in what they want to do, I think that is good for our nation and they are proactive. Like the part of renewable energy, like the area where I proposed to work in, that means we are thinking ahead, because we just need to be thinking ahead and diversify. So it's a very good programme. I commend the management of PTDF for all the efforts they put in, including the other level of staff that are working with us ■

My research is to provide bio-diesel from the micro-organism called algae, specifically clopila bulgaries, it is a green algae that we will cultivate and then extract oil from there and then process it as bio-diesel.

- Prof. Gideon Abu
Recipients of PTDF Research Grant Award

PTDF STEPS UP PLANS TO ESTABLISH A RESEARCH AND DEVELOPMENT CENTRE

The sponsorship of research by PTDF is to ensure that local researchers are effectively engaged in solving petroleum industry problems. Research results with high potentials for gaining intellectual property rights and patents are key performance indicators of PTDF Annual Research Grant Competition.

Five sponsored Researches of the PTDF 2012/2013 Annual Research Grant Competition were closed in a two day event organized by the Fund to review the achievements of the research cycle.

Three of the five researches showed high prospects of securing intellectual property rights and patents in the coming months. They are: *"Immobilized Oil Degrading Micro-Organisms in Local Cellulosic Materials for Rapid Deployment in Bioremediation of Petroleum Contaminated Soils"*, *"Hydrocarbon Source Rocks"* which has given strong indication for hydrocarbon presence in the offshore of the Dahomey Basin at Okitipupa in Ondo state, and the research on *"Development of Novel Technology for diagnosing and remediating problems associated with Oil field, reservoir souring and corrosion in the Petroleum Industry"* which proved economically significant having given indications of ability to solve the problems of Bio-Fouling and Bio-Corrosion in the industry.

The penultimate research cycle equally recorded huge successes with three intellectual property rights and patent certificates awarded out of the five (5) researches that were selected. The research results are on the *"Production of Fuel Briquettes and Biogas from Water Hyacinth Cow-Dung Mixture"*; *"Software Development for Wellbore Stability Management"*, as well as the research on *"Control of Fine Migrations in Reservoir using Nano–Particles"* which have earned Intellectual Property Rights and Patent certificates.

It was disclosed at the event that the Fund plans to establish a research and development centre for biofuels and other alternative energy sources in Nigeria which will be domiciled at the National Institute of Petroleum Policy and Strategy, NIPPS, Kaduna and will address some of the challenges experienced in the course of carrying out research in renewable energy and unconventional energy resources.

Oil companies were urged to co-operate and support Nigerian researchers with monetary and material assistance, as this would empower and encourage them to contribute more towards solving specific industry problems and thus promote spin-off for rapid job creation and knowledge transfer in–country.

The Chairman Steering Committee, Dr. Alex Niyi, commended PTDF for its commitment in the development of research in the industry *"this is one of the good organizations that I have seen in this country because they have done a lot of things trying to stimulate research and getting results"*. He encouraged

universities and companies to contribute in funding research.

A Director in the Ministry of Petroleum Resources, **Mrs. Edna Ene**, who represented the Permanent Secretary, invited the academia, stakeholders in the oil and gas industry, embrace research for innovations. "*Once you go into research you bring out a lot of ideas and lots of innovation, this will make our country move forward*".

Speaking on the area of patent, Mr. Tanimu Ahmed, Manager, Legal Services, PTDF, stated that acquiring intellectual property rights will protect research works and their results against being pirated.

In his remark, the General Manager, Strategic Planning, Research and Documentation PTDF, Mr. Jide Adebulehin said that the approximate duration of research funded by the Fund is about 24 months. He said that areas of research are usually dictated by occurrences in the industry "*At the inception of the programme issues of oil spillage, pipeline integrity, enhanced oil recovery were topical and so the research interventions were designed to address these topics*"

The topics covered during the 2012/2013 Research cycle are as follows:

- "*Hydrocarbon Source Rock Evaluation in the Cretaceous to Neogene Basins of the Southern Nigeria and Implications for the Niger Delta Petroleum Systems*" carried out by a team of seasoned Petroleum Geologists led by Prof. Samuel Akande of the University of Ilorin.
- "*Development of Novel Technology for diagnosing and remediating problems associated with Oil field, reservoir souring and Corrosion in the Petroleum Industry*" investigated by Dr. Chuma Okoro of the Federal University, Ndufu, Alike Ikwo, Ebonyi, State.
- "*Immobilized Oil Degrading Micro – Organisms in Local Cellulosic Materials for Rapid Deployment in Bioremediation of Petroleum Contaminated Soils*" by Dr. G.O. Agiri and his team from Petroleum Training Institute (PTI) Warri,
- "*The Development of Bentonite Mineral as a Drilling Mud Additive in the Petroleum Industry*" investigated by Dr. B. B. Dewu and his team from Ahmadu Bello University (ABU), Zaria,
- "*Development of Biofuel Technology from Locally Sourced Cellulosic Materials*" by Prof. Ayoade Kuye and his team from the University of Port Harcourt.

The Annual Oil and Gas Research Grant Competition was initiated in 2008 with the aim of domiciling oil and gas technology in Nigeria, through effective engagement of local researchers in solving petroleum industry problems. To qualify for the grant, the candidate must be a Nigerian and the research must be domiciled in Nigeria. Interested applicants are required to submit research proposals based on various developed research themes, upon advertisement by the Fund. These proposals are then subjected to in-house pre-screening and selection processes. Selected proposals are further subjected to blind peer reviews by subject-matter experts constituted as the steering committee. Shortlisted proposals are invited for both technical and budget defences before the final award of the grants in line with the industry-identified problems ■

Researchers
speak on the subject matter of their investigation

Dr Chuma Okoro
Federal University, Ebonyi State

What is your area of research?
We worked on diagnosis of some common microbial problems in the Nigerian oil and gas industry like corrosion and souring, with the aim of finding out appropriate remedial measures to apply in the field.

Why did you choose this area?
It is primarily because of the demand of the industry and the present problem at hand in the industry. We have been having this problem of corrosion and souring and that has cost the industry a lot of money in management. So we are trying to find cheaper solutions so as to save the industry some money and from part of the savings develop our laboratories.

What was the time line for the completion of your research and were you able to meet it?
It was two years, starting from 2013, we worked all the way 2013, 2014 and finished early 2015 and this is about the third presentation. We started with presentations at the beginning, at the middle, it was reviewed, this is the third and final one. We submitted our draft final report, so we were able to meet up with the time.

Did you experience challenges in the course of the research?
The major challenge is that in Nigeria you don't really have facilities for this kind of research work, so I had to travel out of the country. I collaborated with the Biological Science Department of the University of Calgary Canada, they have the facilities. We did the pyro-sequencing aspect in the University of Quebec still in Canada. The major challenge is that Nigerian universities don't have the facilities for this kind of research, so we did very little here in Nigeria but majority over 75% was done over there in Canada. Another constraint was that of funding, it wasn't really adequate so we had to plead with our collaborators to contribute. Funding was a lot of challenge too.

Now that you have completed, what do Nigerians stand to gain?
You know research is an ongoing thing, once you start a research, lots of issues come up from that research, as you are investigating one issue, another issue is coming up, but we achieved some major break through any way because this is the first time we are using molecular method to diagnose corrosion and souring issues in Nigeria's oil and gas industry. Before now it's this fast reproducible kit they used that is the SRV, APB, but we went as far as using molecular method to do a detailed diagnosis and when you diagnose, you have an idea of the problem, we really discovered that the industry has been doing wrong application of their remedial measures because they don't know exactly what the problems are. With diagnosis now we have a clear idea of what the problems are, so we are now ready to apply cheaper remedial measures that can save a lot of cost.

In what ways would your research benefit the academia, both students and lecturers?
In so many ways. Number one is that literature wise we don't have previous information on the prevalence of all this corrosion causing organisms and souring organisms in the Niger delta oil fields. The data we have generated has actually closed that gap to a great extent by providing information on that; And research-wise students and lecturers would benefit, because in our data bank we have information

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- Dr Chuma Okoro
Federal University, Ebonyi State

especially the areas we have investigated. We have generated a lot of data on problem causing organisms and how they interact with each other and their relative abundance.

Are there other benefits?
There is an economic benefit. Our target is to device a solution system that would reduce the present cost of managing corrosion and souring by 75% and if that is done, it will be a huge benefit. The Nigerian oil and gas industry is what everyone depends on, If money is saved in the corrosion and souring management, definitely it will benefit Nigerians.

What is your advice to PTDF on improving the programme?
I have to commend PTDF first because they funded what I call a blind research which means taking a proposal you don't know the outcome of, the industry cannot do that. No manager can waste up to 50,000 USD to fund a blind research i.e without knowing the outcome. PTDF took a bold step to do that. Having done that there is a lot of interest in the industry now. The industry now wants to partner with us because at the end of it, they can see we are moving somewhere. But what I would really advise PTDF to do is that for every researcher they should provide at least one major equipment even if they have to buy, because where we have to ship all our samples to Canada for analysis is a big challenge to us, but if we had the equipment for example in getting DNA extracted and amplified, that set of equipment is less than 10 million Naira, meaning if we had that kind of money for that equipment, only some fragments of DNA would be sent abroad for pyro-sequencing. So if they are able to do that, so many of our students would benefit, because many of our students have not seen DNA before, they don't know what DNA looks like. If they can practice how to extract, it would help hundreds of students even research students. And basically by doing that, PTDF would have succeeded in helping so many other people indirectly to benefit from the project.

Prof Samuel Olusegun Akande
Geology Department, University of Ilorin

What is your research all about?
Hydro-Carbon source rock evaluation of the cretaceous neogene sedimentary basins in southern Nigeria. The sedimentary basins in Nigeria are areas where you can find oil and gas and what we have been doing even before we started this research is looking at the basins to find out which are the types of source rocks that can generate hydrocarbons. The source rocks are the nucleus for any petroleum generation. If you find source rocks, those source rocks need to have certain characteristics to enable them generate either oil or gas, so we have been very interested to look at where they are in respect to Nigeria's sedimentary basins and what are their salient characteristics. Whether they are good enough or have the capacity to generate hydrocarbons, that is the motivation.

You mentioned you have been working on this research for the last 7 years, and this close out is for the 2012/2013 research cycle. 7 years clearly goes back further than that. Was PTDF involved in funding this research from the outset?
Me and my team, that is Akande and others, that includes my past and present PhD and MSc students, I said we started this 7 years ago because there was a first phase, we already had some preliminary result which was presented in the year 2008. So that was the time a first phase of the proposal was approved and we embarked on the first phase which ran between 2008 and 2010. That concluded and there was a need because of the gaps in the previous phase 1 to go ahead and it was recommended that we should essentially test the basins further because we were able to outline the most promising basins where those source rocks are available and we were able to characterize them to such a level to say that, well looking at several of these basins there are two of them that are essentially spectacular that could actually produce oil and gas, even though they are inland basins because the focus in the previous times should have always
been on the Niger delta but these are inland basins surrounding the Niger Delta also having the potential. That was how we then put in for an extension for the phase 2 and that's the phase 2 that started in 2012 which has now been concluded.

What are the successes and breakthroughs that have been recorded through your research?
Well we have been able to accumulate data, that were not essentially just surface data, because we started with surface data, that is looking at rocks that were exposed on the surface, but what we have now done in the last 2 years since 2012 is to look at areas where they have drilled wells and bore holes in those basins particularly in the Dahomey basins and the Anambra basins. So the deeper wells and the bore holes gave us data that had essentially identified the intervals that oil and gas can be found, because we found source rocks that have the capability to generate oil and gas at those intervals. Those intervals are deep, they are within rocks that are 70, 90 million years old, but we have been able to date them on the basis of bio-strategraphic evidence, assemblage of fossils and those ages confine the intervals. At this interval we know we can be able to get source rocks that have adequate maturity, because the source rock has to be mature, it has to essentially been buried to a certain level of thermal maturation to be able to generate the hydrocarbon it contains. These we were able to establish in this second phase and we are happy to say offshore Dahomey basin, offshore Lagos there are sediments that can generate

hydrocarbons and similarly in the Anambra basin we saw some rocks that could also generate hydrocarbons. So this in a nutshell are the results we have gotten at this present time.

I want to believe that from this research, we would be seeing a lot of exploration activities in the areas you named?

That is true because since the submission of our first report we realize that some companies like Afren oil company, Lake oil and Folawiyo oil company have been doing some work in those areas we focused, and we know they are testing this and the intervals we talked about. All they have to do now is to test the thickness of the intervals and see whether the reservoirs have retained the oil and gas, we proved to have been generated. One thing is to generate the oil and another is to preserve it in the reservoir. We have been able to deal with the source rock and the source rock shows that there is oil and gas there, and once it has been generated it moves to the reservoir. They now need to go and test to see if there are enough seals to seal it off from leaking and preserved within those reservoirs. But we know for sure there are source rocks that have generated hydrocarbons at those strategraphic intervals called in geological terms the senomanian toronian strategraphic interval. The Tano basin off the coast of Ivory Coast and Ghana is producing oil and gas at that same strategraphic level. That interval is very important and that is the interval producing oil off the coast of Ghana today that is the jubilee field in the Tano basin, which is essentially 30 kms off the shore of Lagos, and we have estimated that maybe 750 million barrels of oil should be reserved there by our calculations.

...if PTDF can establish a central laboratory it would save some costs and train more students to have hands on experience. With the laboratory, the bench work can be done in Nigeria, we have the people but we just don't have the equipment. This laboratory can then be put into use by the joint research teams, so that analytical work can be done here in Nigeria.

– Prof Samuel Olusegun Akande
Geology Department, University of Ilorin

What are the benefits of this research?

It would help to extend our reserve base as far as energy is concerned, because oil and gas are our mainstay, the more we have the better. And it would result in job creation as other states join the oil producing states.

Do you have any suggestion on improving the research grant?

If PTDF can establish a central laboratory it would save some costs and train more students to have hands on experience. With the laboratory, the bench work can be done in Nigeria, we have the people but we just don't have the equipment. This laboratory can then be put into use by the joint research teams.

Dr Gabriel Agiri
Petroleum Training Institute Effurun. Lead Researcher on "Production of Hydro-Carbon Degrading Material immobilized in Semi-Cellulosic Material for Rapid Deployment in Bio-Remediation of Contaminated Soil".

What prompted your interest in this research area?

I am from the Niger-Delta area of Nigeria and there are always cases of oil spillage in farmlands and the rivers. This is a major issue between the communities and the oil companies, and some of the methods and technologies used by the oil companies to bio-remediate the affected soils do not give the desired result. They basically just remove the surface oil from the soil and leaving the residual oil in the soil. So the research was to develop a product that you can apply in any area there's been oil spill to clean it up. An interesting thing is that the materials which is coconut fibre is readily available. So the fibre serves dual purpose of absorbing the crude oil and also housing the hydrocarbon degrading bacteria. So it gives a better and quicker method of cleaning the environment, and the waste product is environment friendly giving a better method for cleaning spills than the ones currently being used in the industry.

With the completion of your research, would you say the days of oil spill contamination in Nigeria are over?

The most important thing is the awareness of the oil companies to know that we have a product we can sell to them. The next thing to do is to market it, because we have tried it, it has worked and we can say the product

can help in reducing contamination.

Can you elaborate some more on the other benefits of the research?
It has a lot of benefits apart from cleaning the crude oil. At the time of going into production it can give jobs to the teeming youths. Also people can be engaged in sourcing for the coconut fibre. We would also try to be involved in the production line of these degrading microbes.

What were the challenges you faced during your research?
The challenges were in locating the test sites. PTDF wanted us to carry out the field test in a place that is naturally contaminated and we had constraints in accessing these sites. Another area was in fabricating our bio-reactor locally.

The research was to develop a product that you can apply in any area there's been oil spill to clean it up. An interesting thing is that the materials which is coconut fibre is readily available. So the fibre serves dual purpose of absorbing the crude oil and also housing the hydrocarbon degrading bacteria. So it gives a better and quicker method of cleaning the environment, and the waste product is environment friendly giving a better method for cleaning spills than the ones currently being used in the industry.

- Dr Gabriel Agiri
Petroleum Training Institute Effurun - PTDF sponsored Researcher

What suggestions do you have for PTDF to improve on the research grant programme?
After spending so much money on research and getting good outcomes from it PTDF needs to develop a better way of relating with the industry to appreciate its research works in a bid to justify the monies spent and to also look ahead to patent the results of research.

What benefits will the country derive from this breakthrough?
I mentioned that in the Niger delta you have a lot of youth restiveness, and its mostly because of environmental degradation so when this product is being used to bio-remediate, because we are talking about rapid deployment to bio-remediate contaminated soil, if the oil companies assure communities that they would rapidly use this product for bio-remediation, it would lead to peace between oil communities and oil companies. It would also lead to a sustainable development of the environment.

B.B Mohammed Dewu
Ahmadu Bello University. Lead Researcher on "Improvement of Bentomite in Nigeria for use as Drilling Mud in the Oil and Gas Industry"

What breakthroughs have come out of your research?
The whole aim is to develop local bentomitic clay that occurs in very large quantities in the country so we can reduce the amount of bentomite import into the country. There is no oil well that is drilled without use of bentomite and we are talking of hundreds of thousands of tonnes of bentomite used in the country which translates into billions of dollars. If we can sell these locally we can conserve our foreign exchange. We have found that the bentomitic clay in the country requires just simple processes that would transform them to be used in the country. Also it's not just about reducing importation of the clay, but by the time we start developing our own, we are talking about a large industrial complex that would employ a lot of people and as a spinoff would create a number of job opportunities in the country.

What challenges did you encounter while working on this project?
The major challenge is the issue of analytical facilities in the country. Our research centre is a centre of excellence in analytical activities, however a lot of equipments were not functioning and we had issues with all the results being obtained for analysis in this regime, so most of the analysis had to be done abroad and that cost a lot of money and time. That is why we are advising PTDF to establish a centre so that some of these small analyses can be done in the country without difficulty, but it has to be done properly so the results can meet with any international standard.

Can you say that based on your research outcome there is no more need to import bentomite into Nigeria?
We won't say that, but there should be a reduction. By the time our results are fully worked out so we start production of the bentomite, because what we did was just laboratory scale; By the time you do pilot scale production which is now going commercial, by the time you start producing you can greatly minimize or reduce the amount of import into the country and at the end produce enough for the oil and gas industry operations in the country.

When did you begin work on this project and was the specified time line for the research met?
You see this is just the second phase, we started 2013 to 2015. But we

had actually carried out the initial aspect from 2008 to 2012 which is cumulatively 4 years. To a reasonable extent we have concluded the pilot scale scheme to say that this can be done.

Will PTDF have any role in the pilot scale production?
Initially in the proposal we gave, which was submitted for evaluation, the pilot scale production was included in our financial proposal but when the fund was reduced, the activities were minimized to a laboratory scale. But with the encouraging results we have got, PTDF can come in to scale it up to a pilot stage scheme.

With the new knowledge your research has brought up, would it likely have any effect on the academia?
We would like to commend PTDF for this excellent scheme, there are many government agencies but PTDF has stood alone to be able to fund researches, and this has kept the pace of research in our academic institutions. You know over time due to lack of resources especially in the universities most of our research boards are actually gone. It's only these interventions that have made research work to go on. You know it's not only us doing the research, we engage students both at PhD and Masters level and that has assisted in the development of academic activities to a reasonable extent.

Having benefited from the PTDF grant and surmounted several challenges what suggestions do you have for the improvement of the programme?
Well for the processes, as I said so far so good, my own suggestion is for PTDF to give its commitment to establish standard laboratories within the country and I don't mean hundreds or tens of labs but possibly two laboratories for minor analysis to be carried out. Like I said in our own research if we didn't have to go abroad to carry out these analysis both time and money would have been saved. And I believe it's not only our own but all the research schemes right from 2008 till date I am sure most of the analysis if you look at it 80 to 90% are done abroad. If PTDF can intervene in this not only would the research scheme benefit from it but others as well.

The whole aim is to develop local bentomitic clay that occurs in very large quantities in the country so we can reduce the amount of bentomite import into the country. There is no oil well that is drilled without use of bentomite and we are talking of hundreds of thousands of tonnes of bentomite used in the country which translates into billions of dollars. If we can sell these locally we can conserve our foreign exchange.

- B.B Mohammed Dewu
PTDF sponsored Researcher

Prof. Ayo Adekuye
- Department of Chemical Engineerng University of Portharcourt - Bio Oil Production from Cellulosic Biomass

Can you tell us about your research topic?
In a nutshell what the project is about is that we take a biomass and convert it to bio oil. What is a bio-mass? They are wastes that are of biological source. For this project we have taken saw dust as our biomass that we will use for the project. We have taken sawdust as our bio-mass and convert it to bio-oil, and we would analyse the bio oil and see whether it can be used either as diesel or we need to blend it with some other oil we can use or process it further to get bio gasoline that is petrol.

So how did your research to develop cellulosic materials start?
Well we got a grant from PTDF in 2012, and the project started. We looked at the literature, that is what others had done and saw not much work has been done on Nigerian saw dust. We then looked at the characteristics of this saw dust to make sure bio-oil can be gotten, we looked at the chemical and physical characteristics and convinced ourselves that when we process it we can get bio-oil and we are using our observations to fabricate the machines we will use.

Is the primary source sawdust something you can find everywhere?
Well like you know we have over two thousand saw mills everywhere in the country and currently what people are doing is they are just throwing it away. Part of the objective of this project is to convert that waste to wealth and we have chosen the bio-oil route, so it's readily available but not been utilized effectively.

Were you able to meet the target date for completion of your research?
We have not been able to finish in two years, there were challenges we faced that we didn't think would be there. Remember this is a research work, and you can't be sure what the final product would be and that is exactly what has happened. We didn't anticipate that by now we would have some of these problems. What we discovered was that there was no data on Nigerian saw dust so we had to go back and get that data and

that meant time. That is the reason it wasn't completed in 2 years, but it's still ongoing.

What other challenges what other challenges did you encounter?
There are different types, one you have to get the materials, design it and fabricate yourself. Unfortunately you don't have too many people who are good in fabrication and design. We had to do the design ourselves; we tried to see if we could buy these equipments off the shelf but there weren't any so we had to do everything on our own. These are the things that slowed it down.

Since you have not been able to meet up with the deadline, are you closing out the research ?
I have not closed it because I have not delivered the product it's still ongoing, I have just done the presentation and have requested for an extension of time.

What are the likely impact or benefit of this research to the economy.
Well hopefully when we finish the technology would be domesticated, because when we are done some of the fabricators would be able to go and fabricate even for larger companies, and it's also part of capacity building, because I am not the only one doing the work, I have some Masters and PhD students that are working with me. And I don't know what would come out of the research, maybe something innovative because there are issues we are trying to resolve and if we get that it means we may also be able to get some other added benefits.

For this project we have taken saw dust as our biomass that we will use for the project. We have taken sawdust as our bio-mass and convert it to bio-oil, and we would analyse the bio oil and see whether it can be used either as diesel or we need to blend it with some other oil we can use or process it further to get bio gasoline that is petrol.

- Prof. Ayo Adekuye
PTDF sponsored Researcher

If you are to measure your progress how far would you say you have progressed?
I would say it's about 50 to 60%, it's a bit difficult to quantify, because in Nigeria we look at research as something you go into the market to buy. We don't realize that research takes time and effort in order to get what you are looking for. There are four segments we are supposed to look at; we have completed two with two remaining, the fabrication and testing stages.

Are there suggestions you will like to give PTDF in order to improve the research grant programme?
Well I think there are two things PTDF should take a good look at. One is if it's a research grant then PTDF needs to understand that the key word is research. The way I define research is that you are looking for something you don't know the solution from the beginning, but if you know what you are looking for its no longer a research, you are just solving a problem. So if PTDF is looking for research, they should look at it from that point of view but if they are looking for solutions to problems it's a different ball game. Let me take my own as an example of either using it as a research or problem solving. If PTDF says I want to produce bio-oil from saw dust, then PTDF should set up a team and fund every stage. It can task them like I want you to process 200 or 300gramms per day of this saw dust and then produce bio-oil for me. That way, it won't be a research project but a problem solving project which you know the final solution. I have been involved with a project like that with Raw Material Research Council, we were given a task and the council funded it directly and paid resource persons an allowance.
I agree with PTDF to put timelines, but they should be flexible with the timelines if you are looking at it from a research point of view. I agree with what PTDF does by appointing project supervisors for each research topic but they should rely on those project supervisors to give progress report on what is going on and re-adjust along that line if you are looking at it from a research point of view.

Dr Mohammed M. Ibrahim mni
Oil and Gas Industry Expert.

As a member of the steering committee for the award of the grant, how relevant are these researches sponsored by the Fund to the industry?
Up until this moment most of the researches that are carried out in universities and other agencies are not specific to the oil and gas industry, now these are not industry specific researches. This is the first time in the history of this country that an agency of government would fund researches specifically to address energy issues, therefore there's no doubt whatsoever that we have already seen patronage by international oil companies, independent oil producers and refineries. One of the patents that is just coming out is the development of catalyst to be used in the refinery operations in this country. Now if you take for instance one of the papers presented today, it's about the use of bentomite as drilling mud in the

country. It costs about 40 million USD to develop a well and 10 million USD that is 25% of that is bentomite and drilling mud. Can you imagine the savings to the Nigerian state if the drilling muds used in the Nigerian oil and gas industry are sourced locally, where you have about 200 wells of 40 million USD each and 10 million USD for bentomite drilling? It's quite substantial, it would not only help conserve foreign exchange, it will enable us to start using our locally sourced materials, it will create jobs and achieve security of technology. If we do not do that and something happens where then shall we get the items we need not only to sustain oil production but to even increase our reserves.

Are there suggestions you would like to give the Fund on ways to improve the research grant programme?

There has been a lot of research carried out in the areas of exploration, production, petrochemical and refining and in renewables like bio-fuels but there's a particular sector Nigeria is lagging behind which is geo-thermal. It's time for PTDF to start considering research into geo-thermal. Nigeria is really behind countries like Kenya, Ethiopia and South Africa. So PTDF can look into that area.

PTDF should also start considering the health of the workers in the industry. Up on till this moment not much research has been carried out in this area, areas like systems and human factors engineering relating to the oil sectors. These are areas within the purview of the mandate of the Fund. PTDF should start looking beyond just the conventional areas like exploration, production and refining, new areas are emerging, most of the oil companies are going geothermal. The first rule in the industry is safety, has there been any research carried out in safety, in oil and gas industry, for instance as simple as people selling fuel, the pump attendants, you discover that the fumes of fuel they inhale are carcinogenic. What are the protective measures they are given? Except we carry out research, we would keep importing these materials into this country. Are there certain local materials that can be used? These are areas, that looking ahead I think PTDF should look into.

What is your assessment of all the research areas in this close out programme in terms of the breakthroughs, and how would you assess the researchers and the research presentations?

It has been largely a success, but there has been some challenges not because the researchers were not up and doing, but there was an interregnum due to the change of leadership in PTDF. So for about a year the committee did not meet, in the process there was misdirection in the research activities, but that notwithstanding one is proud to say that Nigerian researchers are leading the way especially in the hydrocarbon sector and what we have seen over the last 2 days, one can see that Nigerian academics are up to world class standard. There is absolutely no research that cannot be carried out here if we have the right funding which would give us the right machinery and equipments, and also the right attitude which I believe is already there.

There is need for collaboration between the Fund and industry so that some of the players in the industry can contribute their quota in co-financing some of the researchers. But what we have seen in the last 2 days has gladdened my heart and I think it's been quite a success, no doubt about that.

Prof. Abdulahi Abduzuru
Vice Chancellor Usman Danfodio University Sokoto.

What is your role in the PTDF research grant?

As the Vice Chancellor of Usman Danfodio University, Sokoto, some of the researchers are from my university. I have had a very long standing relationship with PTDF since 2002. I happened to be the first chair occupant for petroleum chemistry which is domiciled at Usman Danfodio University Sokoto, in the department of pure and applied chemistry. I also served as the consultant to PTDF on their local scholarship scheme, I was also a member of the screening committee for the overseas scholarship scheme, I was responsible for interviewing candidates that were awarded. I was also a pioneer member of the steering committee responsible for this research grant competition. So this has been my relationship with PTDF, I will not be wrong if I say am an adopted staff of PTDF.

With your involvement in the activities of the Fund and the various capacities you have been involved with, what are your primary expectations from the Fund?

Well the primary expectation is the Fund achieving its primary mandate and the primary mandate helping to develop technology in the area of oil and gas which is the mainstay of Nigeria economy. That is the primary expectation.

When we started, the major concern is the rapid development of Nigeria to be able to domesticate the oil and gas technology within the country and like I said the easiest thing to do is to send people abroad quickly. That was informed by the level of facilities with respect to petroleum technology within the country. But it's not only that, if you really want to be a global player you should also have the opportunity to mingle with people in their own country. So the government sent out Nigerians to go out there and acquire technical skills, managerial skill, develop relationships with other experts around the world, so that by the time they come back to the country, not only will they have acquired skills but they would have also developed friends so that networking becomes useful. Then, we thought that we should start another scholarship scheme within the country called the local scholarship scheme.

They take universities in phases, we started with six and then improved like that. There you target students where they have already identified where they are going, I mean the area of studies which normally start at 200 level. So we screen them, examine them across the country and take the best, in fact for you to be able to compete you must have a CGPA of at least 2.75, then later we made it 3.0 on a scale of 4, 4.0 on a scale of 5. Then you will be eligible and you have to belong to certain courses within the department where we have the upgrade program. So the students now compete, the best is awarded the scholarship whereby PTDF will now take over their sponsorship, give them a full scholarship throughout their stay in the university but they are expected to maintain a minimum of 3.0. Anytime you fall below that you will be withdrawn. That was intended to ensure that these students study without pressure of finance. Added to that we came up with a policy that the best graduating student amongst them will be automatically sponsored provided that university will give him employment. The wisdom is that you help build capacity and the training is at his own choice, more often obviously they will send him abroad, if he wants to do it in Nigeria fine, but it is mostly abroad but the university must employ him first so that when he comes back he goes back into the university. Over the years, that has paid a lot of dividend because quite a number of students graduated and most of the best students graduating in the universities concerned are from the PTDF scholarship Scheme. So that is for the LSS. When chairs were set up, the expectations were that those chairs will be the primary foundation for development of technology in-house that means within the country. So you endow a chair in the university in a specific area of research, like in our own case it is petroleum chemistry that was endowed. That became the basis of introducing petroleum chemistry as a program in Nigeria. So that is the first program of petroleum chemistry in Nigeria. The first thing they did was to upgrade the department, they built a whole department that is housing the chair, they equipped it, furnished it and did everything. Then provided a state of the art equipment to enable us do the research, off course as the chair occupant I had the responsibility to also bring up some younger ones and then we took some of our younger colleagues put them on the program, they are basically the researchers and today they have all completed. One of the researchers that came Prof. Faruk is the first graduate of that program in petroleum chemistry. So these are the kind of expectations. In a nutshell my expectation has been that one day PTDF will be the main agency that will ensure we domesticate the oil and gas technology in the country. And I think from my own experience with them, we have now produced what I will say the critical mass of technical people to be able to really start thinking of domesticating the oil and gas technology. You have sent a group of young people, some of them from the university and some from the industry, they have gone to UK, USA and other places and they have come back, now inject them into the various oil and gas sectors like NNPC, some of the private companies like Shell. Then they will grow up because when you sent them, all you have done is to empower them with the skills, they then learn on the job, they grow on the job. From 2002 till now, if we had done that purposely they would have been the people at the managerial level and they now have a uniting factor as PTDF scholars. But my observation is that we have not taken the step to harness this, in terms of number I believe that we will have nothing less than 3000 or above brilliant Nigerians that were trained in various fields in the oil and gas industry since we started in 2002. And I believe that will be enough for us as a nation to say that look we can take over. Of course the oil industry is very large, it is understandable but imagine if those scholars are in the managerial level, they should be able to dictate what happens in the oil industry, but what we have seen over time is that after you have done the training, to harness them and purposely inject them into the field has not been done. Policy positions on local content has been done, so many steps have been taken but coordinating them has not been done.

In a nutshell, my expectation has been that one day PTDF will be the main agency that will ensure we domesticate the oil and gas technology in the country. And I think from my own experience with them, we have now produced what I will say the critical mass of technical people to be able to really start thinking of domesticating the oil and gas technology.

- Prof. Abdulahi Abduzuru
Vice Chancellor Usman Danfodio University Sokoto

Shehu Malami
Production Programming and Quality Control, Kaduna Refinery

As an industry personnel, what are your primary expectations from PTDF?
Well PTDF, we have always known that they are involved in capacity building and that much we appreciate, then also in the area of research trying to contribute to development of local content again that we know and we appreciate. If you remember very well, when I spoke I was only requesting that they put more emphasis on downstream especially refineries because there is a lot of money to be saved if we are able to produce the catalyst we need for our processes and the chemicals. We spend huge amount of money in that aspect. When you look at the oil exploration companies, apart from the initial capital project in terms of operations they don't use so much chemicals but I can assure you if we are able to produce catalysts and able to produce some other chemicals, we will save a lot of money in terms of foreign exchange and that will boost our economy. So I expect PTDF to start looking more at that, I appreciate the fact that we are already doing something on the catalyst.

You want PTDF to focus more on the refineries; That is one aspect of your expectation. How would you assess the success of PTDF in the area of research?
What we are doing today is a proof that PTDF is doing well, so I would say PTDF is doing well but going back to expectation I don't know whether it is possible for PTDF to help refineries by sponsoring staff for special programs such that they come back as improved persons. The only snag we are seeing is that PTDF has spent a lot of money, they have trained a number of personnel, most of whom are not working and that is not good enough. So I think it will make sense for PTDF to first of all have a data bank for all the people they trained, that data bank should show how many people are engaged and how many are not, but I think that PTDF can also partner with refineries because the refineries need personnel. Suddenly there is need for manpower in the refineries and a number of experienced people are going, so it will make sense if PTDF has a data bank and to start talking to NNPC and see what good they can put the trained people to, how they can use them properly.

When you say partnership with refineries, what is the specific partnership you are looking at?
What I just suggested is for PTDF to find employment for people they have trained which NNPC as an organization can confirm if they have the capacity to work. Partnership is something that is ongoing, in the area of catalyst they are working on FCC Zeolite catalyst of course partnership that will come up for the refineries to now switch from the catalyst they are using to locally made ones. I think it shouldn't be a problem, once we are relating together, partnership is something that shouldn't be a problem.

Regarding the breakthroughs that PTDF has been able to achieve through these researchers, how relevant are they to the industry?
All the researchers I have seen and all the researches that have been done are relevant to the industry but the industry is broken into segments like the upstream and the downstream. The refinery operation requires that we use a lot of catalyst. This catalyst we have been buying for 30 years plus, we are buying from abroad and it is a very large amount of money. The most important thing is for us to be able to source for it in the country and produce this catalyst. That will be a very good thing because a lot of money will be saved and that will be to the benefit of the country.

Dr Frank Oroka
Department of Agronomy, Delta State University

I am Dr Frank Oroka, senior lecturer in department of Agronomy Delta State University, Abraka. I and my colleague Dr. (Mrs.) Telme Akinrero, of the department of Chemical Engineering of the same University, we went into a project that is titled *"The use of water hyacinth and cow dung mixture for production of fuel briquette and bio-gas for application in the agro industry and small scale industry"*. So we were able to come out with a viable commercial product, specially the fuel briquette which is a solid fuel to replace charcoal wood and fuel wood which are our major problem in terms of deforestation across the whole country.

Why did you choose this area of research?
The research came out of the major threat to our environment. If you go across the whole country you will see that trees are just cut down, even in the savannah area the little trees that are left, they are all cut down just for the purpose of fuel because people just need it, because kerosene and other sources of fuel even gas are very expensive and beyond the reach of the common man. So if you go into our bakeries and even those who cook, they mostly use this product both in the rural area and the urban area, so they all use this product. So it has continued to be a major problem such that any forest anywhere is cut down, so we now saw that there is also another option of solid fuel from renewable sources

because even kerosene which is from crude oil, and we all know that crude oil is not renewable, with time some wells will dry up. So we have to think of what other option of energy and the option we brought in now is that there are two materials within Nigeria, generally cow dung is an abundant waste which is everywhere. People are not even using it and we have the water hyacinth plant all over the rivers, if you go through every river in the Benue and all the small rivers even up to the north Hadeija rivers they are all a threat, even to our dams and you see they are just everywhere but this is a bio resource that can be used and it is just wasting away, so rather than allowing our forest to be destroyed, why don't we use another product that is even a threat to our environment, use them to produce something that is what I will call more or less a project that is based on principle of environmental equilibrium. Using something that is a threat to the environment to control another environmental problem, so that is what we have done. A solid fuel, though we did the bio gas aspect of it but the major one that is highly commercial, in terms of availability even to the rural poor or anyone.

Can you take us through the various stages of your research work?

In the first place, with this product we already had in mind that of solving a certain problem. First the raw materials were already available, that is the water hyacinth and cow dung, so they were not sourced from anywhere outside Nigeria. Wherever you are in Nigeria you can easily access them, so both the cow dung and water hyacinth is everywhere. So with these products being there, all we needed was funding which the PTDF provided and the funding was not complex as in terms of releasing the fund as we see in some cases. So the fund was there and we were able to get the materials and even the briquetting machine was locally fabricated, so everything about the whole process was local.

Do you see the end users buying into this alternative source of fuel?

I think the principle behind energy is to know if the product can burn, can it be used to cook, is it environmentally friendly. Now the moment the person is able to know that it can, first he will want to take it but the next question he will ask is the price. It's a material that is everywhere. When produced on a massive scale definitely the price will even be lower than the charcoal in the market and the density is higher. So because the density is higher the burning will last longer than even the charcoal you see in the market. So in the long run, you may cook food with lower quantity of this product. It is a function of marketing, telling people this is what it is, you know at the initial stage of a new product the adoption may be slow but the moment some people are able to take it and you do more aggressive marketing definitely it will not take long for you to break through into the market because we are not talking of an expensive technology in this case, we are looking at a product that people are already using. You have charcoal that people are already using; you are just talking of an alternative that is better than this one, so in the long run it can replace charcoal wood.

You must feel very proud; you are the holder of a patent, the product of diligent work sponsored by the Fund. Are there any words of appreciation you have for PTDF?

I think PTDF has done a great deal for me and my co-researchers because you see this was an idea that was born some time ago before we saw the PTDF advert and it was just lying down there, we didn't really know that it can come to this stage. We finished the product and tested the burning and it worked. But before then we were just doing it and we could not really use it to do anything because there was no funding. So I think that PTDF has done a great deal and it is an encouragement to the researcher and we will appreciate it if they sustain the tempo and we believe that we will have small and large scale industries coming out of PTDF research based products. So I believe that we are working towards it, so it is a great deal and it is an achievement for us and for our university and we thank PTDF for what they have done ■

I think PTDF has done a great deal for me and my co-researchers because you see this was an idea that was born some time ago before we saw the PTDF advert and it was just lying down there, we didn't really know that it can come to this stage. We finished the product and tested the burning and it worked. But before then we were just doing it and we could not really use it to do anything because there was no funding. So I think that PTDF has done a great deal and it is an encouragement to the researcher and we will appreciate it if they sustain the tempo and we believe that we will have small and large scale industries coming out of PTDF research based products.

- Dr Frank Oroka

PTDF STRENGTHENS PARTNERSHIP WITH STAKEHOLDERS AND CENTRES OF EXCELLENCE FOR EFFECTIVE CAPACITY DEVELOPMENT IN THE OIL AND GAS SECTOR

The Petroleum Technology Development Fund (PTDF) brought key stakeholders in Geosciences and Petroleum Engineering trainings to a tripartite workshop, to pave way for the long-desired government-industry-academia relationship and the strengthening of the Fund's existing partnership with oil and gas training Centres of Excellence. This will increase the momentum and drive for capacity development in the oil and gas industry through a common framework for fulfilling the local content objectives of the Federal Government.

The two day workshop with the theme "*The Role of PTDF, Oil and Gas Centers of Excellence and PTDF Professorial Chairs in Local Content Development*" conforms with the Fund's vision of using collaboration and partnership as vehicles for facilitating its mandate of capacity building, as well as strengthen the Centers of Excellence for greater effectiveness to deliver on designed programmes.

The Fund has over the years initiated and implemented a number of need-driven programmes that are clearly manifesting in the calibre of qualified professionals currently engaged in both the industry and the academia. There is therefore a need to partner with other world class institutions to realise the gradual domestication policy of PTDF programmes.

Forming a platform for linkages between the Centres of Excellence, PTDF Upgraded universities and Universities abroad where the Fund has MoUs, will create a greater industry buy-in and participation in capacity development through the centers as well as cost reduction in training budget. The workshop was to prepare the ground for PTDF/ Industry event showcasing the Fund's beneficiaries and the launching of PTDF alumni.

The workshop which will be a yearly event, will serve as a means of measuring the success of continuous collaboration with Centres of Excellence by student's employability index. The Fund intends to sustain its collaborations with the Centres of Excellence through sponsorship of students and other activities. Scholars will be sponsored yearly and lecturers jointly selected and funded to deliver lectures at the centers. It is proposed that oil and gas industry challenges requiring research will be exposed to research clusters in the Nigerian universities with research students whose areas of studies are directly linked to industry real issues.

Dr Babangida Wushishi Jibril, a member of the organizing committee and an ex-PTDF scholar underscored the significance of the workshop in bringing all the stakeholders on one table to brainstorm and find solutions to some of the problems that relate to capacity building in the industry, "*presently only PTDF funds most of the intervention programmes across various universities and that has immensely contributed in producing quality graduates from the universities. So the objective of this workshop is to synergize and find ways of enhancing local capacities for the oil and gas sector*" he said.

A representative of Schlumberger, an International Oil Company (IOC), Mr Dele Aikhionbare, Director National Content (West Africa) said of the workshop "*What I see from the*

discussions we have had is that, we have all been chasing the same goals but working in silos, and this workshop has to break the silos for us to have a common ground. It is clear that the Federal government through PTDF should do more on capacity building because it's globally believed that, human capacity development is the key to moving from the low level to where we all aspire to be"

Mr Aikhionbare commended PTDF for its various intervention programmes to upskill competencies in the oil and gas sector, particularly its human and infrastructural upgrade of selected faculties and departments across universities in Nigeria which he said could be considered for upgrade to Centers of Excellence pending appropriate adjustment recommended by the stakeholders where necessary.

Professor Mosto Onuoha, PTDF Professorial chair occupant in Geology at the University of Nigeria, Nsukka, said that, bringing together high caliber professionals in the industry, academia and government is a major achievement of the workshop particularly in deciding how research and development can be of immense benefit to the nation. He made a case for PTDF upgraded departments adjudged to have the right pool of skilled people, equipment and expertise to also be considered for upscaling to Centers of Excellence. "*PTDF chair in Nsukka as far as I am concerned is a Centre of Excellence in some respects, because we have expertise at least in some areas, for example, in basin analysis and reservoir characterization. We have been skillful and have plenty of papers. We have supervised several doctoral students who specialized in particular areas of oil and gas studies. I expect that PTDF chairs in other universities will also be qualified as Centres of Excellence*".

Another industry player, West and Central Africa Manager, Landmark Software and Services of Halliburton, Mr Tomide Togun said "*the workshop has been very good in that, we all saw the gap that needs to be bridged, we highlighted things that we all need to do, for instance the robust status of the research works and the equipment that PTDF has been supplying to the Centers of Excellence and to the universities, as well as the PTDF professorial Chair endowments, PTDF Scholarships and how we can create a database of all that, a database that will be accessible to everybody, so that we will not have to do those work again and we will only just build on them going forward*".

Dr Babangida Wushishi Jibril is an Ex- PTDF Scholar and member of the Workshop organizing committee.

What is your involvement with the industry and how relevant is the workshop to the Nigerian Content initiative?

I am part of the organizing committee of this workshop taking place in PTDF, in addition to that, I am also an ex-scholar. PTDF funded my Msc in 2003 at the University of Manchester and then in 2007 PTDF funded my PhD at the University of Birmingham. I am here as part of the organizing committee and also a beneficiary of PTDF intervention scheme.

What is the objective of this workshop?

The objective of this workshop primarily is to bring on one table all the stakeholders in oil and gas industry ranging from the policy makers on the part of the government, for example PTDF and the Ministry of Petroleum Resources, and also to bring in the oil and gas industry people and then people from the academia, lecturers, professors in the university. Essentially the reason for them to be in one place is to brainstorm on the best ways to find solutions to some of the problems we have in this country most especially as it relates to capacity building. Now this is interesting because PTDF funds most of the intervention schemes in our universities today, but as we have listened, several companies actually provide intervention schemes similar to PTDF. If we all sit down together, we can find ways of, not duplicating intervention schemes so that we can synergize between the industry, government and academia and then help enhance our local capacity in the oil and gas industry.

The Centres of Excellence you have been talking about, what qualifies them to be so?

The centres of excellence are specialist centres located within the universities. We presently have about 6 of them and essentially they are specialized because they are clusters for specific training and research in the oil and gas industry. They are different from conventional universities because they are specialized clusters, they get funding from oil and gas industry that normal universities do not get, and in recent years we saw oil companies actually recruiting graduates from these centres. We presently have 6 and there are plans to increase the number, most especially with the successes recorded with the Centres of Excellence in Port Harcourt.

If we all sit down together, we can find ways of, not duplicating intervention schemes so that we can synergize between the industry, government and academia and then help enhance our local capacity in the oil and gas industry.

- Dr Babangida Wushishi

As you know, PTDF upgrades departments and faculties in universities, why are these upgraded facilities not counted amongst the Centres of Excellence?

Essentially, the intervention of PTDF is that of university upgrade that comes along with professorial chairs. Like I said, one of the objective of this workshop is to sit together and see if there are things we duplicate that we need to harmonize. Yes! The position is that, they are very good intervention schemes, because when you upgrade a department or faculty, you provide an opportunity for students to learn in a better environment, for instance, I know that in all the upgrades PTDF has funded, PTDF built very big structures, equipped them with latest facilities, so that intervention has also contributed immensely in producing quality graduates from these universities that are presently enjoying that intervention.

The essential goal is domestication, how prepared do you think PTDF is ready for that?

Infact, the domestication issue is one of the topical issues that we have discussed at this workshop. It's good to have lots of these courses domesticated because PTDF has spent a lot of money in upgrading facilities in our universities, we have professorial chairs in various universities across the country. I think it is time to domesticate these programmes. By domesticating the programmes, cost will be reduced, the cost of sending a student to UK for Msc is in the region of 7 to 8 million naira. If we domesticate you train 3 or 4 students with that amount of money. Yes, we can domesticate but we can't live in isolation, we still need our students to go abroad so that they can interact with students from other countries, avail themselves the opportunities in technologies, latest technologies in oil and gas exploration, science, engineering and environmental sciences that can be applied in this country, but hopefully we are going to see more and more of these programmes domesticated.

Dr Kehinde Ladipo is one of the lead conveners of the workshop. He also speaks on the significance of the workshop.

What is the objective of the workshop?

Well the objective is to try and see how we develop strategies to drive assistance to Centres of Excellence domiciled in Nigeria, collaboration between Centres of Excellence and professorial chairs, as well as other strategies that PTDF has been involved in other universities. Centres of Excellence are relatively new and they were created from outside the PTDF initiative, but they are all about capacity development. So we saw a need to marry all these together.

I won't say that PTDF has not been in support of centres of excellence, indeed they have been extremely helpful but we need to develop the structured framework by building more relationships in which that support can be better concretized and can lead to more results and improved efficiency. That is why we organized the workshop.

So has this objective been achieved?

Well you know achieving success is a journey and when you start you don't say you have achieved it because that journey has just started. So far I believe that this first practical step which is the result of the brain storming with the right departments of PTDF has practically been successful, the energy, the ideas, and the issues have been identified and brought forward by the participants. Remember that one of the achievements is to create a forum where we will bring as many stakeholders as possible, that has been successful because at least we have stakeholders from Professional organizations, the Directors, Senate members, beneficiaries of professorial chairs by PTDF, industry service companies as well other representatives from the oil and gas industry.

Would you subscribe to an increase in the number of Centres of Excellence?

There are 5 centers of excellence which have been established, the Institute of Petroleum Studies at the university of Port Harcourt; The centre of excellence in geosciences University of Benin; The geosciences school, University of Lagos; The geosciences school Obafemi Awolowo University, and the centre of excellence in petroleum engineering at the University of Abuja. Centers of Excellence are places where you have the right cadre of qualified resource persons some of whom are domiciled within the academia, many others from the industry, as well as the required technology to deliver on the programmes that are designed. That is what qualifies an institution or an institute to be referred to as centre of excellence so that they can produce the right calibre of graduate. This is where PTDF comes into the picture to aim at training for oil and gas development in the country.

Tomide Togun is Land Mark Manager, West and East African Region, Halliburton.

What are your perspectives about the workshop?

The objective of the workshop is

to see how the industry, PTDF can collaborate more with the Centres of Excellence. We want to see how we can start new centres of excellence. So PTDF has organized this collaboration with the IOC's, service companies and centres of excellence, and we need to bridge the gaps. We have highlighted some key things from the workshop, things we need to do now for all the researches and equipment that PTDF has been supplying to the Centres of Excellence and to the universities. Also, how we can create a data base where all the work that has been done in the past will be accessible to everyone, so that we will not repeat those wrongs again, we will only build on them as a way forward. So far, I think the objective has been achieved.

Talking about Centres of Excellence, what qualifies them to be called centres of excellence?
They are called centres of excellence because they are the centres where we intend to train local content for Nigerians. The initiative behind centres of excellence is to train scholars, tutor them about the oil and gas sectors using local and overseas scholarship. PTDF doesn't have to keep sending people abroad but can sponsor and send them for local scholarship in Nigeria.

PTDF is involved in upgrading some selected centres in the universities that are oil and gas related.

The initiative behind centres of excellence is to train them, tutor them about the oil and gas sectors both with the local and overseas scholarship.

- Tomide Togun

PTDF has to develop these different centres in institutions, however you cannot make every one of them to be Centre of Excellence, you are going to create a particular set of Centre of Excellence all around the country the same way it is done globally. You have centres where people are trained specifically for key disciplines even though the universities are there to give them the beneficial knowledge of everything and that is what PTDF is trying to create there. It is a very good initiative for the country.

Dele Akihionbare, is the Director National Content (West Africa) Schlumberger

Do you see the desired linkages between the policy makers, academia and you people from the industry being achieved?
Yeah, at least this has turned out to be an eye opener because what I see from the discussions we had in the past two days is that, we have all been chasing the same goals but working in silos, this workshop has managed to break those silos, so now, we can talk from a common ground and a common perspective.

What is your view about those Centres of Excellence?
For me, the centres of excellence is a place where you have a lot of elements coming to play, a pool of people make the centres work, the equipments, good hardware and software that will enable that centre to thrive. I have been actually involved with the centre of excellence at the UNIBEN and I will say it qualifies as a Centre of Excellence. The IPS in Port Harcourt is actually something we should be proud of, and in my opinion the Federal Government, PTDF, NCDMB need to focus more in building more of these centres of excellence. It is the way to go because globally it's believed that human capital development is the key for moving from the low level to where we all dreamed to be.

What about the PTDF upgraded departments?
The upgrades that PTDF does in the schools around is a very good initiative and should be commended, I will suggest, yes, that they should be upgraded to centres of excellence and one of the things we came up with from this workshop is what defines centres of excellence. I think at the end of the day when the communiqué is issued, we should come back to PTDF and say yes, you have upgraded this, but you need to do 1 or 2 things, or you may not need to do anything at all, this is a Centre of excellence, and we need to get those upgraded schools and link them more with the industry, because the industry has been gaining from them.

PTDF has trained thousands over the years, and the industry is not absorbing them, so to what extent will you say this kind of intellectual forum will assist in redressing the situation?
This forum has given us from the industry a chance to know more about the effort of PTDF. I will tell you before I came here I didn't realize the scope of investments that PTDF has made in human capacity development, what I will do when I leave here is to get people who manage same process in Schlumberger to work closely with PTDF, so that as we develop human capacity we will also be developing internally what they will be doing as they graduate. If PTDF is doing X,Y,Z as regards to human capital development, the industry should be involved, so that whatever capacity we develop can be absorbed in the industry, yes, people will tell you the industry is in a bad shape now, the truth of the matter is that, there are still jobs that people can do.

It is clear that the Federal government through PTDF should do more on capacity building because it's globally believed that, human capacity development is the key to moving from the low level to where we all aspire to be.

- Mr Dele Aikhionbare

Professor Mosto Onuoha is the PTDF Chair Occupant on Geology, University of Nigeria, Nsukka.

You have other chairs sponsored by shell and other companies, how do you think we can synergize to avoid duplication of research engagements?

It is a good question because PTDF works on its own, has its objectives, selects the universities for upgrades and intervention. Shell also has its objective, but along the line, somehow there has to be synergy among the industry. For example you find a situation where in some schools you have PTDF intervention, They also have intervention by Shell and professorial chairs and then many other schools there is none at all, either by other companies or by PTDF. So, it will benefit the nation more and certainly the university systems in Nigeria if some more chairs were spread out to especially universities where there are none. You see, in ABU, you have PTDF chair and have Shell Chair, Ibadan you have Shell chair, you have PTDF chair, University of Port Harcourt and the University of Nigeria the same thing, it is not by chance! These are older universities and as the younger ones make their marks, develops good people and personnel who can write good proposal. I am sure they will also get chairs.

But why are they called Centres of Excellence?

First of all, what constitutes Centre of Excellence? Who designs it and names a Centre of Excellence? For example if PTDF appoints a professor who owns a chair? Does that automatically mean that, that place is a Centre of Excellence? That is a question that has to be answered, my answer will be no! I think a Centre of Excellence first of all will be a Centre where you have a pool of skilled people and then the equipment is there, When you have the right set of people in a Centre, one location, department or unit, or even a research cluster, where ever you have a group of people with the right expertise and then they have the tools to work within an area then that is a Centre of Excellence. And right now, I think IPS in UNI PORT is one, the one Shell established in University of Benin is another and there are others that are coming up in other universities, but even if we call them that by now, for them to sustain that name in the future, they need more people, they need the right equipment so that the result can come out. A Centre of Excellence must deliver, if it does not deliver at the high level expected, then it's not a Center of Excellence in reality, only in name and we don't want that.

What is the place of PTDF upgraded faculties/department. Are they qualified to be Centres of Excellence?

I think as the PTDF chair at the University of Nigeria that they are Centre of Excellence in one respect, I call it so because for instance in the University of Nigeria, we have expertise at least in some areas, in basin analysis and reservoir characterization, we have the skilled pool, we have plenty of papers. Last year alone, there were not less than 5 PhD's produced. All of them in a particular oil and gas studies namely, reservoir characterization which deals mainly on how you can find more oil in older fields using newer technologies. So in that respect, because of the kind of work we do, we are a Centre of Excellence and we have the skilled people and we have the tools to work with. At least in these areas, and I expect the PTDF Chairs in other universities have similar attributes.

In view of what PTDF is doing, do you think we are prepared for complete domestication of our trainings?

I think PTDF should continue with Oversea Scholarship Scheme, OSS. I decided to address that first because there are views that it should stop, I don't think so. PTDF has already been sending them not just to any school but to special schools where you know they will really learn. Nigerians need to attend those schools and PTDF paying for them. You can reduce the number of OSS and increase the local scholarships, I could train a lot more people with the money for the candidate abroad in my department and my area of geology and geo-physics and they will be competent for the industry hands-on. In the centers of excellence and so on they will equate that, but we must continue to give them that exposure. I think the domestication is important as we train more of our people and they are industry ready and the knowledge we are getting out is here with us. The other thing is, when you send somebody outside, even if he comes and uses your data like some of them do for their PhD's, sometimes unless he gives you a copy and asks you to do something relevant to that, we may even lose the information. So that is why it is important we encourage our centers some more.

WHY PTDF IS HOSTING THE CENTRES OF EXCELLENCE WORKSHOP

The workshop is providing a credible framework for improving on PTDF training programmes through collaboration and partnership with experts in petroleum engineering and geosciences training.

As a strategy, this will facilitate the domestication drive of PTDF by using the Centers of Excellence as training grounds for PTDF scholars. These centers compare favorably with the foreign Universities. This means that more local scholarships will be awarded for studies in local universities with the added advantage of ensuring industry relevance of the training and research. While not cancelling out rightly the overseas scholarship scheme, the Fund will continue to explore avenues of providing training in-country without compromising standards. PTDF has also upgraded the facilities in 26 oil and gas departments in 26 universities which have been deployed for the training of scholars under the Local Scholarship Scheme.

The effort of PTDF is to also increase the employability of scholars, ensure that they have requisite skills and experience that should make them attractive to and desirable by national and international oil companies. PTDF is not a regulatory agency and does not have the mandate to force any oil company to employ anybody. Interestingly, the Federal Government established the Nigerian Content Development and Monitoring Board (NCDMD) to carry out that role which is to ensure compliance with the Nigerian Content Act. So in situations where you have local capacities that have been built, companies whether they are local or foreign should consider employing these people first. This is the essence of the Local content Act being enforced by the Nigerian Content Development and Monitoring Board as a regular. This is distinct from the job of PTDF. However, PTDF is doing other things to make our scholars more employable. Apart from giving them relevant need based training arising from skills gap audit, which prescribes the skills that are needed in the industry, PTDF exposes the scholars to industrial attachment to acquire entrepreneurial skills that are tailor made for the industry. In spite of all these the International Oil Companies still prefer to import skilled labour.

With the level of intervention in areas such as welding and fabrication and in other areas of its mandate, the expectation is that oil and gas companies in Nigeria especially will jump at recruiting PTDF ready-made man power. With the effective application of the Local Content Act and the political will by government its imperative that where there are qualified, competent and experienced experts in Nigeria, there should be no reason to import manpower from outside the country ■

POLICY SHIFT IN PTDF SCHOLARSHIP PROGRAMME

The Petroleum Technology Development Fund (PTDF) has announced new policy directions that will fundamentally affect the operation and funding of its overseas scholarship scheme and other training programmes under its management.

These include a partial domestication of the scholarship scheme in Nigeria in line with the Local Content policy of the Nigerian government, and the denomination of the scholarship in hard currency as against the naira due to the volatility of foreign exchange rates.

To give effect to these policy shifts, the Fund has opened up discussions with officials of foreign universities where Nigerian scholars are regularly sent for their Masters and PhD studies under the sponsorship of PTDF, on the possibility of either setting up branches of their institutions in Nigeria or collaborate with local universities in Nigeria, particularly those whose oil and gas related departments have been fully upgraded by the Fund, to become Centres of Excellence in teaching and research.

At an interactive session with officials of the Imperial College London and the University College London as well as Nigerian scholars officials of the Fund agreed that such a partnership will hence forth form the basis for the Fund's future relationship and co-operation with universities providing training and research to its scholars abroad.

The Petroleum Technology Development Fund has as part of its mandate of enhancing the institutional capacity of universities offering oil and gas related courses, upgraded not less than 26 departments in universities as well as developed oil and gas polytechnics from scratch. Some of these upgraded facilities have become centres of academic excellence for oil and gas related courses in Nigeria

The Fund already plans to use the National Institute of Petroleum Policy and Strategy, Kaduna, as the

co-ordinating centre for alternative energy sources and renewable energy resources.

The students, mostly PhD scholars, had at the interactive session raised serious concerns on the domestication and commercialization of their research results which they alleged are currently appropriated by their universities of study. The scholars are worried that their research efforts are rather benefiting UK companies and industrial concerns. According to **Mrs. Uwaila Omoruyi**, a PhD scholar at Imperial College London, so many Oil companies and pharmaceutical firms in the United Kingdom have indicated interest in her research work on the use of biomas as catalysts.

"*The thing I am worried about is after I have done my research, one company in the UK just comes over and buys it. Still we cannot even go back to Nigeria and say NNPC, Shell etc we have this beautiful catalyst, we can produce all the solvents from biomas, can you implement this on an industrial scale? A whole lot of billions will be generated. We get this research done, our supervisors sometime collaborate with the industry in UK, and our ideas and sweat are just gone and all we get at the end of the day is a PhD*".

She was of the opinion that the Federal Government having invested so much in their training should also ensure that their research outcomes directly benefit the oil and gas industry and the academia in Nigeria.

Adamu Abdullahi Suleiman also a PhD scholar at the Imperial College London is working on identifying the hydrocarbon deposit of Nigeria's frontier basins such as Chad and the Benue trough.

"*We do this work here, we produce and generate results of our research here and they are used by North Sea prospectors. These results go back to their industry, tomorrow British Petroleum will use it, increase its production capacity; we pay tuition fees, we do the research for them and then we give them the results, so if there is any way we can get data for our research in Nigeria, this will help and this is where PTDF can come in- so that we can have the result going back home*".

Akpan Michael a PhD scholar at the University College London, said his research topic was rejected twice by his supervisor because of its non relevance to current realities and challenges in the UK industry. He said his research proposal on "*waste management, material recycling facility-optimising the 6 geopolitical zones in Nigeria*", was intended to be of relevance in solving the challenge of waste management in Nigeria. "*I won't use Nigerian money to Fund another person's project because I am a Nigerian to the core. I will not use my fatherland's money to Fund somebody else's project. I have a passion for Nigeria and I want to do a research that will benefit Nigerians and I am determined to lose the scholarship if denied the opportunity to do research that favours Nigeria*" says Akpan with patriotic zeal and nationalistic fervour.

Perhaps, a way out of this controversy is for PTDF to be more inclined to provide project based sponsorship that will make sure that a prerequisite for sponsoring research is its industry relevance. Is it relevant to our own industry back home? The Fund will provide a platform back home in Nigeria where PTDF scholars with patentable breakthroughs will showcase their research findings, particularly those that can easily be applied to projects in Nigeria.

On the issue of payments and remittances for the scholarship programme, the current realities with regards to the foreign exchange regime necessitates a shift in policy of denominating the scholarship payments from naira to hard currency. This is because of the foreign exchange volatility which poses a serious challenge if not paid out in foreign currency.

Meanwhile a PhD scholar **Maurice Ezeoke** studying at the University College London under the sponsorship of the Petroleum Technology Development Fund (PTDF) has designed and built an electromagnetic sensor, as part of his research on electromagnetic characterisation of bare faced terrain for security surveillance and monitoring.

Mr. Ezeoke, a Lt Commander in the Nigerian Navy and a Naval Satellite Engineer was part of the 12 man Nigerian team that built Nigeria's first two satellites- the Nigerian Satellite 2 and Nigerian Satellite X. Mr. Ezeoke said his research which led to the design and development of the radar equipment will be of immense benefit to the intelligence community in Nigeria. "*My last chapter deals with geo-intelligence ie how you can use patterns and proximities to help predict and forecast events such as terrorist bombings. I expect that after my research here in the UK, I am going to be of assistance to my country by way of contributing to the work of the defence space agency and the office of the National Security Adviser, where I hope that my work will help them to better predict terrorist incidents*".

Professor Nicos Ladommatos

Professor of Mechanical Engineering University College London, has supervised the work of many PTDF scholars. He spoke with PTDF Digest in London.

Please introduce yourself

I am Professor Nicos Ladommatos, from the department of Mechanical Engineering. I have been in UCL for many years now, I have been the head of mechanical engineering department for 10 years now, I finished my tenure 2years ago and now I do mostly supervision of PhD and Msc students. We have a substantial number of students supported by PTDF at the mechanical engineering department, both Msc as well as PhD students and they are very good students. We enjoy having them, they contribute greatedly to the learning process among themselves and other students and we are very pleased to have these students.

Are you presently supervising any PTDF Scholar?

Yes! At the moment I am supervising Mr Hamisu Danladi, he has just completed his first year. He is a very assiduous student, very dedicated student, his works involve the formulation of new fuels made from both fossil sources, but they are also made from new materials, renewable materials for example from cellullosic materials and the idea is to produce fuels from molecular level so that this fuel can be used in diesel engines, in vehicles, both goods vehicles and passenger cars which produce minimum toxic emission. Hamisu's project involve experimental works, which is analyzed to find out why different fuels produce more or less polluted emissions. He has to use very sophisticated equipment like gas analyzer which is standard in industry.

You also supervised another student?

Christopher is also a Nigerian like Hamisu, he came to us a year ago to do masters in power systems, and he is supported by President's fund. He is an excellent student, he has come tops in written examination, he is doing his project, he hasn't completed his Msc, he should complete this year, he has contributed enormously also to the learning life of Msc students. He has approached us now to stay and do PhD on combustion and diesel engine. From my discussion with him, he is very keen when he goes back to make a contribution to the country. We have discussed how his project is going to provide him with the skills for example to form fuels in various communities in Nigeria especially the remote communities, where they might make their own fuel for example.

You have been dealing with students, particularly those sent on scholarship by PTDF. Give us an overview of their performance?

Yes! I have been the head of mechanical engineering department from 2004 until the beginning of last year, during those period I saw many scholars from PTDF coming to the department for Msc's and PhD's, I have always been impressed by the scholars, they have all been dedicated and hardworking and have always been impressive, I have personally supervised quite a number, so I have personal experience of how good and dedicated they are, we are very pleased to have your scholars in our department.

SCHOLARS SPEAK

My name is **Uwaila Omoruyi**, am a PhD scholar under PTDF. Am currently in my first year of PhD here at Imperial College, am trying to do a research on how to design some catalysts for the transformation of some biomass products into more viable petro chemicals. Now as part of this research, I intend to take some biomass including waste products, producing them into more viable chemicals and this will serve as a platform. Instead of producing petroleum products from just crude oil alone you can also do that from biomass. Now one of the significance of this project is that it is not only applicable to the oil industry. As a lecturer back home, it will serve as a platform from which I can also train other students because this training will afford me the opportunity of learning from a well renowned university here in the UK and some of this knowledge will be applied back home in my university.

My name is **Onyema Sunday Nduka**, am a PhD student at Imperial College London. Am actually working on control and optimization of electric power distribution system. This research is very essential because recently it is a research that is creating a lot of interest in the UK, it's also been pulling a lot of interest in the US, it is also relevant for the Nigerian electric utility industry because the issue of electricity losses is a global concern. Electricity losses could lead to things like global warming, it could lead to things like increase in electricity bills, and it could lead to things like over voltages destroying electric equipment and then it could also lead to things like fire hazard where the problem is very severe. So in my research am trying to develop some computational tools and am trying to perform some simulations using some advanced computer tools to be able to find out the best way with which companies can operate their networks with renewable energy sources integrated into the networks and they will be able to achieve maximum operation. So am very happy, I want to commend the effort of PTDF for giving me this opportunity to be able to contribute in trying to solve a global problem.

I am **Adamu Abdulahi Suleiman**, I am a final year PhD Student here at Imperial College London. I am studying petroleum system modelling of the Nigerian sector of Chad basin. This Chad basin we all know is one of the frontier basins in Nigeria and there has been a lot of hydro carbon exploration campaigns in the basin since 1980s. However all the explorations carried out so far have not been a success simply because we are not able to fully understand the subsurface geology of that area; my research is trying to address this problem. There are two things;

(1) Understanding the structures that contain the hydro carbon,

(2) Evaluating the impact of igneous pyrogenous that happened in the basin. I believe that at the end of this research I will be able to delineate hydro carbon bearing structures, and this will increase the hydro carbon reserve of Nigeria, Chad Republic, Niger and Cameroon have all made discoveries in Chad basin, so we can, by understanding the geology. So I believe this research will add value to our country, it will help in boosting the economy by increasing our hydro carbon reserve, I therefore urge PTDF to carry on and continue with this good work of sponsoring Nigerians to come here to UK or any other part of the world to carry out researches to add value to the country.

My name is **Lawrence Chukwuka**, currently a PhD student here at the University College London, and this is my 4th year, I would be rounding off very soon. My focus here has been on crude oil transportation. I've been dealing with energy efficiency in crude oil transportation in form of drag reduction in oil water flows. As a result of this experiment, I've been able to understand much more, the dynamics of fluid flow in terms of fluid transportation which is very beneficial to us in Nigeria because it will help some people to understand and optimize fluid or petroleum transportation from the depot, from the oil wells to every point where it is needed, either as raw product or as refined product from the refineries. PPMC and other stakeholders in the oil industry or part of the NNPC will find this research useful. This has also led to quite a lot of publications both in the local and international journals and conferences around the world and PTDF is being known for doing this great job all over.

My name is **Alozie Modesta** and I am a PTDF scholar studying in the University College in London. I am doing my PhD now. My research interest is to understand how the distribution of petrol benefits causes violence specifically in the Niger Delta. We know that the oil industry is the bed rock of the Nigerian economy, but issues of environmental degradation and violence keeps reoccurring once you mention oil in Nigeria. Because of the impact it has on the global economy and on the economy of Nigeria in particular, I want to understand the issues of violence and how that can be countered.

My name is **Ariyo Temitayo Oluwafemi Henry**, I'm a first year PhD scholar in the department of Biochemical Engineering, University College London. I am a PTDF scholar. My research has to do with delineating the relationship between profiting engineering and formulation. Over the years it has been known that alienation of biopharmaceuticals has led to instability of drug formulation so basically my research centers around designing new drugs, trying to understand more about alienation as it involves biopharmaceuticals especially those ones that have been known to help diseases such as Alzheimer disease, parkison disease. Understanding this alienation path way can enable me to better design drugs that can be used to treat these conditions better.

MEET PTDF SCHOLAR INVENTOR

My name is **Maurice Ezeoke.** I am a lieutenant commander in the Nigeria navy, am also a naval satellite engineer. In terms of my background, after my degree at defense academy in Nigeria, I also went to Naval Engineering College. I also attended university of Surrey, where I obtained with distinction an MSC in Satellite Engineering. I was part of a Twelve Man Team that built Nigeria's first two satellites which are the Nigerian satellite two and satellite X- the advanced imagery satellites. Prior to that was the Nigerian satellite 1 which was a medium resolution satellite but the Nigeria satellite 2 is a very high resolution satellite 2.5GSD. After my MSC, I obtained a post graduate diploma with distinction from Manchester Metropolitan University by distance learning while I was in Nigeria between 2009 to 2011. It was from there that I was able to obtain the PhD scholarship from PTDF and since then in the last four years I have worked on the electromagnetic characterization of bare faced terrain for security surveillance and monitoring. This means I have developed models of the terrain and models of aperture that can help you identify things on ground. The primary focus of the research has been to differentiate between different types of land terrains, between all sands on the floor, gravel and pebbles etc. but it has longer term application to things like security and surveillance, remote sensing, radar remote sensing. In terms of my work, I built hyper- spectral and radar models that enables you to obtain the back scattering and reflectant signature of terrain types. This wider application has to do with the intelligence community. My last chapter deals with geo intelligence, how you can use patterns and proximities to help you predict and forecast events, such as terrorist bombings etc, and I expect that after my research, I am going to be of assistance to my country by way of looking at defence space agency, and the National Security Advisers office where I hope that my work will help them better predict terrorist incidence.

I built this **electromagnetic sensor** with the assistance of PTDF.

It was built by an Italian Company which assisted in obtaining the polyiametric signature of terrains. Though I designed the sensor, it was too complex for University College London (UCL) where am studying to build.

PTDF SCHOLARS MAKE NIGERIA PROUD AT MALAYSIA UNIVERSITY GRADUATION CEREMONY

Thirty-five scholars of the Petroleum Technology Development Fund were among a total of 253 Nigerians who graduated in various academic disciplines at the 2015 convocation ceremony of the Linton University College Malaysia in collaboration with University of East London and Coventry University, United Kingdom. Altogether 50 Nigerian graduates distinguished themselves with first class honours degrees, among whom were 13 PTDF scholars who earned first class degrees in Software Engineering, Mechanical Engineering, Electrical and Electronic Engineering, Business Management and Civil Engineering.

Acting High Commissioner of Nigeria to Malaysia, Mrs Janet Besseng Odeka said the unprecedented achievement of the Nigerian scholars in a university in Malaysia has contributed in creating a positive image for Nigerians living in the country. The High Commissioner who addressed the PTDF scholars at a post convocation meeting in Kuala Lumpur, urged the graduands to go back to Nigeria and contribute to the development of the nation particularly under a new regime of transparent leadership *"I am really excited and grateful because this is the first time we are having such number of graduates who produced good results such as 1st class and 2nd class upper. We have had students from Nigeria who were involved in criminal activities and other immoral acts, but for the first time we are celebrating something we should be proud of as Nigerians. I wish to appeal to Nigerians here that they should emulate what these graduands have done to attract a good name for Nigeria"*.

It is expected that these graduates with excellent academic performances will be encouraged to proceed to their masters and doctorate degrees while others will be linked up with available job opportunities in Nigeria.

Although there is great benefit in training scholars abroad, the Fund is mindful of the fact that it must strive to continually increase its capacity to deliver same quality trainings to a greater number of its scholars in-country.

The Petroleum Technology Development Fund was mandated by the Federal Government under the Post Amnesty Disarmament and Rehabilitation Programme to provide quality education and training to youths from oil producing communities in the Niger Delta Region and other parts of Nigeria. PTDF awarded a total of 50 undergraduate and post graduate scholarships to the target beneficiaries to undergo Engineering, Information Technology and Business Management studies at the Malaysia campus of the University of East London-Linton University College,

Malaysia.

The scholars thanked the Federal Government for uplifting their educational background and requested for further consideration to be sponsored for post-graduate degree programmes.

Lucky Okeigbuna graduated with 1st class in Software Engineering, *"with what I have achieved here in Malaysia, I should contribute greatly in Nigeria. I strongly believe in education and I intend to proceed for my masters degree perhaps up to becoming a professor or consultant in my field of specialization"*.

Sunday Godswill made a first class degree in Business management *"I want to be an example to people who believe that if they don't know what they ought to know at the time they ought to know, then they will never know. Three years ago I was not able to read and write well but now I have confidence in myself. These are the difficulties that have become possibilities in my life courtesy of PTDF. I want to tell whoever will listen to me that I live a life to inspire others based on my personal experience, my life is a miracle and I believe that life itself is a miracle, believe in yourself and you will succeed. It is my desire to use my skills and experience to help people in my country positively and to touch the lives of the masses by helping them where and when I can. PTDF has really touched my life, I am very grateful to PTDF"*.

Samuel Adekalu who was given a scholarship by PTDF to study business information system at the Linton University College, Malaysia, made a second class upper and has already received another scholarship for PhD to study in a research university in Malaysia *"it is really a great privilege and my life has been transformed. I look forward to becoming an academic in a Nigerian higher institution"* ■

Congratulations to our Scholars!

First class PTDF scholars in various academic disciplines.

Jafar A. Nasir
Software Engineering

Abubakar Bashir Shehu
Software Engineering

Ateinyam Awuduma Adike
Business Management

Godswill Sunday
Business Management

Aisha Abubakar Shema
Software Engineering

Abdulhakeem Abiodun Solihu
Civil Engineering

Rabiu Aminu
Electrical Electronics Engineering

George Bokolo
Business Management

Lucky Okehigbemen
Software Engineering

Maryam Nasir Modibo
Software Engineering

Mubarak Umar Albaka
Software Engineering

KEY FOCUS OF THE FUND GOING FORWARD:

- Scholarships and strategic partnerships
- Curriculum review of petroleum related courses in Universities
- Encourage, Foster and facilitate internship placement for students and ensure that graduates are industry ready
- Encourage, foster, and facilitate opportunities for lecturers to go and work/carry out research in the industry
- Encourage, foster, and facilitate industry adoption of specific departments in educational institutions
- Encourage, foster, and facilitate industry retirees to work in the institutions
- Diversification into renewable energy
- PTDF researchers and scholars form a problem solving hub in the Oil & Gas industry

PTDF DELEGATION VISITS SCHOLARS IN NORWAY

To keep abreast of scholars' welfare and progress in various institutions across the world, the Petroleum Technology Development Fund (PTDF) pays regular visits to these institutions of study, to have a first-hand appreciation of issues arising from their study abroad.

A delegation of the Fund visited Norway where 39 PTDF scholars are studying oil and gas related courses at the Haugesund University College, Haugesund, Norway. The strategy is to hold personal discussions with the students on challenges being faced by them generally and individually.

Leader of the delegation, Mr Peter Egheneji, a Chief Officer, Industry Collaboration Unit (ICU) PTDF, encouraged them to open up on their challenges which he said will be communicated to PTDF Management. According to him, information is better communicated when there is one-on-one interaction.

Mr. Egheneji commended the good conduct of the scholars which made them good ambassadors of the country. *"I will just urge you to be good citizens. You are here for your studies and you must take it very seriously. Whatever you are doing here you are doing it for your selves and the country Nigeria"* he said.

The students thanked the delegation for the visit and listed some issues and challenges confronting them. Most of them had to do with delays in payment of their allowances, their bus cards and accommodation issues. Some of them spoke to PTDF Digest.

Akinpelu Abdulwaheed - a student of Mechanical Engineering in the university acknowledged that Norway is a very good place for learning and their standard of education is very high. *"We really appreciate the Nigerian Government, through the PTDF for their contribution to our studies here in Norway. Whatever knowledge we acquire here, we have to credit it to our country because our country has spent so much money on us. When we finish this programme, we will like to come back to the country and help move the nation forward by contributing the expert knowledge*

we have acquired to the development of the nation. We are ready to make the Nigerian Government proud through PTDF at the end of the day".

Gloria Nwaosu - student of Mechanical Engineering in the University *"Studying in Norway is quite difficult. It is also difficult to adjust in Norway. We the students here are trying to see how we can fit in with their standard of living and learning. We will try after our studies to come back to Nigeria to develop Nigeria. I want to say that I am very grateful to PTDF and that I am optimistic that we will make the country proud".*

Daobry Peter - student of Mechanical Engineering in the University, *"Studying in Norway is cool and good. It is good because we have everything at our disposal ranging from constant internet services. The Federal Government through PTDF has provided everything for us the scholars. So we have all it takes to excel to the maximum. We don't have any excuse for not achieving success because our teachers are at our disposal. Here in our school, we have what we call the calculation study where the best student assists other students on topics. We have the library where we can go in at any time to read etc. So studying in Norway is very good. Some of the challenges we face here in Norway is in their marking scheme which is very high. In all I am very grateful to the Federal Government of Nigeria through PTDF for this wonderful opportunity and privilege given to me in Norway".*

Fatima Yusuf - student of Petroleum Engineering, *"Studying in Norway is quite nice though very difficult when compared to Nigeria. I want to say a very big thank you to PTDF for organising this scholarship and I promise that I will do my country proud".*

At the end of the interactive session, the leader of the delegation, Mr. Peter Egheneji, promised that all the issues and challenges raised by the scholars will be presented to PTDF Management for further necessary actions ■

UNITED NATIONS PARTNERS PTDF IN PRODUCING AFRICA'S FUTURE OIL AND GAS INDUSTRY MANAGERS

The United Nations, has restated its commitment to strengthen its existing partnership with the Petroleum Technology Development Fund (PTDF) in producing competent and qualified manpower for Nigeria as well as, globally certified and employable professionals capable of leading Africa's oil and gas industry in the near future.

United Nations Assistant Secretary-General and Executive Director, United Nations Institute for Training and Research (UNITAR) Ms Sally Fegan-Wyles made the commitment in Abuja when she paid a courtesy visit on the Fund.

There is an existing partnership agreement between PTDF and the United Nation's Institute of Research (UNITAR), through a Memorandum of Understanding (MoU) signed in 2012 to train some young Nigerians in the core areas of petroleum, marine and Sub-sea engineering in Norway.

The unique partnership is to see to the training of young Nigerians in degree programs in Norway as well as provide mentorship and apprenticeship programs that will expose them to the industry and boost their employability on graduation. The UN office also promised to secure educational grants to a number of the students to ease the financial burden of training them by PTDF.

Ms Fegan-Wyles observed that, the challenge of foreign expatriates domination of the oil and gas industry has been an issue that affects not only Nigeria, but most African countries with natural resources which limits the ability of local professionals to take over the management of their country's resource. "*They haven't had the kind of experience nor have the requisite academic qualifications and work exposures that the global oil and gas industry requires. Most universities in these countries only trained people for academic excellence rather than training them for employment*".

She said, the partnership between PTDF and the United Nations through its Institute of Research will change the trend in Nigeria and Africa as a whole, as it will facilitate the production of graduates that are trained to work in Petroleum or ship building industry among other technical areas. The graduates will also be instilled with the right attitude and discipline required by international oil companies from their employees. "*So that, as they finish their academic training they become immediately employable*". This she said is made possible by the apprenticeship and other mentoring components of the partnership agreement.

"*We will like to commend PTDF for taking the leadership in this area and for having established this programme and selected UNITAR as the UN partner for doing this. We are going to be producing the future middle management cadre of Nigeria's oil and gas industry and the future leadership of the industry. Because many other countries who have recently discovered oil are facing the same challenges as Nigeria, we believe that, from this experience, Nigeria can be the beacon of best practices in the industry*"

The UN Assistant Secretary-General disclosed that, UNITAR is working out a partnership with the oil and gas industry employers and respective Universities to design standard academic courses that are specifically tailored to produce the kind of graduates that the oil companies want, rather than the kind of graduates the universities want which are not always the same.

She said, *"the very interesting aspect of this partnership with PTDF is not only in designing the engineering degrees to make sure that, we produce the kind of engineers that the employers want, but also in having apprenticeship program during vacation periods. It is one thing for the young people to have academic learning, we know the behavioral skills that makes you really employable and if we can put as much working experience as possible into their vacation time, by the time they graduate, they will have an understanding of the need of the industry from the point of view of the industry. That means when they do job interviews they will perform in a different way from young people who have only academic exposure"*

The Fund thanked the United Nation's team for its interest in helping the country and Africa to indigenize its oil and gas sector, and described the strategic partnership between PTDF and United Nations through its Institute of Research (UNITAR) as a ground breaking mission specifically tailored to not just provide academic knowledge but ensures that, the graduates becomes efficient and effective in the oil and gas industry. It stressed that the partnership with the United Nations Institute of Training and Research (UNITAR) demonstrates the seriousness of the Fund to contribute through capacity building to the future of the oil and gas industry in Nigeria.

Head Industry collaboration Unit of the Fund, **Miss Timipre Wol**o said, the Fund engaged in partnership with UNITAR in furtherance to its mandate to build indigenous capacity for the oil and gas sector as well as its commitment to youth development and creation of employment for young Nigerians.

She said, the coming into effect of the Nigerian content law has empowered the country to compel oil companies to give priority to Nigerians in their employment consideration, while PTDF will strengthen its activities to ensure that, existing gaps were identified and young Nigerians were trained to fit into the gaps ■

BARONESS LINDA CHALKER
ON HOW IOC'S CAN ENGAGE PTDF SCHOLARS

The co-ordinator, Nigeria's Honorary International Investor Council, Baroness Linda Chalker says the mandate of the Petroleum Technology Development Fund in building capacity for the oil and gas industry is critical to the survival of the Industry and for maximising the benefits of the oil and gas resource in Nigeria.

Linda Chalker who in the last 30 years has been canvassing for new investments into Africa visited PTDF Corporate Office.

According to her, "*Unless you build capacity you would not get the best out of your industry, and it doesn't matter whether it's in the oil industry or any other industry, Capacity building helps government to make better use of their resources*".

Baroness Chalker argued however that for such trainings to be meaningful, and sustainable, the trainees must be effectively engaged and made to practice the skills they acquired in the course of their training.

"*When you train people, you want them after the period of training to go on using that training, and you would only persuade a funder of training to bring in more people in if they are going to go on using the best outcomes of that training*" she added.

On whether the international oil companies who are in joint venture partnership with the Federal Government in the development of the nation's oil resources should be compelled to employ Nigerian professionals trained by PTDF, Baroness Linda Chalker cautioned against that but advised that the Fund should adopt the dialogue option. "*You need to know if the IOC'S value the training you are giving as appropriate to their needs, to fill their skills gaps. Unless you do that, and you don't do it just once off, you have to repeat it and update it to make sure the training you are giving is what the customer wants. I think a dialogue with the IOCS is essential*" she said.

It will be recalled that at the Close-Out of the 2012/2013 research Cycle of PTDF Annual Research Grant Competition, a case was made by the Fund for oil companies in the country to be compelled to employ Nigerian professionals who passed through PTDF capacity building programmes, to help in developing the oil and gas sector.

90% of Nigerian oil is produced by joint venture companies (JVC). The Federal Government equity share in the project is 60 percent while 40 percent is for the IOC'S with Nigeria controlling the large share of the JVC, it is the expectation that it should influence the engagement of Nigerian professionals in oil and gas projects.

PTDF spends huge sums of money in manpower development through research and training of Nigerians in engineering, geology, geosciences, management, economics and relevant fields in the petroleum and industry. "*The purpose is to add value domestically. To achieve this requires the political will to compel oil companies to employ Nigerian trained professionals to work in the sector as against waiting for the IOC'S to do that. By so doing, government will be getting value for the money it is spending in training, research and development*".

"Unless you build capacity you would not get the best out of your industry, and it doesn't matter whether it's in the oil industry or any other industry, Capacity building helps government to make better use of their resources".

BARONESS LINDA CHALKER
speaks with PTDF DIGEST

You are still coordinating Nigeria's Honourary International Investor Council?

My path in life for the last 30 years has been to try to get new investments into Africa, and it doesn't matter whether I do it through Africa Matters ltd or whether I have been doing it through the HIIC or HPAIS. I intend to go on helping Nigeria win investment. How I would do it in the future, I don't quite know yet, but I would let you know when I know.

What brings Baroness Linda Chalker to PTDF?

I am not a petroleum engineer, I am a statistician by training but I know that unless you build capacity you would not get the best out of your industry. Some years ago l worked with the then Head of the World Bank Jim Wolfenson on this very issue of how you build capacity in governments to make better use of their resources and that is exactly what I understand PTDF does. So I have come along to find out about this organization.

Based on your Global Experience, in what ways do you suggest PTDF can do things differently?

When you train people, you want them after the period of training to go on using that training, you would only persuade a funder of training to bring people in if they are going to go on using the best outcomes of that training. I am a trustee of an organization called the Invest Climate Facility for Africa. We do a huge amount of change management with governments to try and develop the capacity of the individuals employed, civil servants, specialists and so on, so that for instance the revenue authority actually pulls in the money that should be paid into it, so that there is more money in the government coffers to support more training, more education so that you get the best out of training.

PTDF does not train in vacuum, there are basis upon which our training programmes are run. It's derived principally from a survey, we now know those skills which Nigerians lacked and we try to train to fill those gaps, and those surveys are conducted in the oil and gas industry dominated by the IOC's. How do you think the IOC's can be compelled to utilize those people we have trained based on the outcome of the skills gap survey conducted by the Fund in the IOC's?

You need to know whether the oil company and IOC's value the training you are giving as appropriate to their needs, to fill their skills gaps. Unless you do that and you don't do that just once off, you have to repeat it and update it to make sure the trainings you are giving is what the customer wants. It's as basic as that. I think a dialogue with the IOC's and the National oil company is essential. I don't know if you have it on an intermediate basis and it needs to be very realistic, the people you have got doing the training need to be up to date with what is happening both upstream and downstream and often training organisations and I am not criticizing you entirely, I am thinking much more generally, training organisations are not up to date with what the industry wants to have trained.

Finally I just went through your bio data, it's very intimidating. How can we use your influence to knock on doors of donor agencies, to go into collaborative ventures with PTDF in developing capacity?

I think again it's like the dialogue you need to have with donor agencies, it's all about quality, appropriateness, focus on the changes that are happening in the petroleum industry and also in the gas industry. Because you are PTDF, we sometimes forget that you can do trainings in the gas sector because some of the techniques are similar, but you need people to understand. Remember the future for West Africa would be gas and there are some very clever people who are involved in that UN agency and I would be involved in future, but it must be doing what the industry really needs and that's why you need a new dialogue with the industry ■

FIRST SET OF NIGERIANS TO ACQUIRE ADVANCED AND SPECIALISED WELDING SKILLS RECEIVE INTERNATIONAL CERTIFICATION IN TURKEY

Nineteen beneficiaries of the Petroleum Technology Development Fund (PTDF) Welders training and Certification Programme (WTCP) have emerged the first set of Nigerians to acquire International Certification in advanced and specialised welding processes. This followed their successful completion of an advanced welding course at the German Institute of Welding, Eskisehir, Turkey in November 2015.

The graduate trainees who were chosen from a pool of 1,200 successful participants of the Fund's Welders Training and Certification Programme (WTCP) in Manual Metal Arc Welding (Fillet, Plate and Pipe) are now qualified and certified to engage in high end multiple welding processes for the construction industry such as flow stations, gas stations, compressor stations, floating barges, large diameter pipelines, steel bridges, and agricultural machinery. Their skills are also required by the defense, petro- chemical and automotive industries as well as in the maintenance subsector.

The 19 had in the course of the training gained practical and theoretical knowledge in Flux Core Welding, Tungsten Inert Gas Welding (TIG), Metal Inactive Gas Welding (MIG), Metal Active Gas Welding (MAG) and Oxy-Acetylene Gas Welding.

The graduants received their certificates of proficiency and expertise in the 5 advanced and specialized welding processes at the close out ceremony in Turkey. The occasion marks another milestone in PTDF capacity building initiative to develop a crop of highly skilled Nigerian welders that will effectively take over welding and fabrication activities not only in the oil and gas industry but in other sectors of the economy. The advanced welding skills will enable them to work in areas previously only available to expatriates. This will lead to a reduction in capital flight

with attendant benefits to the nation's economy.

The 19 graduating welders will be engaged on their return to Nigeria in training other Nigerians to acquire similar skills and proficiency, as a way of ensuring the complete domiciliation of fabrication activities in the oil and gas industry, and to advance the Nigerian Government's Local Content drive. This is part of efforts towards domiciliation of all welding activities and capacity building in Nigeria. These trainees are not only competent and capable to do welding but also capable of transferring the knowledge to other people because it is a train-the-trainer programme. When they get back home, they are expected to train other people in-country. The reason being given by International oil companies operating in Nigeria for bringing foreign welders to Nigeria is that we lacked welders with requisite skills and experience and that is why PTDF started this advanced welders programme so that there will be no excuse to take jobs that are meant for Nigerians in any area of welding and related fields.

Buttressing this fact, Solomon Edebiri, President, Nigerian Institute of Welding said at the graduation ceremony, that one of the setbacks to the engagement of Nigerian welders is the requirement for expertise in the 5 advanced welding processes. "*With the ongoing skills upgrade for the beneficiaries of PTDF Welders Training and Certification Programme, Nigeria is set to commence the process of repatriating all the foreigners who are sent to Nigeria to serve as welders. We can assure all organisations that in the next five months, Nigeria will have enough competent welders that are proficient in the advanced and specialized welding processes to replace all the imported foreigners*".

In addition, the NIW President affirmed that in the next twelve months, there will no longer be a need to send any Nigerian abroad for the purpose of training in any area of welding and related fields.

On behalf of the graduate trainees, Ijafa Atoju, one of the two female members of the set, expressed their appreciation to the Federal Government for making their dreams come true. "*We regard this opportunity as a privilege knowing we were selected from a total of 1200 trained welders by PTDF. We will work, learn, teach, communicate and consistently give the very best of our abilities.*"

Other graduate trainees had these to say:

Ngwu Japhet - "*All of us are now practically skilled in gas welding, acetylene, MIG, MAG, TIG, Fluxcore welding. We are happy to tell you that when we go back to Nigeria, we will deliver the best to our fellow Nigerians who are waiting for us to teach them.*"

Christabel Asierika - "*It's not just the practical and theoretical knowledge of welding that we have learnt here, we have also learnt culture. The essence is to add value to everything that we do. In this environment we have learnt that it is not just coming to burn electrodes, achieving just the welding, you have courtesy in everything you do*".

The Nigerian Government local content drive of ensuring complete domiciliation of fabrication activities in the oil and gas industry as provided by the (Nigerian Content Act) led to the development and implementation of PTDF's Welders Training and Certification Programme.

So far about 1,200 Nigerians have been trained under the programme with a good number of the trained welders fully integrated in the industry as practitioners and qualified instructors. As a result of the Fund's efforts, the industry is now experiencing a dramatic turn-around with a large number of Nigerian trained skilled workforce taking up key jobs and roles in the petroleum industry. The advanced welding programme of the WTCP evolved as a result of an audit /evaluation of the welding and fabrication capabilities of public and private training institutions in Nigeria carried out by the Fund to determine areas of urgent intervention in terms of equipment needs and requisite human capacities. The exercise subsequently identified knowledge gaps and the need for capacity building in the area of advanced welding.

From available statistics, no Nigerian welder practicing or working in Nigeria has received formal training and expertise in the five core areas of advanced welding. The significance therefore is that the 19 Nigerian beneficiaries of the PTDF advanced and specialized welding course are pioneers having received the expertise, practical experience and full knowledge of advanced welding processes relevant to the oil and gas industry as well as in welding fabrication centers in Nigeria. This will contribute substantially in ameliorating the dearth of local highly skilled welding professionals, which has been the justification for the engagement of expatriates by international oil companies (10C's) operating in Nigeria.

The Nigerian Institute of Welding is collaborating with PTDF in facilitating the Welders Training and

Certification Programme, which is pivotal to the realization of Nigeria's local content capacity building in welding and fabrication. The President, Dr Solomon Edebiri said at the formal inauguration of the PTDF advanced training programme in welding three months earlier that the trainees on graduation will form the core of Nigerian welding professionals that will be competent and functionally relevant in oil and gas construction, civil construction, fabrication works, underwater welding as well as in maintenance works.

"I am confident that these Nigerian welders that are here in Turkey will return to up skill thousands of Nigerians in our quest to fully domesticate welding and fabrication activities in Nigeria. It is expected that as soon as these students return home on completion of the training, they will commence the training of other Nigerians without allowing any vacuum to exist."

The investment in human capacity development by the Federal Government through PTDF will ultimately lead to the realization of Nigeria's drive for local content development, technological advancement and sustainable development.

There are about 1200 people that PTDF have trained in Manual Metal Arc welding. About 40% of welding graduates are fully integrated in the industry and so many of the certified welders are being used by the training centers in- country as international institute of welding (IIW) qualified instructors. It was discovered that despite these achievements, some of the oil companies are still bringing in expatriates because they believe that there are still some jobs that those who did Manual Metal Arc welding cannot handle. So PTDF took the initiative and invested in the training of Nigerians in more advanced welding processes that are required by the industry.

BENEFICIARIES OF PTDF ADVANCED AND SPECIALISED WELDING TRAINING PROGRAMME SPEAK ON THEIR EXPERIENCE

Chinyere Christabel Asierika

My name is Chinyere Christabel Asierika. I am from Anambra state Nigeria. I joined welding as a profession shortly after my HND in mechanical engineering. I was about going for youth service when I heard that PTDF was giving scholarship. I applied and was called for examinations. After the exams, while I was on camp, I got a message that I was short-listed. After we were done with the training, I was employed at ANOTECH. So far welding as a profession is actually an exciting profession because it's very interesting when those things you learn in school you apply them. It's exciting contributing your quota and serving your country in spite of the challenges. A lot of people asked me why do you do this kind of man job? I like it because I have passion for my job and it's this passion that keeps me going and when I see it working out, it gives me so much joy.

Etim Anyiefiok

My name is Etim Anyiefiok, from Akwa-Ibom state, south-south Nigeria. I came from a very humble background. My father is just a technician, a painter and my mother is just a trade woman and they did their possible best to see that we get the best of our education. I did my ND in the Petroleum Training Institute and I came out with upper class credit and in the process of my schooling, different things came up like application for jobs, interviews and all that. So when this program of PTDF came up I didn't get the information on time, it was just about three days to the end of the program when somebody told me about it, so I hurriedly gathered the things required. Fortunately, I was short-listed for the entrance examination. We wrote the exam in Port Harcourt, there were thousands of us, I was in train two of the program, and by the grace of God I found out that my name was among those for the training program.

So how do you feel being amongst the very few to be selected to take part in this highly specialized welding program?

Let me trace back to when we did a closing ceremony of the program in Port Harcourt ITL. I came late and the PTDF officials had gone, we asked what transpired and they told us that PTDF said they will be training 20 in Turkey in advanced welding. So I said well if I am chosen I will thank God but if am not I won't worry myself, I still believe I will be among the 200. So one day I was at home, I was doing some things and my phone was charging. So when I came I saw about six missed calls and when 1 called back fortunately it was one of our examiners. He asked me where was I and what was my name, I told him and he said congratulations, you are among those that have been successfully picked. In fact I was short of words, I was so overwhelmed, I just give God the glory because it is not that easy.

I want to say that on a normal basis if you want to run even shield metal welding, the manual metal welding, if you want to do it on your own cost it is very expensive, I wouldn't even have such money to enroll but now taking it to a higher level. In fact I am grateful to PTDF, to NIW and I am most grateful to Nigeria in particular.

Atoju Oreka Ijafa

Before being selected to participate in this training, what training programs did you pass through PTDF?
I went through the first stage which comprises of three modules, module A which is just like an introduction into welding and to module B which is an advanced process and then module C which is the last. All these modules comprise three months each.

What opportunities do you think exist for you having gone through these processes?
There are so many opportunities out there, like we were being told that there are so many jobs out there with few people to occupy those jobs and with welding, it has opened our eyes to the understanding of the fact that there is a gap and it has to be filled, so with this knowledge, it has given us the room to bridge the gap that has been created.

How did you get to be selected? It was not been asy, I wouldn't say this is the criteria, but the only thing I knew for sure was what they told us only the best will be taken and that if it wasn't the best, we will not be able to stand with others in the world, so I felt they brought in the best, so that even if the best in the world comes, we will be able to stand among the best.

Why do you want to be a specialized welder; it's not a job for females is it?
I want to be unique, I want to be outstanding, I want to be different, If a man can go dirty I think I should also go dirty, as long as the work is being done, I want to see people saying a woman is doing this job, I want to be different.

Before their departure to Turkey for the Advanced and Specialized Welders Training Programme, an induction ceremony was conducted by the Fund to educate the trainees on how to behave in a foreign country being PTDF and Nigerian ambassadors in the Republic of Turkey. The trainees were also bonded through a Memorandum of Understanding (MoU) that on return to Nigeria they will impart the knowledge they have acquired during the training to younger and upcoming welders. This is in an effort to bridge the existing welding and fabrication gaps in the oil and gas industry.

The induction ceremony was flagged-off at the head quarters of the Nigerian Institute of Welding in Benin City, Edo State which was not only the fulfillment of the promise PTDF made during the close-out of the WTCP module-C in June 2015, but also a significant milestone towards the fulfillment of the mandate of the Fund to identify the skill gaps in the oil and gas industry and build capacities to ensure the complete domiciliation of activities in- country. PTDF is providing the advanced welding trainees with the rare privilege to acquire specialized high-end welding skills in order to create a sustainable means of income and provide a worthwhile livelihood to enable them make their own contribution to the economic development of the nation. The ceremony was therefore a celebration of the outstanding performance of the trainees during the WTCP-Pipe Weld programme examinations.

"This occasion is unique and important in many ways. It marks the successful progression of some top performers amongst WTCP-PTDF trainees to the advanced and specialized welding programme in Turkey; it marks the rejuvenation of the advanced and specialized welding programme previously executed in 2010, and opens a new chapter to the lives of twenty young Nigerians that are on the verge of joining the small but important group of indigenous internationally certified professional welding practitioners that are needed to meet the Nigerian content requirement of ongoing and planned projects in the oil and gas industry"

The PTDF led audit/evaluation of welding and fabrication capabilities of all federal universities, polytechnics and private institutions conducted across the country identified the knowledge gaps in the areas of advanced and specialized welding such as Flux core welding, TIG welding, MIG/MAC welding, Electric stick welding, Electric resistance welding, pipe welding, Torch soldering and construction welding.

The President, Nigerian institute of Welding, Dr Solomon Iyabosa Edebiri commended PTDF commitment to capacity building in the oil and gas industry particularly in welding, fabrication and other related fields. He said that, the decision to train and qualify welders in more industrially relevant processes is in response to the dynamic demand of the oil and gas industry on welding technology which is constantly demanding higher levels of welding and personnel competency in more than one of the processes.

Some of the areas where the advanced trainees welding skills will be deployed include the civil construction industry such as the high rise buildings, Gas infrastructure projects such as the industrial gas park and Badagry gas plants, offshore constructions like Bonga South West and Egina projects, maritime-passenger and Cargo ships, boats, barges, ferries and pipeline projects such as the trans sahara gas pipeline among others. *"On completion of this program, competence shall be deployed in the operations and projects which all constitute critical high strength steel components and other materials within the weldability range of the welding processes required in the oil and gas industry and other sectors"* ■

PTDF FLAGS-OFF IN-COUNTRY TRAIN-THE-TRAINER COURSE IN ADVANCED AND SPECIALIZED WELDING

The nineteen (19) successful graduates of the Petroleum Technology Development Fund's (PTDF) sponsored Advanced and Specialized Welding Training Programme in Turkey have been deployed to serve as instructors in the in-country training of the first batch of One Hundred and Thirty (130) Nigerian welders in advanced and specialized welding skills. At the end of the programme, it is expected that 200 Nigerians would have acquired the proficiency and international certification in high-end welding processes.

The in-country advanced and specialized welding training programme was flagged-off at the Nigeria Institute of Welding (NIW) headquarters in Benin, Edo State. The Fund adopted the train-the-trainer approach into its WTCP programme, to fast-track the training of the huge number of skilled local welders required to fill the welding and fabrication gaps in the petroleum sector. The programme has since produced over 1200 indigenous technicians, welding specialist and engineers in plate, fillet and pipe welding processes.

PTDF is striving to produce all round competencies in the sector in view of the fact that, no welder practicing in Nigeria has acquired full competence in all the five welding processes so far. To address this challenge, PTDF developed the Train- the- Trainer (TTT) programme in advanced and specialized welding, where nineteen trainees that performed exceptionally well in the previous welding courses from trains I&II of the WTCP participated in a programme in Turkey to acquire high-end welding skills. Today the nineteen have successfully completed the programme and have returned home to serve as instructors that will train many more Nigerians in-country.

The Fund, believes that, there are too many jobs without the people. The sad reality in the Oil and Gas industry is that, the jobs are available but not many people have the requisite skills to be engaged in the industry. PTDF is therefore bridging the gap by empowering Nigerians and offering them the opportunity to be trained to acquire the right knowledge and skills that would earn them qualifications for effective engagement in the industry.

A study by the Nigerian institute of Welding revealed that no indigenous welder practicing in Nigeria has formal training and expertise in all the five core areas of advanced welding i. e Flux Core, Tungsten Inert Gas Welding, Metal Inert gas welding, Metal active gas welding and Oxy-Acetylene Gas Welding prior to PTDF Sponsored training of the 19 welders in Turkey. Consequently, the proficiency in all the five welding processes will give participants competitive advantage over their colleagues in the industry.

Opportunities for specialized welders in Nigeria are limitless when considered against many on-going and planned development projects in the industry. These include, the construction of the multi-country trans sahara gas pipeline projects, the industrial gas park in Bayelsa, the Badagry Gas plant infrastructure project in Lagos, the offshore construction in Bonga West, the building of floating production storage and offloading vessels and the construction of oil platforms and cargo ships among others.

The President Nigeria Institute of Welding (NIW), Dr Solomon Edebiri thanked the Fund for fulfilling its promise to further up-skill 200 competent beneficiaries of the PTDF-WTCP programme. The programme which is the product of collaboration between PTDF and NIW has over the years produced welding practitioners, specialists, technicians and engineers with most of the beneficiaries presently working in different establishments around the globe.

He said that, the attainment

of the federal government's vision of industrializing the country will continue to be a mirage, if the country fails to develop its steel industry, welding and fabrication capability, non-destructive testing, inspection and machining technology, which are the crux of the future Nigerian industrial state. The first phase of the train-the-trainer programme will last four months. On completion the beneficiaries will be competent in six (6) welding processes thereby making them fit for the construction, manufacturing and maintenance industry.

Mr Ugochukwu Azubuike of the Dolphin Integrated Services, Port Harcourt on behalf of the service providers, thanked PTDF for not only making the beneficiaries competent but also increasing the capacity of the training providers themselves to be able to deliver quality training to the beneficiaries of the PTDF-NIW welders training and certification programme.

"*We the training providers deeply appreciate PTDF for the previous and on-going welders training and certification programmes. We are not surprised when the Fund is called the lead proponent of low hanging fruit by identifying with this skill gap in the oil and gas industry, and while we pray and urge you to continue on it, I want to say that, within the rank of this low hanging fruits lies the development of Nigeria. As much as trainees are excited we the service providers are also excited because not only have we developed capacity to train, our partnership with you has enriched us too, both in context and content, capacity and standard to offer the desired training and I want to assure you that, as we succeeded in the previous ones we shall also succeed in this one. God willing*"

One of the training instructors, Atoju Orekajita on behalf of her colleagues thanked PTDF for welding young bright Nigerians together to become trainers. This she said has given them a new sense of reasoning and a hope for a brighter future.

"*The journey to Turkey is a product of great minds that love their country and saw the need for this welding vacuum to be filled in our oil and gas industry, the journey opened our eyes to a new method and way of teaching and way of life. We have not only learnt the various welding processes but we also learn how to transfer the knowledge acquired to the people of Nigeria*".

She said, as instructors now, they will strive to teach, impart, change, transform, and rebuild the country especially in the production of quality manpower that will take over the welding bit of Nigeria's oil and gas industry hitherto dominated expatriates in the nearest future ■

PTDF is striving to produce all round competencies in the sector in view of the fact that, no welder practicing in Nigeria has acquired full competence in all the five welding processes so far. To address this challenge, PTDF developed the Train-the-Trainer (TTT) programme in advanced and specialized welding, where nineteen trainees that performed exceptionally well in the previous welding courses from trains I&II of the WTCP participated in a programme in Turkey to acquire high-end welding skills. Today the nineteen have successfully completed the programme and have returned home to serve as instructors that will train many more Nigerians in-country.

PTDF TO FACILITATE THE ESTABLISHMENT OF WELDING ENGINEERING PROGRAMMES IN NIGERIAN UNIVERSITIES

In spite of the Federal Government's effort towards bridging the gaps between local skills in the oil and gas sector, it has been discovered that no Nigerian University is offering Welding Engineering programmes at under graduate or post graduate levels.

This was made known at the presentation of the audit report carried out by the Nigeria Institute of Welding (NIW) for the Petroleum Technology Development Fund (PTDF), the main aim being to audit and evaluate welding capacities in vocational, tertiary and private institutions in Nigeria. The audit report, found a huge deficiency in the training programme for welders, especially in areas of advanced and specialised welding.

Before the intervention of the Fund in the training of welders, only two facilities were certified to train welders in Nigeria. However, privately owned welders training facilities have now grown to 50 with over 1200 Nigerians trained in basic welding processes. After the 1,200 trained welders, the Fund decided to raise the bar by upskilling 19 of them in Advanced and Specialised Welding in Turkey, under a Train-the Trainer

scheme.

It is the expectation of the Fund that those qualified in high end welding processes, will train another 200 Nigerian welders locally to bring the number of trained specialised welders to 219. At least between 60-70% of the activities in the oil and gas sector involves welding and it is not just oil and gas. In Every industrial and manufacturing activity, there is one form of welding involved. So welding is very critical in the manufacturing sector, that is why PTDF is spending so much money training welders.

President, Nigerian Institute of Welding, Dr. Solomon Edebiri while giving details of the audit report, said 214 institutions made up of universities and polytechnics were involved in the study. The audit report revealed that no Nigerian university offers welding engineering as a degree programme. He however stated that 22 percent of Nigerian universities offer at least three COREN approved engineering programmes that are closely related to welding engineering and technology.

The review of Nigeria's welding industry revealed the following:

- Lack of a national blue print for the advancement and assessment of welding industry in Nigeria.
- Disharmony in personnel qualification benchmarks in the welding industry
- National limitation in capacity and capabilities (Equipment & Personnel, Processes)
- Disconnect between learning institutions and industry practices through outdated and disconnected knowledge of teaching personnel.
- Limitations in research grants and development/implementation of research findings.
- Lack of national welding standard/ technology database.

From the skills gap audit that was done, it was found out that Nigeria needed about 5,000 qualified welders for all the programmes and projects that Nigeria was going to do. PTDF has tried to bridge the gap by training about 1200 Nigerians in manual metal arc welding, which just scratches the surface.

PRESIDENT NIGERIA INSTITUTE OF WELDING DR SOLOMON EDEBIRI GIVES MORE HIGHLIGHTS OF THE AUDIT REPORT

"With this, we already know what the gaps are. We know what the equipment deficiencies are. We know that these gaps exist. Once you know that these gaps exist, you can now plan on how to close the gaps. I think that is the basis we found ourselves now. We have enough information to work for the future.

Q: What were the criteria used in your assessment?

A: *We have a check list. Look at the standard. Are they old? Are they new? Are they able to carry out the purpose of which they were established? Are they able to meet the correct standard? Then look at the facility itself, look at the equipment that are meant to provide training. You look at the human resources, the equipment that is provided and look at the structure itself. These three things combined together, provide enough capabilities for training and for building human capacities.*

The university is supposed to be a research centre. When you carry out a research, you carry out a prototype of the production and sell the procedure to any manufacturing company that wants to buy it, then they go out to start producing it. Without the right equipment, personnel or environment you cannot do all these. That is what this audit has revealed and that is what PTDF was able to do for Nigeria and I believe that with the current commitment of PTDF, in the next couple of years these gaps will be closed and we can actually domicile in-country all welding activities both training and production in Nigeria" ■

PTDF WTCP score card

- ✓ Training of Twenty (20) International Welding Practitioners in South Africa
- ✓ Training of Ten (10) international Welding Specialists in South Africa
- ✓ Training of 11 underwater Welding Technicians in France
- ✓ Training of 11 industrial Welding Engineers in Turkey
- ✓ Training of over 1200 International Welders in Nigeria.

Excellence IN SCHORLARSHIP

Our guest in this column is Dr Umar Bamalli, the Chief Executive Officer, Nigeria Institute of Mining and Geosciences, Jos. He is a beneficiary of PTDF Overseas Scholarship Scheme (OSS).

Please introduce yourself and your relationship with PTDF?
My name is Dr. (Engr). Umar Bamali, I am currently the Chief Executive, Nigeria Institute of Mining and Geosciences Jos. I came in contact with PTDF in 2001/2002 when I was sponsored for my Postgraduate in Minerals Engineering. I did my MSc in Minerals Engineering and Processing in UK. I am among the first set of PTDF scholars with Higher National Diploma (HND) background to be awarded scholarship by PTDF.

What kind of training did you receive under PTDF scholarship at that time?
I was a staff with Raw Materials Research and Development Council (RMRDC) and we did a lot on the mining and mineral sector. With PTDF intervention, I was able to go to one of the best school of mines in the world, and I was able to see the latest equipment, the latest technology. I was given one of the best training in the mining sector. I visited some of the best mining sites like China clay in UK, and I was in Greece underground mines, that was in 2004. It's an underground mining site which was almost 2 kilometers underground, and this exposed me to a lot of practicals in the mining sector. And coming back to Nigeria, I decided that I shouldn't leave the sector, but I should contribute my own quota by either training or being directly involved in making sure that the sector progresses.

How did the training offered by PTDF helped shape your career?
On coming back, I realized that the

Dr Umar Bamalli

knowledge I acquired in UK will be useful in areas such as research. I started working on some of the Nigerian minerals to look at their potential, and I was encouraged by some of my colleagues to go into PhD in one of the sectors because Nigeria has a lot of mineral resources. I went to research on barite which is one of the most valuable minerals in the sector, because without barite you cannot drill for oil. So I decided to go into that sector to do a research on the reserves and the quality of Nigerian barite for oil drilling and it has helped a lot, because in 2006 government decided to ban the importation of some minerals but later on because government was not convinced that the minerals are available, they decided to start giving import duty again, but with the research findings and the knowledge which I acquired from overseas, it has shown that we have a lot of mineral deposits, which is equivalent to the requirement of the oil industry. I stand to say that government should ban the importation of that mineral and we should start exploiting it so that people can have job opportunities and can generate some foreign exchange for the country. And this is part of the challenges I faced to make sure that the knowledge I acquired is not wasted. It exposed me to some of the minerals in the sector which working together with my colleagues will be developed to encourage government to diversify the economy.

What is your assessment of PTDF capacity building programme?
Actually there is a lot of capacity in the sector and that is why you can see I talked about barite, which is a drilling fluid, without which you cannot go for oil and gas drilling and that is why I decided to take up that area. The oil sector has a lot of potentials and we have other raw materials from solid minerals that can contribute to the sector and my research on the barite has shown that we don't need to import more barite into the country. We need to exploit our own, so that we can save this money. I can say 80% of the drilling fluid is coming from barite and we have other components like bentonite and other minerals. It has contributed to the oil and gas sector significantly, because before now, the oil servicing companies had to go to Morocco and India. It helps now that we have barite in Cross River which is not up to 500km from the oil rigs and it has contributed a lot in that sector. PTDF capacity building has shown that Nigerians can facilitate research to develop their sector help to make sure that oil and gas contributes more to the economy.

Would you have become CEO if you hadn't benefitted from the PTDF scholarships?
It would really have been difficult, because I can say that, Nigeria has a lot of graduates, over two million, especially now that people are looking at professionalism and if somebody is serious in his area of specialization he will excel, that is why I decided on coming back after my MSc to continue the research work and that is what made me to be where I am today ■

PTDF TRAINED PILOTS SOAR HIGH IN THE SKIES

Some of the PTDF Trained Cadets and the Caverton Team that flew the newly acquired Caverton Helicopters from France

Twelve PTDF trained helicopter pilots on 18 month Internship programme at Caverton Helicopters, have completed a series of extensive regulated trainings within and outside Nigeria.

In fulfilling the requirement for full time flying as internationally certified commercial pil oil and gas industry, the Cadets received qualifications in 3 different helicopter types.

Four (4) of the Cadets were type-rated in Westland (AW139) aircraft; four (4) of them in the Bell 412 Air craft; four (4) pilots type- Eurocopter AS350 (squirrel) Helicopter.

Based on these achievements, the Cad graduating from Cadet Pilots to 2nd Officers only been Type-Rated but also carry out flights within and outside Nigeria. Reports fro Helicopters in Lagos indicate that some of the among the pilots that flew some newly acquir helicopters from other countries to Nigeria.

PTDF Digest congratulates the Cade successful graduation to 2nd Officers and for being PTDF ambassadors of our Helicopter Piloting Training Programme ■

Congratulations!

Mr. and Mrs. Isu Elamanologi Emmanuel
May 2, 2015
Mr. Isu Elamanologi Emmanuel is of the Education Department, PTDF

Mr. and Mrs. Ibe Onyeka Samuel
October 15, 2015
Mr. Ibe Onyeka Samuel is of the Project Department, PTDF

Mr. & Mrs Eustace Obaze
January 30, 2016
Mrs Oyintare Jemide Obaze is of the Human Resources Division, PTDF

Anuli Nwonu
MA Human Resource Management. University Business School, London
Year of graduation: 2014
Training Division, PTDF

Sobomabo West
MSc Forensic Audit And Accounting University of South Wales, UK
Year of graduation: September 2015
Accounts and Finance Division, PTDF

PETROLEUM TECHNOLOGY DEVELOPMENT FUND (PTDF)

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INNA LILLAHI WA INNA ILAIHI RAJI'UN

Mr. Ismaila Jauro Hamasani

8th August, 1959 - 15th October, 2015

The Executive Secretary, Management and Staff of the Petroleum Technology Development Fund (PTDF) regret to announce the death of our colleague, Mr. Ismaila Jauro Hamasani on Thursday 15th October, 2015, after a brief illness.

Until his death, Mr. Ismaila Jauro Hamasani was a Manager and Head of General Administration Division of the Fund. He is survived by a wife and children.

May Almighty Allah (SWT) grant him eternal peace and al-janatul-firdausi. Ameen.

Signed
Management

Mission

To train Nigerians to qualify as graduates, professionals, technicians and craftsmen in the field of engineering, geology, science and management in the oil and gas industry in Nigeria or abroad.

Vision

To serve as a vessel for the development of indigenous manpower and technology transfer/ acquisition in the petroleum industry as well as to make Nigeria a human resource center for the West African sub-region.

The Mandate

- To provide scholarship 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 specified in paragraph (a) of this section.
- To make suitable endowments to faculties in Nigerian universities, colleges or institutions and conduct researches in oil and gas and other related fields aprroved by the Minister.
- For sponsoring regular or as necessary visits to oilfields, refineries, petrochemical 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.

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Developing Regional Know-How

The Petroleum Technology Development Fund (PTDF) is Nigeria's agency for developing and enhancing the skills, capacities, competencies and capabilities of Nigerians to operate and manage the various segments of the oil and gas industry.

- PTDF offers local and overseas scholarships to deserving Nigerian students for undergraduate and graduate studies in specialized oil and gas related courses in PTDF upgraded Nigerian Universities and top ranked universities abroad.
- PTDF trains and enhances the skills of Nigerian welders including under water welders for international certification to practice and carry out complex fabrication and welding requirements of the oil and gas industry.
- PTDF upgrades oil and gas related departments with world class teaching and research facilities in universities across the country.
- PTDF is also enhancing the teaching, learning and research skills of university lecturers including trainings in Engineering Design Software Interpretation.
- PTDF sponsors research activities in critical areas of the oil and gas industry through its Endowment and Research Grant Competition and provides the platform for sharing research outcomes with the industry through the Technology Knowledge Sharing Programme.
- PTDF is building relevant institutions for in-country development of the human capital requirements of the oil and gas industry. These include the Federal Polytechnic of oil and gas, Ekowe, Bayelsa State; The Federal Polytechnic Bonny, Rivers State, specializing in Environmental Management and Gas Technology; The comprehensive infrastructural and faculty upgrade of the Petroleum Training Institute, Effurun, Warri, Delta State; The National Skills Training and Development Centre, Port Harcourt, Rivers State; International Oil and Gas Research Centre and Museum, Oloibiri, Bayelsa State; The National Institute for Petroleum Policy and Strategy, Kaduna and the development of Information Communication Technology (ICT) Centers in secondary and tertiary institutions across Nigeria.
- Through its sponsorship of the annual "Catch Them Young" competition in Petroleum Technology, PTDF creates awareness and sustains interest among secondary school students in core science subjects necessary for the study of oil and gas courses and future career in the petroleum industry.
- PTDF conducts and regularly updates skills gap surveys and audit of the oil and gas industry to determine the skills requirements of the industry that Nigerians lacked and with a view to providing specialized training to fill the gaps.

ALL THESE AND MANY MORE PROGRAMMES MAKE PTDF THE LEAD AGENCY FOR HUMAN CAPACITY DEVELOPMENT IN THE OIL AND GAS INDUSTRY.

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