Nigerian Gas

A JOURNAL OF THE NIGERIAN GAS ASSOCIATION | FIRST QUARTER 2019

...The voice of the gas industry in Nigeria

A Chartered Member of International Gas Union

EVALUATING THE PLACE OF GAS AS A PRIORITISED ENABLER FOR NIGERIA'S ECONOMIC DIVERSIFICATION AGENDA

LNG to Power
The Role of LNG in Emerging West Africa Gas Market

Plotting the Nigerian Gas Flare Commercialization Programme (NGFCP)
to the UN's Sustainable Development Goals (SDGs) for Socio-Economic Development.

ISSN 1597-2577

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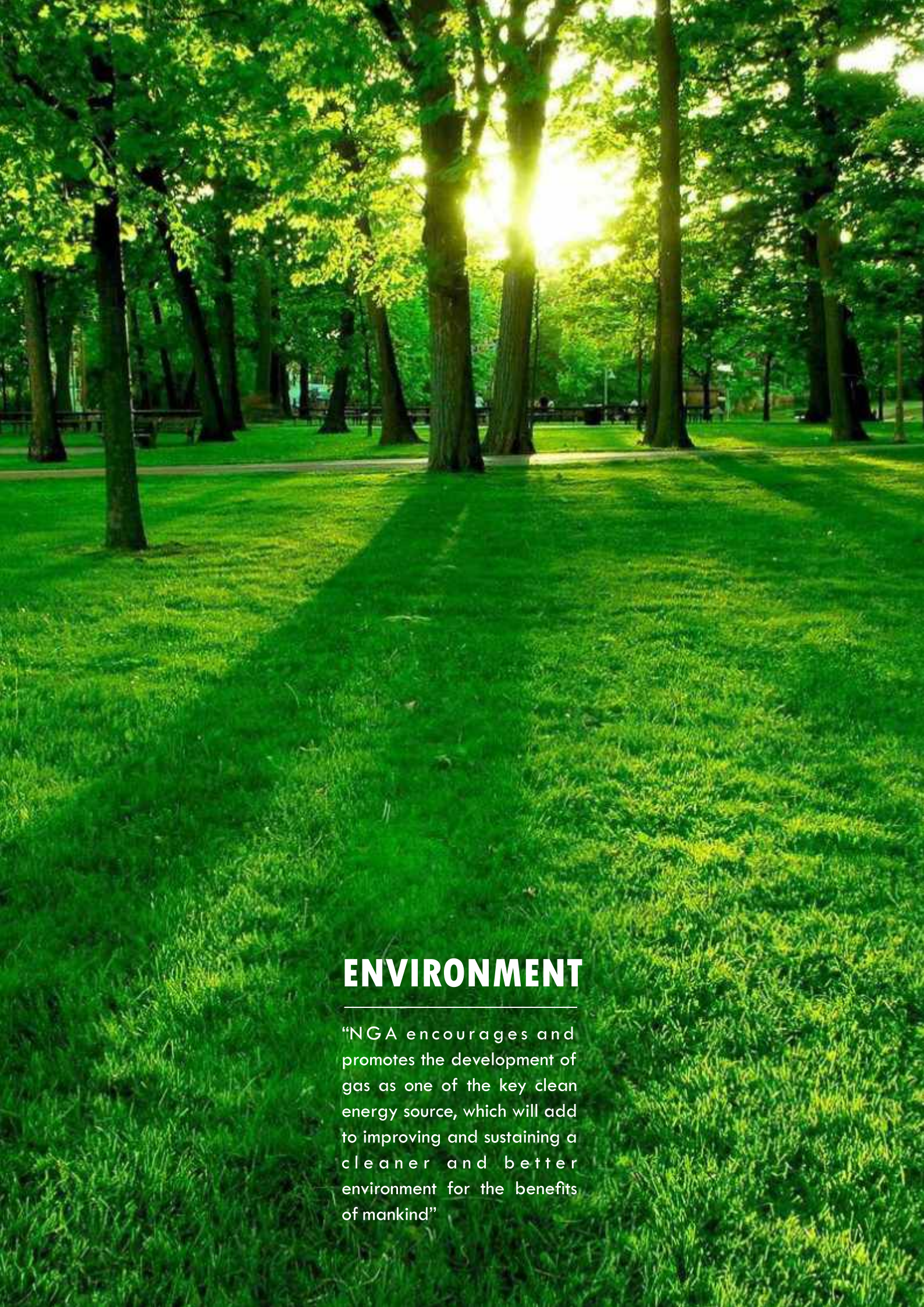

ENVIRONMENT

"NGA encourages and promotes the development of gas as one of the key clean energy source, which will add to improving and sustaining a cleaner and better environment for the benefits of mankind"

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About the NGA

The Nigerian Gas Association ("NGA") is the apex organisation representing the varied and numerous stakeholders in the gas sector within the Nigerian oil and gas industry. It is a non-political association that was formed in 1999 to promote the development of gas in Nigeria for the benefit of the nation and the various stakeholders.

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VISION

NGA will be the most influential and independent non-profit organization, in effectively advancing the role of Nigerian Natural Gas as the preferred energy source, while serving as the platform for championing the development of the gas industry in Nigeria.

MISSION

NGA will actively champion the competitiveness and utilisation of Natural Gas by promoting sound policy development, capacity development and best practices towards optimising the economics of the entire gas value chain, while emphasising environmental sustainability and safety.

OUR FOUR CARDINAL VALUE PROPOSITION

1. **Anticipate & Drive Legislation and Policies**

   Influence the formulation of Legislation, Policies and Regulation.

   Provide effective Advocacy to stimulate new thinking about Nigeria's natural gas resources.

2. **Promote Investment in Nigerian Gas Sector**

   Provide the platform for sharing points-of-view on industry opportunities in interactive settings and by participation in gas related trade mission including World Gas Conference.

3. **Encourage Best Practices and Acceptable Standards**

   Towards optimising the economics of the entire gas value chain while emphasising environmental sustainability and safety.

4. **Be the Industry Resource Centre of Choice**

   Authority for information in the Industry through knowledge exchange and constituted Study Group.

Benefit of the NGA Membership

- Greater influence and effective lobbying for more friendly legislation, policies and regulation
- More effective arbitration platform for stakeholders to resolve related issues and concerns
- A strong and centralised platform for accessing essential industry resources

Industry

Dramatic improvement in growth of the industry resulting in increase in:

- Gas exploration and production
- Local consumption/utilisation of gas especially in derivatives manufacturing for
- Gas Based Industries (GBI)
- Volume of gas export

National Economy

- Recognition of the Nigerian gas industry as key market by local and international investors
- Increased Foreign Direct Investment (FDI) into the country
- Increased revenue generation

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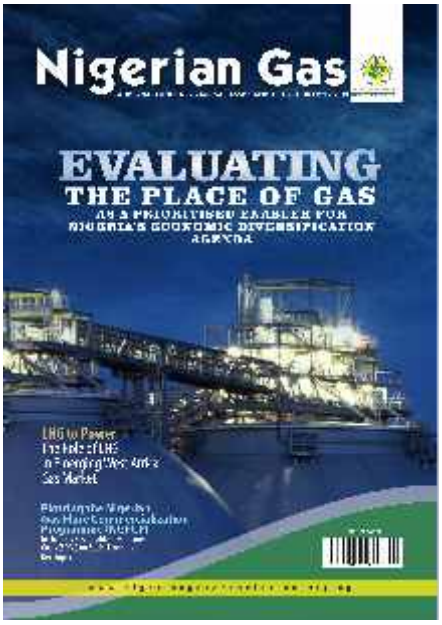

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Message from Chairman Editorial Board

Undoubtedly, energy plays an important role in powering the economic engine of any nation. The outlook is looking good for fossil fuels, as it is expected to continue to play a dominant role in the global energy mix, meeting 76 % of total energy demand by 2040 as projected by Gas Exporting Countries Forum (GECF).

This edition of the NigerianGas magazine was prepared to share views on the developments that have been taking place in gas markets and on the multiplicity of factors and players which are resulting in shifting strategies.

Typically, the industry has flared gas, burning it up at the source. Flaring means carbon emissions and lost product. However, with demand for cleaner alternatives to petroleum rising, flaring does not only pollute the environment, but also wastes a valuable resource.

The campaign for greater penetration of natural gas in the energy mix cannot be undertaken only by the owners of such resources or the producing companies; it should involve all stakeholders including producers, buyers, consumers, governments, environmental groups, academia et cetera that can educate on the benefits of natural gas as a rightful and legitimate leader in the energy transition towards more sustainable energy sources.

In this regards, the NigerianGas magazine provides a credible platform for all-inclusive dialogue including data exchange and debate, in the field of energy and natural gas market development.

In this edition, you will read how Nigeria is plotting its Gas Flare Commercialization Programme (NGFCP) to the UN's Sustainable Development Goals (SDGs) for Socio-Economic Development. There is a feature on LNG to Power: The Role of LNG in Emerging West Africa Gas Market; from GreenVille LNG, you will read another feature on LNG: Energy in Shaping Nigeria's Economy. Lastly, we interviewed the NGA 1st Vice President, Mr. Victor Okoronkwo on the robust role of gas in the future energy mix.

Happy reading.

HRM. Barr. Justin Ezeala

MESSAGE FROM THE PRESIDENT
NIGERIAN GAS ASSOCIATION

Dear colleagues,

As a nation, we have just come out of the throes of politicking and electioneering, the impact of which has been a slowing down of economic activity, the gas industry having been no less affected. We must all move forward however, and our view as NGA is that the imperatives for progressing the diversification of Nigeria's revenue base should come more to the fore at this time. Gas remains that critical resource which stands to rapidly catalyze the attainment of Nigeria's economic recovery and growth agenda; specifically, our aspirations relating to the expansion of our power sector infrastructure, energy sufficiency in power, the acceleration of non-oil revenue generation, attainment of agriculture and food security, as well as the driving of industrialization through SME's, among others.

The established correlation between the volume of gas consumed on the domestic front and the level of economic development of any nation provides the impetus for the current focus on growing our domestic gas industry. We must as a nation ensure we are more deliberate about gas-to-power, in-country value addition through gas-based industrialization, and the building of local capacity if we are to rapidly impact positively on the socio-economic wellbeing and empowerment of our citizens. These realities inform the theme for this edition of Nigerian Gas and of our first Business Forum for the year 2019, "Evaluating the Place of Gas as a Prioritised Enabler For Nigeria's Economic Diversification Agenda".

Natural Gas continues to feature strongly on the world energy stage. According to BP Energy Outlook, global demand for Gas is expected to continue rising by an average rate of 1.5% per year until 2035. It is projected that by 2040, 7% of the global energy production will come from Africa. Rising levels of industrialization and productivity in Africa are expected to drive one of the fastest increases in energy demand among the world's regions, with gas being the dominant fuel at 35% of Africa's energy mix. LNG exports are also expected to double to 9.8 Bcf/d by 2040, growth that is projected to be largely driven by new LNG plants in East and West Africa. The question remains as to how strongly Nigeria will continue to feature on the evolving gas landscape in Africa and therefore also, globally.

West Africa presents an interesting paradox, being a major LNG exporter while struggling with electricity demand that is largely unmet as a result of gross insufficiency in gas supply for domestic power generation. In this edition of NGA's Nigerian Gas magazine, we examine the viability of LNG-to-power projects in addressing energy availability, accessibility and affordability in Nigeria and across the West Africa sub-region; particularly with the development of domestic and regional LNG projects, evolving technologies and current demand patterns within the global LNG industry.

Specifically, we examine how Nigeria can best position to take advantage of the opportunities presented by these realities in addressing our power constraints, power availability being a primary enabler of our ERGP objectives. This edition also examines the role LNG is set to play in bridging domestic gas transportation issues, the Greenville project being a forerunner in this regard.

We examine the prospects for moving Nigeria out from amongst the league of gas flaring nations in consonance with the Paris Climate Agreement, through the monetization of flared gas under the ambit of the Federal Government of Nigeria's National Gas Policy and specifically, the National Gas Flare Commercialization Program NGFCP. Nigeria is targeting flare-out by 2020, a decade well ahead of the United Nations "Zero Routine Flaring by 2030" target; underpinned by the Flare Gas (Prevention of Waste and Pollution) Regulations 2018.

The world is counting on Nigeria to propel economic development using her Natural Gas resources as a catalyst. We recognize the several strides that have been attained within Nigeria's gas industry over the past few years but believe as NGA, that the pace and scale of advancements must be rapidly accelerated in the interest of the entire nation. Our role as NGA and the umbrella body speaking for players and participants within the gas value chain, is to continue to build capacity for industry investments to occur through the creation of awareness, sharing of knowledge on industry developments and technological advancements, facilitating local/regional/global investor relations. We are actively working to engender a higher level of understanding, alignment and partnerships between industry players and investors, and executive and legislative arms of the government to ensure we are all working in tandem to move our industry and economy forward. Additionally, by our active role within the International Gas Union IGU, we are giving Nigeria a stronger voice within the global gas industry.

As a new Council, we are championing the structuring (or restructuring) of industry reforms which will be implementable and beneficial to all stakeholders. We look forward to our efforts resulting to the crystallization of investment opportunities within the upstream, midstream and downstream segments of our gas industry. We count on the continued support and goodwill of our members as we work together to build a more robust and sustainable gas industry in Nigeria.

Do enjoy the read and we look forward to your feedback and insights on any of the articles within this publication.

Best regards,

Audrey Joe-Ezigbo
President, Nigerian Gas Association

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Benefits of NGA Membership

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4. Be the Industry Resource Centre of Choice

Authority for information in the Industry through knowledge exchange and constituted Study Group.

MEMBERSHIP

NGA membership provides a powerful communication tool, a voice to decision makers, links to related organizations, and the opportunity to help shape the future of the Nigeria energy industry.

NGA has a range of membership grades to suit every participant in the gas industry - from university students, through to qualified professionals in all disciplines, to the interested and involved such as financiers and investors, energy lawyers, leading and emergent technology/service providers etc that are contributing to shaping our nation's oil, gas-LNG and energy future.

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NGA CALENDAR 2019

AGM & Business Forum
16th April

IGU Council Meetings
23rd – 25th April
8th – 10th October

The NGA's nominee, Mr. Emeka Ene, was elected Vice Chair of the IGU Exploration and Production Sub-Committee for the 2018 – 2021 triennium, the first Nigerian and African to ever hold a position on the IGU Council. We plan to actively utilise the IGU platform to give voice to the Nigerian Gas Industry on the world stage.

Learning Solutions Training – Stream 1
20th – 22nd May

NGA 20th Anniversary Event
5th July

An event which will showcase and highlight the achievements and contributions of the NGA to the Nigerian Gas Industry Value Chain over the past 20 years.

Gas Legal Forum/ Policy Dialogue
14th October

Financial Forum/ Industry Roundtable
15th October

These Forums will be hosted during the year to interrogate the legal/policy and financial landscapes and the effects on the Gas Industry Value Chain.

Learning Solutions Training – Stream 2
11th – 13th October

Advocacy
Continuously and aggressively advocate on critical issues such as Petroleum Industry Bill, Power Sector Debt, Foreign exchange exposure, including a representative of the NGA on Governing Boards of relevant Industry Parastatals; and with the Federal Government for the creation of a dedicated cabinet position which will serve as the voice for gas at the highest level of government in Nigeria.

NGA Study Groups
NGA Study Groups have been restructured and revamped in line with the reality of current important issues in the Nigerian Gas Industry Value Chain. The new study groups and their respective chairs are:

- Study Group 1: Network Code & Infrastructure – James Odiase, Seven Energy
- Study Group 2: Gas-To-Power Value Chain – Ransome Owan, Aiteo
- Study Group 3: Legal, Regulatory & Policy – Ike Oguine, Advisory Legal

Investment Promotions
NGA will continue engagement with the NIPC, various embassies, High Commissions, Trade Missions, and regional gas associations to facilitate cross-border and international partnerships and investments in gas opportunities in Nigeria.

Equipping of the NGA Secretariat
Delivery of a fully functional secretariat with the required facility and human resources to fully engage the association's members and support her activities, through the use of information technology.

Website Overhaul
We apologise for technical shortcomings members may have experienced with the NGA website. The NGA's web and internet interfaces are currently being upgraded and will be unveiled to members soon.

Revamping and repositioning the NGA Learning Solutions
Repositioning the NGA's Learning Solutions brand for increased sustainability, relevancy and value to current practitioners in the Nigerian Gas Industry Value Chain.

A COMMUNIQUÉ

ISSUED AT THE END OF THE NIGERIAN GAS ASSOCIATION 11TH INTERNATIONAL CONFERENCE AND EXHIBITION, HELD AT TRANSCORP HILTON, ABUJA, NIGERIA, 14TH -16TH OCTOBER 2018 WITH THE THEME "SHIFT TO GAS ECONOMY: PACE AND SCALE OF INNOVATION IN THE WEST AFRICA SUB-REGION"

The conference carefully considered and addressed several pertinent issues of urgent national importance. At the end of deliberations, the following conclusions were reached:

- The conference highlighted that Nigeria is facing an energy crisis despite having an abundance of Natural Gas. This is unacceptable given that Nigeria is the 9th largest Natural Gas resource holder in the world. Natural Gas remains a viable fuel option to environmental sustainability due to its cleanliness and low green gas emissions.

- The key energy challenge facing the nation is not a lack of energy resources such as Natural Gas but the question of 'What are we doing with the resources?'

- The conference noted that there is a correlation between the levels of domestic gas consumption, power production, and the Gross Domestic Product (GDP) of a country. Full monetization of our abundant Natural Gas resources will propel the Federal Government of Nigeria's (FGN) economic diversification agenda. Nigeria, as with other countries in the West Africa region, must embrace the use of Natural Gas to accelerate the pace of development and industrialization of their respective national economies within a regional framework.

- Gas via the Gas-to-Power value chain is key to achieving the objectives of the government's Economic Recovery and Growth Plan (ERGP).

INTERNATIONAL GAS UNION

- The International Gas Union IGU forecasts that energy demand will continue to grow as the world population increases; but the demand will largely be for cleaner energy including gas, with a reduced relevance of oil in the primary mix.

- The IGU sees a bright future for Natural Gas with 3.7% growth in global consumption, more than double that of the previous five years. With the signing of the Final Investment Decision (FID) on NLNG TRAIN 7, the IGU sees Nigeria playing an increasing role in the global energy market. The IGU recommendation is for Nigeria to keep gas development as a key focus area for the economy and leverage its gas reserves for industrialization.

GOVERNMENT POLICY AND GAS DEVELOPMENT

- The FGN's commitment towards providing a policy framework to guide gas development, as expressed through the formulation of the National Gas Policy is commendable. The conference however pointed out the need for government to review and strengthen the policies, backed by enabling legislation, to encourage much-needed private sector investments.

- The conference opined that the oil and gas industry restructuring has lasted too long and calls on the FGN to urgently pass the Petroleum Industry Governance Bill, Petroleum Industry Fiscal Bill, Petroleum Industry Administration Bill, and the Petroleum Industry Host Community Bill in the coming months, as this will increase investor confidence in the gas industry.

- There is an imperative for the deepening of Liquefied Petroleum Gas (LPG) utilization in Nigeria through policy and market-driven reforms that will encourage private capital

- investment in the sector. The conference identified the challenges confronting the LPG sector as the global pricing benchmark, exchange rate volatility, shortage of discharge terminals, inadequate storage and transportation infrastructure, taxation of locally produced LPG vs. non-taxation of imported LPG, etc. and calls for concerted action by the government to address these issues.

INFRASTRUCTURE AND GAS SECTOR DEVELOPMENT

- Natural Gas has the capacity to propel industrialization. The conference noted that Gas exports are used for the development of other economies. Nigeria should therefore aim at balancing domestic and export needs with domestic gas consumption embracing gas-to-power, gas-based industries such as fertilizer, methanol and other petrochemical plants, transportation and other sectors.

- The conference noted that maximizing capacity utilization of existing gas infrastructure is of as much importance, as the push for new gas infrastructure development. There should be extensive due diligence by project developers in planning and execution of projects, as well as concerted efforts to enhance execution capabilities of contractors.

- The conference lends its support to the NNPC 7 critical gas projects and therefore calls the FGN to support these projects, including the expansion of the NLNG Trains, the Ajaokuta-Kaduna-Kano (AKK) Pipeline Project, the Brass Fertilizer Project and other similar projects that are imperative to the realization of Nigeria's Economic Recovery and Growth Plan (ERGP) priorities.

- The conference notes that the NLNG Train 7 project will engender massive foreign investment inflow, increased foreign currency earnings through taxation and dividends to the FGN.

NIGERIAN CONTENT

- Communities play a key role in providing conducive environments and ensuring security of critical national assets. The conference enjoined industry operators to invest heavily in training and capacity building of their indigenous Nigerian contractors to grow their capacity and maintain regular stakeholder engagements with their host communities to ensure the attendant outcomes of curbing vandalism and enhancing community development.

- The conference noted that Local Content implementation through the Nigerian Content Development and Monitoring Board (NCDMB) has made positive impact in the economy. The conference commends NCDMB's intervention funds to support local contracting asset acquisition and financing capacity; and its ongoing establishment of oil and gas industrial parks as key ingredients for economic development.

GAS TO POWER

The conference noted that the gas-to-power value chain is currently neither viable nor sustainable. The nation is facing an energy crisis. The conference therefore calls for the FGN to declare a power sector emergency in order to develop a holistic intervention plan to rescue the gas-to-power sector from collapse, and to put in place plans for the immediate liquidation of the over One Trillion Naira debts within the gas-to-power value chain and assurances for payment of generation and gas invoices from 1st January 2019.

- The illiquidity crisis in the power sector is exacerbated by added market imperfections which do not provide for adequate incentivization of the entire value chain, including: a non-market-reflective pricing framework; ineffectual securitization and guarantees; infrastructure deficits; inadequate tariffing; and the current situation in the foreign exchange market which creates significant exposures, losses and value erosion for investors.

- The conference therefore calls on the FGN to urgently review the progress of the incomplete Nigerian Electricity Sector reform and take necessary steps to conclude the process and solve the pending issues. Emphasis was placed on decentralization of the national grid and making way for catchment power generation across the nation.

FUNDING, PRICING AND PAYMENTS

- The conference noted that pricing and payment assurance are strong determinants for private sector operators and investors in gas projects, particularly for gas supply to power. The power sector represents the largest gas off-takers in the domestic market and as such, appropriate legislation and regulations should be put in place to set market-reflective tariffs that assure operators can recoup their investments.

- The conference notes the drive to attain parity of domestic gas price to export to encourage entrepreneur investments in the Gas sector. However, consideration must be given to the fact that the gas supplied to NLNG, based on export pricing, is unprocessed gas, whereas the requirement for domestic gas supply is for processed gas which requires significant additional capital investment.

- The conference noted that the challenge of a shallow domestic financial market works against the local financing of the sector through high interest rates and shorter-tenured credit facilities and a mismatch of investment currency in US Dollars and income in Naira.

MINISTER OF STATE FOR PETROLEUM RESOURCES (DR IBE KACHIKWU)

- The conference is in alignment with the Honorable Minister of State for Petroleum Resources, Dr. Emmanuel Ibe Kachikwu who reiterated the relevance of Natural Gas in economic development and industrialization and noted that there is still a huge amount of work to be done in the Gas sector towards actualizing the FGN's aspirations.

- The Honorable Minister stated that infrastructure development is key and informed the Conference of the FGN's plans to launch the Gas Infrastructure Rebirth which will open up tariffs and create policy positions that enable investment by the private sector in critical gas infrastructure, to progress our national aspirations for gas-based industrialization.

The Conference calls on the FGN to maintain a concerted push towards monetization of Nigeria's gas resources, noting that Natural Gas is a key ingredient for the success of the FGN enunciated ERGP key priority areas of:

1. Achieving Agriculture and Food Security – Natural Gas resource abundance supports increase in fertilizer production

2. Attaining Energy Sufficiency in Power and Petroleum Products – Natural Gas fueled power generation remains the lowest cost option for immediate and massive increase in national grid power generation as well as increased LPG production

3. Improving Transportation Infrastructure – Natural Gas vehicles will enable in the first instance mass transit and large fleet operations

4. Drive Industrialization by focusing on SMEs – Natural Gas will provide the fuel and energy required for local manufacturing including Petrochemicals to grow, providing the necessary platform for Industrialization.

MRS. AUDREY JOE-EZIGBO
PRESIDENT, NIGERIAN GAS ASSOCIATION

Q&A WITH VICTOR OKORONKWO

1ST VICE PRESIDENT, NIGERIAN GAS ASSOCIATION

Victor l. Okoronkwo 1st Vice President, Nigerian Gas Association & Senior Vice President at Aiteo Eastern E&P Ltd

Over 30years of Oil and Gas Industry experience. Results-focused and innovative Executive offering expertise within the oil, gas and power industry. Full knowledge of the oil and gas value chain including exploration, production, commercialisation and asset management. Play active roles in the conceptualization of energy master plans and programs for government entities. Serve on industry and project boards to drive strategic initiatives. Effectively lead teams, provide business development/direction, coordinate restructuring opportunities, and successfully negotiate contracts and deals. Grow and leverage internal and external relationships for business sustenance and growth. Ability to lead integrated, multicultural and multidisciplinary teams. Lived in Nigeria, United Kingdom and Canada. Led the startup of electricity generating 650MW Combined Circle Gas Turbine (CCGT) power plant and startup of over 100Kboe/d oil and gas company.

What kind of challenge does seeking to attract investment to Nigeria gas sector face?

The Nigeria gas sector holds enormous investment potential from a resource perspective with over 180Tcf of discovered natural gas reserves. So, the gas sector in Nigeria is robust enough to support growth in both export and domestic markets. Despite numerous efforts, growth in the Nigeria's gas market seem to have stagnated in both markets. However, recent policy initiatives and pronouncements from the Petroleum Ministry seem to reenergize the sector leading to the increasing hope for the Train7 of the NLNG, the ANOH project development, the transnational AKK pipeline, the Brass Fertiliser project, etc. The sector however, still faces challenges in attracting investments, these challenges can be categorized broadly as follows:

Low domestic market offtake due to inadequate infrastructure, high debt owed by the electricity sector impacting major domestic gas suppliers, illiquidity in the power market arising from non-cost reflective tariffs and inadequacy in metering and revenue collection, quasi price control in the domestic gas market, multiplicity of policies and lack of clarity on the regulatory landscape occasioned by the non-passage of the Petroleum Industry Bill. Hopefully with the elections now over, government may take steps to help mitigate these challenges.

Where are the most attractive opportunities in the Nigeria gas sector at the moment?

Nigeria is resource rich in Natural gas with over 180Tcf of discovered reserves and over 600Tcf of upside potential. Therefore, from a resource perspective, there are lots of attractive opportunities. However due to some and all the factors I mentioned earlier, the most attractive opportunities for NG investment seem to tend towards export-oriented projects, this is mainly because of market uncertainties within the domestic gas sector which is not helped by the huge debt owed the sector by the electricity sector. Even existing market dynamics show that domestic supplies hover around 1.2bcf/d to 1.5bcf/d whereas the export supplies are in excess of 3bcf/d. In fact, new gas developments targeting existing LNG expansion far outstrip the development from ANOH which is being celebrated as the biggest domestic supply project in country.

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Q&A WITH VICTOR OKORONKWO

1ST VICE PRESIDENT, NIGERIAN GAS ASSOCIATION

Several studies have shown that with the right environment, the domestic sector could grow to over 3bcf/d in the medium term. So, opportunities to triple the domestic sector exist under the right conditions of infrastructure expansion and downstream utilization projects bankability.

Opportunities also exist within the LPG and the virtual pipeline space. Nigerian LPG consumption at less than 2kg per capita is far below the regional average. This provides tremendous investment opportunities, but the government needs to step in to level the playing field amongst local producers and major IOC and NLNG producers, particularly with respect to taxes and infrastructure development like transportation, LPG cylinder manufacturing, jetty and storage construction that will aid market penetration.

The 10th annual international conference and exhibition of NGA late 2018 spoke to 'shift to gas economy-pace and scale of innovation in the West African Sub-Region'. What role can Nigeria and/or NGA play in helping to foster the economic revitalization and cooperation in the region using gas?

In fact, the terminology shift to gas economy sounds interesting. Interesting because the economic recovery and growth plan (ERGP) of the government of Nigeria revolves around the utilization of Natural Gas. Look at the four priority areas enunciated in the that plan – Energy Sufficiency, Transportation, Agriculture, Manufacturing/Industrialization, the common denominator in all these areas is natural gas. Natural gas is a major fuel for power generation, for transportation and key ingredient for manufacturing fertilizer which is required for Agriculture. Natural gas derivatives of petrochemical products aid manufacturing and industrialization, natural gas is also a preferred fuel choice for generating both electricity and steam required for manufacturing. Really natural gas has a key role to play in unlocking the potentials of the Nigerian economy. So, I think that the ERGP is government's way of saying we are shifting to gas-based economy without necessarily saying so, but they should say so. The NGA is engaging with ERGP team with a view to reviewing the plan and highlighting the dependency on natural gas. This will therefore give the natural gas the attention it deserves in our journey to economic development.

For the West African Sub Region, in this age of global energy transition, collaboration is required at the sub-regional levels for energy optimization particularly around natural gas. There is already a key infrastructure – the West African Gas Pipeline, the countries within the regional can leverage this pipeline as enabler for collaboration to ensure the success of the West African Power Pool. There are discussions to extend the WAGP to Cote d'Ivoire and even up to Morrocc Nigeria and indeed the NGA is very well positioned to lead this collaborative effort. This effort has indeed started as you saw at the last NGA conference that you referred to. You will recall that there was attendance from Ghana and a few other West African countries.

We at the NGA will be working to embed and deepen these collaborations. NGA has also supported the LPG West Africa Conference and Exhibition focused on building and expanding the LPG business across the West African sub-region. Similarly, there are also possibilities of extending the northern flank of Nigeria gas transportation sytem from Abuja, Kaduna, Kano and then Algeria. African Countries are of late also considering REGAS facilities in their energy mix. This will create a market for MINI LNG projects in Nigeria and also help to unlock the resources in Nigeria's shallow water assets. These and the other initiatives with respect to legislations, economic development, common power solution, etc, will work to enable the the collaboration across the African sub regions. A dream the NGA is poised to help actualize.

How can the share of West and Central African gas in Europe's energy mix be increased?

The paradox in Africa is that it is resource rich and yet energy deficient. Africa houses about 13% of global population and yet accounts for less than 4% of global energy demand, there is therefore massive potential for African gas to feed the African energy needs. The International Energy Agency in its African Energy Outlook Report estimate that more than 620 million people in Sub Saharan Africa have no access to electricity. >>>

Q&A WITH VICTOR OKORONKWO

1ST VICE PRESIDENT, NIGERIAN GAS ASSOCIATION

In recent times however, there have been substantial discoveries of oil and gas in Africa signaling a global appetite for African energy. The huge gas discoveries in Mozambique and Tanzania coupled with emergence of small to mid-scale producer nations like Ghana, South Sudan, Niger, Kenya, etc. lend credence to this. African traditional major producers like Nigeria, Angola, etc. are also planning capacity additions to their existing LNG export. There is however a looming challenge as the European energy transition shifts more towards renewables, the question will be these African resource rich countries will they find investments capital in good time to develop these resources before the train leaves them behind.

Has the expectations of power privatization on the broader gas-to-power value chain be impactful? If and/or if not, please address the underlining fact/.

At the current generation level in Nigeria, the average per capita electricity consumption is estimated at an abysmally low level of 120KWh. The Nigerian electricity grid generation hovers around 4500MW whereas suppressed grid demand is estimated to be over 23000MW, closing the gap, has remained the dilemma of the Nigeria Electricity Supply Industry (NESI). This is in spite all the attention and investment that has gone into that sector since the passage of the Electricity Power Sector Reform Act (EPSRA) in 2005. A recent report by the Nigeria Economic Round Table on Power estimates that Nigeria losses about $29.3bln annually due to lack of adequate electricity supply. This statistic therefore begs the question of the impact of the electricity power sector reform in the past 14years.

In fact, experts within the sector have identified liquidity issues creating a market shortfall of over one trillion naira as a key factor. Other challenges impacting the gas to power sector include foreign exchange challenges created by the slide of the naira from around 180 to a dollar down to nearly 500 to dollar and now stabilizing at about 360 to a dollar in recent times. The gap created by this slide has left a huge whole in the books of the industry players. This power sector liquidity challenges have led to huge debt owed to the fuel gas suppliers to the power sector, The NESG Power Roundtable sees the power sector liquidity issue as the most pervasive across the entire gas to power value chain. Facilities granted by money deposit banks to the power sector constitute significant portion of their non-performing loan portfolio, making it difficult for the sector to attract more loans. The other major factor is the MYTO tariff which has become non cost reflective occasioned by the foreign exchange gap. Some reports claim that the tariff gap is in excess of 1.3trillion naira and growing. These cocktail of liquidity issues make it difficult for the distribution companies to make the necessary investment to curtail losses and improve metering.

What is the biggest misconception fund managers have regarding investing in the gas segment of the economy and what will be your advice in other to change the narrative?

Natural gas is fundamentally different from oil, in that the components of the gas value chain are more interconnected, and each must be economically robust for a gas project to be bankable. For instance, the upstream, midstream and downstream components all must viable, as the gas value chain does not tolerate a weak link. Second fundamental difference is that natural gas must have a market before it is produced, storage of natural gas is very expensive venture. Therefore, the nature of the value chain creates challenges not only to the fund managers but also to project developers. Natural gas projects have a longer payback period than their oil counterparts and therefore need patient capital. Fund Managers are also generally concerned about the long gestation period required before gas projects are matured and revenue streams turn to profit, unlike in oil. I believe that if we start to see natural gas in it 'value add' form like compressed natural gas (CNG), liquefied natural gas (LNG) gas to products like fertilizers, etc., then fund managers may begin to see the projects end to end and therefore more amenable to participating in gas development projects.

What tangible impacts do you want to see happen with the gas flare commercialization program championing from Ministry of Petroleum?

The Gas Flare Commercialisation program is the plan set out by the Ministry of Petroleum Resources to implement provisions of the gas policy on Prevention of Waste and Pollution. It is a laudable initiative in that it will provide avenues to commercialize hitherto uneconomic associated gas flares.

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Press Release

Baru Calls for Energy Integration Across West Africa

. . . As US Pledges to Help Africa Become Energy-Independent

NNPC Group Managing Director, Dr. Maikanti Baru (right) with United States Energy Secretary, Rick Perry, at the meeting

The Group Managing Director of the Nigerian National Petroleum Corporation (NNPC), Dr. Maikanti Baru, has called for more integration among countries within the West African sub-region towards providing lasting solutions to the region's numerous energy challenges.

Dr. Baru made the call Wednesday during a meeting with the United States Energy Secretary, Rick Perry and some African petroleum ministers, on the sidelines of the 19th CERAWeek Conference taking place in Houston, United States.

NNPC Group General Manager, Group Public Affairs Division, Mr. Ndu Ughamadu, in a release in Abuja said Dr. Baru disclosed at the meeting that energy integration across the sub-region was necessary as it would drastically reduce unemployment and restiveness as well as improve the economies of the affected countries.

"Nigeria as a regional leader has already encouraged regional integration by first putting up the West African Gas Pipeline (WAGP) to ensure gas is available to West Africa. We are also doing the Trans Sahara Gas Pipeline (TSGP), even as we are intent on extending the WAGP to Morocco," Baru told the US Energy Secretary at the occasion.

He said the intent was to come up with a West African Power Pool that would put up power plants and other gas-based industries along those areas within the respective countries.

The GMD said Nigeria's crude oil production had seen tremendous improvement in recent years, due to Federal Government's laudable efforts in ensuring security in the Niger Delta region.

He said Nigeria and US had been very good partners with about $35bn worth of trade between the two countries.

Earlier in his remarks, the United States Secretary of Energy, Rick Perry, expressed his country's commitment towards helping Africa achieve energy independence for the benefit of their people.

"For our part we will support progress by engaging economically as well as championing open markets in societies. We endorse the modernization of critical oil and gas infrastructure which leads to better security and diversification of energy supplies and exports," he noted.

Describing innovation as the surest path to energy security, Perry added that once countries innovate, they are greeted with greater economic growth, opportunities and national security.

"We support efforts to improve the regional interconnectivity. We also see energy access as critical to increasing prosperity and combating the cycle of poverty," he added.

He said as the number one producer of oil and natural gas in the world, the US was more than well-positioned to not only share its resources, but also its technology and know-how.

He said his country would work towards transforming the Africa's domestic energy systems so that it would provide power, create jobs, foster development, open up new opportunities and improve almost every facet of human existence on the continent.

"The US is very eager to share its energy resources and expertise with the African continent. As we go forward, we want to be a desired partner in ensuring that the global energy market are supplied with the diversity of energy sources," he stated.

Other Ministers and high level energy executives from African countries such as Ghana, Mali, South Sudan, Namibia, Kenya, Uganda and Sierra Leone participated in the meeting.

NNPC Assures of Commitment to Gas Development

. . . Charges NCDMB to raise Nigerian Content

L-R: Representative of NNPC GMD and Chief Operating Officer, Gas & Power, Engr. Saidu Mohammed; Managing Director/Chief Executive Officer of the Nigerian Liquefied Natural Gas (NLNG), Mr. Tony Attah and Executive Secretary, Nigerian Content Development & Monitoring Board, Mr. Simbi Wabote, at the signing of the Local Content component of the Train 7 Project of the NLNG in Abuja

The Group Managing Director of the Nigerian National Petroleum Corporation (NNPC), Dr. Maikanti Baru, has expressed the corporation's commitment to support any project that would encourage production and utilization of natural gas for the benefit of the nation.

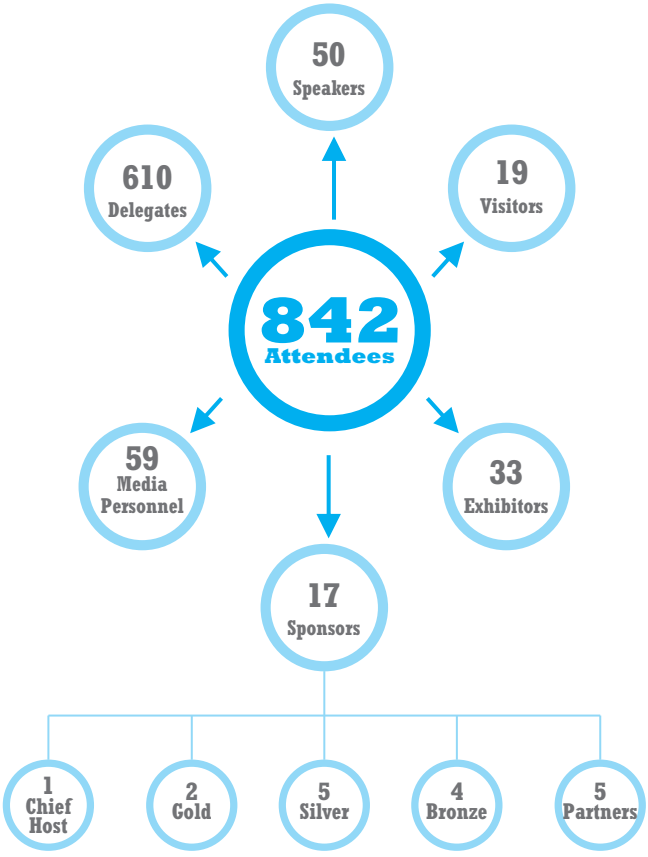
Continue on page 34

NGAICE 2018 Summary

The 2018 Nigerian Gas Association International Gas Conference and Exhibitions held at the Transcorp Hilton, Abuja, from October 14 - 16 2018. It was three days of robust industry discussions.

The 2018 event themed **'SHIFT TO GAS ECONOMY: PACE & SCALE OF INNOVATION IN THE WEST AFRICAN SUB-REGION'**, focused on accelerating the on-going gas revolution to help in positioning the sector as a critical enabler of economic growth and diversification in line with the current government's focus on building a robust multi-sectorial national economy.

Like in the past, the conference brought together top officials of relevant ministries, department and agencies of Government; CEOs of International and National E&P companies; captains of industry; entrepreneurs; bankers; media; professionals and technocrats in the gas value chain.



- The NGA 2018 Conference and Exhibitions had a total of The NGA 2018 Conference and Exhibitions had a total of 842 attendees with 610 as Delegates, 50 Speakers, 19 Visitors, 59 Media Personnel, 17 Sponsors and 33 Exhibitors.
- The conference sponsorship categories: 1 Chief host, 2 Gold, 5 Silver, 4 Bronze Event sponsors and 5 Partners.
- The Conference had **5** Engaging Sessions and **8** Networking Platforms across three days of robust discussions.
- **9** lead papers in **5** business sessions and **6** speeches/remarks were delivered with focus on Gas Policy Dialogue, Gas Infrastructure Development, Nigerian Content, Gas to Power and Financing Gas Projects.
- The Conference had international speakers led by the Secretary General of the International Gas Union (IGU), Mr. Luis Bertrán Rafecas, the CEO of Ghana Gas Company, Dr Ben Asante, and two others from Trinidad & Tobago - H.E. Wendell V.C. De Landro and Mr. Ashley Taylor.
- The opening day of the conference witnessed the attendance of the GMD of NNPC, Dr. Maikanti Baru, the erstwhile President of NGA, Engr. Dada Thomas, the new President, Mrs. Audrey Joe-Ezigbo, Captains from the Oil & Gas Companies both IOCs and nationals as well as Chief Executives of leading companies and stakeholders from the Gas Industry.
- The conference on the opening had in attendance, Dr. Jackson Gaius-Obaseki (Founding President, NGA), who moderated a session on Gas Policy Dialogue. The GMD of NNPC, Dr. Maikanti Baru, was a keynote speaker on the session that had other CEOs and industry experts on the panel.
- The second day of the conference had Minister of State for Petroleum Resources, Dr. Ibe Kachikwu in attendance and he delivered the closing remark.
- The event saw the formal presentation of the 2018 – 2020 NGA Executive Council
- There was a Gala & Award Night held with five deserving recipients receiving awards. 12 corporate organisations also received Special Recognition Awards.

PHOTONEWS

NGA2018 INTERNATIONAL GAS CONFERENCE

COURTESYVISIT

PHOTONEWS

NGA2018 INTERNATIONAL GAS CONFERENCE


Exhibition





Gala Nite



Q&A WITH VICTOR OKORONKWO

1ST VICE PRESIDENT, NIGERIAN GAS ASSOCIATION

Continue from page 14

The model of allowing mid-stream entities into the scheme is a game changer that will allow Upstream companies segregate their investment but the risk of reservoir performance and the vagaries of oil production in our clime persists. This is a challenge, and it will be interesting to see how investors will mitigate these risks. It will be advisable that midstream players fully understand these risks as they are largely dependent the projections of the upstream producers for the economics of their projects. In a success case, this program lends itself to encouraging the virtual pipeline strategy that will help in bridging the gap in the natural gas infrastructure domain. Another issue of clarification will be how this fits into the mandate of the Gas Aggregation Company of Nigeria (GACN) and whether this will help the upstream companies meet their domestic supply obligations.

How transparent and sustainable do you feel the current gas policy are in Nigeria?

What is creating the buzz now is the implementation of the flare gas regulations pursuant to the gas policy on Prevention of Waste and Pollution. This implementation is otherwise known as the Gas Flare Commercialization Program (GFCP). Transparency is no longer an issue as the policy has been issued and there has been quite an impressive press and advocacy generated around it. GFCP has been a subject of discussion at several professional fora, so whether enough industry engagement was undertaken prior to its enactment is now water under the bridge. Commercialization of associated gas which is the focus of the policy has been treacherous for upstream companies particularly when the associated gas is in remote areas without access to market. The cost of processing and delivering the 'stranded' associated gas to market has always been way outside the envelope of domestic gas prices as declared by the government. The sustainability therefore of the implementation program will depend on how the subsurface risks, the above ground risks and the processing and transportation costs are accommodated in the ultimate pricing of the associated gas to the end user. One point to note however is the limited volumes of these associated gas pockets which lend themselves to small scale individual projects. These projects must prove independently economically robust to attract investments and their sustainability will be based on the risk management, market ability to pay economic prices and the stability of the associated oil production.

Over the long term, could the further emergence of non-carbon renewables weaken the position of gas in the global market?

This is an interesting point in that in recent times, there is more investment going into electricity globally than into Oil and Gas. Electricity demand is growing faster than demand for oil and gas consumption. It is estimated that over 1 billion people globally have no access to electricity, so there is still a huge demand gap that can disrupt the dominance of oil and gas as primary energy source. The world is moving towards less carbon intensive fuels that will ultimately alter the global energy mix. This means that renewables like wind, solar, hydro, geothermal, biomass etc. as primary energy sources will gain more market share against fossil fuels like oil and coal. Advancements in technology is also helping to bring down costs particularly in the solar energy domain for PV cells and batteries. The advancement in battery technology is giving impetus to the growth in the electric vehicle (EV) domain. With increasing penetration of EVs, component fossil fuel transportation will decrease. However, whether this emerging trend will weaken the position of natural gas in the global market will depend on the scenario under consideration. But there are certain 'knowns': 1. the global demand for energy will continue to increase with increasing human prosperity aided by technology. 2. As the emerging economies continue to industrialize their demand for electric energy will increase. 3. Electricity generation will constitute the large chunk of the energy demand, so the world will continue to electrify, 4. The global challenge therefore will be to balance within a world of more energy and less carbon. Consequently, soon the world will experience displacement of liquid fossil fuels in favour of natural gas which has relatively low carbon emission intensity, more abundant and relatively cheaper on value basis. So, in my opinion, natural gas will remain strong in the global energy market and indeed fill some of the gap left by liquid fuels as the global energy mix continues to achieve that balance of more energy and less carbon.

...The voice of the gas industry in Nigeria

A Chartered Member of International Gas Union

NATURAL GAS BUSINESS FORUM 2019

Evaluating the Place of Gas as a Prioritised Enabler of Nigeria's Economic Diversification Agenda

Civic Centre
Ozumba Mbadiwe Avenue,
Victoria Island, Lagos.

Tuesday April 16th, 2019

0900 – 1230 hrs

Fee:
N30,000 (Non-Member)
N15,000 (Member)
N5,000 (Student Member)

SPEAKERS:

Mr. Paul McGrath
Chairman, Oil Producers' Trade Section (OPTS)

Engr. Saidu A. Mohammed
COO, Gas & Power, NNPC

Alhaji Kabiru Rabiu
Group Executive Director, BUA Group

Mr. Ed Ubong
MD, Shell Nigeria Gas (SNG)

Mrs. Maryam Shehu
DGM, Gas Commercial, Total E&P Nigeria (TEPNL)

Mr. Chima Ibeneche
Executive Director, Execution Edge

Engr. (Sir) Emeka Okwuosa
Chairman/CEO, Oilserv

Mrs. Audrey Joe Ezigbo
President, Nigerian Gas Association | Host

Who Will be in Attendance? >>>

Over 200 of the industry's most prominent and influential executives involved along the Nigeria oil, gas/LNG and power generation value chains, including governments, off takers, developers, gas upstream suppliers, pipelines, construction firms, equipment providers, and financiers will be attending.

The Annual General Meeting of the Association will follow after the Busness Forum and for members only

NOTICE OF ANNUAL GENERAL MEETING

Notice is hereby given that the 20th Annual General Meeting of the Nigerian Gas Association (NGA) will hold from 12 noon on Tuesday, 16th April 2019 at the Civic Centre, Ozumba Mbadiwe Avenue, Victoria Island, Lagos to transact the following business:

- Presentation of the Association Annual Report for the year ended December, 2018
- To receive and consider the consolidated financial statement of the NGA for the year ended 31st December, 2018
- To transact any other business as may be required by the AGM

Please note that only financially up-to-date members will be allowed to participate in the AGM.

Signed
Victoria Loko Gom
Secretary General

SCAN QR CODES FOR PRE-REGISTRATION

NGA Secretariat: Block 98, Plot 3, Mike Adegbite Avenue, Lekki Phase 1, Lagos, Nigeria.
Tel: +234 803 829 0908 | Fax: +234-1-2612570 | Email: info@nigeriangasassociation.org.ng | www.nigeriangasassociation.org.ng

Engr. Fisoye Delano is President & CEO, at Delphi Ventura Group. He is Adjunct Professor at the Centre for Petroleum, Energy Economics and Law, University of Ibadan. He holds a B.Sc. and M.Sc. in Petroleum Engineering and an MBA.

Engr. Delano started his career as a Wellsite Petroleum Engineer in Shell and then worked for Texaco for 20 years in the US, Trinidad and Tobago and Nigeria and later joined NNPC. At NNPC, he was the Group General Manager, Corporate Planning and Development Division of NNPC in Abuja. He led the commercial negotiations for the different Nigerian LNG projects. He joined Poten & Partners in New York as a consultant. He provided advisory and consulting services on natural gas monetization, LNG and natural gas supply projects to gas buyers and to lenders.

He has authored several publications on Natural Gas and LNG. He frequently makes presentations on aspects of natural gas and LNG at industry conferences.

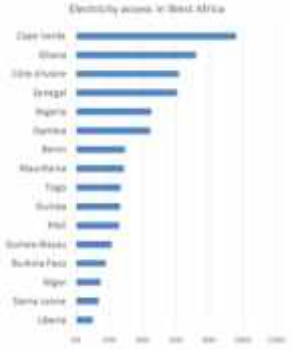
LNG TO POWER

The Role of LNG in Emerging West Africa Gas Market

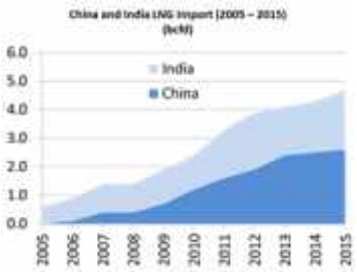
Fisoye Delano

Unmet Electricity Demand

In many countries in West Africa today, electricity supply is erratic and sometimes of low quality. Daily outages are rampant. The International Energy Agency (IEA) World Energy Outlook (WEO) 2016, (IEA, 2016) reported that over 200 million people are without access to electricity in West Africa.



According to the report, in 2015, only four West Africa countries had electricity access exceeding 50% of the population. The US Power Africa Roadmap report (USAID, 2013) outlined a goal to increase power generation in sub-Saharan Africa by more than 30,000 megawatts (MW) by 2030. This objective will require an enormous quantity of gas over the next 13 years to be available for consumption comparable to the growth of LNG import that was observed in both China and India over a similar timeframe in the recent past.



Cost of Electricity

The cost of electricity in most countries in West Africa is relatively high (AfDB, 2013). The generally available fuels to run base load thermal power plants are Fuel Oil, Diesel and Light Crude Oil (LCO) which are comparatively expensive, inefficient and polluting. >>>

Some countries have hydro-electric power but many countries with large populations such as Nigeria, Ghana and Ivory Coast are increasingly dependent on natural gas for power production.

Gas Supply

West Africa produces much more natural gas than is required for domestic consumption. The natural gas is exported within West Africa by pipeline and all over the world as LNG.

Ghana, Ivory Coast and Nigeria are the main West African natural gas producers today. The largest natural gas reserves in the region are in Nigeria. Nigeria exports 22 million tonnes per annum (MTPA) of LNG. The West Africa Gas Pipeline (WAGP) transports natural gas from Nigeria to consumers in the Benin Republic, Togo, and Ghana. The WAGP receives gas from the Escravos-to-Lagos Pipeline System (ELPS) which gathers gas from Shell and Chevron fields in the Niger

Delta. The capacity of ELPS is being expanded from 1.1 billion cubic feet per day (bcfd) to 2.2 bcfd. However, the huge demand for natural gas in Nigeria coupled with supply disruptions have constrained the amount of gas available to the other West Africa countries through the WAGP.

Domestic Gas Price

Domestic natural gas prices in many West African countries are very high since the gas price is usually indexed on available alternative fuels such as crude oil or petroleum products, as in the case in Ghana and Nigeria. The natural gas prices for power generation range from about $8.3 – 9.8/MMBtu in Ghana (Emmanuel Armah Kofi Buah (MP), 2016) to about $3.30 – 7.00/MMBtu in Nigeria. This presents a great opportunity for LNG imports to fuel the projected growth of West African economies since all the West African countries except Burkina Faso, Mali and Niger Republic have coastal access to the Atlantic Ocean. Over 30MTPA of LNG is exported from Nigeria, Equatorial Guinea, Cameroon and Angola.

LNG to Power

The combination of high production of natural gas in West Africa and the low gas export prices presents opportunity for both regional and global LNG imports for the development of gas fired power plants. The LNG supply will serve as a bridge pending the arrival of cheaper pipeline gas. Importing LNG for gas-to-power projects in West Africa has become feasible due to the current weak demand in the global LNG market and the urgent need for new power plants. LNG can compete with imported diesel or other sources of energy and is a cleaner energy choice than coal, biomass, diesel, or kerosene for power generation. LNG can also serve as an important energy security mechanism.

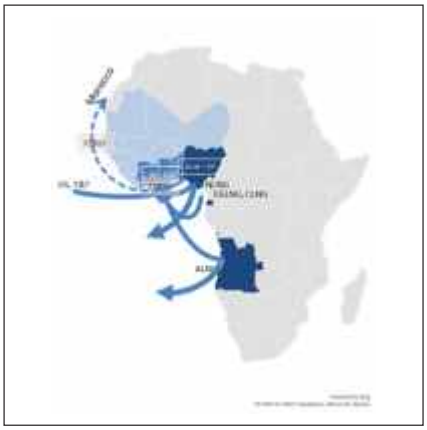
Most of the existing or planned LNG import terminals are expected to be Floating Regasification and Storage Unit (FSRU). FSRUs are quicker to deploy to market, especially if they are converted from LNG carriers as opposed to being newly built. They are also cheaper than land-based terminals. FSRUs are substantially lower capex than land-based terminals. On May 25, 2018 Rosneft and the Ghana National Petroleum Corporation (GNPC) signed an agreement for the delivery of about 1.7MTPA LNG to the port of Tema and its regasification using the processing capacities of Tema LNG Terminal for subsequent supply the natural gas to GNPC. (Rosneft Oil

The natural gas price levels in Ghana as discussed earlier, and the high cost of imported fuel are adequate to accommodate LNG imports to complement the other gas supply sources. Ivory Coast, Lagos State in Nigeria, Benin Republic and Senegal have announced plans to install FSRUs to meet the gas supply for their expanding power needs. Integrating the gas to power value chain through the ownership and operation of the FSRU and the power generation plant as an investment package can be readily deployed and replicated along the West African coast. As an example, in April 2018, Golar Power reached financial closing on the 1.5GW Porto de Sergipe I Power Project in Brazil. The project includes a 1.5GW Power Plant, a dedicated 34km 500KV high-voltage transmission line, and associated gas pipeline and mooring infrastructure required for the integrated LNG import terminal facility. The total project cost is estimated at US$1.74 billion and is scheduled to deliver power to 26 committed off-takers for 25 years from Jan 1 2020 (Golar Management Limited, 2018). Similar strategies can be rapidly deployed from country to country in West Africa.

Conclusion

There is a significant unmet electricity demand all over West Africa. Paradoxically, West Africa, a major exporter of natural gas as LNG, lacks adequate gas supply for power generation. With the high electricity tariff and high domestic gas prices in West Africa, LNG to power projects are viable and are being developed.

The emerging West Africa gas market is being driven by growing power demand. LNG will deliver natural gas to meet the immediate demand ahead of the expansion of the WAGP. The opportunity space for LNG import in Africa is bigger than what took place in China and India combined over the last 10 – 15 years.



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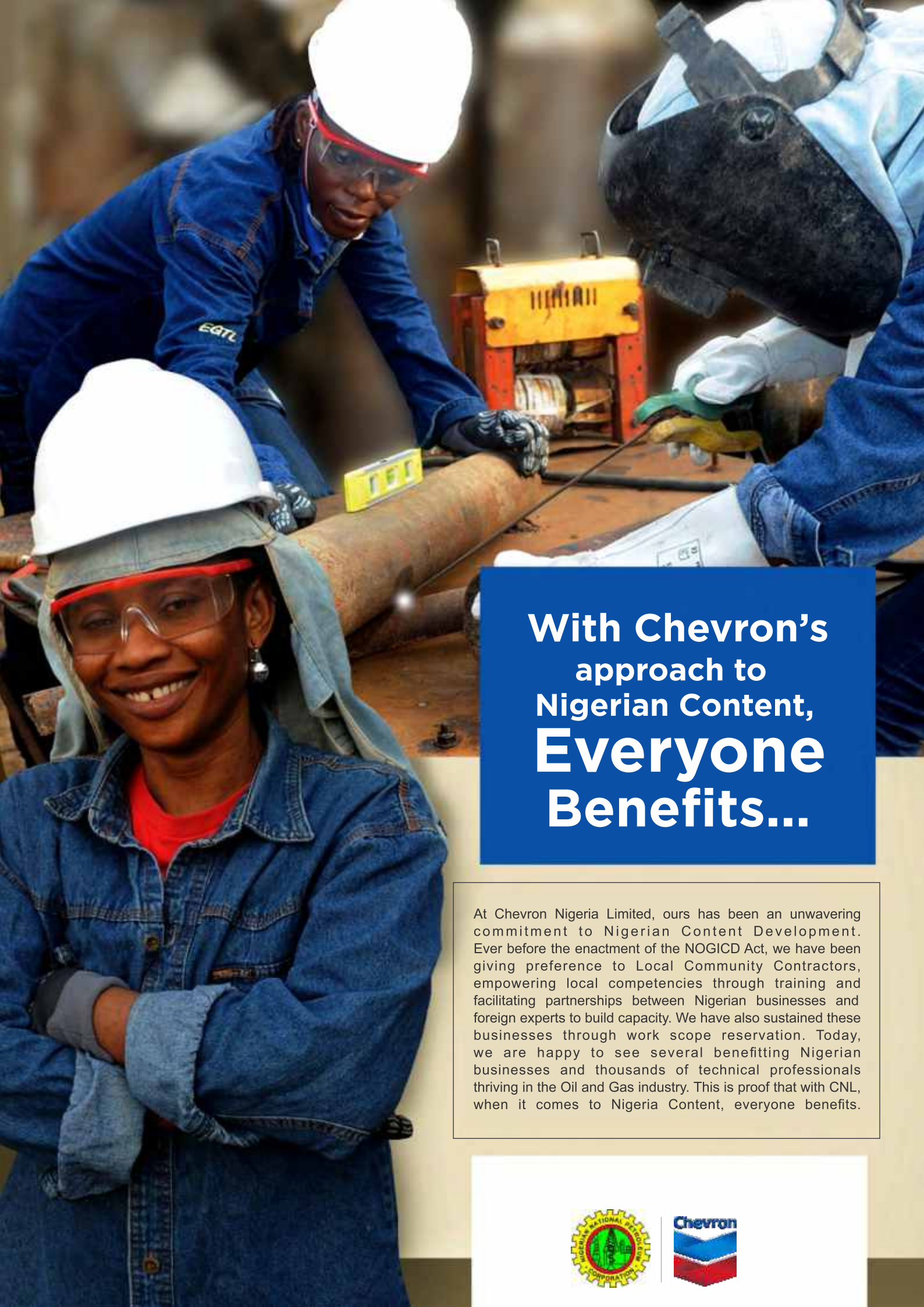

With Chevron's approach to Nigerian Content, Everyone Benefits...

At Chevron Nigeria Limited, ours has been an unwavering commitment to Nigerian Content Development. Ever before the enactment of the NOGICD Act, we have been giving preference to Local Community Contractors, empowering local competencies through training and facilitating partnerships between Nigerian businesses and foreign experts to build capacity. We have also sustained these businesses through work scope reservation. Today, we are happy to see several benefitting Nigerian businesses and thousands of technical professionals thriving in the Oil and Gas industry. This is proof that with CNL, when it comes to Nigeria Content, everyone benefits.

Chevron

Entire Site, Greenville LNG

LNG: the Energy in Shaping Nigeria's Economy

Liquefied Natural Gas (LNG) is natural gas that has been cooled into liquid at -162°C to reduce its volume by 600 times. This allows ease of storage and transportation in vessels and specialized trucks. LNG is an odourless, colourless, non-toxic and non-corrosive liquid that is converted back to gas using a re-gasification process. Importantly, LNG or natural gas burns far clearer than liquid fuels and coal. When combusted, no particulate matter is produced by natural gas. In comparison with diesel, natural gas produces up to 90% less carbon monoxide, 95% less Nitrogen oxide and 30% less carbon dioxide as a transportation fuel.

Global Perspective of LNG

Primary energy mix varies from country to country depending on the availability of natural resources. In 2017, world primary energy mix comprised of Oil - 37%, Gas - 23%, Coal - 28%, Nuclear - 4%, Hydro - 7% and Renewables - 4%. The two most populous countries in the world India and China have large reserves of coal and accordingly coal feature prominently and forms a large part of their primary energy mix. In terms of percentages, coal constitutes 56% and 60% in India and China respectively. Whereas share of Natural Gas is about 7-8%. This relatively low consumption of natural gas in these countries can be linked to their low gas reserves, consequently, they have to depend hugely on imports. However, this is changing as 56% global imports of LNG comes from the Asian pacific.

There has been an increase in demand for LNG; According to the International Gas Union (IGU) 2018 World LNG Report, from about 50MT in 1990, global trade reached 293.1MT in 2017. Year-on-year, LNG export increased by 35.2MT between 2016 and 2017. An increase that was driven predominantly by added liquefaction capacity in Australia and the USA.

Only a few countries across the globe have large reserves of natural gas, only 18 countries currently export LNG. Qatar remains the largest producer of LNG with 80.1MT. This is followed by Australia with 56.2MT, Malaysia with 26.4 and Nigeria with 21.3MT. While 36 countries import LNG.
In recent years, natural gas has emerged as a fuel of choice for generation of power, transportation, industrial and domestic uses. Currently natural gas including LNG is abundantly available at an affordable price. Major developed countries like USA and Europe are opting for natural gas to replace coal and liquid fuels for power generation because of their lower amounts of greenhouse gas emitted per unit of electricity produced.

Nigeria Gas Production and LNG Development

Nigeria as it were sits on pots of natural gas reserves. The country has the most proven natural gas reserves in Africa which stands at about 192TCF (with ultimate potential of 600TCF) and 9th most proven reserves in the world. In fact Nigeria's gas wealth avails it a change of dynamics from being an oil producing nation to a gas producing one.

Unfortunately, the country has not been able to fully utilize its gas resources and gas accounts about 3% in the primary energy mix. >>>

Greenville Customer Regasification Site, Sumal Foods, Ibadan, Nigeria

In fact, Nigeria is one of the largest gas flaring countries in the world. However, significant flare reduction strides have been made. In 2016, records from Nigerian National Petroleum Corporation (NNPC), show that about 10% of gas produced by oil firms was flared as against 36% in 2006. In 2003, the National Energy Policy set 2008 to end gas flaring, yet this unsustainable practice continues unabated. With the new National Gas Policy and the Gas Flare Commercialisation Programme developed by the Federal Government, A flare-out target has been set for 2020; ten years ahead of the United Nations "Zero Routine Flaring by 2030" target.

The long felt need for Nigeria to increase her domestic consumption of gas to mitigate the problem in the power and industrial sector, has continued with renewed plans and policies. The implementation of the well-articulated Nigerian Gas Master Plan to take natural gas to different parts of the country has not yielded the expected results after over a decade of its development. The achievements record so far of reducing gas flaring in Nigeria can be linked to the Nigerian Gas Master Plan approved in February 2008.

Fortunately, Nigeria has fully developed its gas export through the Nigerian Liquefied Natural Gas (NLNG) project in Bonny. In 2017, Nigeria share of global export was 7.3% making it the fourth largest LNG exporter.

Control Room, Greenville LNG Plant

However, even with such an impressive export record, overall LNG investment in Nigeria for domestic use was non-existent until now. Greenville LNG has taken the initiative to develop the pioneer domestic LNG processing and distribution company in Nigeria.

Problem with the Power Sector

Electricity generation in Nigeria dates back to the pre-amalgamation era when the first generating power plant with 60KW capacity was installed in Lagos, in 1898 only 15years after its introduction in England.

Unlike the quantum improvement that has been recorded by the England, the power generation in Nigeria seem to defile all reasoning. While the UK in 2015 generated in excess of 337tTWh of electricity, Nigeria's total installed generation capacity remains at only about 12,500 MW with less than a third on average being fed to the grid.

One constraint to power generation in Nigeria is the poor energy mix. As it stands, 85 percent of the country's installed capacity coming from natural gas based thermal plant which are plagued by the problems of inadequate gas pipeline network and frequent pipeline vandalism. Another constraint is that majority of the gas-based generation are located in the southern parts of the country, thus requiring very expensive transmission lines to evacuate the generated power to northern parts of the country.

Greenville LNG Truck, Fuelled by LNG

This poor power supply statistics means that many commercial, industrial and residential consumers rely on self-generation powered by liquid fuels (diesel, gasoline and LPFO) and/or coal. A 2015 survey report by Adeola Adenikinju (a professor of economics in the University of Ibadan) indicates that over 13,000 MW is self-generated by manufacturers in Nigeria. This situation is compounded by the high cost of self-generation and higher carbon emissions.

Sadly, efforts by successive government have failed to achieve the targeted improvements in power generated, transmission and distribution. This creates an opportunity for LNG use in power generation in the country to supplement pipeline gas and improve power generation in Nigeria. This is because LNG takes up about 1/600th of the volume of natural gas. Thus, it can be economically transported with vessels and specialized trucks from place to place eliminating the use of high cost imported diesel for self-generated power and fueling of the new and existing power plants located away from the pipeline.

Problem with the Transport Sector

Road transportation is the major means of transportation in the country as rail and water transportation are not currently adequately developed. The road transportation encounters many problems like over congestion, bad condition of the road, aged vehicles causing pollution and frequent break down, high consumption of fuel, etc.

Globally LNG use in transportation sector is growing including maritime applications, as it is seen as low carbon, low pollutant (SOx, NOx, PM) fuel to help decarbonise the sector and reduce air pollution. More over due to commitment in Paris Agreement, the countries are driving to adopt cleaner fuels. In addition, considerable savings in fuel cost with LNG over diesel has being recognised.

In Nigeria LNG is estimated a savings of between 30% to 40% compared to diesel. Further, LNG fueled vehicle can travel more than 1100Km compared to about 300Km in the case of CNG without refueling. Globally LNG is gaining popularity in heavy duty vehicles and buses. China is the world leader in adoption of LNG for road transportation. In order to adhere to the >>>

Government vehicular emission norm LNG is being taken to the different corners of the country to fuel the power plant and industries, even the areas where there is no pipeline. LNG fueled trucks are deployed in large numbers in China for transportation. This is driving the faster adoption of LNG fueled vehicle across China. Many countries in Europe are also aggressively pursuing adoption of LNG fueled heavy vehicles including in maritime shipping.

Vehicular air pollution is the root cause of many diseases like asthma, tuberculosis, cancer etc. Greenville LNG has brought the first LNG fueled trucks into Nigeria for delivering Gas across the country, is yet to make a beginning to introduce LNG in road transportation. It will not only reduce the cost of transportation; pollution free environment is going to eliminate many health-related ailments.

The Greenville LNG Approach for Improved Power Generation and Transportation

Greenville Liquefied Natural Gas Company Limited otherwise Greenville LNG™, is the pioneer LNG production and distribution company for domestic use within Nigeria. A masterstroke of a kind, Greenville LNG has made a foreign direct investment of over $500 million (wholly equity) in the first phase of its LNG plant located in Rumuji, Rivers State. The pioneer project comprises of 3 liquefaction trains with total capacity of 2,250 metric tonnes of LNG per day in the first phase. In the second phase, 2 additional trains are planned to bring total capacity to 5,250 metric tonnes per day.

It is the mission of Greenville LNG to 'bridge the natural gas supply gap, to promote economic activities and social development and revive moribund industries across Nigeria" Specifically, Greenville LNG was established to develop the natural gas infrastructure in Nigeria including LNG production & distribution for domestic use. To achieve this, the company has carved a niche to deliver LNG to locations underserved by the exsisting gas pipeline infrastructure using a virtual pipeline system. This virtual pipeline system is maintained by the first fleet of LNG fueled trucks in Nigeria and replaces physical pipelines which are susceptible to vandalism and take huge capital and long time to construct.

To this effect, Greenville LNG has acquired an initial fleet of 300 specialised cryogenic LNG fueled trucks to supply LNG to power plants, industries and its LNG refueling stations strategically located across Nigeria.

LNG Loading Bay (Front view), Greenville LNG

LNG Loading Bay(Back View), Greenville LNG

These 25 metric tonne trucks are equipped with GPS tracking devices to ensure that gas is delivered on time, every time. Importantly, these trucks are designed to meet with US National Fire Protection Association (NFPA) standards for LNG handling, storage and transportation. Greenville LNG has five refueling stations currently under construction in the first phase and are located at Rumuji, Rivers State; Shagamu, Ogun State; Kakau, Kaduna State; Ikpoba-Okha, Edo State; and Korton Karfe, Kogi State to serve not just its trucks but third party LNG vehicle users. These infrastructures will change and shape the future of LNG utilization in Nigeria. The strategy is to encourage LNG in large haulage vehicle. Importantly, using LNG fueled trucks will not only serve as a cleaner energy source but also save logistics companies up to 35% in fuel cost in comparison to diesel fueled trucks.

The company's innovative approach also offers ready to use facilities for storage, regasification and power generation at consumer's location with capacities from 1MW to 250MW. With this, Greenville LNG in contributing to the achievement of SDG 7 by ensuring affordable, reliable and clean power generation for power starved industries.

Greenville LNG Refuelling Station, Rumuji

Conclusion

From the foregoing, it is clear that LNG has come to stay in Nigeria. It also means that LNG facility investment can only get bigger and better.

LNG for local consumption, will improve overall gas utilization for power generation as well as for use as transportation fuel. Ultimately, it will contribute to reduction in gas flaring. It is also expected to usher balanced industrial growth in different parts of the country with assured availability of natural gas. It will create direct value added employments and many more indirect jobs. Reduce the disbursement of foreign exchange for diesel importation (thus saving Nigeria scarce foreign exchange). Support the attainment of greenhouse gas emission reduction as targeted in the Nationally Determined Contribution. Contribute to economic growth in Nigeria through general resuscitation of power starved industries. With the innovative virtual pipeline system ensure the delivery of clean fuel for power generation and promoting economic growth in parts of the country unserved by gas pipelines. For the transport sector, it will lower the cost of fueling and ultimately overall cost of goods movement.

Greenville LNG, Reliable Energy for the Future.

Nigerian Gas Company Limited...

.....transporting gas to your place of choice!

Warri Gas Treatment Plant (WGTP):

NGC Metering Station: *Transports gas to Power Plants, bulk shippers, N-Gas etc.*

NGC Vision Statement: To be the natural gas processing and transportation Company of choice in Nigeria.

NGC Mission Statement: NGC is committed to providing world class infrastructures for the delivery of on-specification natural gas and its by-products to customers in a safe, reliable, profitable and environmentally sustainable manner.

The Nigerian Gas Company (NGC) Limited is a fully-owned subsidiary of the Nigerian National Petroleum Corporation (NNPC) incorporated in 1988 and mandated to Process and Transport natural gas nationally and internationally. NGC develops and maintains gas transmission infrastructure to transport and dispatch gas in line with the network code.
NGC is expanding its footprints within Nigeria and beyond.

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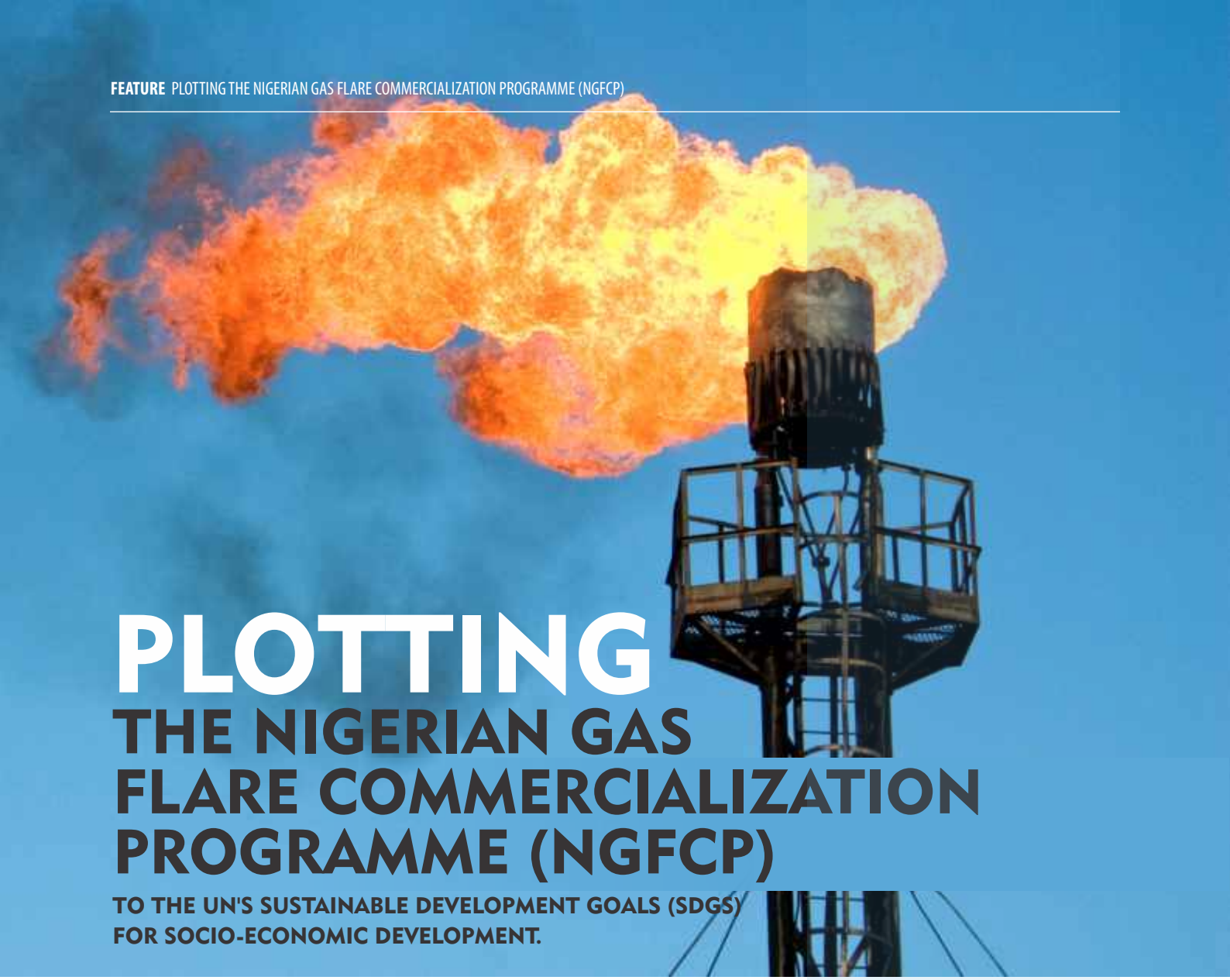
NATURAL GAS...

..Powering the Nigerian Economy!!!



PLOTTING THE NIGERIAN GAS FLARE COMMERCIALIZATION PROGRAMME (NGFCP)

TO THE UN'S SUSTAINABLE DEVELOPMENT GOALS (SDGS) FOR SOCIO-ECONOMIC DEVELOPMENT.

INTRODUCTION

The 17 Sustainable Development Goals (SDGs) launched in 2015 by the 193 member states at the United Nations General Assembly adopting the 2030 agenda for sustainability seek to establish global consensus for the next 15 years. The 17 SDGs aim to address some of the world's pressing economic, social and environmental challenges. UN member states, Nigeria inclusive are expected to use the SDGs to frame their development agendas, and there is a recognition that the private sector will play an important role in achieving them.

The Nigerian oil and gas ("NOG") industry is fundamental to the nation's economy and in terms of sustainability, it is also crucial, as the NOG industry is a strategic pillar of the nation's energy system and, as such, a driver of economic and social development. That notwithstanding, the NOG industry operations and products potentially have positive and negative impacts on a range of areas covered by the SDGs. The NOG industry also contributes to sustainable development in a number of ways which include generating direct and indirect jobs; supplying access to energy that enables economic activity and social development; contributing substantial tax and other types of revenue to the federal government of Nigeria (FGN). However, the SDGs also highlight sustainability challenges for the NOG industry, where more can be done to mitigate the adverse impacts of oil and gas development, i.e. oil spill, gas flaring.

One particular challenge (amongst the suite of issues) for the industry is its role in climate change linked with gas flaring. Whilst the NOG industry has enabled industrialization and human development, it has also contributed to the rise in atmospheric carbon dioxide, which in turn has contributed to a warming of the climate system. By endorsing the 2030 Agenda, the FGN automatically agree to deliver the SDGs whilst also addressing the risks of gas flaring in the country.

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Mr. Justice O. Derefaka is a Marine Engineering graduate from the Rivers State University (RivSu), Port Harcourt. He has a Master's degree in Environmental Management from the University of Lagos (Unilag) and a second Master's degree in Sustainability Leadership from the University of Cambridge, United Kingdom (UK). He is also a doctoral research scholar at the University of Bradford, United Kingdom.

He is currently the Program Manager (PM) of the **Nigerian Gas Flare Commercialization Programme (NGFCP),** in the office of Honorable Minister of State, Petroleum Resources, Federal Ministry of Petroleum Resources (MPR), Abuja. In this role and reporting to the NGFCP Ministerial Steering Committee (SteerCo), Derefaka manages the NGFCP which is designed as the strategy to implement the policy objectives of the Federal Government (FG) for the elimination of gas flares from Nigeria's oil & gas fields in the near term (2-3 years), with potentially enormous multiplier and development outcomes for Nigeria as well as Nigeria's commitments as ratified at the Paris Climate Change Agreement (COP21) which included gas flaring reduction as a key national greenhouse gas (GHG) emissions mitigation in the Intended Nationally Determined Contributions (iNDC's).

Prior this role, Mr. Justice manages occupational **health**, safety and environment (HSE) for all pipeline asset for The Shell Petroleum Development Company (SPDC). Previously, he was with Shell Nigeria Exploration and Production Company Limited (SNEPCo) as the Head, Environment and Social Performance. At different times in SPDC, he was the Corporate Head: Materials and Waste Management Discipline and subject matter expert (SME) for Shell Companies in Nigeria (SCiN) and Shell Gabon respectively.

Emphasize is made here that the NOG industry must be a key part of the solution to address gas flaring and climate change. While there is no single pathway to a net-zero GHG emissions future, this article showcases a number of actions the FGN has put in place that could contribute to the transition in order to stabilize atmospheric GHG concentrations and global temperatures in line with the Paris climate agreement and as encapsulated in chapter 6 of the 2017 approved National Gas Policy i.e. Government will take measures to ensure that flare capture and utilization projects are developed, and will work collaboratively with industry, development partners, providers of flare-capture technologies and third party investors.

Goal 7 of the SDGs purposes to "ensure access to affordable, reliable, sustainable and modern energy for all". And it is a glaring fact that the availability and accessibility of energy, at the same time curtailing negative impacts on the planet and the air we breathe, is one of the daunting challenges of the 21st century. At the ground-breaking UN climate conference in Paris in 2015, world leaders met and decided to work towards off-putting the global rise in temperature to well below 2°C above pre-industrial levels. Accomplishing these laudable goals suggests changes in the way energy is produced, accessed, utilized and even wasted in the case of gas flaring in Nigeria. Analysts have said the global energy demand will nearly double by 2050. Most of the increase will come from the world's emerging economies (Africa and India) as a result of population growth and improved standards of living. In the midst of this resolve for reliable and affordable energy, the FGN and the oil and gas industry as well as investors alike need to work collaboratively to grow supplies, particularly of natural gas. In that mix, natural gas, as the cleanest burning fossil fuel, will play a prominent role in the decades to come. And yet we flare gas in Nigeria.

Gas Flaring - Contexts, Issues and Perpectives Leading to the Birth of the Nigerian Gas Flare Commercialization Program (NGFCP)

As a nation, gas flaring is a tremendous waste that can no longer be tolerated, especially from a climate change perspective. The flaring of natural gas wastes valuable resources and contributes to climate change. When oil is extracted from a reservoir, gas is also produced as the oil is brought to the surface. This is known as associated gas. This gas can be captured and used alongside the oil. When there are no facilities to gather the gas, the economics is not right or no sufficient capacity, and/or challenges with terrain, it is sometimes flared, or burned. Flaring is also carried out for safety reasons to relieve pressure in the production system.

The world currently emits 32 billion tonnes of energy related CO2 each year. To limit the rise in global temperature to 2°C, the International Energy Agency (IEA) has calculated that energy related CO2 emissions need to fall to around 18 billion tonnes a year by 2040. This poses a significant challenge. To put it in context, removing around 200 million cars from the road (equal to every car in Europe) would save just 1 billion tonnes each year. As a solace, the NGFCP consistent with Nigeria's commitments for reduction of GHG under the Paris Climate Change Agreement would reduce Nigeria's CO2 emissions by approximately 13 million tons/year, which could be monetized under an emission credits/carbon sale programme. Each cubic meter of associated gas flared results in about 2.5 kilograms of CO2e emissions and gas flaring account for 2% of all greenhouse gas (GHG) emissions. And in a world where we are under increased climate pressure, we cannot get rid of a precious natural resource and fuel in that way. The gas we flare is an important part of the global energy transition, the closet ally to renewables. The UN has described energy as ''central to nearly every major challenge and opportunity the world faces today. Be it for jobs, security, climate change, food production or increasing incomes, access to energy for all is essential" Nevertheless, even today, little or no access to energy deprives part of the world's population of the opportunity to improve their quality of life.

In a world where we still have about 1.1 billion (i.e. 1 in 6 people on the planet) people without access to electricity (i.e. more than three times the population of the USA) and another 1 billion people struggling with unreliable supplies of electricity. More worrisome is the fact that 95% of these people are from sub-Saharan Africa and developing Asia. Of that 1.1 billion, Africa has 588 million. Of that 588 million Africa's share, the West African sub region, has the highest with 175million closely followed by Central Africa with 172 million. According to PricewaterHouseCoopers (PwC), back home in Nigeria with a population of over 180 million people, only 12.5% of Nigeria's population have access to power supply and others with epileptic supply. Yet we flare gas that can generate electricity for the nation and boost economic development.

It is based on this premise and other detrimental impact of gas flaring in the country that the Federal Government of Nigeria (FGN) took a policy position that gas flaring is unacceptable and will no longer tolerate it. And as part of the FGN strategy to reposition the oil and gas industry, the Ministry of Petroleum Resources commenced the implementation of carefully conceived initiatives to foster efficiency and attract investments along the oil and gas value chain as embedded in the "7 Big Wins - Short and Medium Term priorities to grow Nigeria's Oil and Gas industry" which was launched in October, 2016 by His Excellency, President Muhammad Buhari.

A critical aspect of Big Win No3 (Gas Revolution) intends to reduce gas flaring by harnessing flare gas to stimulate economic growth, drive investments and provide jobs in the Niger Delta through the utilization of widely available innovative technologies. The policy on gas flaring is also encapsulated in the National Gas Policy approved by the Federal Executive Council in June 2017.

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And to support this strategy, the FGN included gas flare reduction as a key national greenhouse gas emissions mitigation in its Nationally Determined Contributions (NDC) under the United Nations Framework Convention on Climate Change (UNFCCC) and the Federal Executive Council in June 2016 approved the Nigerian Gas Flare Commercialization Programme (NGFCP). The NGFCP is a special program developed by the Ministry of Petroleum Resources (MPR), Nigerian National Petroleum Corporation (NNPC), the Department of Petroleum Resources (DPR) and international development partners from the World Bank, USAID and DFID-FOSTER. The Programme was launched by the Minister of State for Petroleum Resources – Dr Ibe Kachikwu on December 13, 2016.

The NGFCP is designed as the strategy to implement the policy objectives of the FGN for the elimination of gas flares from Nigeria's oil and gas fields in the near term (2-3 years), with potentially enormous multiplier and development outcomes for Nigeria. It is also designed as the contribution of the petroleum sector to Nigeria's Intended Nationally Determined Contributions (INDC) under the Paris Agreement (COP21). The NGFCP is an approach to eliminate gas flaring through technically and commercially sustainable gas utilization projects developed by competent third party investors who will be invited to participate in a competitive and transparent bid process. The commercialisation approach has been considered from legal, technical, economic, commercial and developmental standpoints. And it is a unique and historic opportunity to attract major investment in economically viable gas flare capture projects whilst permanently addressing a 60 year environmental problem in Nigeria.

The third party investors are to access and utilize flared gas that is currently being sent to flare and convert same into Flare-Gas-to-Market-Products (FG-2-MP) by deploying Flare-Gas-to-Market-Technology (FG-2-MT), demonstrate project development experience and proven technology in commercial application. The NGFCP is also designed as an important "climate change action plan" for the Nation. And it is the first market driven program undertaken on this scale globally – where bidders will have flexibility of choosing which flare site(s) to bid for, the gas price they want to offer, and the end market or gas product, as well as the technology to be used.

The Role of the NGFCP in the Energy Mix Transition and SDGs Space

On its part, the NGFCP will play an important role in meeting this sustainability, climate change cum air pollution and energy challenge by harnessing Nigeria's flare gas for sustainable value and wealth creation. At NGFCP, we believe that as a nation we need to deliver the much needed energy for development and growth, we need to explore ways and means to scale through the Nigeria energy hurdle and put in place strategic measures to address the downside issues, challenges, gaps and aggressively pursue the upside opportunities.

The design of the NGFCP hovers within the context of the UN's 17 SDGs which Nigeria is a signatory. Emphasis is made regarding SDG No. 7. "Ensure Access To Affordable, Reliable, Sustainable And Modern Energy For All". It is a fact that energy is a fundamental fulcrum of sustainability, without which most of the other SDGs cannot be achieved. Access to affordable, reliable, sustainable and modern energy is essential for rewiring the energy sector for economic growth; light up Nigeria, generate employment, basic education, poverty reduction, and health and safety. An estimated 2.8 billion people globally – 41% of the world's population – had no access to modern energy sources and instead use solid fuels such as wood, charcoal and animal dung for cooking and heating.

Gas Flaring - The NGFCP Era And Beyond

In 2017, Nigeria ranked 7th place in the league of gas flare nations with approximately 888 MMscf/d from over 178 flare sites out of the more than 16,000 flare sites in 90 countries globally. Lost revenue from the flared gas is within the range of US$1 Billion. The NGFCP seeks to reverse this trend and wastage. This is evidenced on the fact that the NGFCP also found out that the volume of gas flared in Nigeria could otherwise power millions of Nigerian homes as well as industrial areas with electricity access. Apart from the socio-economic value of otherwise using flare gas, flaring has been proven to have serious consequences on environmental health and social impacts in local communities in the Niger Delta and beyond. These include respiratory illnesses, acid rain and corrosion of roofs, amongst others. The potential alternative uses for flare gas, alongside the need to curb negative environmental, social and economic impacts of gas flaring, have made a national strategy for gas flare commercialization urgent and necessary. To achieve this, the NGFCP mapped out 6 – key cardinal objectives (principles), which is the NGFCP must: Reduce gas flaring; Benefit Niger Delta communities; positively impact the Nigerian economy; Present a market-driven solution for the flares; be bankable for investors and lenders, and avoid any adverse impact on the level or safety of Producers' Exploration and Production (E&P) operations.

From 2005 to 2014, there has been an approximately 70% decrease in total flare volumes nationally (NNPC Statistical Bulletin 2014; EIA Country Overview: Nigeria, 2015). This puts the average annual gas flare reduction rate at 8%, at which rate it will be impossible to achieve the FGN's target of zero flaring by 2020. Preliminary groundwork prior to launching the NGFCP included diverse case studies and economic analysis of various flare gas utilisation options for the country. Major highlights from the economic analysis include:

- harnessing gas from the top 50 flare points would reduce flare gas volumes by 80%, given 2015 gas flare locations and volumes as the baseline;
- the majority of the gas flaring locations (about 65% of them) are onshore;
- at least 80% of gas from the flaring locations can be viably utilised; and
- about US$ 3.5 billion worth of investments is required to achieve the gas flare commercialisation targets by 2020.
- Although pipelines present the most viable option for transporting gas, scalable, containerized, skid mounted/barge type 'plug & play' technologies, virtual pipeline & compressed natural gas trucks would be preferred for security and other reasons;

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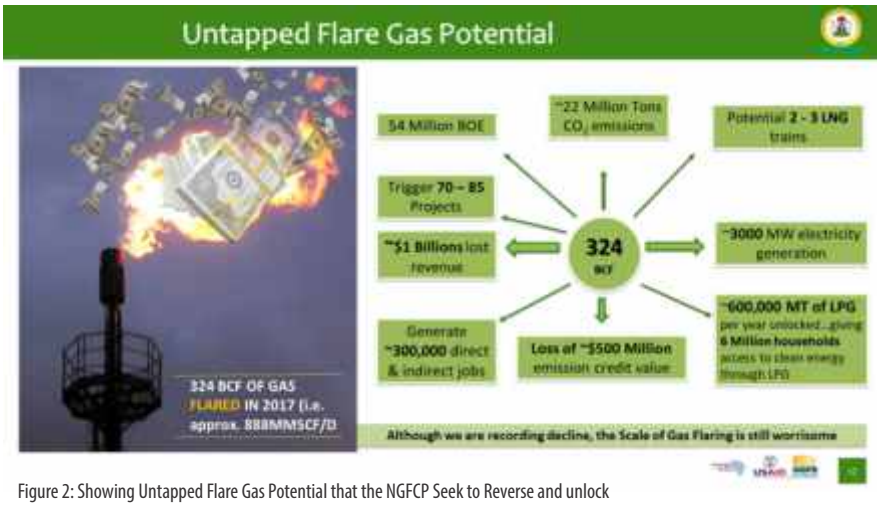

Figure 2: Showing Untapped Flare Gas Potential that the NGFCP Seek to Reverse and unlock

Highlights Of The New "Flare Gas (Prevention Of Waste And Pollution) Regulations 2018"

The Flare Gas (Prevention of Waste and Pollution) Regulations 2018 approved on the 5th July, 2018 by His Excellency, Muhammadu Buhari (GCFR), President of the Federal Republic of Nigeria provides a legal framework and basis for the implementation of the NGFCP, introduces a new payment regime (penalties) for gas flaring which adopts the "polluter pays" principle and mimics a carbon tax i.e. the current meager flare payments (penalties) of N10 per thousand standard cubic feet is increased, in the case of any one producing 10,000 barrels of oil or more, to $2.0 USD per thousand standard cubic feet of gas and, in the case of anyone producing less than 10,000 barrels of oil per day, to $0.50 USD per thousand standard cubic square feet of gas.

The Journey So Far and the Next Line of Action towards Gas Flare Reduction

Following the completion of the design of the key Programme transactional, commercial framework and documentation, there has been a successful launch with the publications of the NGFCP adverts issued on the 26th November 2018 by the Federal Government of Nigeria (FGN) calling for Expression of Interest (EoI) in the NGFCP and the issuance of Request for Qualification (RfQ) package to conduct the first bid round for the largest market driven flare gas monetization and utilization programme. This ushered in the announcement of the first global bid round for the flare gas inviting parties interested in participating in the NGFCP to register and apply for the issuance of the RfQ package that will lead to the submission of Statements of Qualification (SOQs) by interested parties for participation in the programme. As at the time of writing this article, over 700 investors have registered to download the RfQ package to submit their statements of qualification (SOQs) for participation in the programme.

The next critical path item in line with the approved Programme implementation timeline following the closure of submission of SOQ's on Friday, 22nd March, 2019, is the inauguration of the Proposal Evaluation Committee (PEC) by the Honourable Minister of State for Petroleum Resources (HMoSPR) – Dr Emmanuel Ibe Kachikwu to undertake:

a) Evaluation of the SOQs submitted by the Applicants to determine Qualified Applicant (QA) status in line with the design criteria of the Request for Qualification (RfQ), and

b) Evaluating the Proposals to be submitted by QA to determine those Bidders that achieve Preferred Bidder (PB) and reserved bidders status in line with the criteria of the Request for Proposal (RfP) package

Conclusion

In summing up, the NGFCP has shown that energy is an important engine of economic growth, on which job creation, poverty reduction, good education, health and safety and shared prosperity depend. The NGFCP also demonstrates that energy is a critical input for the achievement of the SDGs hence - **Plotting the Nigerian Gas Flare Commercialization Programme (NGFCP) to the UN's Sustainable Development Goals (SDGs) for Socio-Economic Development.**

In terms of developmental impact, the NGFCP benefits are huge, ranging from an overall inward investment of around US $3 - 3.5 billion; a potential annual revenues/gross domestic product (GDP) impact around ~ US $ 1 billion/annum. The NGFCP could also generate approximately 300,000 direct and indirect jobs and unlock and supply around 600,000 MT of liquefied Petroleum Gas (LPG) product to 6 million homes in Nigeria. The Programme would reduce Nigeria's CO2 emissions by approximately 13 million tons/year, which could also be monetized under an emission credits/carbon sale programme to generate around US$ 400 – 500 million. The international development partners to the NGFCP have scrutinized and thus assert that the design of the NGFCP is detailed, affirming that it is an innovative, robust and scalable approach to gas flare reduction which could be replicable in many other gas flaring countries around the World; tagging it a "game changer" (first of a kind) consistent with the climate change action plans anticipated in the Paris Climate Accords. Overall, the NGFCP is the first market driven program undertaken on this scale globally, making it a High - Impact Program.

Press Release

NNPC Assures of Commitment to Gas Development

(Continue from page 16)

Disclosing this recently at the signing ceremony of the Nigeria Liquefied Natural Gas Limited (NLNG) Train 7, Nigerian Content Plan, in Abuja, Dr. Baru, who was represented at the occasion by Chief Operating Officer (COO), Gas and Power, Engr. Saidu Mohammed, said the signing ceremony was important as one of the major processes to bring the Train 7 project on board.

He noted that the project had a lot of potentials that would benefit the nation, but called on the Nigerian Content Development and Monitoring Board (NCDMB) to ensure that Train 8 and any other LNG projects in the future should be designed to accommodate more local content in the fabrication of facilities.

Commenting on the corporation's interest in the signing agreement, he said that the Train 7 project was in line with NNPC's vision of prioritizing the use of natural gas to the greater benefit of Nigerians.

"Apart from being 49 per cent share holder in NLNG, we are more interested because it will enhance the development of gas in the country. Bringing the gas to this Train 7 would involve a robust gathering system that will connect trunk lines from offshore to the hinterland, looking beyond NLNG to domestic market, which will open up a flexible system that allows us to swing gas either way, depending on need. This implies that if NLNG is not running, the gas meant for it can be sent to the local market, and when the local market has difficulty in getting the gas consumed, same can be sent back to NLNG.

Dr. Baru stated that NNPC's 49 per cent share in the NLNG meant more dividend to the corporation, even as he advised NCDB to make room for more Nigerian Content in subsequent LNG projects.

The GMD called on other partners in the project to obey the rules of engagement.
"My fellow shareholders, please let us continue to provide the necessary support that NLNG as a company requires and always remain compliant with what we are signing today".

Earlier in his address, NLNG Managing Director/CEO, Engr. Tony Attah, expressed gratitude to the management of the NNPC for its roles in seeing the project to this critical stage.

Speaking in the same vein, Engr. Simi Wabote, NCDMB Executive Secretary, said that NNPC's presence at the signing ceremony was an indication of the corporation's commitment to ensuring that the Train 7 project gets to Final Investment Destination (FID) this year as projected.

NGA COURTESY VISIT TO NCDMB

L-R Engr. Simbi Wabote, Executive Secretary, Nigerian Content Development & Monitoring Board and Mrs. Audrey Ezigbo, President, Nigerian Gas Association

NGA COURTESY VISIT TO SHELL NIGERIA GAS

CORPORATE MEMBERS

S/N	NAME OF CORPORATE ORGANISATION	S/N	NAME OF CORPORATE ORGANISATION
1	ACCENTURE NIGERIA LIMITED	58	MG VOWGAS LIMITED
2	AITEO EASTERN E & P COMPANY LIMITED	59	MIDWESTERN OIL AND GAS COMPANY LIMITED
3	AJUMAGOBIA & OKEKE	60	MOMEC OIL & GAS INVESTMENT LIMITED
4	ALGASCO LPG SERVICES LIMITED	61	NATAFAMDAVID INTERNATIONAL LIMITED
5	ALUKO OYEBODE AND CO.	62	ND WESTERN LIMITED
6	AMBER GAS	63	NECONDE ENERGY LIMITED
7	AMNI INTERNATIONAL PETROLEUM COMPANY LIMITED	64	NEWPAL NIGERIA LIMITED
8	ARCO GROUP PLC	65	NIGER DELTA POWER HOLDING COMPANY LIMITED
9	ASIKO ENERGY	66	NIGER DELTA UNIVERSITY
10	AXXELA LIMITED	67	NIGERIA AGIP OIL COMPANY
11	BANWO AND IGHODALO	68	NIGERIA LIQUIFIED NATURAL GAS LIMITED
12	BAYELSA STATE GOVERNMENT	69	NIGERIAN GAS PROCESSING AND TRANSPORTATION COMPANY LIMITED
13	BLACK CRYSTAL ENERGY	70	NIGERIAN NATIONAL PETROLEUM CORPORATION
14	BOAB ENGINEERING SERVICES LIMITED	71	NIPCO PLC
15	BRASS LNG LIMITED	72	NORTHWEST PETROLEUM & GAS COMPANY LIMITED
16	BUA GROUP	73	NOSPETCO OIL & GAS LIMITED
17	CALCON SYSTEMS GLOBAL SOLUTIONS LIMITED	74	NOVANTUS GAS LIMITED
18	CENTRICA RESOURCES NIGERIA LIMITED	75	NOXIE LIMITED
19	CENTURY GROUP	76	O.T OTIS ENGINEERING LIMITED
20	CHEGAS DEEP STREAMS LIMITED	77	ODUSOLA ELUMELU & PARTNERS
21	CHEVRON NIGERIA LIMITED	78	OIL AND GAS FREE ZONES AUTHORITY
22	CODUB CONSULTING LIMITED	79	OILSERV LIMITED
23	COMPRESSION AND POWER SYSTEMS LIMITED	80	OPEX OIL & GAS RESOURCES LIMITED
24	CUTIX PLC	81	OWEL LINKSO GROUP
25	DEPARTMENT OF PETROLEUM RESOURCES (DPR)	82	PAN OCEAN OIL CORPORATION NIGERIA
26	DETAIL COMMERCIAL SOLICITORS	83	PEACEGATE OIL AND GAS LIMITED
27	DUBRI OIL COMPANY LIMITED	84	PETROLOG
28	E.ON RUHR GAS NIGERIA LIMITED	85	PLANT ENGINEERING LIMITED
29	ENERGIA LIMITED	85	PNG GAS LIMITED
30	ENERGY PORTFOLIOS MANAGER LIMITED	87	POWER GAS DELTA INNOVATIONS LIMITED
31	ERASKO ENERGY LIMITED	88	PRICEWATERHOUSE COOPER
32	EXXONMOBIL UNLIMITED	89	PROPETROL LIMITED
33	FALCON CORPORATION LIMITED	90	SEENDEO LIMITED
34	FALCONGAZ LIMITED	91	SEPLAT
35	FMX INTEGRATED SERVICES LIMITED	92	SHELL NIGERIA GAS LIMITED
36	FORTE OIL PLC	93	SHELL PETROLEUM DEV. COMPANY LIMITED
37	FRADRO INTERNATIONAL LIMITED	94	SHORELINE NATURAL RESOURCES LIMITED
38	FRONTIER OIL LIMITED	95	SOLOLA AND AKPANA (BARRISTAR & SOLICITORS
39	GAS AGGREGATION COMPANY NIGERIA LIMITED	96	STANBIC IBTC BANK PLC
40	GASCO MARINE LIMITED	97	STATOIL (NIGERIA) LIMITED
41	GAZPROM OIL & GAS NIGERIA LIMITED	98	TAMSON CAPITAL PARTNERS
42	GEO-DEVELOPMENT SERVICES NIGERIA LIMITED	99	TECHNO OIL LIMITED
43	GEORGE ETOMI AND PARTNERS	100	TEMPLARS
44	GLOBAL GAS & REFINING LIMITED	101	TOPLINE LIMITED
45	GOWUS NIGERIA LIMITED	102	TOTAL E AND P NIGERIA LIMITED
46	GREEN GAS LIMITED	103	TOTAL SUPPORT GROUP
47	HONEYWELL GROUP	104	TRANSURBAN NIGERIA LIMITED
48	HYSON NIGERIA LIMITED	105	TRIUMPH POWER & GAS SYSTEMS LIMITED
49	IBAFON OIL LIMITED	106	UDO UDOMA & BELO-OSAGIE AND CO.
50	ILF ENGINEERS NIGERIA LIMITED	107	VIGEO OIL AND GAS LIMITED
51	INTERNATIONAL ENERGY INSURANCE PLC	108	WAJGEE GLOBAL SYNERGY LIMITED
52	IVORIA NIGERIA LIMITED	109	WEST AFRICAN GAS PIPELINE COMPANY LIMITED (WAPCO)
53	JASPER AND CARNELIAN OIL AND GAS	110	WESTFIELD ENERGY RESOURCES
54	LEKOIL NIGERIA LIMITED	111	XENERGI
55	LUXXORGAS LIMITED	112	XTRA ENERGY SUPPORT SERVICES LIMITED
56	MANSFIELD ENERGY NIGERIA LIMITED	113	ZEZ NIGERIA LIMITED
57	MASTERS ENERGY OIL & GAS LIMITED		

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