Local Content Implementation and Development in the Upstream Oil and Gas Sector in Ghana: Contemporary Issues on Policy Management

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Abstract

Upstream oil and gas activities dominates the debate on local content policies in Ghana. If well implemented, upstream activities have a trickledown effect on the local content policy linkages. However, local content policies alone do not assure success. In this paper narrative analysis and stakeholder consultations lead to in-depth discussions of how Ghana can use local content policy in upstream oil and gas operations to maximum benefit. The paper argues that, as is not the case for the Multinational Oil Companies (MOCs), the high risks and the huge financial commitments are a major challenge to the participation of indigenous Ghanaian companies. Balancing the needs of indigenous companies, local communities, and MOCs is critical; without it, efforts of policymakers to benefit from the oil sector will be futile.

Introduction

Resource-rich developing countries are seeking ways to deepen the economic linkages between their extractive sectors and their economic development. Increasingly countries are introducing or reinforcing local content policies with a view to stimulating and creating value in their domestic economies [32]. Local Content Policies (hereafter, LCPs) are being viewed as important policy interventions to that purpose [26]. LCPs have the potential to do the same for developing countries, and that there is a mismatch between African countries' development and their natural resources extraction activities [34, 20, 26].

LCPs are heralded because of their ability to bind Multinational Oil Companies (MOCs) to a commitment to developing the host country's economy, instead of simply pursuing profit maximization [20]. Since MOCs are mostly profit driven, LCPs are the best way to promote the economic wellbeing of local communities [34]. Therefore, linking local content to upstream oil and gas activities can serve as a means of generating social value for the host government and the MOCs. Many oil producing developing countries are implementing LCPs with the aim of maximising the potential of their upstream oil and gas sectors. The real challenge facing developing countries, though, is developing and implementing such policies.

Upstream oil and gas activities in Ghana started in 2007, following their discovery in commercial quantities; production began in 2010 [23]. The Ghanaian government initially adopted a 'revenue-focused approach' to oil resource management, aimed at maximising royalties and taxes. This was seen as short sighted, because it ignored the potential long-term value addition to the economy [20, 26]. The benefits include localization and scaling up employment, and linkages of local content and corporate social responsibility, in the oil and gas industry [29].

While it is clear that the government of Ghana lacked a comprehensive framework, it is also important to note that it has developed and adapted LCPs. These facts raise the main question driving this paper. What policy and regulatory measures are required for an effective LCP in the upstream oil and gas sector

in Ghana? This question is timely, because while Ghana has argued for the need to liberalise its economy and move away from tax revenues, little has been done in the upstream oil and gas sector except to continue depending on oil tax revenues.

Adapting the local content implementation and development conceptual framework of [16], the study analysed upstream oil and gas industry LCPs and the trickledown effects on the LCP framework in Ghana. The objective is to explore the role of upstream oil and gas LCPs and management issues presented to the various stakeholders. The paper's point of departure is the observation that the LCP sector in Ghana, as it currently stands, needs improvement; without it, efforts to maximise upstream oil and gas benefits will be futile. The paper demonstrates that policy-makers and practitioners might intend to create a robust LCP sector, but doing so remains a mirage in most developing countries due to bureaucratic inertia and regulatory lapses [36].

The rest of the paper is structured as follows: The next section focuses on literature review and begins with local content regulation and upstream oil and gas operations in Ghana; the second section reviews the literature on LC in Ghana and the local content development framework; the third section is the methodology of the study; section four discusses the result and the analysis; and the final section, five, presents the recommendations and conclusion.

Literature Review

Local content in the upstream oil and gas sector is the demands of the law on International Oil Company's' (IOCs) to employ Ghanaians, provide training to improve their expertise, prepare and implement plans for technological transfer to the Ghana National Petroleum Corporation[1] (GNPC), and use local raw materials in their operations. This operational definition is important, because the political economy of petroleum production in developing countries has always been dominated by the financial and technological strength of IOCs [20, 24]. Ghana's upstream oil and gas operations are not different, inasmuch as they are dominated by IOCs[2] and major upstream services companies[3]. The Petroleum Commission[4] serves as the agent of the government of Ghana, and as the upstream regulator and host of the upstream local content implementation agenda.

Upstream oil and gas laws in Ghana include the law establishing the Ghana National Petroleum Corporation, PNDC[5] law 64, and the Petroleum Exploration and Production Acts 919 and 84. PNDC law 64 establishes the GNPC to be mandated to undertake the exploration, development, production, and disposal of petroleum. Additionally the law states that a contractor or sub-contractor (foreign or local) shall ensure that opportunities are given, as far as possible, for the employment of Ghanaians with the requisite expertise in the various levels of operations. Also, the contractor or sub-contractor shall use goods and services produced in Ghana for his operations in preference to foreign goods and services. Then again, the contractor or sub-contractor shall, in consultation with the GNPC, prepare and implement plans and programmes for training Ghanaians in all job classifications and in all aspects of petroleum operations. The law further makes it mandatory for a contractor or sub-contractor, to prepare and

implement plans for the transfer to GNPC of advanced technological know-how and skills relating to petroleum operations. If this law is properly applied, it will be the basis for upstream LCPs to maximise tangible trickle-down benefits.

2.1. Contemporary Discussions on Ghana's Local Content Policy

[25, 29] noted that the concept of local content in Ghana predates the Minerals and Mining Law, 2006 (Act, 703) and the Minerals and Mining (General) Regulations, 2012 (LI, 2173), which both introduced a local content framework to Ghana's longstanding mining sector. It was these laws that influenced the Ministry of Energy to stipulate "local content and local participation" in petroleum activities in 2010. Ghana's petroleum local content Regulations 2013 was passed with the aim of promoting local content in the oil and gas sector. The framing of Ghana's LCPs is guided by a drive towards employment creation, technology transfer, local ownership, and maximization of local procurement [28]. The LI[6] 2204 describe local content as "the quantum or percentage of locally produced materials, personal, financing, goods and services rendered in the petroleum industry value chain and which can be measured in monetary terms". Ghana's LC law aims to generate positive synergies between the oil industry and the other sectors of the economy [27]. The objectives of Ghana's LC laws, as outlined in LI 2204, are as follows:

- Maximisation of value and job creation through the use of local expertise, goods and services, businesses, and financing in the petroleum value chain, and their retention;
- Develop local capacities in the petroleum value chain through education, skills transfer, and expertise development, transfer of technology and know-how, and active research;
- Achieve the minimum local employment level and in-country spending for the provision of goods and services in the petroleum value chain;
- Achieve and maintain a degree of control for Ghanaians over development for local stakeholders; and
- Transparent monitoring and reporting systems to ensure delivery of LCP objectives.

[29] identified the major stakeholders in Ghana's oil and gas local content structure as the Ghana government, Multinational Oil Companies (MOCs), and the citizenry. Employment is the main expectation of the citizenry, and seems to be the primary form of local content. But even this idea is bedevilled with numerous barriers to localizing jobs, such as limited experience, qualifications, and skills levels within the local labour market, a lack of understanding among local people of the parent organization culture, and the preference for employing expatriates by MOCs [29].

[3] has argued that Ghanaians dominate onshore administrative positions and low echelon (rating)/low skill positions offshore. There is also a significant salary disparity between Ghanaians and expatriates due to poor regulation by the Petroleum Commission, with corruption and undercutting by local recruitment agencies. The government has not yet offered skill enhancement programmes for Ghanaians in the industry [25]. The lax enforcement of regulations by the Petroleum Commission on the national scale creates an environment for expatriates to commit malpractices such as slowing skill transfer [3].

Furthermore, [1] reiterated that the Petroleum Commission (PC) was revealed to be negotiating with MOCs to award contracts in smaller units, a scale on which Small-to Medium scale Enterprise (SMEs) could meet the financial requirements. The MOCs noted, however, that awarding contracts in smaller units could increase their operational costs. Additionally, the high interest rates charged on loans from banks in Ghana makes it difficult for SMEs to procure loans to finance their businesses. Most of the Ghanaian banks lacked an understanding of the operations of oil and gas, and were not ready to finance SME activities in the petroleum sector. It is imperative that institutions such as the Petroleum Commission and the Ghana Standards Authority (GSA) enforce local standardisation measures that are easily obtainable by local SMEs and acceptable to MOCs.

[3] noted that the primary factors driving local content implementation in Ghana are neither institutions nor broad politics, but rather inter-elite power relationships within the ruling coalitions, underpinned by interests and ideas. [4] examined the government of Ghana's flagship Enterprise Development Centre (EDC[7]), a five-year project established to enhance the capacity of Ghanaian SMEs in the oil and gas industry. Driven by the desire to appeal to voters, the ruling government implemented the EDC project without broad consultation. Consultations with these small to medium scale businesses concluded that most of them lack the financial capital, technical expertise, and competitiveness to engage effectively. [1] identified limitations in the implementation of the backward and forward linkages in the industrialization processes associated with the local content law.

The literature on Ghana's oil and gas local content laws has so far exclusively focused on employment, local content implementation politics, and the role of Small to Medium Scale Enterprises in the implementation of local content laws. The broader context, exemplified by the case of [8] LC and its significance for broad based politics and power systems in Ghana, has received less attention. One of the main reasons for the current study is to remedy this insufficiency. We believe that a comprehensive analysis of constraints and opportunities of the LC laws and policies in the upstream oil and gas industry is required to formulate a coordinated strategy. Such an analysis will be beneficial to policy makers, practitioners, and community leaders who seek alternatives to the status quo. The next section proposes such a framework.

2.2.0. A Framework for Analysing Local Content Development in Ghana

[16] developed a local content conceptual model aimed at incorporating all important factors to provide a comprehensive and coordinated strategy. Some, such as local policies, local infrastructure, local environment, and local capacities, categorized as variables, impact local content development and implementation (see figure 1). These factors were developed through empirical and theoretical studies in the petroleum industry, and tested for their appropriateness and validity in creating value for the host country.

Adapted from [16].

There is a strong relationship between local content development and implementation and the aforementioned variables. Local content development is found to have an impact on local infrastructure, local policies, local capability, and the local environment. Many of the enablers for the local content development are identified by their having the potential to influence the promotion of local content processes. The benefits of local content development are in three main areas: economic growth, industrial growth, and spillover effects. Some of the dominant factors that have a direct impact on the oil and gas sector in Ghana include the following:

2.2.1. Local Policies

Each sector, including the oil and gas industry, of any country's economy will have its local policies. Such policies are designed to stimulate local development in manufacturing and services; they generally forecast the macroeconomic environment, increase the reliability of institutions, offer incentives to enhance sound business practices, generate an enabling infrastructure for business development, and enhance social structures. The broadly based policies for local content development in Ghana are the National Development Plan and the Ghana Energy Policy. Both require the domestication of natural resources for development.

2.2.2. Local Infrastructure

Public utilities, such as roads, railways and air transport, telecommunications, and electricity and water supply, as business environment infrastructure, can create an environment that enables business development and productivity. Public utilities like the internet technology infrastructure are an important variable for local content development that enables information dissemination in the oil industry. Social infrastructure, on the other hand, is associated with social cohesion between different stakeholders, which reduces the chances of social disorder; a stable environment attracts foreign investment and technology transfer [14].

2.2.3. Local Capability

Local capabilities include education, skills and expertise development, transfer of technology and know-how, and an active research and development portfolio within the manufacturing and services of local companies. Developing local content in the petroleum sector must be based on existing capabilities within manufacturing, fabrication, and services. Local policies have to appreciate and encourage foreign firms in order for them to collaborate with local companies. Industrial development is a learning process, where capacity and capabilities expand through a process of solving challenging tasks in collaboration with international leading competences. The absorption capacity of the local company is crucial for technology transfer. The LCP in Ghana emphasise technology transfer, but fail to address the absorptive capacity challenge of local companies.

2.2.4. Local content development

The level of local content development depends entirely on the quality of the relationships among the political, infrastructure, environmental, and local capability factors, and the results are economic and industrial growth and spillover[8] impact. LCPs encourage economic diversification and backward linkages are necessary because they are a trade-off between short-term efficiency and long-term economic development. When they are applied, LCPs should be coordinated through value chain analysis that can facilitate the competitive participation of domestic firms in the local petroleum industry [14]. Improper application of LCPs may be deleterious to the economy of the host country. The foregoing review demonstrates the requirements of an effective LCP for Ghana as it strives to enact its upstream LCPs. The next section considers the study methodology.

Methodology

Narrative analysis, Kazzazi and Nouri's conceptual framework (discussed above), semi-structured interviews, and content analysis are used to critically examine local content policies in the upstream oil and gas sector in Ghana for the period 2010 to 2020. [30] defined narratives as the kind of organizational scheme that is expressed in story form. Narratives provide grounded arguments to compare and contrast performance and enable the construction of narrative strategies [33]. This study uses narrative analysis because there is a long record of narratives in the implementation of local content in Ghana's oil and gas sector.

A total of twelve (12) major stakeholders were identified, consulted, and interviewed, based on their activities in the upstream oil and gas industry and the enforcement of local content laws in Ghana. They were further divided into four sections: Government Agencies (the Ministry of Petroleum, the Petroleum Commission, and the Ghana National Petroleum Corporation); educational institutions (GNPC Research Chairs in the three leading public universities in the country); upstream production companies (Tullow-Ghana, and ENI-Ghana); and upstream service companies (MODEC, Baker Hughes, Schlumberger and Haliburton). We sent these organizations emails inviting them to participate. About 90% responded, and we scheduled times and venues convenient for them. The interviews were conducted in November and December 2019 at their premises. Each interview lasted for about 45 minutes.

Each interview guide was made up of open-ended questions. Such questions gave the respondents enough leeway to answer the questions fully, while providing explanations and clarity [7]. It is an approach that also enables follow up questions for further clarification. It suited the research needs best, because the open-endedness of the questions granted greater flexibility in the actual interviewing process. They were recorded on an audio-recorder, and transcribed for analysis.

Secondary data on local content development in Ghana for the period 2010-2020 was collected from two sources (government agencies and review of local content literature in Ghana). These include the annual reports, newsletters, press releases, and company presentations published on government, civil society, and International Oil Companies websites. We also examined local content related policy documents, technical reports, and country studies commissioned by the government, international agencies,

academic institutions, media, civil society groups, and independent consultancy organizations. Content analysis is used for coding and identifying themes or patterns” in the secondary data [15].

The use of narrative and content analysis and semi-structured interviews generated a good level of objectivity in both the collection and analysis of data. It ensured that we could cross check and verify the accuracy and validity of the data. Using this data, the next section examines the main bottlenecks of the implementation of local content laws in the upstream oil and gas sector in Ghana.

Discussion

This section uses the above discussions to answer the main research question. How can Ghana effectively develop and implement LCPs in the upstream oil and gas?

Local Capabilities and Infrastructure. Kazzazi and Nouri's framework on local capacities and local infrastructure is analysed from the Ghanaian perspectives. What local capabilities and infrastructures are required to implement Ghana's LC policy in the upstream oil and gas segment? Ghana has an enabling business environment, and ranked one of the most attractive locations in Africa for doing business [17]. It is a stable, multiparty, parliamentary democracy, and committed to market liberalization with a sound macroeconomic environment and immediate access for all markets of the Economic Community of West African States (ECOWAS). Other objectives are on-going privatization of key economic sectors; infrastructure development; expanding stock markets; a competitive labour force; fast developing financial infrastructure; and a high degree of personal safety [17]. Ghana is performing credibly well in the governance of oil and gas resources, and scored 67 out of 100 points from the global Resources Governance Index, making it the best performing extractive country in Sub-Saharan Africa [21]. Ghana has demonstrated that it has an enabling environment, with social and local infrastructures adequate for the development and implementation of LC in the upstream oil and gas sector [14, 16].

Local Policies. The GNPC Act, 1983 (PNDCL 64) and the Petroleum Commission (PC) Act 2011 (Act, 821) established, respectively, a national oil company, GNPC, and an upstream petroleum resources regulator, Petroleum Commission. The GNPC is, among other things, responsible for ensuring that Ghana: obtains the greatest possible benefits from the development of its petroleum resources; secures the transfer to Ghana of appropriate technology in petroleum operations; facilitates the training of Ghanaians, and the development of national capabilities in all aspects of petroleum operations [11].

The Petroleum Commission, on the other hand, is mandated to regulate and manage the utilization of petroleum resources and coordinate the policies in the upstream petroleum sector [31]. The commission is responsible for, among other things: promoting local content and local participation in petroleum activities as prescribed in the legislative instrument (LI 2204) and other applicable laws and regulations [31].

The GNPC is well governed [22], and if its laws are adequately implemented it would ensure effective upstream LC development and implementation in Ghana. The GNPC's activities over the years have

resulted in accelerated commercial upstream petroleum discoveries and production in Offshore Tano, West Cape Three Points, Saltpond and the Keta basins. Through the activities of the GNPC, Ghana's upstream petroleum operations have rapidly transformed on every front in investments, scale of operations and new institutions [11]; the GNPC should, however, aim to achieve higher, global, standards, and be the engine of national development [22] and the "*poster child*" for Ghana's upstream oil and gas LCPs.

In the areas of LC development and implementation, the GNPC admittedly has been unable to ensure the training of Ghanaian citizens and the development of national capacities in all aspects of petroleum operations. Except for joint venture operations with IOCs, the corporation is yet to develop any upstream infrastructure for the production of oil and gas in Ghana. Furthermore, the corporation has been unable to meet the country's national petroleum requirements, making it a net-importer of petroleum products, while the GNPC sells crude oil to the global market to the detriment of the internal domestic refinery market.

The problem is a poor LC backward linkage of integrating upstream crude oil production to an existing (Tema Oil Refinery) refinery capacity. It also prevents Ghana obtaining the greatest benefits from its petroleum resources, except the ones from petroleum revenues and limited employment opportunities in the upstream sector. The GNPC is also constrained in ensuring the transfer of technology from IOCs in operationalizing their mandate. The [22] recommendations to GNPC effective performance and implementation of LC include: the GNPC defining a commercial mandate and financing commercial activities, and attracting adequate debt and equity financing; limiting political interference in technical decisions, and investing in staff capacity and integrity; and ensuring transparency and oversight of the activities of their LCPs.

The PC, as an upstream regulatory institution, is required to ensure the implementation of LC legislation (LI. 2204). In efforts to implement Ghana's upstream LC regulations, the PC and the interviews with the stakeholders identified the following factors affecting upstream LC implementation in Ghana:

Equity participation in upstream operations and service provisions. In the Local Content LI, an Indigenous Ghanaian Company (IGC) shall be given first preference in the grant of a petroleum agreement with respect to petroleum activities. Also, there shall be five percent (5%) equity participation of an IGC other than the GNPC to be qualified to enter into a petroleum agreement. Additionally, a foreign company that intends to provide goods or services in the petroleum sector shall incorporate a joint venture company with an IGC, and afford that IGC equity participation of at least ten percent (10%).

Despite the aforementioned good intentions of the law, there are still a number of serious constraints. The main constraint on the IGC 5% equity participation in upstream operation is the difficulty of accessing financing to pay for their equity. Very few IGCs can absorb the risk of cash calls for exploration activities, and the potential and real risk of no discovery can subsequently negatively impact the survival of the IGC. Additionally, the 5% equity participation is inadequate to participate significantly to management and ownership control. In this regard, IGC is merely used to acquire petroleum agreements and licences, and not allowed adequate participation in the decision making and operations of the joint venture. This

obstruction undermines the purpose of skills acquisition and technology transfer to IGCs. That is why we agree with the suggestion of the [17] that Technical Partnership Agreements should be signed with IGC, instead of just a joint venture that allows Ghanaians to be part owners of the contracts with the foreign companies. Doing so will include them among the drivers of execution, giving Ghanaians some management and operational control. When this is properly monitored by the PC, skills and technologies can be transferred to the IGC.

Establishing a robust financial link: From 2011 to 2018 Ghana received US\$4.97 billion, and distributed US\$5.013 billion as cumulative revenues from upstream oil and gas operations in the form of royalties, participating interest, taxes, interest, surface rentals, and gas revenues [13]. The Petroleum Revenue Management Act (815), amended as Act 893, stipulates the distribution of petroleum revenues, and the Bank of Ghana receives these funds into a Petroleum Holding Fund. Not more than 55% is given to the Ghana National Oil Company. The remaining 45% is distributed as follows. Not more than 70% is given to the Annual Budget Funding Amount (ABFA). Out of the ABFA fund, not more than 30% is allocated to the Ghana Infrastructure Fund, the Public Interest and Accountability Committee, and selected priority areas of investment for the country. The remaining 30% of the 45% is disbursed into the Ghana Petroleum Funds [15, 13].

The GNPC uses 55% of its share of petroleum revenues to finance its upstream operations and increase their equity participation. The Ghana Government uses the ABFA to finance government expenditure on goods and services and the remaining amounts for public investment expenditure. In this way does the economy of Ghana benefit from these oil revenues for national development [13].

To address some of the critical infrastructure woes in the upstream oil and gas sector, funds from petroleum revenues should be used to provide some of the critical infrastructure (roads, rails, and ICT), as [16] noted, which is required to implement LCP. Investments should be channelled into providing new and improving existing physical and social infrastructure at the upstream in collaboration with the GNPC. Some funds can be made available to provide financial support to the IGC to compete with their foreign counterparts in the services sector. The petroleum revenues can provide seed capital for the local content fund, and serve as a leverage to develop critical infrastructure to scale-up indigenous participation.

The lack of a local content fund is another major challenge. in the stakeholder interviews financial challenge was identified as the main barrier and it hinders the participation of the IGC in the upstream oil and gas sector. [7] identified two aspects of the problem: poor capital mobilization, and higher interest rates. There are no specialized investment banks to deal with the long-term financing needs of the oil and gas industry. Syndicated loans could solve the problem, but local banks lack adequate capital, and cannot support the high-risk exposure in the upstream oil and gas sector. To solve the local content funding problem, the Oil and Gas Business Development and Local Content Fund (OGBDLCF), supported by the IOCs, was established to support education, training, and research and development for the government to address the human resource gap. The Petroleum Commission is currently developing guidelines to operationalize the local content fund (LCF). This fund is meant to provide financial

assistance to the IGCs to help them compete in the sector. The LCF is supposed to be funded by 1% of every contract signed in the sector. There has, however, been very little cooperation from companies in contributing. While the idea might be good for local companies, it's not in the long-term interest of the IOCs. Stricter enforcement and supervision or a consultative approach is required to compel/convince the IOCs to honour this contractual requirement of funding the LCF.

In-country spending by IOCs: LCPs can be used as a tool to develop local supply chains [32], but this is minimally done in developing countries [20]. Evidence from the Petroleum Commission indicates that from 2012 to 2019 in-country spending along the oil and gas value chain was US\$16.4 billion. Foreign companies received 55%, (US\$9 billion), IGCs 7% (US\$1.2 billion) and Joint Venture (JV) companies 38% (US\$6.2 billion), as shown in the table below.

Source: [31].

IGCs receive a marginal share of 7%, representing US\$1.2 billion out of a total of US\$16.3 billion of the in-country expenditure in the upstream oil and gas sector within seven years of operation (2012 to 2019). Upstream contracts going to foreign companies (55%) are still far greater than the combined contracts going to both IGCs and JVs (45%). The in-country spending, procurement of goods and services, and joint venture activities are a significant source of both direct and indirect benefits of the oil and gas industry to the Ghanaian economy. The in-country spending can be re-engineered so that the majority goes to IGCs through joint ventures, as stipulated by the local content law (LI.2204), which requires oil and gas service companies to form joint ventures with IGCs with 10% equity participation. As well, the IGC 10% equity participation needs to be monitored by Petroleum Commission to ensure that the IGCs benefit fully from this law.

There is, however, resistance from these international service companies to the implementation of the 10% joint venture equity participation with IGCs. For instance, a respondent (Senior Manager – Expatriate) with one of the Multinational Oil Companies argued that “*Their companies are of international repute, and they cannot give 10% ownership to an IGC. Even a local subsidiary of our companies does not merit any JV with an IGC*”. While this concern is legitimate, the PC can consider services JVs on a contract award and execution basis, instead of company ownership. Furthermore, while contract awards going to foreign companies can be discouraged, joint venture operations should be encouraged through joint operating agreements for IGCs in order to learn from their foreign counterparts in the areas of joint management, control, and operations of projects/contracts. At the same time, an IGC that is credible enough to be on their own should be encouraged and promoted while preventing fronting[1] tendencies, which is a criminal offence in Ghana [6].

It is noteworthy that the in-country spending total of US\$16.3 billion over the past seven years is twice the amount of direct oil revenues (US\$4.97 billion) to Ghana's government. This means that the LCP should target optimization of in-country spending towards IGCs. In-country spend has an indirect effect, driving benefits from the oil and gas industry. As the [19] noted, between 40 and 80% of the revenues created in

oil and gas is spent on the procurement of goods and services, which often exceeds the benefits from tax and royalty payments.

Employment linkage: The Local Content law LI 2204 on employment requires that a company operating in Ghana for 10 years must employ 70-80% managerial, 70-80% core technical, and 100% of other Ghanaian staff. Data from the Petroleum Commission indicates that as of 2019 about 4,362 (Industry Wide) Ghanaians were employed in 30 companies operating in the upstream oil and gas industry. This represents 91% of the total workforce; foreign expatriates represent 9% of employment positions, as indicated in Figure 2 below.

Source: [31].

The number of expatriates employed in the upstream oil and gas sector in Ghana is significantly marginal, representing 9% out of the total 4,794 employees working in the upstream sector. Further analysis, however, of this 9% is necessary to ascertain their roles and responsibilities, and to see whether they can be replaced by Ghanaians.

A further breakdown of categories of the upstream employment roles in Ghana shows that Ghanaians represent 75% of management roles, and expatriates 25%, as indicated in Figure 3 below. The majority of the 9% expatriate workers are in the management segment. Further analysis is required by the PC to ascertain which managerial roles Ghanaians occupy.

Source: [31].

There were also constraints on the impact of the managerial roles occupied by Ghanaians. As was indicated by a respondent (Senior Manager IOC - Ghanaian), *“Not all managerial roles are strategic or technical, and the IOCs appoint Ghanaian managers to meet the local content law requirement, but these managers do not have any significant impact on strategic decisions making in the IOC”*. Ghanaians can be appointed as managers of IOCs, but what is the level of their participation and control? Most important, which part of the decision value chain are they managing? What are the financial authorization limits for him/her? And, finally, who is he/she responding to?

Another respondent (Senior Manager, IOC-Ghanaian) said: *“The IOC has a Ghanaian country director, who operates the IOC Ghana office solely, and reports directly to the overseas head office. The manager was recruited by the overseas head office.. This manager takes all the operational, technical, and strategic decisions in-country, and has a financial authorization limit of US\$400million. He meets weekly with the company’s board of directors and with his other colleague managers from other subsidiary country offices”*.

On the same issue, another respondent (Senior Manager IOC-Ghanaian) stressed that *“the IOC has an expat from Headquarters office as the stationary manager, but there is a Ghanaian local content manager acting mostly as the country manager. The less active expat manager, however, is the final authorization point, and reports to the IOC head office outside Ghana”*.

The difference in the two managerial level roles cases affords a sound understanding of the extent of their control and the ability of two Ghanaian senior level managers working in two different IOCs to exert any strategic managerial control. The difference between the two managers for the two IOCs is in their control and authority to make in-country financial and strategic decisions. While the manager of the IOC in the second case is constrained by an expatriate, the first one reports directly to the headquarters. This requires the PC to further inquire into the managerial roles of Ghanaians in these IOCs upstream and their effectiveness.

In the core technical roles Ghanaians are 59%, and expatriates are 41%. This low representation of Ghanaians in proportion to the expatriates in the technical core staff in upstream operations undermines a core aspect of the local content law. We agree that the upstream oil and gas industry is high capital intensive, and low in labour intensity [10]. The few jobs available from upstream operations are very technical and highly skilled, such as engineering and higher management positions. This shortfall is a result of the lack of Ghanaian workers with core technical expertise in upstream oil and gas operations, and the challenge of enforcing knowledge and skills transfer from expatriate technical staff to their Ghanaian counterparts in the upstream [29]. Unless and until this is addressed, the idea of knowledge and skills transfer as required in the implementation of the local content law in Ghana will remain a mirage. In order to address this, Local Training in core technical skills (e.g., drilling, engineering, geosciences, and technical management) needs to be scaled-up, and mentoring, experience building, and efforts to localise major core technical positions should be encouraged [29]. Training and education in technical expertise in the upstream sector is thus paramount [28].

Technological transfer. LC LI requires that technology be transferred from MOCs to local companies. The [16] LC framework notes that the absorptive capacity of the IGC is crucial in technology transfer. Technology transfer in the upstream oil and gas segment in Ghana is minimal, as [7] agrees. Mentorship is the best way to achieve this objective, but as one respondent (GNPC Professorial Chair) observed, *“It is interesting to note that none of the MOCs will willingly transfer technology to an IGC. Technology is not transferred willingly, unless it’s stolen”*. This indicates the magnitude of the constraint, and it means that even in the best of circumstances, it is difficult, if not impossible, to have technological transfer until concerted efforts are made by the PC to ensure effectiveness. It must develop a technology transfer plan.

Research and Development: with research and development, the LC LI 2204 requires IOCs to ensure that their research and development activities in relation to the oil and gas industry are conducted in Ghana. Little is achieved by the PC in petroleum research activities in Ghana. Meanwhile, in 2018 the GNPC established four (4) research chairs in four public universities to accelerate research and training in upstream oil and gas activities. A US\$1 million research endowment fund is made available to each of these institutions to establish new training programmes and research into petroleum-related activities for GNPC and Ghana at large. While this is an opportunity to contribute significantly to research and development in the sector, and encourage academic talent, the GNPC's initiative should be supported by the PC, and scaled-up to be more inclusive and sustainable, while the management and disbursement of the funds need to be improved.

Forward and Backward Linkages: The backward linkages arise from activities established to supply inputs into the production of a commodity, with a focus on local firms providing services and supplying inputs to the oil industry in the country [25, 3]. The backward link emphasises the ability of local companies to provide goods and services to meet the requirements of upstream oil and gas operations. IGCs have low to moderate capacity to take up opportunities in the core technical areas where IOCs tend to spend more; these include well-drilling services, Front End Engineering and Design (FEED) services, detailed engineering, and fabrication, among other services. Many local companies tend to focus on the non-technical areas of transportation, supply, and disposal, environmental health and safety, IT, and communications. This limits the opportunity of local companies to build advanced technological competencies for opportunities in the backward linkage, and shows why IGCs play a less significant role in in-country spending. The in-country spending and backward linkage is directly related; when IGCs are adequately prepared to offer goods and services to the IOCs competitively, less will be achieved through the backward linkage. This is why the LC Fund's research and development and technological transfers should be targeted to IGCs to improve their performance so as to enable their contribution in the upstream oil and gas sector through the backward linkage.

The forward linkage provides direct and indirect benefits to the Ghanaian economy, as seen in the benefits of natural gas utilization for power generation and liquefied petroleum gas for domestic use [12]. Little, however, can be said about crude oil. There could be enormous benefits from it, if supplied through the Domestic Supply Obligation to be refined locally for local consumption.

[1]Fronting is a rent seeking behaviour where individuals or entities use companies' names to obtain economic gain at the expense of the larger society.

Conclusion

The study established that Ghana, needs a new growth model to transform its potential resource windfalls into long-term prosperity. The foregoing discussions show that the oil and gas sector in Ghana can generate substantial contributions to economic development by supporting the development and implementation of an effective LC law and policy beyond the financial benefits. The LI 2204 can be implemented in the broader and inclusive context of [16] LC framework, with the IOCs, MOCs, PC, the GNPC, and IGCs playing active roles.

The financial link can serve as leverage through which the Local Content Fund will be established to provide financial support to IGCs, which would have the potential to enhance, first, employment, and then forward and backward linkages to the economy. This study recommends a strong connection with the financial link to provide support in capital and lower interest rates, building capacities in training and research into the oil and gas sector to further boost inflows to the economy at large.

The Ghana government gas infrastructure has provided stable and less expensive power to maintain macroeconomic stability. Establishing robust forward and backward linkages from the oil and gas industry in Ghana as a growth pole, like an integrated petrochemical industrial hub, has the potential to

transform the Ghanaian economy. The Petroleum Hub Bill 2020, recently passed in Parliament, is in furtherance of this objective, which needs further research.

The Government of Ghana, the GNPC, and the Petroleum Commission should focus not only on serving as passive actors, providing regulations for local content activities, but also as strategic and active agents in creating an enabling environment for effective implementation of LC laws, increasing the government's stake in petroleum agreements, helping to develop skills, providing infrastructure, developing customised/local based technologies, giving financial support, and coordinating with IGCs to boost local participation in the upstream sector. The PC can further offer a common platform for all the stakeholders involved in the upstream oil and gas sector on which to discuss local content implementation strategies in a transparent and accountable manner. As a recommendation, Ghana should consider developing an LC implementation Master Plan, like the Ghana Gas Master Plan and the Ghana Renewable Energy Master Plan [18], for an integrated roadmap for local content development and implementation in Ghana.

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Table

Table 1: In-country Spending of Petroleum Operations in Ghana

Contracts Awarded from 2012 to 2019			
Ownership Structure	Contract Value (USD)	Round Off (Billion USD)	%
Foreign	8,977,036,478.03	9.00	55%
Indigenous Ghanaian Company	1,193,107,537.90	1.20	7%
Joint Venture (JV) Company	6,167,759,587.06	6.20	38%
Total	16,337,903,602.99	16.40	100%

Source: [31].

Figures

Figure 1

Conceptual Model for Local Content Development in Ghana

Figure 2

Upstream Localization of Employment in Ghana

Figure 3

Upstream Employment Roles In Ghana