UPSTREAM

LOCAL CONTENT

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Complimentary Copy

WAYOE Engineering & Construction Ltd – A Local Content Success Story in Ghana's Upstream Oil & Gas Industry

Empowering Ghana's Future Workforce: A Partnership for Local Pipefitting Expertise

Ghana hosts Inaugural West African Energy Summit

Who We Are

- Regulator and Manager of Ghana's Upstream Petroleum Industry
- Custodian of Upstream Petroleum Data
- Gateway to Ghana's Upstream Petroleum Industry
- One stop shop for all permits in the Upstream Petroleum Industry
- Facilitator of Ghanaian participation in Upstream Petroleum Industry
- Upstream Agency under the Ministry of Energy, established by an Act of Parliament, Act 821, 2011

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EDITORIAL

Ghana's Upstream Petroleum Sector is Ready for New Investments

The 3rd edition of this Magazine is mainly aimed at highlighting steps Ghana is taking to attract Exploration and Production (E&P) investments to work its hydrocarbon resources.

The theme of the 2024 Local Content Conference and Exhibition is: **Attracting E&P Investments to Boost Local Content-New Pathways.** It is hoped that the various panel discussions, networking and other platforms to be offered by this year's Conference would result in far-reaching discussions and consensus-building around the chosen theme.

Upstream Local Content is a corollary of E&P activities. Thus, wherever there is increased E&P activities, Local Content booms. The Petroleum Commission and the Local Content Committee are resolved that if Ghana should see a fillip in its upstream Local Content endeavours, there must be an increase in E&P activities. Without an increase in E&P activities by way of accelerated exploration activities, strides made in upstream local content will stagnate.

With 14 Petroleum Agreements in effect, Ghana has three producing fields, namely, the Jubilee, TEN and Sankofa-Gye Nyame Fields in production. It can be said that the major benefits of local content witnessed since 2010 have been from these three Fields. E&P companies who have interests in the 11 other Contract Areas (Petroleum Agreements); which are yet to move into field development and production phases, have also contributed to the growth of local content; albeit not to the extent that the three producing Fields have.

The strategy to ensure heightened E&P activities is two-pronged. The first of these is that the Commission is resolved to strictly enforce the drilling of obligatory wells by incumbent E&P companies with immediate effect. These obligatory wells, when drilled, may result in discoveries, which when appraised and determined to be commercial may well result in heightened E&P activities within the next decade. An upshot of this strategy is that E&P companies that have made discoveries since 2018 are at various stages of meeting their obligations to appraise them to determine the commerciality (s) of the respective discoveries. Between 2018 and the present, Ghana has seen seven discoveries from six wells. These are the Pecan South East in 2018, Nyankom in 2019, Afina in 2019, Akoma in 2019, Eban in 2021 and the Aprokuma[1] in 2022 .

Of these, the Pecan South East discovery has been appraised and had its Plan of Development (PoD) approved by the Hon. Minister for Energy. Efforts are underway for the appraisals of the other six discoveries. Yet another upshot of the first strategy is to strictly ensure that E&P companies that have obligations to drill exploratory wells do so without any further extensions to their Initial Exploration Periods. Whilst the Commission appreciates the difficulties of E&P companies in raising the needed funds to drill their obligatory wells, the international standard remains that the obligations of E&P companies continue to run no matter the challenges they face.

The second strategy is to attract new investments into available acreages by way of the execution of new petroleum agreements and also encouraging farm-in or farm-out arrangements.

[1]Two discoveries in one Well

Additionally, the Commission has looked at trends around the world, particularly in new producer countries where there have been significant reforms of fiscal regimes. These reforms have resulted in a flurry of investment decisions by Super Majors and Independents amongst others in favour of such reformist new producer countries.

The Commission has taken a cue from the examples of the new producer countries and has submitted a raft of draft reforms to the Ministry of Energy for consideration and adoption. It is hoped that once approvals are granted by the Ministry of Energy, Ghana's upstream sector will attract and retain a lot more investments.

This year's Conference as the recent ones has retained its international flavour with representations from Uganda, Nigeria, Namibia among others.

The Commission is grateful to all our sponsors for the various sponsorships they have provided to make this year's Conference and Exhibition possible.

We also thank all the speakers, moderators, and panellists for their anticipated insights and contributions to this year's Conference.

We encourage all participants to engage and share ideas throughout the next three days for a successful Conference.

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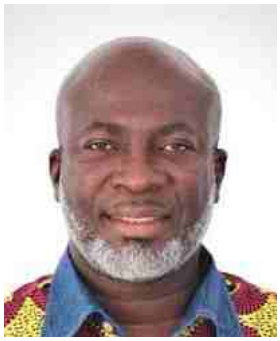

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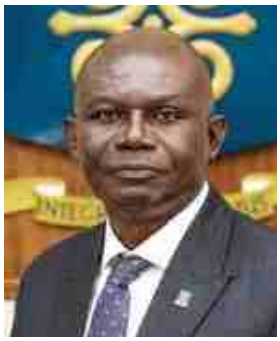

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Local Content Policies and Capacity Building of SMEs in Ghana's Upstream Oil & Gas Industry

Charles Acquaah

Introduction

The discovery of oil and gas in commercial quantities in Ghana ushered in an era of renewed optimism in the oil and gas sector and the broader Ghanaian economy.

The spirit of good governance coupled with the expectations of Ghanaians prompted the managers of the Ghanaian economy to develop and institutionalise the requisite political and regulatory framework to shepherd the budding oil and gas interest. This was critical to maximise the benefits of the resources.

As in the case of many countries, Ghana, upon discovering commercial quantities of oil and gas, proceeded to develop and integrate local content policies into the regulatory regime of the oil and gas industry.

This exercise led by the Ministry of Energy culminated in developing and approving the policy on Local Content and Local Participation in Petroleum Activities in the year 2011. This policy was subsequently converted into the Petroleum (Local Content and Local Participation) Regulations 2013, L.I. 2204 to enforce its compliance. The above-mentioned policy and Local Content Regulations (L.I. 2204) were complemented by provisions in other policies, laws, and regulations such as the National Energy Policy, Petroleum (Exploration and Production) Act, 2016 (Act 919), the Petroleum Commission Act, 2011 (Act 821) etc. In addition, these local content provisions are provided in clauses in the Model Petroleum Agreement.

Global Perspective

Local content policies are globally recognised as arguably the best means to maximise the benefits of oil and gas resources to the host nation.

A World Bank study on Local Content in Oil and Gas in 2013 (Silvana Tordor, 2013)[1] stated that, over time the aim of Local Content Policies (LCPs) have evolved from creating backward linkages (that is, supplying input to the local economy through the transfer of technology, the generation of value-added in domestic supply sectors, the creation of local employment opportunities, and increasing local ownership and control) to creating forward linkages (that is, processing the sector's output before export through, for example, the establishment of refineries, petrochemical industries, and the production of fertilizers) (Silvana Tordor, 2013)[2]. This essentially defines the spectrum and the trajectory of local content policies.

The study further indicated that LCPs have the potential to stimulate broad-based economic development, which is necessary to alleviate poverty. However, their application in petroleum-rich countries has achieved mixed results. The use of specialized inputs and the technological complexity of the petroleum sector often limit the possibility of developing backward and forward linkages into the local economy. A small economy can hardly be expected to quickly supply diverse services, let alone build forward linkages.

The Ghanaian Approach

Typical of most oil-rich developing countries, Ghana is saddled with the challenges of finance, human resources, and technology. These notwithstanding, the country has sustained an ambition to create more social value by establishing and strengthening these linkages and integrating the oil and gas sector into the national economy.

Role of the Petroleum Commission in Local Content Development

The Petroleum Commission is the lead institution in the promotion of Local Content in upstream petroleum sub-sector in Ghana. Section 3(f) of Act 821 mandates the Commission to promote local content and local participation in petroleum activities.
In light of the above, the Commission has made significant strides regarding indigenous participation from creating awareness among Indigenous Ghanaian Companies (IGCs), assisting them to register and participate in tenders, developing their capacities, and reserving the supply of certain goods and services.

A major boost to the local content drive has been the enforcement of the requirement of foreign companies to form joint ventures and recently, strategic alliances and channel partnerships with IGCs as a pre-requisite for participation in Ghana's upstream petroleum sub-sector to enhance technology and skills transfer to Ghanaians.

[1]Silvana Tordor, M. W. (2013). Local Content Policies in the Oil and Gas Sector. Washington, D.C: World Bank
[2]Ibid.

Implementation Strategies

Some of the key strategies adopted by the Commission to implement the Local Content regulations are;

i. Reservation of Goods and Services Exclusively for Indigenous Ghanaian Companies:

Following an assessment of the oil and gas value chain, in consultation with key stakeholders, some goods and services have been exclusively reserved for Ghanaian companies. In 2021, Local Content Regulations were amended to include reserved goods and services. It is worth noting that these reserved goods and services are predicated on the existing capacities of IGCs.

ii. Contracting Strategies

Further, the Commission has developed several innovative local content maximisation strategies to increase in-country spend such as:

- Unbundling of contracts to increase local participation;
- Shortening contract duration to broaden participation;
- Specification of bid evaluation criteria (requiring Local Content as a key variable); and
- Specification of minimum local content requirements /local content levels.

iii. Capacity Building of SMEs

One constraining factor inhibiting the participation of Ghanaian companies in the upstream industry is the lack of technical capacity and business skills among IGCs. To address these challenges, the Government of Ghana, through the Petroleum Commission has implemented a number of initiatives to increase the capacity of Ghanaians in the upstream subsector. These initiatives include establishment of the Enterprise Development Centre (EDC) (now defunct) in Takoradi by the Jubilee partners,

The Commission, through the Business Advisory and Enterprise Development (BAED) Department and in collaboration with the industry, periodically organizes capacity building workshops for IGCs. In the last few years, about three hundred and forty (340) companies have received advisory support leading to some of them registering for operating permits with the Petroleum Commission.
The Commission also facilitates trade missions for IGCs to develop networks with their foreign counterparts and to learn state-of-the -art industry practices.

These initiatives have boosted the capacities of Ghanaian companies in winning mid-technical contracts and enhancing their competitiveness.

Technology Transfer/Research & Development

ne key strategy being advanced by the Petroleum Commission is the enhancement of Technology Transfer and Research & Development in the upstream oil and gas sub-sector. The Commission has developed a draft Technology Transfer Policy which is currently being reviewed in collaboration with the National Development Planning Commission (NDPC). The purpose is to provide a framework to guide the systematic transfer of technologies from IOCs and ISPs to IGCs and the GNPC. In developing the draft policy, the Commission recognises the challenges of technology

transfer as a result of restrictions imposed by international IP rights and competition concerns by the IOCs. Hence, the policy has adopted the following; Hardware transfer, Software transfer, Skill and know-how transfer, and Organisational development as elements of technology transfer.

A complementary R&D Policy is also being developed. The R&D policy will guide research and development in the upstream oil and gas sub-sector, which would ultimately enhance the technological capacities of IGCs as part of efforts to significantly improve local content in the Ghanaian upstream oil and gas space. The draft R&D Policy intends, amongst others, to facilitate industry and academia collaboration and domesticate R&D expenditure in-country.

Conclusion

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Accra hosts inaugural West African Energy Summit

CEO of the Petroleum Commission, Mr. Egbert Faibille Jnr. delivering his speech at the WAES

The inaugural West African Energy Summit (WAES) which ended in Accra recently has been hailed as one of the most impactful energy events on the African continent.

The event, which was held from 3rd to 5th September, 2024 was organised by OGV Energy, the Petroleum Commission, and the Ghana National Petroleum Corporation (GNPC) with support from the Ministry of Energy.

Chaired by His Excellency Chief Olusegun Obasanjo, a former President of the Federal Republic of Nigeria, the Summit brought together over 450 delegates from 20 countries, 70 speakers, and 20 exhibitors fostering discussions around increasing foreign direct investment into the region's proven energy sector.

The opening ceremony was graced by His Excellency President John Agyekum Kufuor, Ghana's former President under whose regime the Jubilee Discovery was made, His Royal Majesty, King Tackie Teiko Tsuru II, Ga Mantse, and Dr Omar Farouk Ibrahim, Secretary General for the African Petroleum Producers Association (APPO).

In his Keynote Address, H.E. Chief Obasanjo stressed the need for a united and strategic approach to energy development across the African continent. He noted that while the world benefits from the extraction of African resources for industrialisation, Africa is yet to benefit from its vast endowment of natural resources. He opined that while many countries are rushing to net zero after benefiting from the continent's resources, Africa, accounting for only 3% of global emissions, must continue to harness fossil fuels for its economic development and energy security needs as a continent.

For his part, Dr. Omar Farouk Ibrahim highlighted the establishment of the Africa Energy Bank as one of the bold solutions aimed at addressing the challenges of financing to unlock Africa's potential.

Some Speakers and Participants at the WAES

He contended that it was not up to the same people who led humanity to the current ecological catastrophe to impose their agenda on Africa and added that Africa must be able to give itself the means to continue the exploitation of its natural resources, especially oil and gas, to lift its 600 million energy-insecure population out of poverty.
In his remarks, former President Kufuor emphasised the need for transformational leadership to ensure the benefits of Africa's resources impact the citizenry. President Kufuor also called for increased collaboration between African leaders to solve Africa's challenges.

Notable speakers at the Summit included Hon. John Kobina Sanie, Deputy Minister for Energy, Hon. Collins Adomako – Mensah, Deputy Minister for Energy, Mr. Egbert Faibille Jnr, CEO, Petroleum Commission, Mr. Joseph Abuabu Dadzie, CEO, GNPC, Mr. Rashid Ali Abdallah, Executive Director, Africa Energy Commission.

The three – day Summit served as a gateway for governments to access international investors committed to investing in African energy projects.

The Summit attracted government officials, industry leaders, and investors from across the globe. The discussions and sessions focused on fostering deal-making opportunities that promise to increase foreign direct investment into Africa's energy sector. From policy debates to investment pitches, the Summit will continue to serve as a crucial platform for facilitating transactions and shaping the future of energy in West Africa.
International and local participants left the Summit with enthusiasm, professing a renewed hope for a promising future for the energy sector in the province of West African and the African continent.

Former President Kufuor was honoured for his role in putting Ghana on the map of oil producing countries. Also honoured were the Ga Mantse, King Nii Tackie Teiko Tsuru II, and former President Chief Olusegun Obasanjo, Chairman for the West African Energy Summit.

The West Africa Energy Summit is poised to become an annual fixture, building on its success to continue driving discussions, deals, and investments that will transform the sub-region's energy landscape and prosperity of West Africa.

Ghana's Energy Transition Framework and its Implications for the Survival of the Upstream Petroleum Sector

Amega Setsoafia Wisdom Esq.

1.0. Introduction

The upstream petroleum sub-sector in Ghana undoubtedly plays a critical role in the economy of the country in terms of revenue generation through taxation, royalty and export earnings. It also offers direct and indirect employment, promotes Local Content development, technology and skill transfer.

The upstream petroleum sub-sector contributes to Greenhouse Gas (GHG) emissions, leading to climate change. However, Ghana has demonstrated a strong commitment to reducing carbon emissions and addressing climate change. This is being done through expansion of renewable energy sources, improving energy efficiency, decarbonising the energy sector, participating in international climate change agreements, sustainable development goals as wells through regulations and policies.

Considering the importance of Ghana's upstream petroleum sub-sector to the economy and commitments to reducing carbon emissions and addressing climate change, there is an urgent need for a strategic balance. Consequently, Ghana's transition to renewable energy sources must be carried out in a just and equitable manner such that Ghana can still exploit its oil and gas resources for economic growth and development.

2.0. Ghana's Energy Transition Framework

Ghana's energy transition framework is aimed at achieving a sustainable, reliable, and diversified energy mix to support economic growth and environmental goals. The framework focuses on expanding renewable energy, improving energy efficiency, decarbonising the energy sector and reducing carbon emissions to reach net zero by 2070.

2.1. Key components of Ghana's Energy Transition Framework

i. **Renewable Energy Expansion:** Under this initiative the government is promoting large-scale solar projects and exploring the potential of small-scale hydropower and wind energy projects to increase and complement its existing energy sources.

ii. **Natural Gas as a Transition Fuel:** Natural gas from domestic offshore fields, such as the Jubilee and TEN fields helps to reduce reliance on more carbon-intensive fuels like oil.

iii. **Energy Efficiency and Grid Modernization:** The framework includes initiatives to improve energy efficiency across sectors, such as the introduction of energy-efficient appliances and the promotion of energy-saving practices in industries and households. Moreover, investments in smart grid technology are being made to enhance grid reliability and support the integration of renewable energy sources.

iv. **Policy and Regulatory Support:** Ghana's Renewable Energy Act 2011(Act 832) sets clear targets for renewable energy integration and provides incentives for private sector participation.[1]

2.2. Ghana's Long Term Energy Transition Targets

Ghana's long-term energy transition targets focus on achieving a sustainable and diversified energy mix that ensures energy security, supports economic growth, and meets environmental goals. The country's key targets include:

i. 20% renewable energy in the national energy mix by 2070.

ii. Achieve universal electricity access by 2025.

iii. Reduce 30% of energy consumption in public buildings by 2025.

iv. Contribute to global climate goals by reducing carbon emissions through increased use of renewable energy and energy efficiency measures.

v. Utilise natural gas as a transition fuel to support cleaner energy generation.[2]

These targets reflect Ghana's commitment to a balanced energy transition that supports sustainable development whilst addressing climate change.

3.0. Ghana's Energy Transition framework and its implications to the survival of the Upstream Petroleum Sub-Sector

Ghana's energy transition framework, which is focused on gradually reducing the country's reliance on fossil fuels has the following implications:

i. **Energy Efficiency and Grid Modernization:**

As a result of the country's commitment to reducing carbon emissions to reach net zero by 2070, there is a potential risk of oil companies redirecting their investments to renewable energy projects. This is supported by the International Energy Agency's annual energy investment report 2024 which reported that 'the world now invests almost twice as much in clean energy as it does in fossil fuels'.[3] Funding for oil and gas projects has become challenging and expensive because some pressure groups, stakeholders and countries have resolved to halt funding for oil and gas projects.[4] This will result in a decline in new exploration and production investments which will impact government revenue, employment in the upstream petroleum sub-sector and local content development.

[1]Ghana's National Energy Transition Framework (2022-2070)
[2]Ibid
[3]World Energy Investment 2024, International Energy Agency Website: www.iea.org
[4]Sara Schonhardt, Deal to limit oil and gas funding abroad hinges on US:

The upstream petroleum industry contributes to local content development by ensuring that a significant portion of goods, services, and labour in the sector are sourced within Ghana.
The Petroleum (Local Content and Local Participation) Regulations, 2013, L.I. 2204 as amended mandates that Indigenous Ghanaian Companies (IGCs) and human resources are prioritized in the petroleum industry.

ii. Energy Efficiency and Grid Modernization:

Ghana's energy transition framework which seeks to decarbonise its energy sector and reach net zero by 2070 could lead to the imposition of stricter environmental regulations to align with international climate change agreements. Oil companies operating in the upstream petroleum industry would therefore be compelled to adopt green technologies to reduce carbon emissions and this would increase their cost of operation. The increased cost of operation would impact the survival of the upstream petroleum sector as oil companies may either reduce investment or cease investment in the sector.

iii. Stranded Assets:

Ghana's energy transition framework demonstrates a strong commitment to decarbonisation. This will impact the upstream petroleum sector as companies may decide to diversify their existing investments which will result in stranded assets in the sector.

4.0. Conclusion and recommendation

Ghana's energy transition framework focuses on expanding renewable energy, improving energy efficiency, decarbonising the energy sector and reducing carbon emissions to reach net zero by 2070. This presents significant implications to the survival of the upstream petroleum subsector.

However, considering the importance of the upstream petroleum subsector to the country it is recommended that

i. E&P companies should adopt green technologies such as Carbon Capture Utilization and Storage (CCUS) and Enhanced Oil Recovery (EOR) techniques that minimise carbon emissions, to align with global decarbonisation efforts.

ii. Oil companies in the upstream petroleum subsector should be encouraged to use advanced drilling techniques such as horizontal and multilateral drilling technologies. These reduce the number of Wells needed and thereby minimizes emissions associated with drilling operations.

iii. E&P companies should integrate renewable energy into their operations such as powering offshore platforms with solar and/or wind energy.

iv. Ghana should position its upstream industry to attract green financing by demonstrating commitment to environmental, social, and governance (ESG) standards as well as international climate agreements.

https://www.eenews.net/articles/deal-to-limit-oil-and-gas-funding-abroad-hinges-on-us/

Petroleum Commission holds First Petroleum Data Workshop

Gerald W. Adda

Panel Discussion led by Mr. Thomas Manu during the Data Management Workshop

Hon. Herbet Krapa, delivering the Opening Remarks at the Workshop

The importance of seismic data in upstream E & P activities cannot be gainsaid. It is against this backdrop that the Petroleum Commission in collaboration with PGS[1], a seismic acquisition company held the first ever Petroleum Data Workshop in Accra.

The Workshop was held on the theme "Enhancing E&P Activities in Ghana in the era of Energy Transition – The Role of Petroleum Data."

In a speech read on his behalf by the then Deputy Minister for Energy, Hon. Herbert Krapah, the then Minister for Energy, Hon. Dr. Matthew Opoku Prempeh lauded the Commission for partnering with PGS to organise the Workshop. He charged the Commission to sustain the momentum of steps the Commission is evolving to derisk Ghana's sedimentary basins for accelerated E&P activities.

In his remarks, CEO of the Commission, Mr. Egbert Faibille Jnr. said: "the first step in E&P activities is the acquisition of quality data. Without such data there cannot be discoveries and production thus, all E&P activities rest on the availability of good quality data. The clamour for Local Content can only be successful if Ghana has good quality data to attract E&P companies who will bring, in the wake of the activities a number of opportunities to grow the value chain to benefit Indigenous Ghanaian Companies (IGCs) and our people." PGS's then Senior Vice President, Africa and Middle East, Mr. Chris Drage thanked the Commission for the opportunity to partner it for the workshop.

[1]PGS and TGS have since merged into TGS

In his view, the workshop signals Ghana and the Commission's readiness to place availability of quality seismic data at the centre of its efforts to attract and retain E&P companies. He expressed PGS's commitment to Ghana in this endeavour.

Some of the topics discussed at the workshop include “Enhancing E&P Activities in Ghana; Accelerating Exploration and Production through the Utilisation of Petroleum Data,” “The Role of Petroleum Data in Attracting Inward Investments to Ghana's Upstream Petroleum Sub-sector.” Other topics were “The Staircase to Success: The Value of the MegaSurvey and Vision in unlocking Ghanaian upstream potential,

The workshop which attracted geoscientists, engineers, and oil and gas company executives amongst others discussed at length strategies for Ghana to make available adequate, quality seismic data to E & P companies. It has been identified that because of the paucity of adequate and quality 3D seismic data in Ghana's offshore Keta Basin investments in acreages in that basin has not been encouraging.

The Commission as part of its mandate to promote Ghana's hydrocarbon potentials and to attract investment for increased E&P activities therefore resolved to hold the workshop for a no holds barred discussion on the way forward for Ghana.

The status quo has resulted in a situation where second generation petroleum agreements were signed with the contractors getting seismic data acquisition option[2] as opposed to Well drilling option.[3] Contractors with the seismic data option often face the challenge of contracting seismic companies to acquire seismic data for them due to inadequate funds. Conservative estimates have it that seismic companies may charge E&P companies from US$17m – US$23m to acquire proprietary data over an offshore area of 1200sq km.

The advantage of having readily available data for E&P companies seeking to invest in Ghana is that upon the signing of Petroleum Agreements such companies will have only the Well drilling option. The Well drilling option will impose an obligation of 'drill or drop' on E&P companies such that if an E&P company fails to drill its obligatory well within the Initial Exploration Period it will have no option of an extension of the Initial Exploration Period and may have to relinquish the acreage.

On the sidelines of the Workshop the Petroleum Commission and TGS signed a three year muliticlient survey agreement for the acquisition of seismic data in the Tano Basin. When completed, the multiclient survey will be used for investment promotion purposes to attract E&P companies to take up blocks in the Tano Basin.

Having identified this situation as a barrier that ought to be removed to ensure accelerated E&P activities in Ghana, and to avoid stranded resources in light of the Energy Transition and Ghana's National Energy Transition Framework, the Commission used the platform of the workshop to announce that it will submit a strategy paper to the Minister for Energy for Government to consider funding seismic data acquisition.

Ghana, like most oil producing countries, strives to sustain its petroleum production levels by continuously exploring its sedimentary basins. Oil and gas exploration particularly in frontier sedimentary basins is underpinned by the availability of subsurface exploration data such as seismic data.

Seismic data projects are highly specialised, technical, and capital-intensive ventures dominated by a few seismic companies. These companies acquire the data either on a proprietary basis for a client or on a multiclient basis by reaching an agreement with the host government.

[2]With this option, a contractor has the obligation of using part of the Initial Exploration Period to acquire data to enable it determine whether it will prudent to drill a Wild Cat Well.
[3]With this option, a contractor as of the date of the execution of Petroleum Agreement is provided adequate quality data such that its obligation will be to use the Initial Exploration Period to drill its Obligatory Well.

A group picture of the organisers and participants at the Workshop

Challenges of IGCs in Seismic Data Acquisition Jvs

In the last decade, a number of seismic companies such as TGS (PGS/TGS), GeoPartners, BGP and Exploro have successfully signed and/or conducted multi-million-dollar offshore and onshore seismic data projects in Ghana through their respective Joint Venture Companies (JVCs). Some of the IGCs partnering the data acquisition companies are, Freddie Jordan, Bay Logistics, OMA and Integrated Geoscience. The role of the Indigenous Ghanaian Company (IGC) in the partnership has however been limited to the facilitation and execution of non-core low budget services due to their lack of technical and financial capabilities.

A typical offshore 3D seismic project involves the use of a specialised marine vessel to acquire subsurface data over an area of interest within a period ranging from several days to several months. The acquired data is subsequently processed in land-based facilities before it is delivered to the client. The data may also be interpreted by specialists upon the client's request. Within this value chain (data acquisition, data processing and data interpretation) lies the opportunities for the IGC to build capacity through the JVC and transition in the long term into an independent seismic data c.

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As Ghana's national oil company, we continue to make a positive impact on our economy and the people of Ghana. Resourcefulness and endurance will remain our tools for creating opportunities and Empowering Dreams.

Access to and Cost of Capital in Enhancing Participation of IGCs in the Oil and Gas Industry

Kwadwo Boateng

As part of the efforts of Government to ensure that Indigenous Ghanaians and their businesses benefit from the country's oil finds, the Petroleum (Local Content and Local Participation) Regulations, 2013; L.I. 2204 as amended was passed.

Regulation 1, sub-Regulation (a) provides that the purpose of L.I. 2204 among others is to "promote the maximisation of value-addition and job creation through the use of local expertise, goods and services, businesses and financing in the petroleum industry value chain and their retention in the country." Additionally, Regulation 1, sub-Regulation (d) provides that the Regulations L.I. 2204 as amended aims to "increase the capability and international competitiveness of domestic businesses."

To meet the spirit and letter of the above provisions of L.I.2204 among others Government reserved a category of business in the upstream petroleum sector known as Indigenous Ghanaian Companies (IGCs).

This article seeks to discuss the challenges IGCs face in accessing capital in their quest to thrive, develop and sustain their operations to internationally competitive standards.

L.I. 2435 defines an IGC as a company incorporated under the Companies Act, 2019; Act 992, which is fully owned by Ghanaian citizen and has at least 80% of executive and senior management positions and 100% of the non-managerial and other positions.

By reason of the fact that Exploration and Production (E&P) is capital intensive, Government, having recognised this fact, reserved certain categories of goods and services to IGCs. These reserved services such as commodity chemicals, communication equipment, technical welding materials, electrical and firefighting equipment, low and high voltage cables among others are considered not too capital intensive and within the financial capabilities of IGCs.

This notwithstanding, experiences over the years have shown that IGCs still struggle to finance the provision of some of these services even where they win contracts to provide such services. This has resulted in instances where some IGCs have failed to provide the needed bank or insurance guarantees for the execution of specific contracts or burdened with high interest rates when they are able to access interest rates.

The upshot of this situation is that, some of the E&P companies set what some may consider as 'ouster standards' as far as performance bonds are concerned in the award of contracts in the upstream petroleum sub-sector. The Petroleum Commission has over the period engaged some of the E&P companies on the need to lower and/or eliminate such 'ouster standards' in tender requirements for IGCs to enhance their participation in the upstream oil and gas industry.

The Commission notes that the financial system is the ecosystem for sourcing capital for the execution of contracts such as those available in the upstream petroleum sub-sector.

Access to Capital

Financing requirements: The value chain of the Upstream Oil and Gas Industry demands significant capital for the acquisition of licenses, exploration, development activities and procurement of equipment as well as for the provision of services. Many IGCs, especially Small and Medium-sized Enterprises (SMEs), struggle to secure the necessary financing due to critical requirements by financial institutions.

In addition, financial institutions grapple with regulatory restrictions due to single obligor requirements by the Central Bank where banks are not allowed to lend beyond a certain percentage of their capital to a single customer.

It is also a known fact that the interest and lending rates are steep with most financial institutions pricing out IGCs when it comes to access to capital. Also, the recourse to short termism at banking levels in relation to lending to IGCs.

Restrictions on Fossil Fuel Financing: Large energy sector projects in Africa typically seek financing from International Banks, International Development Finance Institutions (DFIs) and Multinational Development Banks. Many of these institutions have, however, imposed policies restricting fossil fuel financing in recent years due to energy transition. Some, including the European Investment Bank, have committed to ending all financing for fossil fuel projects. Other DFIs make some provisions for financing projects, however, most IGCs do not have the balance sheet required to take advantage of such arrangements.

Cost of Capital

High-Interest Rate Environment: In Ghana, the cost of financing is relatively high as compared to certain jurisdictions due to high interest rates and inflation. Ghana's monetary policy rate is about 29%[1] and an inflation of 20.9%[2] as of July 2024, compared to the United States of America's monetary policy rate estimated at 5.5%[3] and an inflation of 2.9%[4] as of July 2024. This increases the cost of investment for local companies and reduces their ability to compete favourably with foreign companies that have access to cheaper sources of financing.

Foreign Exchange Risk: Most transactions in Ghana are marked to the US dollar as a result IGCs often face currency volatility, which can impact the cost of capital and their ability to invest and sustain operations.

Possible Solutions

Local Content Fund
The Government of Ghana has put in place measures to support Ghanaian companies to access concessional financing. A typical example is the Local Content Fund as stipulated in section 64 of the Petroleum (Exploration and Production), Act 2016 (Act 919). The object of the fund is to provide financial resources for citizens and IGCs engaged in petroleum activities.

Partnerships
Strategic partnerships with Non-Indigenous Ghanaian Companies (NIGCs) provide avenues for IGCs to support their operations as stipulated in the local content regulations.

Government is also encouraging IGCs to form partnerships amongst themselves to enhance their balance sheets to unable them access funding. Such partnerships allow the pooling of resources to undertake investments which otherwise would have been costly. By leveraging these advantages and more, local companies can improve their liquidity, reduce liabilities, strengthen equity position and bid for contracts.

Facilitating Access to Capital

The Commission through its Business Advisory & Enterprise Development (BAED) Unit facilitates negotiation between IGCs and financial institutions to ease access to capital by IGCs. A notable example was the role played by the Commission in bringing together local and international banks, insurance companies and the Jubilee Partners which enabled Flat C Marine Offshore Ltd. to finance the acquisition of a new AHTS vessel[5] for Jubilee and TEN operations, the first time an IGC has acquired and flagged such a vessel in Ghana.

In conclusion, the ease of access to financing and the relatively competitive cost of capital enhance the participation of IGCs in the upstream oil and gas industry. Addressing these challenges through policy and regulatory interventions is essential for enhancing local participation and promoting the growth of IGCs in the industry.

[1]Bank of Ghana
[2]Ibid
[3]https://www.reuters.com/markets/us/fed-cut-rates-by-25-basis-points-sept-18-twice-more-2024-2024-09-10/#:~:text=With%20inflation%20approaching%20the%20Fed's,5.50%25%20range%20since%20July%202023.
[4]Ibid
[5]Anchor Handling Tug Supply Vessel

Wayoe Engineering & Construction Limited – A Local Content Success Story In Ghana's Upstream Oil And Gas Industry

Dr. Edward Appiah-Brafoh & Akorfa Okudjeto

UCLM Team interviewing Dr. Stephen Wayoe

One Indigenous Ghanaian Company (IGC) that has made strides towards becoming a service provider for oil fields services companies as well as E & P companies in vindication of Ghana's upstream local content policy is Wayoe Engineering & Construction Limited (WEC).

Only recently, the company has spent about US$17Million to construct an ultra-modern engineering and fabrication facility (see cover picture) with state-of-the art equipment and machinery to facilitate their ever-growing business. Some of the machines used at Wayoe's new operational site include hydraulic cranes, Automatic Welding Systems, Piping and fabrication equipment, mobile and power generating units, among others.

Founded over two decades ago, WEC, located at Ewusiejoe off the Takoradi-Agona Nkwanta Highway in the Western Region, has grown steadily over the years. The company provides a wide range of services, including steel fabrication and detailing, maintenance and shutdowns, manpower for offshore operations, supply equipment and tools, specialised procurement services, tank building and repairs and many others. Their work spans various industries such as mining, oil and gas, and power generation.

The company places strong emphasis on safety and environmental responsibility working with a dedicated team and highly skilled workforce that ensures that projects are completed on time with a track record of success. In an interview with the Upstream Local Content Magazine (ULCM), the CEO of WEC, Dr. Stephen Narh Wayoe indicated that the dedication to safety and sustainability has earned the company a positive reputation both in Ghana and beyond. “As Ghana continues to grow, the demand for reliable construction services will increase. Wayoe Engineering & Construction is well-positioned to meet these needs and contribute to the country's development. We extend our services from a multi-million-dollar fabrication workshop constructed and equipped with state-of-the-art machines and equipment that set us apart,” Dr. Wayoe said.

The company boasts of a wide range of machines designed for both onshore and offshore operations, tailored to meet the specific demands of the oil and gas industry.

These machines do not only enhance operational efficiency but also ensure projects are completed safely and timeously. The Petroleum Commission's ULCM team met with Dr. Wayoe, at his fabrication workshop to learn more about the operations of WEC, how the company started, how far it has come and what plans it has for the future.

ULCM: Can you provide us with a brief history of WEC and how the company has evolved over the years?

SNW: I founded Wayoe Engineering and Construction when I was a student at Takoradi Technical Institute, where I studied Welding and Fabrication. Starting from a small family plot of land, I took on domestic steelworks, such as door repairs and manufacturing of burglar proofs, while still in school. I used to place my equipment in various shops and left my contact information behind for those who needed my services to contact me. I started building a customer base from this exercise.

After school, I saved enough money to open a small workshop. A life changing moment came when I got a job with an American company at the Ahafo South Mine. I used my earnings to invest in tools and equipment for my business.

My breakthrough came when I took on a roofing contract, despite lacking solid experience in roofing. This led to my first major project with Group 5 Construction, worth US$15,000, prompting me to officially register Wayoe Engineering and Construction. In the course of time, I shifted focus to industrial works, securing contracts with major companies like Goldfields, Newmont and Tullow Ghana Limited. I decided to invest in a Crane from China which helped boost our operations, leading to recognition and large contracts in the mining and oil and gas sectors.

ULCM: What does Wayoe Engineering specifically do in the oil and gas industry?

SNW: We are into fabrication for oil and gas operations such as topside and subsea fabrication, we provide manpower for offshore operations and also supply equipment and tools.

ULCM: Can you share some specific projects you have done in the oil and gas industry?

SNW: From 2020 to 2022, we executed some maintenance works on the two FPSOs (KNK and JEAM) which were operated and maintained by Modec. We also fabricated Suction Piles and manifolds for Tullow Ghana Limited projects. We have also undertaken pipe works, fabricated platforms and lots of other projects.

ULCM: What is your employee strength?

SNW: Before COVID, we had about 1000 workers across Africa. Currently we have about 600. We have operations in South Africa, Liberia, Namibia, Sierra Leone and Ghana. We are currently in the process of sending about 120 employees to Liberia.

ULCM: How do you manage your workforce in terms of their training and capacity building?

SNW: Well, I believe a leader is as good as the people around him and success has never been achieved with one person. I am good at identifying talent so when I see someone with potential I train them further. Some of my staff even travel out for further studies in India and other countries. I also pay my staff well and make sure everyone is comfortable.

UCLM Team with WEC officials during the tour for the new fabrication workshop at Ewusijoe

ULCM: How do you support the community in terms of Corporate Social Responsibility?

SNW: Our CSR projects are championed by the Wayoe Workers Wives Association, which is led by my wife, Dr. Mrs. Sarah Liki Wayoe, who is the Director of Finance and Administration at the company.

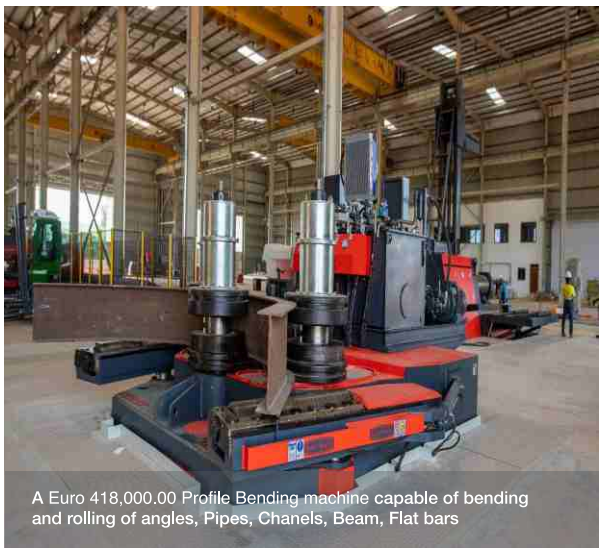
We have started work on a technical training centre to train engineering graduates and fully prepare them before they venture into the job market. People complete school without any opportunity for practical exposure to deepen their technical knowledge. We are in the process of acquiring the relevant accreditation so we can train the graduates effectively.

Additionally, we have other social investment projects for the communities around our operational sites, which includes ICT Labs, sanitary facilities, classroom blocks, among others.

ULCM: So where do you see Wayoe Engineering in the next 5 – 10 years?

SNW: Wayoe Engineering in the next 5 – 10 years should be the top company in terms of fabrication and steelworks. In the next 10 years we should have constructed a galvanized plant and expanded to many countries as well. I see Wayoe Engineering to be a key player when it comes to industrial development in Africa. That is the focus we have for the African market.

Some of the machines and equipment at the WEC facility



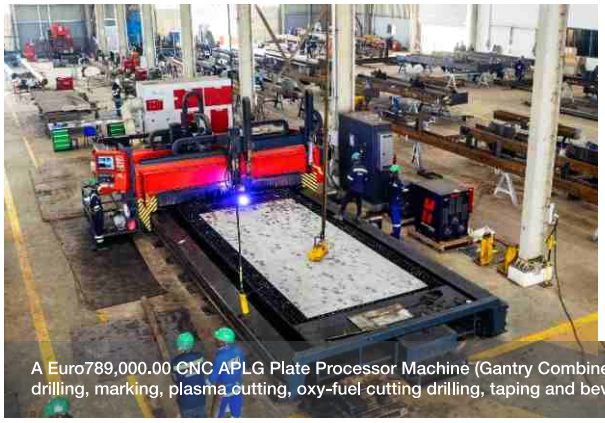
A Euro 418,000.00 Profile Bending machine capable of bending and rolling of angles, Pipes, Chanels, Beam, Flat bars

A Euro 815,300.00 3ADM Beam Drilling Line capable of drilling, marking, countersink with 18 automatic changeable drilling units

UCLM: What are your final words?

SNW: I believe the future for the oil and gas industry looks promising. We encourage the Petroleum Commission to continue providing support for local companies. I also advise the local companies to invest and build capacities so that when such opportunities come, they will be ready to participate fully in the operations of the industry. I will also recommend that the Commission adopts some local companies and mentor them to become giants in the industry.

Some of the machines and equipment at the WEC facility



A Euro789,000.00 CNC APLG Plate Processor Machine (Gantry Combined CNC Drilling & Oxy-Fuel/Plasma Cutting Machine) designed for drilling, marking, plasma cutting, oxy-fuel cutting drilling, taping and beveling. The machine has 7 automatic changeable drilling units.

Euro 462,000.00 3D CNC pipe profiling machine with the capacity to cut and bevel with Plasma and oxyfuel.

A Euro 502,000.000 CNC Punching and Shearing Line for Angles Capabilities: Punching, shearing,marking, notching of angle and flat bars

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Risk Management in the Upstream Petroleum Industry - A Comparative Analysis of Ghana and Uganda

Daniel Amoah Boakye Esq.

Background

This article identifies risk as an inevitable uncertainty of the upstream petroleum sub-sector. It discusses and stresses the necessity of undertaking effective risk management. It also covers Risk Management in the upstream petroleum sub-sector, categorisation of risks and a brief comparison thereof of Ghana and Uganda.

Introduction

Upstream petroleum operations utilise a risk management approach due to its hazardous nature. Activities within the operations involve exploring, drilling, refining, and transporting hazardous materials, which pose high risk or liability for personal injury and environmental damage.

A wide range of risks can impact the financial and operational performance of companies, therefore, making effective risk management important for long-term success and sustainability[1]. Effective Risk Management is crucial across the entire upstream petroleum value chain because it identifies, evaluates and mitigates these potential risks or threats. Risk Management ensures employee and environmental safety and enhances financial performance. Additionally, Risk Management ensures compliance with laws and regulations, thereby avoiding accidents, costly penalties or sanctions. It also provides effective insights into potential threats and opportunities, thereby assisting companies to make informed decisions about their investments, operations and other strategic initiatives. For these reasons, risks and their management and mitigation in the upstream petroleum sub-sector cannot be under emphasised.

Risk Management is the process of identifying, evaluating, and mitigating potential threats to an organisation's capital and earnings. Risks may arise from various origins including financial uncertainties, legal obligations, technology challenges, strategic management mistakes, accidents and natural catastrophies[2].

Types of Risks in the Upstream Oil and Gas Industry

Risks in the upstream Oil and Gas industry can broadly be categorised as follows:

- **Economic Risk –** Economic risk in the upstream Oil and Gas industry is the possibility of financial losses or uncertainties due to various economic factors such as oil price decline, high operational costs and budget overruns.

[1]Risk Management in the Oil and Gas Industry (22 August 2023) http://www.petrosync.com>blog>risk-management
[2]Ibid.

- **Political Risk –** Managing political risk is an important consideration in the upstream Oil and Gas industry. Some examples of political risks in the upstream Oil and Gas industry include changes in government, re-negotiated agreements, and unfavourable regulatory regime.

- **Environmental and Safety Risk** - Environmental and safety risks require careful management and mitigation to ensure safe and sustainable operations in the Oil and Gas industry. Examples of environmental and safety risks include greenhouse gas emissions, environmental contamination or pollution of the surrounding ecosystem.

- **Geological Risk –** This refers to potential losses associated with exploration and production of oil and gas from the earth's crust.

Institutional Framework in Ghana

In Ghana, the 1992 Constitution, which is the supreme law of the land, as stipulated in Article 1(2), provides in Article 257 (6) that all mineral resources are vested in the President of Ghana for and on behalf of the people of Ghana.

The principal legislation for the Exploration and Production for Oil and Gas within the jurisdiction is the Petroleum (Exploration and Production) Act, 2016, Act 919.

The petroleum sector in Ghana is divided into two sub-sectors, namely, upstream and downstream. The Ministry of Energy is the primary state agency responsible for energy policy formulation, monitoring, evaluation, and coordination of all energy sector activities. The Ghana National Petroleum Corporation (GNPC) is the National Oil Company (NOC) of Ghana, and as such the vehicle through which the State participates in all upstream petroleum activities.

The upstream petroleum sub-sector is regulated by the Petroleum Commission (PC) as mandated by the Petroleum Commission Act, 2011, Act 821 to regulate and manage the utilisation of petroleum resources and coordinate the policies in relation to them.

Ghana and Uganda - A Comparative Analysis

Ownership of Petroleum

Same as in Ghana, the 1995 Constitution of Uganda is the supreme law of the land and vests all minerals and petroleum in, on or under, any land or waters in Uganda in the Government on behalf of the Republic.

Principal Upstream Legislation

The principal legislation in Uganda for Exploration and Production, that is the Petroleum (Exploration Development and Production) Act 2013, Act 3 has similar provisions as the Petroleum (Exploration and Production) Act, 2016, Act 919 of Ghana.

The Petroleum Acts of these two jurisdictions have incorporated strict provisions on allocation of liabilities, Health, Safety and Environmental requirements as well as the necessity to procure reasonable and adequate insurance to mitigate and/or transfer risk in the unlikely event of accidents.

Establishment of Regulatory Institutions

The Ministry of Energy and Minerals Development of Uganda is the primary state institution responsible for policy formulation, and licensing for petroleum and mineral resources and their promotion. However, Ghana's Ministry of Energy is responsible for Policy formulation and licensing for the petroleum sector without any responsibility for investment promotion.
The Petroleum Commission is responsible for investment promotion in the upstream petroleum sub-sector in Ghana.

In Uganda, the petroleum sector is divided into three sectors; upstream, midstream and downstream; whereas in Ghana the sector is divided into upstream and downstream. Similarly, the Uganda National Oil Company (UNOC) plays the same role as the Ghana National Petroleum Corporation (GNPC).

Whereas the Petroleum Authority of Uganda was established under Section 9 of the Petroleum (Exploration Development and Production) Act 2013, Act 3, the Petroleum Commission of Ghana was established by Article 269 (1) of the 1992 Constitution of Ghana which mandates Parliament, by or under an Act of Parliament to provide for the establishment of Commission as Parliament may determine for the regulation and management of the utilisation of the natural resources concerned and the coordination of policies in relation to them.

Ghana has separate state institutions regulating the upstream and downstream petroleum sectors, however, the Petroleum Authority of Uganda regulates both the upstream, midstream and downstream petroleum sectors.

Offshore and Onshore Risk

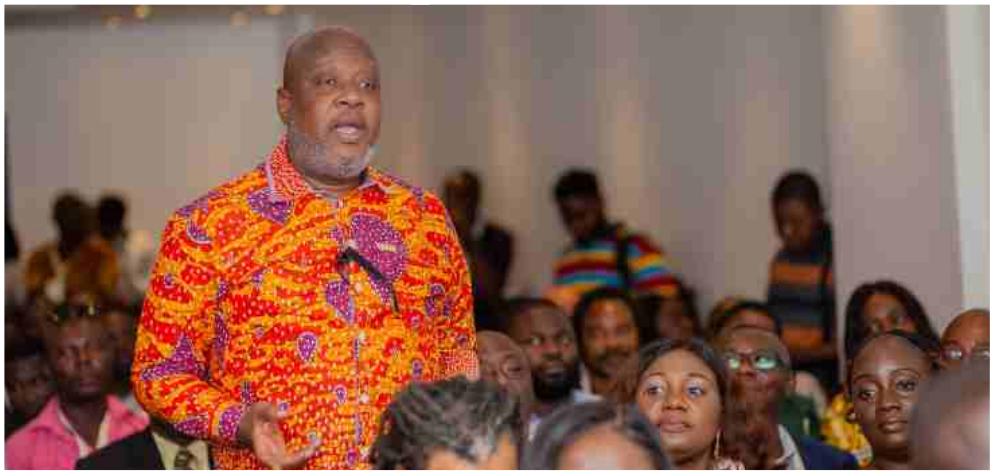
Offshore petroleum operations may expose Ghana to harsh marine conditions including storms and hurricanes and potential equipment failure. There is also the high tendency of oil spill that may affect marine ecosystem and coastal areas. On the other hand, onshore petroleum operation may expose a country like Uganda to risk such as flooding of facilities, motor vehicle accidents, earthquakes and Wildlife-Human conflict which can broadly be said to be geographical risk in the upstream petroleum sub-sector.

Conclusion

Uganda and Ghana made commercial discoveries relatively around the same time in 2006 and 2007 respectively. The only significant difference is that whereas Ghana's discovery is offshore, Uganda's is onshore.

The two countries have developed robust laws on risk management in the upstream oil and gas industry and have established institutions to effectively and efficiently regulate their upstream petroleum sub-sectors. There is therefore the need for Ghana and Uganda to share ideas in offshore and onshore exploration and production activities for the optimum benefit of their respective citizens.

Highlights of the 2023 Local Content Conference & Exhibition




Challenges and Prospects.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Awards Night

Networking Sessions

Empowering Ghana's Future Workforce: A Partnership for Local Pipefitting Expertise

Sarah Quayson Danquah & Mustapha Hameed

Ghana's drive towards maximizing the involvement of local workforce in the upstream petroleum industry is gaining momentum through an innovative collaboration between the Petroleum Commission and Yinson Production West Africa Limited. Recognizing the nation's current lack of pipefitting technicians for its petroleum sector, this partnership represents a strategic investment in capacity building and skills development. The initiative is part of the Government's Accelerated Oil and Gas Capacity Building (AOGC) Programme, aimed at developing Ghanaian professionals in the upstream space in the broader Job Role Localisation Agenda.

In a significant step forward, ten instructors from various technical training institutions across Ghana have been selected to undergo a specialised Pipefitting programme at the prestigious Ngee Ann Polytechnic in Singapore. Known for its cutting-edge vocational training and technical education, Ngee Ann Polytechnic has a track record of delivering industry-relevant training programmes, especially in the area of oil and gas.

Since May 2024, a group of carefully selected instructors have engaged in a Bespoke Train-the-Trainer Pipefitting Course, which has been tailored to meet specific demands of Ghana's upstream petroleum industry.

The beneficiaries from the Takoradi Technical Institute, Takoradi Technical University, Kikam Technical Institute, Kumasi Technical University, Regional Maritime University, and the Ghana Navy, were selected under the Institutional Capacity Building thematic area of the AOGC Programme. This initiative is more than just a training programme; it is a holistic investment in Ghana's educational architecture. Upon their return, these instructors will not only introduce Pipefitting as a course within their respective institutions but also serve as Foundational Instructors at the soon-to-be-established Welding and Pipefitting Center of Excellence at the Takoradi Technical University.

Yinson Production West Africa Limited has sponsored the training programme as part of its local content commitment to Ghana.

The ten Lecturers with some staff of the Commission

Ten Lecturers studying in Singapore

Beyond the immediate training, Yinson Production West Africa Limited's commitment extends to securing American Welding Society (AWS) Certification for the Instructors, further enhancing their global credentials and elevating Ghana's standing in the international welding and pipefitting industry.

The significance of this partnership cannot be overstated. By empowering local instructors, Ghana is building a sustainable pipeline of skilled professionals ready to meet the demands of the oil and gas sector. Ngee Ann Polytechnic's rigorous technical curriculum, combined with practical, industry-aligned training, will equip these instructors with the knowledge, skills and attitudes required to teach future generations of pipefitters and welders in Ghana.

This strategic collaboration, not only underscores the Petroleum Commission's commitment to capacity development but also highlights the vital role of industry stakeholders like Yinson Production West Africa Limited in advancing local talent.

By investing in training, certification, and education, Ghana is laying the foundation for a more self-reliant upstream petroleum sector, driven by highly skilled Ghanaian professionals.

The return of these instructors marks a critical step towards achieving Localisation Goals in the Upstream Petroleum and other allied sectors. As Ghana positions itself as a leading player in the oil and gas industry, the development of a robust, locally-trained workforce will be key to its success, ensuring that the nation reaps the full benefits of its natural resources.

This initiative is a prime example of how thoughtful partnerships and targeted capacity-building programmes can drive long-term economic development, empowering local professionals to take ownership of their country's most valuable industries. Through such efforts, Ghana is not only investing in its present but securing a prosperous and independent future for its oil and gas sector.

Seismic data Acquisition in the Upstream Oil and Gas Industry

Ali Yahaya Amin

Introduction

Oil and Gas, collectively referred to as hydrocarbons, forms from the remains of tiny marine organisms such as algae, plankton, bacteria, in addition to larger plants and animals. These remains are gradually buried under layers of minerals and sediments. Over millions of years, they transform into kerogen, and with the application of heat and pressure, kerogen is eventually converted into hydrocarbons.

In the exploration for hydrocarbons, several methods are employed. The four methods widely used are Seismic, Gravity, Magnetic and Electromagnetic. Seismic, however, is today the most widely used technology for subsurface exploration. Seismic exploration is technology driven, today we have moved from 2D to 3D, introduced the four-component (4C) Ocean Bottom Surveys, time-lapsed 4D and Controlled Source Electromagnetic (CSEM) methods.

Seismic Data Acquisition

Seismic surveying technology is a key tool that makes it easier to 'see' what is underground both on land and beneath the seabed. Seismic surveys is divided into marine and land seismic.

Land Seismic

Land seismic acquisition uses an array of sources and receivers. The choice of sources and receivers to use depends on the goals of the survey along with cost and environmental conditions. Explosives, Vibroseis, and weight drops are some known types of sources used in land seismic acquisition. Geophones are used as receivers for data.

Marine Seismic

Marine seismic acquisition is carried out using large vessels equipped with sources and streamers, which are towed behind the ship. Unlike land seismic acquisition, where geophones need to be repositioned, the vessels in marine seismic acquisition continuously move from one shot to the next. This makes the process faster and typically more cost-effective than land seismic acquisition.
The most used source is the Airguns. The receivers are typically Hydrophones.

2D Seismic Data Acquisition

2D seismic data is mostly used at the early stage of exploration in search for hydrocarbons. It is an excellent technique for identifying geological structures such as faults, folds and hydrocarbon reservoirs. In 2D seismic acquisition, geophones (like microphones) are arranged in a single line along the land or water surface. An energy source is triggered to send waves into the earth, and the geophones, acting as listening devices, capture the reflected seismic signals. This process is repeated multiple times to generate a 2D image of the subsurface along the line. Ghana has significant 2D seismic coverage both onshore and offshore, with approximately 2,000 km of onshore lines over the Voltaian Basin and over 97,000 km of offshore lines across the three offshore basins.

3D Seismic Data Acquisition

3D seismic data is a more advanced geophysical method than 2D surveys. The advantage is its ability to provide high resolution image of subsurface structures. It is also used during exploration mostly after 2D Seismic data has narrowed the leads to a more specific area.

In 3D Seismic Acquisition, geophones are spread out along the land or water surface in a dense grid (thousands of geophones are used). Then a source of energy is set off to penetrate the earth. Each geophone picks up a signal of reflected energy, allowing the contractor to piece together a 3-dimensional image of the subsurface. Ghana has over the last several years acquired over 21,000km square seismic data covering its 3 Offshore Basins albeit most of it is concentrated in the Tano Basin.

4D Seismic survey

In a marine four-component (4C) Ocean Bottom Survey (OBS), the receivers are located at the sea floor. Every receiver station is a 4C sensing system; three components of the particle velocity field are recorded from a three-component geophone, and the pressure field is recorded from a hydrophone. With the sensing system stationary on the seabed, a source vessel towing a marine source array shoots on a predetermined grid on the sea surface.
OBS has several applications in the Oil and Gas exploitation. It has been an excellent tool for revealing reservoirs obscured by multiples on conventional seismic data, mapping of overpressure zones and for reservoir characterization and monitoring to mention a few.

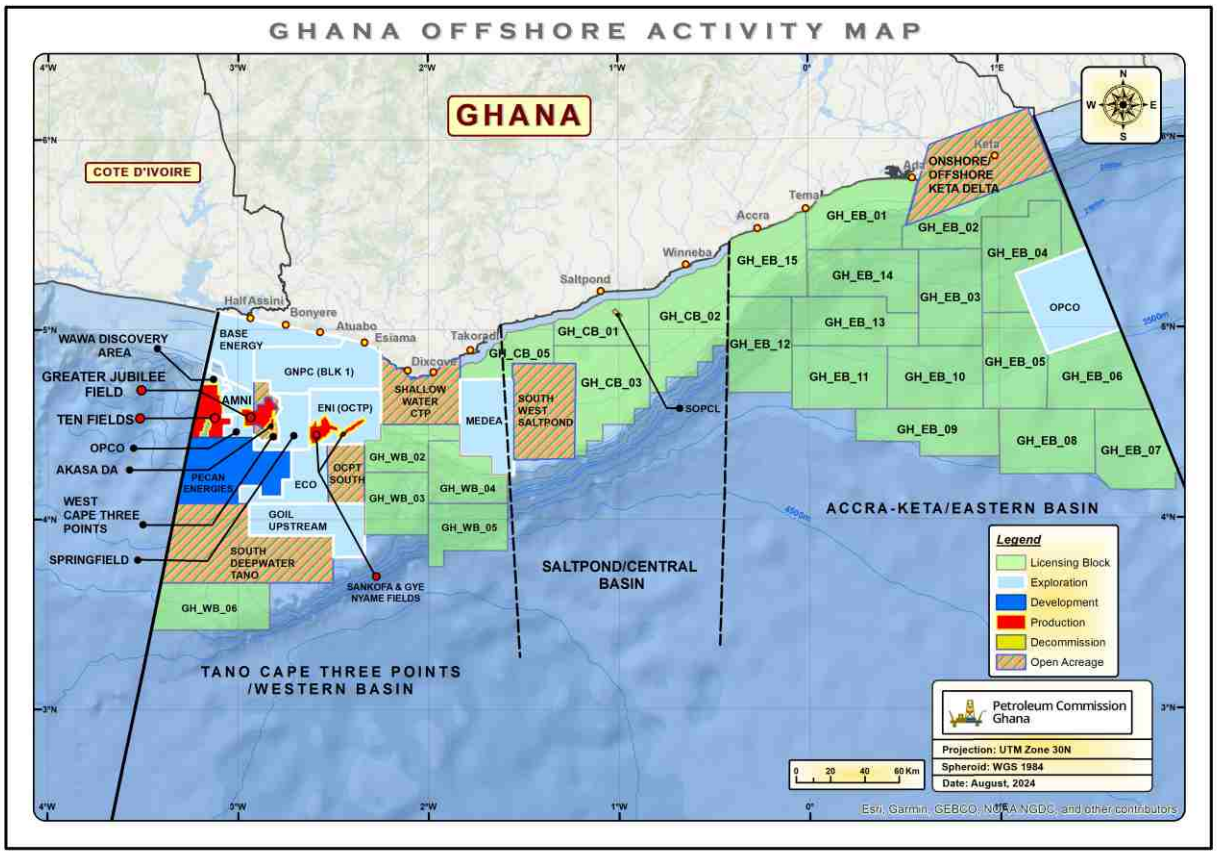
Controlled Source Electromagnetics (CSEM)

The first commercial use of Controlled Source Electromagnetics (CSEM) in hydrocarbon exploration was carried out by Statoil in 2002 (Ellingsrud et al., 2002; Rosten et al., 2003).

Marine CSEM involves detecting variations in electrical resistivity to explore the subsurface. This method is crucial in oil and gas exploration because hydrocarbon-bearing sediments typically have higher resistivity compared to water-bearing formations. Thus, CSEM serves as a complementary tool to seismic methods, offering an additional key subsurface parameter. Being highly sensitive to resistivity, CSEM can indicate the presence of hydrocarbons. The use of CSEM in Ghana has been quite limited. Till date, Tullow Ghana Limited has been the only company known to have acquired CSEM data in Ghana.

Conclusion

The use of seismic data to image the earth's subsurface has evolved greatly over the years. From cutting edge acquisition methods to high resolution shear S wave processing techniques are deployed around the world to find the most evasive hydrocarbon reservoirs. Ghana has come a long way from the sighting of oil seeps onshore Tano basin and the drilling of exploratory Wells in early 1960s to the use of OBS in improving recoveries in declining reservoirs.



Ghana's Offshore Activity Map

Subtech Diving and Marine Services Ltd, SDMSL, is an indigenous registered Diving and Marine contractor based in Ghana, Tema.

The company was established in 2015. It has local and IMCA (International Marine Contractors Association) certified commercial divers based in Ghana with wealth of experience both offshore and inshore spanning over 20 years. The founder of the company is a locally based international certified commercial diver trained at Fort William in Scotland, with over 30 years of experience in the Diving industry both inshore and offshore.

Subtech Diving operates under the UK Diving Regulation HSE 1997 Inshore - Offshore The aim of the company is to provide the Maritime industry with a cost effective and first class underwater consulting, Marine and maintenance services with international standard to Harbours, vessels and offshore facilities.

Whether the requirement is for fast response to short notice emergency situations, or management of larger projects requiring a variety of in-depth planning, Subtech Diving can be your reliable company to consider in the industry.

The company operates with strict adherence to HSE and IMCA regulations.
Subtech is the only indigenous company with IMCA recommended decompression chamber.
We at Subtech Diving and Marine Services Ltd strive to provide a competitive and high quality underwater services with international standards to our clients

How Petroleum is formed

Gerald Adda

The entire oil and gas industry thrives on commodity; petroleum. Petroleum (crude oil and natural gas) is a non-renewable naturally occurring substance that forms through a combination of geological and geochemical processes within the earth, millions of years, before the advent of humans and their antecedents.

Typically, petroleum occurs as accumulations or deposits in specific places on earth called sedimentary basins. Sedimentary basins contain the rocks which are required to store and preserve the petroleum.

Petroleum starts its journey as microscopic organisms including bacteria, algae and planktons which live in seas or lakes. These organisms, under favourable conditions (i.e. the abundance of nutrients and optimal temperature) multiply rapidly. Upon their death, they sink into the bottom of the sea or lake, along with other sediments and eventually become organic matter in a sedimentary rock.

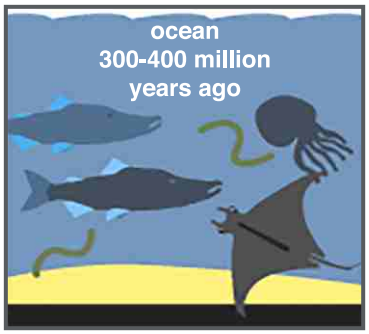
The sedimentary rock at this stage is described as an organic rich rock. Due to the lack of/limited oxygen at the bottom of the sea or lake, the organic matter is altered into an insoluble organic substance called Kerogen, which remains in the organic rich rock. Kerogen is the foundation of all petroleum.

Over a period of several million years, as new sediments sink to the bottom of the sea or lake and overlie the organic rich rock, it gradually subsides to great depths in the earth where it is subjected to increased temperature and pressure. The increased temperature and pressure alter the Kerogen into petroleum.

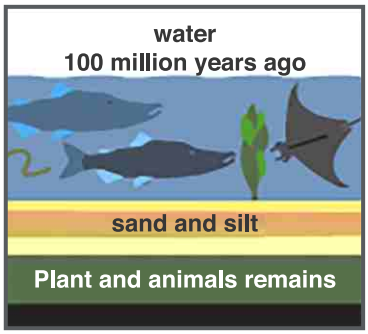
The organic rich rock then becomes a source rock which generates petroleum. The generated petroleum eventually migrates into reservoirs and may be trapped and preserved for millions of years until it is discovered through exploration.

Petroleum and Natural Gas Formation

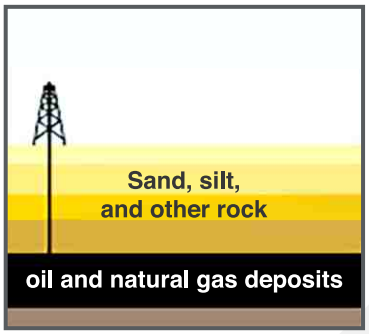
Tiny marine plants and animals died and were buried on the ocean floor. Over time, the marine plants and animals were covered by layers of silt and sand.



Over millions of years, the remains were buried deeper and deeper. The enormous heat and pressure turned the remains into oil and natural gas.



Today, we drill down through layers of sand, silt, and rock to reach the rock formations that contain oil and natural gas deposits.



Source: Adapted from National Energy Development Project (public domain)

Interview with Mr. Ebenezer Quao, CEO – Eco Natural Resources Ltd and Director, 2EN Chemicals Limited

Linda M. Kosi

ULCM puts the spotlight on an Indigenous Ghanaian Company making significant strides in the upstream oil and gas industry. We interacted with the CEO of Eco Natural Resources Ltd and Director of 2EN Chemicals, Mr. Ebenezer Quao to learn more about its line of business.

ULCM: Good day Sir. Thank you for your time.
We have heard so much about the new Blending and Chemical facility established by Eco Natural, and we would like to know more about this facility and how important its acquisition is for the upstream oil and gas industry.

Let's start with what Eco Natural's line of Business is, the current number of employees and how long the company has been in operation?

EQ: Eco Natural Resources (ENR) is a chemical solutions company specialising in the supply of all chemical products for the extractive sectors, energy, textiles and to a lesser extent, the food and beverages industry. ENR also provides the needed logistics required for the delivery of products to clients' base. ENR currently has 16 employees.

The company was incorporated in May 2009. In 2013, ENR made a strategic decision to focus on the upstream petroleum sub-sector and was successful in securing the production chemicals and management services with Tullow Ghana Limited in 2017, using its JV company – Nalco Champion Ghana Ltd. The company got the vision to build a one-stop chemical blending, storage and processing facility which started in 2017.

ULCM: Can you tell us a bit about the Chemical Blending Project?

EQ: The Blending Facility is a project embarked upon by 2EN Chemicals (a partnership between Eco Natural Resources and Ensol Energy Ghana) - two Indigenous Ghanaian Companies (IGCs) with the vision to offer a cost effective and enhanced value creation in the chemical industry.

So essentially, ENR is a joint owner of the facility together with Ensol Energy through our JV Company 2EN Chemicals Ltd. What's more, the facility is open to do business with other chemical manufacturers and suppliers, including competitors. Our current installed capacity (1x10T and 1x5T blenders) can conveniently serve the entire upstream petroleum and mining sector requirements. We intend to operate it as a 'tolling facility' which can be accessed and utilised by all chemical importers or suppliers to blend their products at a token fee.

ULCM: What does a chemical blending plant do and why is it necessary at this time?

EQ: The basic function of a blending plant in simple terms is to turn raw materials, semi-finished chemical products and formulations into the desired finished products. Specifically, our blending plant will use raw materials (chemical concentrates and formulation) to manufacture new products that meet the specification of our clients.

Our 15T plant is able to blend both water and oil-based chemicals for the oil and gas industry as well as other industries i.e. mining, manufacturing, textile etc. The plant is built to store bulk chemicals (both raw materials and finished chemical products), blend chemicals (specialty and commodity chemicals) and decant chemicals into various packaging for onward delivery to clients.

The timing could not be any better as this plant will allow for in-country production of various kinds of chemical products that otherwise would have been imported as finished goods at a very high cost. So invariably, this plant will help the drive towards import substitution and increased in-country production for chemical and chemical products.

ULCM: What are the features of the facility and how many people are required to man/operate the plant?

EQ: We have just completed the Phase 1 which entails the two (1x10T and 1x5T) blenders, office complex, sheltered warehouses, demineralised water storage, reverse osmosis unit, open space storage, sumps at specific locations to retain and treat chemical spillages, diaphragm and centrifugal pumps, firewater and firefighting facilities, etc.)

The final phase, when completed will have a laboratory, additional sheltered storage, decanting/filtration unit and other resources making it a One-Stop Chemical Facility.

ULCM: Can you tell us more about the production cycle of this plant and cost of acquiring of the plant?

EQ: Depending on the product, the process could be complex or simple, and the reason we invested in the top of the range equipment is to minimise the complexity.

For water-based chemicals, water from our boreholes and/or the main water line (Ghana Water) is channeled to the RO system for treatment and de-ionisation for onward storage in the DM tank. Formulations in the lab for the right constituents of the product is prepared. Based on the proportions of the required products, the raw materials and solvents (water) are pumped into the blender and mixed at specific agitator speed for the production of the final chemical. Samples are taken for approval at the lab before the final product is pumped into the allotted packaging for onward storage and/or delivery to clients. To date, we have spent in excess of $2M.

ULCM: Who are your main partners and what has been their role/contribution so far?

EQ: Ensol Energy is our major partner on this journey. However, we also received a lot of support from some key stakeholders including, the Petroleum Commission, Environmental Protection Agency, Tullow Ghana Limited and others who have spurred us on through various stages of the project. It is also worth mentioning that we enjoyed technical support from ChampionX who shared some technical experiences from their global operations. Ross Mixers (India) and Gudrik Engineering Consult also supported during the HAZOP and mechanical installation processes.

ULCM: What sustainability plans or strategies do you intend to implement to ensure business continuity and good return on investments?

EQ: We are fully aware of the uncertainties within the business environment and therefore very strategic in our business outlook. We will not limit our operations to Ghana but leverage on our global and regional relationships to sustain the business. The beauty of a chemical facility is that chemicals are used in almost all industries. This gives us the opportunity to expand and meet the needs of different industries.

On the other leg of sustainability, the key focus for us is to carry out our activities in more eco-friendly ways, continue to promote diversity and inclusion but more importantly be good corporate citizens.

ULCM: What would you consider as a major hurdle or challenge in the acquisition of this plant and how was this overcome?

EQ: Financing. Financing. Financing. - It goes without saying, to be able to come this far, it took a lot of resources many of which we cannot even quantify in monetary terms. We believe that projects like this should enjoy some level of tax exemption in order to provide some respite to the investors.

Our partnership with Ensol Energy no doubt paid off as we did not have to shoulder all the burden alone. Two hands are better than one (TEAM – Together Each Achieves More).

ULCM: We will wrap up the interview and ask about any lessons or thoughts you would like to share with other Indigenous Ghanaian Companies?

EQ: We must embrace technology transfer and be bold enough to make the right investments that create a conducive environment for the technology to be transferred. There is no such thing as 'free lunch'

Finally, there's a lot that we can do together as local businesses to support one another. Let's focus more on building synergies and alliances locally. A friend of mine said and I quote “let us embrace coopetition”. 'Coopetition 'is a business strategy that combines cooperation and competition. It involves collaborating with competitors or complementary businesses to achieve mutual benefits while still competing in other areas.

Key aspects of coopetition include Collaborative advantage: Coopetition seeks to create a win-win situation by sharing resources, expertise, or risk. Competitive advantage:

Coopetition seeks to create a win-win situation by sharing resources, expertise, or risk. Competitive advantage: Each party maintains its competitive edge by protecting core competencies and intellectual property. Mutual benefit: Coopetition aims to increase overall market share, revenue, or innovation.

When IGCs work together, I believe we [Ghana] will be able to meet the challenge of being a net exporter of chemical products and services.

ULCM: Thank you so much for your time.

EQ: It's my absolute pleasure.

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- Capacity to serve other industries aside oil and gas.

A partnership between indigenous Ghanaian companies

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A Harmonised Local Content Policy Framework for Africa's Upstream Petroleum Sector - A Possibility?

Judith Adjobah Blay & Yaw Barimah Amoabeng

Africa's oil and gas sector has enormous opportunities and holds immense potential for driving economic development, poverty reduction, and industrial growth. However, for many oil-rich African nations, the challenge has always been ensuring that the wealth generated from hydrocarbon exploitation truly benefit our economies.

One way to address this challenge is through the implementation of Local Content Policies (LCPs). However, recognising that it will be imprudent for all of Africa's oil-rich nations to have a common local content policy, this article examines the possibility of introducing a common local content policy framework to be used as a guide by oil-rich African countries to develop their individual upstream local content policies.

While many African nations have implemented some forms of local content in relation to the upstream petroleum sector, these differ somewhat in scope, enforcement, and effectiveness, hence the question; **"Is a Harmonised Local Content Policy Framework for Africa's Upstream Petroleum Sector a Possibility?"**

This article discusses the potential or possibility of adopting a harmonised local content policy framework across oil and gas-producing countries in Africa while examining similarities and differences in existing local content policy strategies.

From Nigeria through Algeria, to Angola, Egypt, Mozambique, Gabon, Senegal, Ghana, Equatorial Guinea, Cote d'Ivoire, Uganda, to mention but a few, upstream local content exists. Invariably, some of these policies are driven by among others, each country's experiences from years of production, national development aspirations as well as regulatory regimes and negotiation skills at the time of negotiating licenses.

What is Local Content?

Local Content (LC) in simple terms is the value brought to the local, regional or national economy from an extraction project. Africa's oil and gas-producing countries have different definitions for LC spelled out in their Laws.

Local Content Policies (LCPs) are strategic regulatory frameworks adopted by governments to ensure that natural resource extraction benefits the local economy through job creation, industrial development, and technology transfer. In the petroleum upstream sector (exploration and production of oil and gas), LCPs mandate that companies operating in a country use a certain percentage of local labour, materials, and services in their operations.

Examining Local Content Policy in Selected Petroleum Producing African Countries

According to the U.S. Energy Information Administration Database compiled for the calendar year 2023, there are twenty- two (22) African oil-producing countries.

This article discusses and analyses the LCPs of some oil and gas-producing countries in Africa to identify similarities and differences.

Similarities in Implementation of Local Content Policies

Despite differences in implementation, many African countries share common objectives in their LCPs. A careful review of LCPs of some oil and gas-producing countries reveals some commonalities in their LC strategic objectives.

- **Job Creation and Workforce Development:** Virtually all local content policies prioritise the hiring and training of local workers in the oil and gas sector. For example, Nigeria's Local Content Act of 2010 requires oil companies to meet specific quotas for hiring Nigerians at various levels of their operations, from junior staff to executive positions.

  Angola has similar requirements under its "Angolanisation" programme, which requires that a significant percentage of workers in the oil and gas industry be Angolan nationals. Also, Section 60 of Ghana's Petroleum (Exploration and Production) Act, 2016; Act 919 as well as Regulations 17, 18 and 19 of the Petroleum (Local Content and Local Participation) Regulations, 2013; L.I. 2204 mandate companies engaged in upstream petroleum activities to ensure that Ghanaian citizens who have the requisite expertise or qualifications are given first consideration with respect to employment. Additionally, in Senegal, contractors, subcontractors and suppliers are required to prioritise the employment of Senegalese nationals in accordance with Law 2019- 04 Art.7 S 2-3 and Law 2004-06 Art.25.

- **Local Procurement of Goods and Services:** Many countries, such as Ghana, Angola, Nigeria, and Tanzania mandate oil and gas companies to source goods and services locally. In Ghana, L.I.2204 requires oil companies to procure a certain percentage of goods and services from Ghanaian companies. Tanzania's Local Content Policy of 2015 similarly focuses on the participation of local suppliers and service providers. Goods and services related to the petroleum sector are provided by Senegalese enterprises unless there is no Senegalese company with the requisite qualifications and standards for the project (Law 2019-04 Art.8.1).

- **Capacity Building and Technology Transfer:** Local content policies across the continent emphasise the importance of building local capacities and transferring technology and know-how from international companies to local workforce and firms. Angola's Petroleum Activities Law includes provisions aimed at ensuring technology transfer, with companies required to submit detailed plans for training and capacity building. In Senegal, the Petroleum title holders as well as companies working on their behalf, must contribute to maximise technology transfer to Senegalese companies along with support services (Law 2019-03 Art.58). Also, Ghana has a similar provision in Section 62 of Act 919 and Regulation 23 of L.I. 2204.

Differences in Local Content Policies

While similarities exist, there are significant differences in how countries approach local content, particularly in terms of enforcement, targets, and scope.

- **Enforcement and Penalties:** A striking difference in the implementation of the various LCPs of some African nations is the level of enforcement. Nigeria's Local Content Act is widely regarded as one of the most robust on the continent, with a dedicated regulatory body, the Nigerian Content Development and Monitoring Board (NCDMB) mandated to ensure compliance among others. The NCDMB has the power to impose penalties on companies that fail to meet local content requirements, including fines and cancellation of contracts. In contrast, some countries have been criticized for weak enforcement with regulations in place but little oversight or punishment for non-compliance. In Senegal, the Ministry of Petroleum and Energy is charged with the mandate to oversee and monitor the implementation of LCPs in the oil and gas sector.

- **Scope of Local Content Requirements:** The scope of local content requirements also varies significantly. While countries like Nigeria and Angola have set specific targets for local employment and procurement, others take a more flexible approach. In Mozambique and Namibia, for example, local content policies are still evolving, and there is a focus on promoting local participation through less prescriptive means, such as facilitating partnerships between indigenous companies and international firms.

- **Focus on Upstream vs. Downstream Activities:** Some countries place more emphasis on local content in upstream activities, such as exploration and production, while others focus on downstream activities, such as refining and distribution. Ghana's local content policy, for instance, places a strong emphasis on participation in upstream activities, including drilling and production services. By contrast, the Nigerian Content Development and Monitoring Board (NCDMB) places emphasis on the entire oil and gas value chain i.e. upstream, midstream and downstream.

Can Africa Achieve a Harmonised Local Content Policy Framework?

With all these similarities and LCP peculiarities enumerated above and coupled with the fact that Africa's oil and gas-producing countries vary greatly in terms of economic development, infrastructure, and industrial capacity, can Africa still achieve a harmonised LCP?

While countries like Nigeria and Angola have relatively mature oil and gas sectors, others like Uganda, Namibia and Kenya are just starting to develop theirs. Is a one-size-fits-all approach to local content feasible?

What role can African Union (AU) Leadership play in spearheading the development of a harmonised local content policy framework, since that would also be incongruous with one of its objectives of accelerating the political and socio-economic integration of the continent?

Can the African Continental Free Trade Area (AfCFTA) which has the strategic objective of promoting intra-African trade via its trade framework lead the conversation for a harmonised African LCP framework?

As part of its strategic objectives, the African Petroleum Producers Organisation (APPO) aims to promote economic development and market diversification by enhancing hydrocarbon sector local procurement, employment and gender diversification. Then again, can APPO be used as a strategic lever for a harmonised African LCP framework?

Africa has several regional cooperation structures like ECOWAS, Southern African Development Community (SADC), East African Community (EAC), African Development Bank (AfDB), Africa Upstream Regulatory Forum (AURF) tagged the "Abuja Declaration." All these institutions dominantly aim to promote Africa's growth and economic development through trade by championing citizen inclusion and increased cooperation and integration of African states. Can Africa leverage on the above regional cooperation structures to champion a harmonised African LCP framework?

Conclusion

A harmonised local content policy framework for Africa's upstream petroleum sector sounds complex and ambitious but could also be a possibility. As African countries continue to develop their oil and gas sectors, a regional approach to local content may evolve as an attractive option, hence the need to commence and sustain the conversation around the possibilities, potential challenges and proffer possible solutions to a harmonised local content policy framework for Africa's upstream petroleum sector. African nations should ride on the back of AfCTA to develop a holistic local content policy framework to drive indigenous competitiveness in Africa's oil and gas industry.

Additional Resources

https://investmentpolicy.unctad.org/investment-policy-monitor/measures/3601/angola-new-regulations-on-local-content-in-the-oil-sector

"Petroleum & other liquids" US Energy Information Administration

https://ccsi.columbia.edu/Local-Content-Senegal-Petroleum-CCSI-July-2019

Hauda Law Firm, Oil & Gas regulation in Senegal - **Regulatory overview April - 2019**

https://www.nuprc.gov.ng/african-petroleum-regulators-forum-unveils-abuja-declaration-to-boost-investment-and-economic-growth-in-the-oil-and-gas-sector

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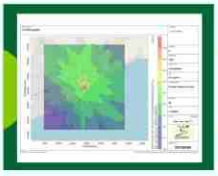
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Local Content – Disincentive to Investment Attraction or Enabler for Involvement of the Citizenry?

Isaac Koduah

Introduction

The exploitation of oil and gas resources involves significant investment of capital, expertise and technology which many developing countries lack. These countries often rely on foreign support to develop their petroleum resources.

Local Content Policies (LCPs) have increasingly become a priority for many emerging oil and gas producing economies to maximise the benefit of the exploitation of the resources to its citizens. These policies aim to create a competitive local business environment, develop a skilled workforce, transfer technology and technical know-how to stimulate economic growth.
While these policies have achieved notable successes in countries such as Nigeria where local content have been implemented, a number of governments are sometimes oblivious of the impact on investments in E&P activities.

As we wade into the debate of LCPs, as an 'incentive or disincentive for foreign investment', it is important to note that the use of local content policies in the petroleum sector dates to early 1970's in the North Sea where these policies were first used. Although the approach to LCP implementation has evolved over time, researchers often identify two approaches i.e. the 'prescriptive' and 'incentive based' approach. While the former involves mandatory requirements such as quotas and targets for local participation, restrictions on foreign ownership, board membership and management composition, the latter uses support mechanisms and incentives to encourage investors to meet aspirational LCP targets. It is worth noting that about 80% of resource-endowed nations employ some form of local content requirements, making it a strategic consideration in investment decisions and project execution.[1]

Critics of LCPs argue that the policies are against the World Trade Organisation(WTO) rules on protectionism and deter investors due to the additional requirements imposed on foreign companies which have cost implications. They further argue that LCPs distort market dynamics by prioritizing local suppliers over potentially more efficient or cost-effective foreign companies, leading to increased operational costs and reducing the host country's attractiveness to investment.

In 1999, Brazil introduced its first LCPs during the 5th and 6th bidding rounds with a focus on in-country value addition mainly on goods and services. Petroleum Agreements (PAs) signed by E&P companies had a 'tall list' of goods and services to be procured locally without consideration to the local capacity at the time. The list was expanded during the 7th bidding round and local content target was increased from 15% to 40% in bids. The industry experienced a dip in compliance and investment which led to a revision of the list and targets after engagements with industry revealed the unrealistic targets set.

[1]World Bank, 2013. "Local Content Policies in the Oil and Gas Sector."

There are also convincing arguments for the use of LCPs. The proponents are of the firm belief that without government intervention, foreign suppliers will use their competitive market power to crowd out indigenous businesses who lack the expertise, financial resources and technology to support petroleum activities. The 'infant industry' argument, propounded by Alexander Hamilton, has been used as a strong advocate for government intervention to drive productivity and competitiveness (competitive domestic firms, job creation for nationals, robust supply chain and development to sustain related support industries).

Although there are sound arguments for and against LCPs, it is imperative to strike a balance between maximizing local benefits and maintaining a competitive investment climate by avoiding the adoption of unfavourable policies that could crowd out E&P investments.

It is in this vein that Ghana, in developing its LCPs, adopted the hybrid approach to local content development. The policy intends that at every stage of E&P activities as well as related businesses, the extent of local content and local participation should be proportional to available local capability. This is to ensure that Ghanaian businesses and expertise are developed in line with the progress of E&P activities. Currently, the policy further provides incentives for companies who support the development of technological capacity of Ghanaians and establish facilities to support local content development.

This article focuses on three (3) key strategic areas of local content development and whether LCPs have been a disincentive to investors: supply chain, human resource, and capital investments or an enabler for the participation of host nationals in the oil and gas space.

Supply Chain Investment

The Local Content and Local Participation in Petroleum Activities – Policy Framework, 2011, the Petroleum (Local Content and Local Participation Regulations), 2013, (L.I.2204) and its amended regulations impose a duty on upstream companies to give preference to goods manufactured in-country and services provided within the country. It further requires non-indigenous Ghanaian companies (NIGCs) to provide goods and services in association with indigenous Ghanaian companies (IGCs) where such goods or services are required. The rationale is to develop local capacities along the petroleum value chain. It is worth noting that the industry has seen over 200 Joint Venture Companies (JVCs) operating after the establishment of LCPs. The Regulation has also introduced strategic alliance and channel partnership arrangements as other options to joint venture formation for NIGCs participation. Through supplier development programmes, incubation programmes, financial and non-financial support, NIGCs have supported IGCs to develop their capacities and capabilities to participate in major Engineering, Procurement, Construction and Installation (EPCI) projects in the industry. Indeed, some of these IGCs are providing services in other oil producing countries in the sub-region. Additionally, through the relationship with IGCs, some NIGCs have expanded their services to other sectors of the economy.

Human Resource Investments

Ghana being a nascent oil and gas industry is faced with the challenge of a dearth of local expertise, know-how and technical skills to manage the industry. L.I. 2204 mandates that first consideration is given to qualified Ghanaians with respect to employment and adequate provisions made for training of Ghanaians.

[5]Anchor Handling Tug Supply Vessel

Petroleum Commission and Western Region House of Chiefs Working Group - A Platform for Peaceful Co-existence between the Oil and Gas Industry and Host Communities

Sekyiwa Darko

Some members of the PC-WRHC Working Group

In accordance with its mandate, to among others ensure transparency and social cohesion in upstream oil and gas operations; particularly in host communities, the Petroleum Commission (Commission) established a joint working committee with the Western Region House of Chiefs (WRHC) in June, 2018.

Though E&P activities presently take place offshore six coastal districts of the Western Region, the Commission takes the view that all the paramouncies of the Western Region embody the interests of the people of the Western Region. Consequently, the Commission has on an annual basis in the last decade held meetings with the WRHC. These meetings, though very helpful in providing a platform for the Paramount Chiefs of the Western Region to communicate their concerns about the impacts and benefits of E&P activities to the Region, were however identified to be of a long cycle.

To that end, the Commission resolved to institute a joint Petroleum Commission-WRHC Working Committee. The Joint Committee made up of six Paramount Chiefs who are members of the WRHC and five management staff of the Commission serves as a platform for collaboration between the Commission, traditional authorities and other relevant stakeholders in the upstream oil and gas industry. The 11-member working group was inaugurated by the Chief Executive Officer of the Petroleum Commission, Mr. Egbert Faibille Jnr., in June 2018.

At present, the representation of the Western Region House of Chiefs on the Joint Working Committee is made up of Nana Kobina Nketsia V, Paramount Chief of the Essikado Traditional Area, Awulae Agyefi Kwame II, Paramount Chief of Nsein Traditional Area, Awulae Attibrukusu III, Paramount Chief of Lower Axim Traditional Area, Awulae Amihere Kpanyinli III, Paramount Chief of Eastern Nzema, Nana Kwesi Agyeman IX, Paramount Chief of Lower Dixcove Traditional Area and Tetrete Okuamoa Sekyim II, Paramount Chief of Wassa Amenfi Traditional Area. The representative of the Joint Working Committee of the Petroleum Commission is made up of Mr. Kwaku Boateng, Director, Local Content, Ms. Nana Ekua Sekyiwa Darko, Head, Community Relations, Mr. Alfred Ayah, Manager, Western Region, Mr. Mohammed Kapeon, Manager, Petroleum Security and Mr. Eric Kwesi Essel, Local Content Department.

The Committee meets twice a year to deliberate on matters of importance to the people of the Western Region and the WRHC. This affords the Commission the opportunity to take the necessary actions on these concerns on a timely basis as opposed to the previous arrangements where such matters were only brought up during the one-day annual meetings of the Commission and WRHC. With this arrangement, the Joint Working Committee meets twice a year following which the Commission and the entire Western Region House of Chiefs meet at the end of the year.

PC-WRHC Working Group meeting at the Commission's Western Region Office

Achievements

The PC-WRHC Working Group has undertaken a number of initiatives which include the publication of a Charter to guide the activities of the Group, the implementation of Safe Sea Access Framework (SSAF) and the publication and distribution of Social Performance Guidelines (SPG). Additionally, the Working Group collaborated with Eni and Tullow Ghana Limited (TGL) to establish greenhouse farming projects for the cultivation of vegetables in selected communities in the Western Region. The Working Group has also conducted Alternative Dispute Resolution (ADR) training for members of the WRHC

Stakeholder Engagements

Over the years, the Commission, in an effort to sensitise host communities to enable the communities appreciate activities in the upstream oil and gas operations, engaged key stakeholders on a number of issues. Some of the issues discussed include Ghana's fiscal regime, licensing round and exploration activities, status of Ghana's upstream oil & gas industry and capacity building programme on Alternative Dispute Resolution for members of the Western Region House of Chiefs.

Other engagements focused on the improvement of linkages between the petroleum and other industries, support for women in oil and gas, alternative livelihoods, protection of offshore installations and social investment projects undertaken by GNPC and other E&P companies (Pecan Energies, Eni and TGL) in the Western Region.

So far, the PC- WRHC Working Group has played a significant role in providing a platform for dialogue and deliberation on all matters related to community relations activities in host communities.

From Lecture Halls to Offshore Rigs: The Journey Of Ghana's First Female Drilling Engineer

Akorfa Okudjeto

Dziedzorm and a colleague offshore

Dziedzorm Ama Anewu Bedzrah is recognised as Ghana's first female drilling engineer, a significant achievement in the traditionally male-dominated oil and gas industry. Drilling engineers are responsible for the planning, designing, and overseeing the drilling of oil and gas wells. Dziedzorm's work involves managing complex operations, ensuring that drilling processes are conducted efficiently. Her expertise and contributions in this field highlights the growing presence and impact of women in engineering roles within the oil and gas sub-sector in Ghana.

As part of the Petroleum Commission's efforts in celebrating women in oil and gas, the Petroleum Commission's Upstream Local Content Magazine (ULCM) team interacted with Dziedzorm.

Dziedzorm is the first Ghanaian woman to graduate with a degree in Petroleum Engineering with a focus on well drilling from the Kwame Nkrumah University of Science and Technology in 2008, even before Ghana discovered oil in commercial quantities; and went on to complete her national service with Ghana National Petroleum Corporation (GNPC) the following year. Impressed by her skills and expertise, GNPC employed her after her national service.

Her pioneering role as a drilling engineer not only breaks gender barriers but also serves as an inspiration to many young women aspiring to pursue careers in science, technology, engineering, and mathematics (STEM), particularly in fields like petroleum engineering.

Dziedzorm Ama Anewu Bedzrah

Dziedzorm is a Senior Well Engineer at GNPC. She was part of the team that drilled the Nunya Well in the Keta block, the OCTP block and other offshore exploratory wells. She was also part of the team who worked on the economic evaluation of the Expanded Shallow Water Tano (ESWT) Block. She is currently a drilling engineer on Eni's CTP-Block 4. She has become a role model for women in oil and gas, encouraging others to challenge societal norms and pursue their ambitions in technical fields.

Balancing her professional career with family life , she is carving out a space for herself in an industry where women are still a minority.

She shares:

Raising two children while managing the demands of a career in engineering requires careful time management and a strong support system. I'm lucky to have a husband who supports my career. He met me when I was already a well engineer, so he knew what he was getting himself into. Sometimes I go away for weeks but he steps in to take care of the kids. I also have a strong family who step in when need be. There are times my children have to be absent from school for days when I have to go offshore and unable to get anyone to step in but that is the price to pay for a job like mine."

Dziedzorm, a member of the Society of Petroleum Engineers in Ghana, hopes to inspire other women to pursue careers in engineering.

She acknowledges that being a woman in a male-dominated field can be challenging, but she believes that the industry is changing.

"We are seeing more and more women enter the field, and that's a good thing. I believe Ghana needs diverse perspectives, and women have a lot to offer," **she says.**

As an alumna of KNUST, Dziedzorm mentors students with a passion for STEM subjects. Each year, she takes on mentees from KNUST, guiding them through their academic and professional development. She also makes annual visits to KNUST to speak with students and inspire them to pursue careers in STEM. As a result of her contribution to KNUST, the institution has named an award scheme in her honor - The Dziedzorm Anewu Bedzrah Excellence Awards, which aims to inspire and encourage female students at the University to excel in their studies and pursue excellence in petroleum related courses especially Petroleum Engineering.

FACTS SHEET

- There are four sedimentary basins in Ghana: 3 offshore (Western Tano Cape Three Points, Saltpond, Accra-Keta), and 1 onshore basin (Voltaian) Ghana.
- Currently, over 230 wells have been drilled since the 1950s.
- First commercial field in Ghana is the Saltpond field.
- Significant oil discoveries made Mahogany-1 well and Hyedua-1 drilled by Tullow and Kosmos in 2007 deepwater offshore, leading to development and production of the first significant commercial and unitized oil field, the Jubilee field.
- 30 discoveries have been made since 2007 with the last discovery made in 2022.
- Post COVID-19, the last exploratory drilling, Aprokuma-1X was in 2022, which resulted in a discovery, and the last appraisal well drilling, Pecan South East 1A occurred in 2019. Meanwhile, about three development wells were drilled in 2024.
- Preparation for the first appraisal well drilling, Eban-2A since 2019 is ongoing.
- The Jubilee field commenced production in 2010.
- Gas was exported locally to the first gas processing plant, Atuabo gas processing plant owned by Ghana National Gas Company (GNGC) happened in 2014.
- There are three hydrocarbon producing fields in Ghana operated by two operators: Tullow Ghana limited operates the Jubilee and TEN (Tweneboa, Enyenra, Ntomme) fields, and Sankofa Gye Nyame fields (also known the offshore cape three points-OCTP) operated by ENI. Additional field, the Pecan feld operated by Pecan Energies is at development stage with POD approved, awaiting Final investment decision by contractor parties.
- Total initial oil reserve from the three producing fields and the Pecan field is estimated at ~1,230.10 mmbbl, whereas the estimated initial gas reserves is ~ 2,448.90 bcf.
- As of the end of August 2024, the total remaining oil reserves from the four fields is 588.46 mmbbl, which is 366.46 Mmbbl of oil from the producing field (259.20 mmbbl in Jubilee, 58.64 mmbbl in TEN, 48.62 mmbbl), and 222 mmbbl from Pecan field) whiles 1,803.19bcf of total gas (697.96 bcf in Jubilee, 388.46bcf in TEN, 716.75bcf in OCTP and none in Pecan) is remaining in the fields, since the first significant hydrocarbon production in 2010 from the Jubilee field.
- As of the end of August 2024, a total of 641.64 mmbbl of oil and 1,814.46 bcf of gas have been produced; of which 645.71 bcf of gas has been exported from the three producing fields since the first significant hydrocarbon production in 2010 from the Jubilee field.
- Production is currently from a total of 84 production and injection wells in the three producing fields: 44 wells in Jubilee, 18 in TEN and 20 in OCTP fields.
- Production of hydrocarbon in Ghana has been declining since 2019. Average oil and gas production from three producing fields from January to August 2024 is ~135,640 bopd and ~776 mmscfd respectively.
- Contingent resources (P50) are ~3,895.56 mmbbl of oil, and ~2,657.33 bcf of gas.
- About four multiclient client survey project scope of work has been planned.
- Subsurface analysis of leads identified on the Voltaian basin, the only onshore exploration activity, is underway. The first onshore exploratory well is expected to be drilled in 2025.
- The first petroleum field to be decommissioned is the Saltpond field. Decommissioning of the field is temporary suspended.

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