Local Content Policy Framework: Capturing More Value Added for Trinidad and Tobago and Guyana

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Abstract

Trinidad and Tobago (T&T) and Guyana, have active hydrocarbon industries. While the countries are different, they are considered as they are both Caribbean Community (CARICOM) Member States, and they are presently exporters of crude oil. T&T's hydrocarbon industry is old, spanning more than a century. Guyana is relatively a new entrant to the hydrocarbon industry as commercial reserves of crude oil were only discovered in 2015. However, the countries' capture of their fair share of the hydrocarbon rents will not automatically occur. It is against this concern for both countries to capture the best value of their natural resource rents that this study seeks to review successful local content policies, outline the key requirements for a successful local content policy, and provide local content policy recommendations for the hydrocarbon producers in the CARICOM region. Document analysis is used to review the case studies from several countries to provide valuable lessons for T&T and Guyana. Indeed, the experiences of several countries, such as Nigeria, Norway, Ghana, and Botswana, reflect the potential for value creation through the development of partnerships. Moreover, the experience of Trinidad Offshore Fabricators Ltd. (TOFCO) in T&T demonstrates the effectiveness of partnerships in building local capacity. Therefore, this study argues in favour of the development of joint ventures to facilitate knowledge and skill spillover as well as technology transfer. Furthermore, this study argues in favour of the use of partnerships between the private sector and local academic institutions to help build local capacity.

Keywords: Local Content Policy, Local Content Requirements, Oil Rents, Hydrocarbon Rich CARICOM Countries

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Introduction

Many countries are fortunate to be endowed with commercial reserves of hydrocarbon resources. Many developing countries often lack the physical and financial capital as well as the technical expertise to monetize their hydrocarbon resources on their own. Subsequently, they turn to multinational energy companies to provide the much-needed support. While this allows the hydrocarbon resource-rich countries to earn revenue, the capacity deficiencies often result in much of the potential value added by the hydrocarbon-rich countries escaping the grasp of the national stakeholders. Moreover, the local hydrocarbon industry becomes dominated by multinational energy companies, and the national stakeholders can become mere spectators to their natural resource wealth rather than active players.

A large amount of the hydrocarbon rents is often siphoned off by foreign firms for upstream services such as Fabrication, Engineering Procurement Construction (EPC), Front End Engineering Design (FEED), conceptual designs, and seismic studies. This escape of hydrocarbon rents is a manifestation of capital flight, as the profits from the foreign firms are repatriated abroad. What is more troublesome is the rents effectively go to the home countries of the multinational companies, which in most cases are developed countries, thus providing employment and income-earning opportunities for foreigners rather than the citizens of hydrocarbon-rich countries. The main reason often pitched by multinational corporations to justify this escape of hydrocarbon rents from hydrocarbon-rich countries is that they allegedly lack the requisite skills, technical expertise, manpower, and production capacity of indigenous firms (Aneke, 2002; Ariweriokuma, 2009).

Despite these facets, the hydrocarbon industry does not have to be an enclave that excludes the participation of national players. Nor does it have to be a cashbasin with the bulk of the rents consistently leaking out to foreign stakeholders. The literature has long recognized that the initial participation and value-capturing deficiencies can be corrected through local content requirements (LCRs) and local content policy (LCP).

LCRs refer to the specific requirements established by governments~~,~~ for the firms operating in the local hydrocarbon industry to use a minimum amount of local inputs. This includes both goods as well as labor. LCRs are implemented to reduce the disadvantages that domestic producers inherently face concerning foreign competitors to supply goods or labor services. LCR can help local stakeholders win contracts, develop capacity, acquire knowledge and technical skills, and strengthen inter-sectoral linkages (OECD, 2016).

LCP refers to the overall policy framework that encourages the use of local inputs in the hydrocarbon industry. LCP is the policy framework that allows the national stakeholders to capture a greater share and participation of the local hydrocarbon rents. A LCP can include LCRs to ensure that certain percentages of local inputs are used by foreign players in the local hydrocarbon industry. LCP is also a subset of a broader category of policy intervention referred

to as productive development policies (PDP), which seek to promote the development of specific sectors of the economy (Tordo et al., 2013).

In the Caribbean Community (CARICOM), Trinidad and Tobago (T&T) and Guyana, have active hydrocarbon industries. T&T's hydrocarbon industry is old, spanning more than a century. The country has experience producing and exporting crude oil, natural gas, and downstream oil and gas products.

Guyana is relatively a new entrant to the hydrocarbon industry, as commercial reserves of crude oil were only discovered in 2015. Guyana commenced the export of unrefined crude oil in 2020. Natural gas deposits have been found associated with crude oil deposits, but by the end of 2021, there was no infrastructure in Guyana to facilitate the export of gas through a pipeline to neighboring countries or as liquefied natural gas (LNG) to importing terminals.

From the second half of 2020 to the first quarter of 2022, oil prices were on an upward trend. Oil prices became so bullish that on Monday 7 March, 2022, both Brent and West Texas Intermediate (WTI), the 2 major benchmarks for oil prices, crossed US$130/ bbl, within the trading day. While the reason for the jump in oil prices in February into March was the Russia-Ukraine war, several other factors were contributing to the bullish prices. Certainly, bullish oil prices provide an excellent opportunity for both T&T and Guyana to capture oil rents. Additionally, there would be opportunity to strengthen forward and backward linkages during this bullish period to build resilience in future bearish periods.

It is against this concern to capture the best value of its natural resource rents that Guyana passed a local content policy law in 2021, to help stimulate the country's industrial development, increase local capability, build a skilled workforce and create a competitive supplier base. Unfortunately, T&T's LCP is old and dates back to 2004. Apart from the LCRs introduced for procurement in the hydrocarbon sector in 2006, nothing was done over the past decade to improve T&T's local participation and capture value added from the hydrocarbon sector.

The objectives of this study are to:

- review successful local content policies;
- outline the key requirements for a successful local content policy; and
- provide local content policy recommendations for the hydrocarbon producers in the CARICOM region.

The remainder of this study is structured as follows. Section 2 presents an overview of the literature on what is local-content in the hydrocarbon sector. Section 3 outlines the methodology for this study. Section 4 considers some case studies of countries with LCPs. Section 5 indicates the key characteristics that should be embodied in a LCP. Section 6 assesses

the World Trade Organization's (WTO's) rules which are an obstacle to local content requirements. Section 7 explores the political economy of the hydrocarbon industry in Guyana and T&T. Section 8 provides recommendations that could be useful for the Governments of T&T and Guyana in the strengthening of their local content policies, to build local productive capacity. Section 9 concludes the study.

Literature Review of Local Content and Industrial Policy

The historical overview of the relationship between the multinational petroleum corporations and developing oil-producing countries could be classified into three different eras, namely the domination, the confrontation era, and the negotiations era (Absusharaf, 1999). The domination era covers the period from the 1850s to the 1960s. During this period, many European countries were the world superpowers that dominated international trade and commerce. Many of these countries were colonizers that controlled the natural resources, governance, and political affairs in their colonies, which were developing countries. The petroleum sector, was just another resource-based sector under European control, and thus the contractual relationships reflected this paradigm. As a result, the concession regime for the petroleum sector granted multinational petroleum companies large acreage for exploration and production, significant control over the development of the hydrocarbon resources, and low royalty taxes to be paid to the host governments. This business model allowed significant hydrocarbon rents to be distributed to multinational corporations, and little rent was left as a residue for the host governments (Absusharaf, 1999).

The confrontation era covers the 1960s to the 1970s. This was a period in which many former European colonies managed to obtain independence, often through conflict. Despite winning political independence, newly independent states continued to experience economic imperialism, which was interpreted as a continuation of colonialism, albeit conducted by private firms such as multinational oil companies (MNOCs). This economic imperialism was seen as a challenge to the economic and self-determination of developing countries. The Group of 77 was established at the United Nations (UN) General Assembly to advocate for the interests of newly independent states, resulting in the development of the New International Economic Order (NIEO), which emphasized the importance of economic and self-determination for political independence (Absusharaf, 1999).

One key area of concern for many developing countries was the dominance of MNOCs in their resource sectors, particularly the oil industry. These countries believed that the traditional concession regime had deprived them of patrimony over the ownership and marketing of their petroleum, leading to a preference for expropriation and nationalization as opposed to regulatory control of MNOCs' behaviour (Absusharaf, 1999).

There were several reasons for this preference for nationalization. Firstly, MNOCs domiciled in the former colonies held the majority of oil investment profits, which deprived developing countries of significant revenues. Secondly, these companies owned politically-sensitive and

strategic natural resource industries, generating large volumes of foreign exchange for MNOCs instead of national governments. The rise of socialist leaders in developing oil-producing countries led to the adoption of expropriation and nationalization measures as a means of reducing dependency on external actors and increasing internal capabilities and resources (Absusharaf, 1999).

National oil companies were established to take over MNOCs' operations, resulting in the almost complete nationalization of politically-sensitive and strategic industries. Examples include Nigeria's National Petroleum Company (NNPC) in 1977 (Igbokwe, 1997), Trinidad and Tobago Oil Company Limited (TRINTOC) in 1974 (GORTT MEEI, 2023), and the Petróleos de Venezuela S.A. (PDVSA) in 1976 (Lander & Margarita, 2003). The negotiation era covers from the 1980s to the present. The oil shocks in the early 1970s and the subsequent debt crisis in the early 1980s had a significant impact on the economies of developing oil-producing countries. These events highlighted the need for these countries to generate more oil revenues to address economic constraints and fund their petroleum development programmes. As a result, they began to encourage foreign participation in oil investment and renegotiate new agreements with MNOCs (Absusharaf, 1999).

The nature of these present dealings has been described as a "bilateral monopoly". This refers to a situation in which both the host country and MNOCs have significant bargaining power in negotiations. On the one hand, MNOCs have control over capital, technology, management, and market skills needed to launch any project successfully. On the other hand, the host country exercises ownership over its petroleum resources, which are the basis of any oil investment project. The concept of bilateral monopoly is important because it highlights the complex and often contentious nature of negotiations between host countries and MNOCs. Host countries seek to maximize their share of oil revenues while MNOCs seek to maximize their return on investment. Both parties have significant bargaining power, which can lead to protracted negotiations and disputes.

This gives rise to the issue of local content. Host countries seek to maximize the benefits of their petroleum resources, which often includes the development of local industries and the creation of jobs for their citizens. However, local players may lack the technical skills and capital necessary to fully participate in the industry. On the other hand, MNOCs have significant technical capacity as they have invested heavily in research and development, as well as in the acquisition of advanced technology and equipment. These companies also have access to significant financial resources, which they can use to fund expensive exploration and production activities. As MNOCs seek to maximize their profits and minimize costs, it often means sourcing goods and services from their own countries. This power imbalance can only be corrected through local content policy.

The literature is replete with studies on how LCP can be used to capture economic rents as well as increase local participation in the hydrocarbon industry (Aneke, 2002; Ariweriokuma, 2009;

Acheampong et al., 2016). Compared to other goods-producing sectors of an economy, the development of inter-sectoral linkages in the hydrocarbon sector is challenging largely due to the unique disposition of the hydrocarbon sector in terms of capital outlay, technological intensity, and high skill requirements to produce output. For host governments, the proclivity towards increasing value addition effectively means creating local employment by replacing domestic labor with foreign labor. For the multinational hydrocarbon companies operating in hydrocarbon-rich countries, the trade-off is defined by the compromises (such as accepting less experienced labor, goods, and service providers) they make to access the hydrocarbon resources.

Since the introduction of the local-content framework by the Government of Norway in the 1970s, there has been an observable paradigm shift from the ad-hoc corporate social responsibility (CSR) model to one where the government seeks to get more of its local stakeholders involved in high-value skilled activities. Grossman (1981) introduced the term "local content" to the academic literature. However, there have been varying definitions by countries on what is local content. For instance, Ghana defines local content as

> the quantum/percentage of locally produced materials, personnel, financing, goods and services rendered to the oil industry and which can be measured in monetary terms (GORG, 2013, p. 27).

While Tanzania Local Content Policy for the Oil and Gas Industry defines local content as

> the added value brought to the country in the activities of the oil and gas industry in the United Republic of Tanzania through the participation and development of local Tanzanians and local businesses through national labour, technology, goods, services, capital, and research capability (URT, 2014, p. iii), and
>
> the added value brought to a host nation (and regional and local areas in that country) through the activities of the oil and gas industry (URT, 2014, p. 7).

Whereas Warner (2007), equates local content to "community content", and defines it as

> the strategic deployment of local participation and local capability development opportunities arising from an oil or gas project, specifically directed to strengthen the sustainability, relevance and political visibility of community investment programmes
>
> (p. 5).

Ackah & Mohammed (2018) express

> Local content refers to jobs or value-added that are created anywhere in the domestic economy as a result of the actions of an oil and gas company. It can also refer more narrowly to jobs that are created in the neighbourhood of the oil production plant. Local content may even refer to the provision, by the oil company, of infrastructure (schools, medical facilities) that is not an input into its own production but intended for the benefit of the local population—either of the nation generally or the neighbourhood of the installations (p. 3).

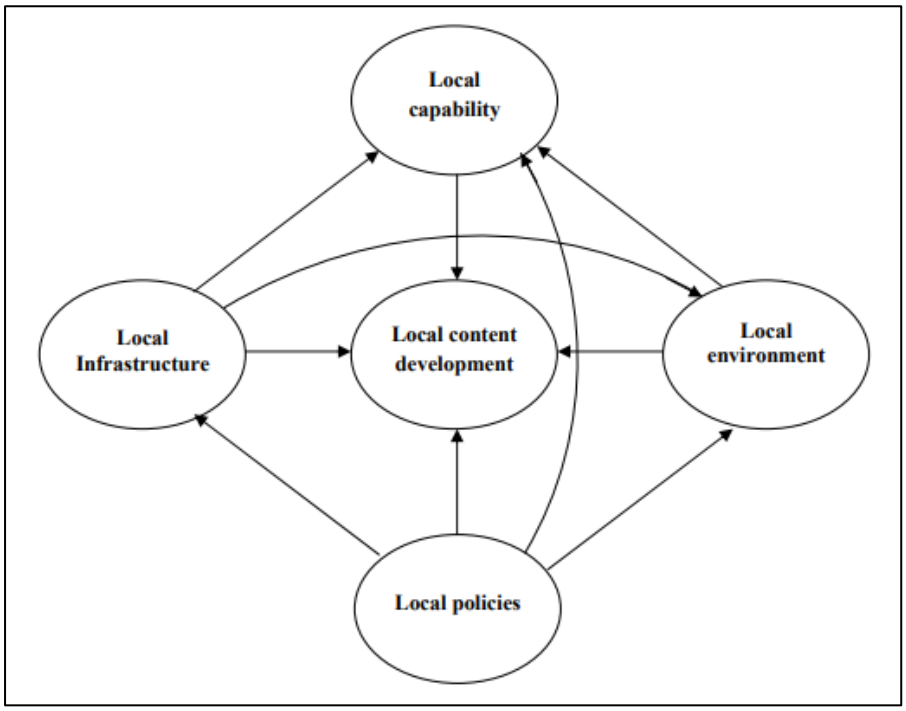
Acheampong et al. (2016) explain that LCPs fall within a broader category of policies referred to as "industrial policies" or "productive development policies" (PDPs). These policies seek to increase the shares of employment, services, manufacturing provisions, and the local capture of value from the hydrocarbon value chain.

Local content has been defined in terms of the value contributed to the national economy through the purchase of national goods and services. Such definition considers the government measures, requirements, and regulations that ensure that a particular portion of a good or product is produced within a specific geographical area but serve to persuade businesses to use domestically produced, rather than imported, parts or other inputs (Arthur & Arthur, 2014). It is in this vein that many developing countries now espouse a local content policy, to help capture more value by linking the hydrocarbon sector to other sectors of the economy. This in turn should enhance the domestic industrial base, create employment, and develop the local productive capacity of entrepreneurs in the economy. This should have a multiplier effect that will create other benefits such as infrastructure development, technology transfer, and promoting innovation (Arthur & Arthur, 2014).

Kazzazi and Nouri (2012) provide a conceptual model of how various factors interact to create value for the host petroleum sector. Figure 1 depicts how local content development can be the central objective (of a government), and how it may be interrelated with 4 corresponding factors, namely local policies, local infrastructure, local environment and local capabilities.

Figure 1

Conceptual Model for Local Content Development in the Hydrocarbon Industry



Source: Kazzazi & Nouri (2012)

Kazzazi & Nouri (2012) also posit that each of the 4 factors is affected by other variables. Table 1 summarizes the relationships.

Table 1

Variables Affecting the 4 Factors/ Determinants of Local Content

Factors	Affecting Variables
Local Policies	Public policies Industrial policies
Local infrastructure	Information technology Local companies' needs Standards Social infrastructure Educational infrastructure Institutional infrastructure Business development infrastructure
Local environment	Macroeconomic environment Investments and business environment
Local capabilities	Local companies' capabilities Education Skills and expertise development Technology and know-how transfer capacity Research and development capabilities

Source: Kazzazi & Nouri (2012)

Kazzazi and Nouri's (2012) conceptual model includes key factors affecting local content development. They acknowledge that local content promotion varies significantly between countries, depending on their state of economic, political, and social development. Moreover, the only thing that is constant across countries is the need for policymakers to stay dedicated to the task of local capacity building.

Economic diversification and the pursuit of industrial policies that develop optimal production linkages are also key to achieving local content. These production linkages include backward linkages, which refer to the inputs used for the production of the staple; forward linkages, which refer to the additional processing of the staple for local use or export; fiscal linkages, which refer to the host government's taxation of all activities associated with the production of the staple; and demand linkages, which refer to the multiplier effect arising from local consumer spending. The development of these linkages also helps a country avoid the resource curse.

Local Content vs Local Participation and Ownership

Despite the potential of LCP, its mere existence on paper does not automatically guarantee increased local participation. Many developing countries have passed laws and policies to increase local content, but in practice, there is no real improvement in local content. This can be seen from the aspects of value capture and ownership.

For instance, at one level, a LCP may facilitate increase in the ratio of the number of nationals to foreigners that are directly employed in the hydrocarbon industry in a country. However, it does not increase the share of the value captured by the locals. In fact, there could be significant differences between the salaries, incomes, and rents captured by locals and ex-pats (Nabatchi, 2012).

Another deficiency may be the gaps in ownership. The LCP may encourage nationals to be employed, but there is insufficient capacity development to allow the locals to develop companies that can capture a larger proportion of the hydrocarbon rents. Therefore, locals' participation may be predominantly restricted to labor, while foreigners' participation includes ownership of business and capital (Webler, 1995). Additionally, too much reliance on LCRs can increase project costs, especially when local producers are significantly less cost-effective than foreign producers. This has implications for the implementation of projects, especially in the oil refining industry where there are tight gross margins. Indeed, a government must delicately balance these interests when crafting a LCP.

Methodology

The methodology used for this study is document analysis. Document analysis is a research method used to review and evaluate a variety of documents, both printed and electronic, to gain a deeper understanding of a particular phenomenon or topic. The primary purpose of document analysis is to elicit meaning, gain understanding, and develop empirical knowledge by examining and interpreting data contained in the documents (Bowen, 2009).

The types of documents that can be used for systematic evaluation as part of a study are diverse and can include advertisements, meeting minutes, manuals, books, diaries, event programmes,

letters, maps, newspapers, press releases, reports, survey data, and other public records. In document analysis, researchers typically review prior literature and incorporate that information into their reports. Documents can serve various purposes in research, providing valuable data and insights that can contribute to a deeper understanding of a phenomenon or topic. Some specific functions of documentary material in research include the following:

1. Providing context and historical insight: Documents can provide background information and historical context that can help researchers understand the roots of specific issues and the conditions that influence the phenomena under investigation.
2. Suggesting questions and situations be observed: Information contained in documents can suggest questions that need to be asked and situations that need to be observed as part of the research.
3. Providing supplementary data: Documents can provide valuable additional data to supplement other research methods. Researchers can browse library catalogs and archives for relevant documents to analyze as part of the research process.
4. Tracking change and development: Documents that are available in multiple drafts can provide a means of tracking changes and developments over time. Even subtle changes in a document can reflect substantive developments in a project or issue.
5. Verifying findings and corroborating evidence: Documents can be analyzed to verify findings or corroborate evidence from other sources. If the documentary evidence contradicts other data sources, further investigation is required. When information from different sources converges, readers of the research report usually have greater confidence in the trustworthiness of the findings (Bowen, 2009).

In summary, documents can provide a range of benefits to researchers, including providing context and historical insight, suggesting questions and situations to be observed, providing supplementary data, tracking change and development, and verifying findings and corroborating evidence (Bowen, 2009).

This study applies document analysis by identifying documents related to local content policy in Guyana and T&T. This includes government policies, reports, legislation, news articles, and other relevant documents. Unfortunately, there is relatively scarce literature on this subject for both countries. Therefore, this study uses as many relevant documents as possible.

To identify the documents, searches were performed on several online databases including Google Scholar, JSTOR, and ProQuest. These databases were selected as they can provide access to academic journals, reports, and other published materials related to local content policy in both countries. Second, searches were performed on the websites of relevant government agencies in Guyana and T&T, such as the Ministry of Energy and Energy Industries (MEEI) in T&T, and the Ministry of Natural Resources in Guyana to access polic documents and reports. Third, searches were performed on online news sources for both

countries for articles related to local content policy. The resulting documents were used to help craft this study.

Country Case Studies of Local Content Policy

Several developing countries have successfully utilized local content policies. Notable success cases include Nigeria, Ghana, and Botswana.

Nigeria's Local Content Policy

Oil was first discovered in Nigeria, an African country, in 1956 (Unam et al., 2012). Since then, hydrocarbons have grown in importance for the country, accounting for 96% of the country's total export revenue and 75% of government revenue (IMF, 2018). The country has grown to become a key player in the international hydrocarbon market, as it is the largest oil producer in Africa, the 10th largest oil exporter in the world, and 5th largest oil exporter of crude oil to the United States (US) (Unam et al., 2012). Despite the windfall rents generated by the hydrocarbon industry, its effectiveness in improving the lives of the people in Nigeria has been limited. Several authors (Aneke, 2002; Ariweriokuma, 2009; and Unam et al., 2012) attribute this deficiency to low local content. Consequently, there was a weak spillover of capital, skills, and productive capacity to local entrepreneurs and indigenous labour.

The relevance of the hydrocarbon industry service sector cannot be overemphasized. The upstream sector services industry can account for up to 90% of the total cost of producing one barrel of oil (Unam et al., 2012). Therefore, significant value can be captured by local stakeholders if there is increased participation in the hydrocarbon value chain. Rossi (2011) asserts that regardless of a country's endowments in hydrocarbon natural resources, and its experience in the production and export of hydrocarbons, without the implementation of the appropriate economic policies, the monetized revenues of hydrocarbon resources will not render prosperity to the majority of the people in the country.

After the return to democracy in 1999, the Federal Government of Nigeria sought to address its country's weak participation and extraction of value in the hydrocarbon industry. Subsequently in 2000, the government introduced its National Local Content Policy. The initial targets were to achieve 45% local content participation by 2007 and 70% by 2010. Unfortunately, the government's targets were not achieved. In 2010, the government passed supplementary legislation that mandated the multinational companies operating in the hydrocarbon industry in Nigeria to grant preference to capable Nigerian companies in the award of hydrocarbon service contracts (Unam et al., 2012).

After 2010, the Content Development Act facilitated the development of local capacity in Nigeria. This was a blend of participation with local entrepreneurs and foreign companies

through joint venture partnerships. Shell, a multinational oil company, continues to be the dominant player, as it produces more than 50% of Nigeria's oil. Local oil companies participate through the marginal field programme, which is essentially a farm-out programme. The Guidelines for Farm-out and Operation of Marginal Fields 2013 complement the Content Development Act as they allow only local companies to be considered for farm-out leasing arrangements. Foreign companies are allowed to indirectly participate through technical partnerships, where the foreigner holds less than 51% equity in the joint venture. This structure allows for the spillover of technical capabilities from foreigners to the locals.

Apart from the granting of preference to Nigerian entrepreneurs, the Content Development Act establishes:

- The Nigerian Content Development and Monitoring Board with the mandate to monitor, coordinate, and implement the Act.
- The Nigerian Content Consultative Forum acts as a platform for sharing information.
- The minimum Nigerian content for all hydrocarbon projects. The local content is measured by the number of man-hours worked for the duration of a project, the tonnage and volume of certain goods, and the percentage of spending for procurement of local goods and services.
- The mandate for some services to only be allocated to Nigerian companies. The services include:
    - the procurement of pipeline systems, risers, and steel pipes;
    - three dimensions and two dimensions of seismic data acquisition;
    - field development plans;
    - marine moving services; and
    - waste disposal/drainage services and industrial cleaning services.
- That mandate for foreign companies to demonstrate that a minimum of 50% of the equipment used in the operations are owned by Nigerian companies. (This provision was introduced to ensure high-end machinery is not repatriated back to the foreign country upon the completion of projects. It also ensures that some Nigerians are allowed to purchase and acquire equipment).
- The mandate is that Nigerians are employed in junior positions. (This allows for the training of Nigerians by experienced ex-pats).
- The Joint Qualification System, allows for a local skills database, which allows local skills to be matched with projects that require them (Acheampong et al., 2016).

Nigeria's Content Development Act allows for the leveling of the playing field between local entrepreneurs and foreign companies.

Ghana's Local Content Policy

In 2007, a consortium of Kosmos Energy Ghana, Tullow Ghana Limited, Anadarko Petroleum Corporation, Sabre Oil and Gas Holdings Limited, the E.O. Group, and the Ghana National Petroleum Corporation (GNPC) discovered commercial reserves of hydrocarbons in the offshore Tano/Cape Three Points Basin, Ghana (Ackah & Mohammed, 2018). First oil was achieved in the last quarter of 2010 (Acheampong et al., 2016).

Recognizing the potential for oil wealth to be divorced from economic capacity development, in 2010 the Government of Ghana piloted the Local Content Policy. The objectives of Ghana's Local Content Policy were as follows:

- to maximize the benefits of oil and gas wealth generation by maximizing the use of local expertise, goods, and services.
- to develop local capability in all aspects of the hydrocarbon value chain through education, training, transfer of technology, and skills spillover;
- to achieve a degree of local influence or control over the local hydrocarbon industry;
- to achieve at least 90% local content and local participation in all aspects of the hydrocarbon value chain within a decade;
- to increase the capabilities and improve the competitiveness of domestic businesses; and
- to create supporting industries for the larger hydrocarbon industry, to help sustain economic development in Ghana.

Ghana's Local Content Policy mandates that:

- Ghanaian entrepreneurs are given priority for the award of oil blocks, oil field licenses, and oil extraction licenses in all upstream projects.
- Regarding goods and services provision, foreign companies are required to use local inputs as much as possible.
- In terms of employment, foreign companies are required to provide employment opportunities to Ghanaians as far as possible. The operator is also required to submit a detailed Annual Recruitment and Training Programme Report to the Petroleum Commission. The report should outline the operator's plans for the recruitment and training of Ghanaians in all operations, within 12 months of the grant of an exploration and production (E&P) license. Additionally, at least 50% of management staff should be Ghanaians at the grant of the E&P license, and 80% after 5 years; at least 30% of technical staff at the beginning and 80% after 5 years; and 100% of non-technical support staff.
- Regarding training, all operators should provide for the training of Ghanaians in all aspects of petroleum operations. This should be done through scholarships, financial

support for education, and practical internships for graduates (Ackah & Mohammed, 2018).

To complement the implementation of the Local Content Policy, in 2013, the government passed the Petroleum Local Content and Local Participation in Petroleum Activities Regulations. The Regulations mandate:

- That every petroleum license granted to a foreign company must have at least 5% equity participation by indigenous Ghanaian companies.
- The foreign companies submit plans to the Petroleum Commission regarding their compliance with local content requirements for the provision of goods and services. For projects, the operators use at least 10% local content of goods and services at the start. This should increase to 50% within 5 years, and range between 60% and 90% after 10 years. Notably, no country has ever achieved 90% local content in the entire hydrocarbon value chain. The highest achieved thus far was 74%, and it was done by Norway.
- The establishment of a Common Qualification System (CQS). The CQS creates a framework for the sole system for the registration and pre-qualification of local contractors. This encourages local companies to be given a fair chance to be considered to supply various goods and services for project activities.
- The introduction of penalties for non-compliance with the regulations. The regulations deem the following as offenses:
    - The refusal to submit a plan or report for the recruitment and training of Ghanaians in all operations, within 12 months of the grant of an E&P license.
    - The falsification of information in any report submitted to the Petroleum Commission, Ministry, or government agency.
    - The non-compliance with the LCR for the employment of Ghanaians.
    - The non-compliance with the LCR for the minimum equity participation of Ghanaians.
    - Fraudulently using a person to act as a front for a Ghanaian company to achieve local content in an attempt to deceive the Petroleum Commission (GORG, 2013).

Norway's Local Content Policy

Norway successfully managed to transition from a country that held no capabilities in the hydrocarbon sector in the late 1960s to a competitive provider of a variety of oil field equipment and services. Norway does not have a LCP or local content regulations, nor is the term "local content" specified in any of its laws. Nevertheless, its strong local content was achieved through the crafting of its laws. The Petroleum Act and the Petroleum Regulations provide the legal framework for the government's control of its country's hydrocarbon industry. The

Petroleum Act vests all petroleum reserves to the state, and as a result, all E&P operators must obtain licenses to conduct E&P activities. This is a normal practice for the petroleum industry.

In the 1970s, the government used its control of its country's hydrocarbon industry to require Norwegian companies to be selected for contracts even when they were not the most competitive in price, quality, and delivery. In other words, the government only awarded E&P licenses to foreign companies on the condition that they showed preference for Norwegian companies for sub-contracting works. This was formalized when the government passed the Royal Decree in 1972 (Sachs & Maennling, 2015).

Several newly formed companies in the 1970s did not have the financial and technical capacity to undertake various projects. Nevertheless, these companies were still given preference for work and were encouraged to form partnerships with foreign firms to procure the capacity to undertake various project activities. This simple approach allowed the local firms to develop technical capacity, grow their financial capital from profits, and gain technology and physical capital from completed projects. In addition to the technology transfer, foreign companies brought their connections with international supply chains (Sachs & Maennling, 2015; Acheampong et al., 2016).

All bidding rounds between 1974 and 1994 provided preferential treatment to Norwegian companies in the awarding of contracts (Sachs & Maennling, 2015). The government also promoted a supplier development programme, which helped develop backward and forward linkages between Norwegian suppliers and the hydrocarbon industry. This encourages spillover and capacity development in horizontal industries. For example, capacity development occurred in the metals processing and shipbuilding and repair industries, both of which complement the upstream hydrocarbon industry. The government also negotiated with oil companies by offering them concessions and incentives to collaborate with Norwegian universities to undertake research and develop local education capacity. As a result of these preferential initiatives, Norway developed strong educational training programmes, a highly skilled and competent labor force, competitive local service contractors and goods providers, and a strong enabling environment to create more entrepreneurs even in new niches (Acheampong et al., 2016).

Certainly, the development of strong backward and forward linkages with the hydrocarbon industry allowed Norway to achieve both vertical and horizontal diversification. The preferential treatment for the local suppliers allowed the country to capture a high proportion of the value added from its hydrocarbon industry. Later in 1994, Norway joined the European Union (EU) and was required to disband these local content preferences. However, by 1994 these preferences were not required since Norwegian companies had already grown to become competitive firms with strong capacity and did not need preferential treatment to win contracts (Sachs & Maennling, 2015).

Botswana Local Content Policy

Botswana, a country in Africa, provides a success story with local content in the diamond industry. This case study is considered as it provides lessons that can be applied by other countries in the development of a local content policy for any mineral extractive sector. Diamonds were initially discovered in Botswana in 1967. De Beers, a foreign diamond production company, was welcomed by the government to coordinate the mining and export operations. Foreign capital was sought since the country had no competencies in diamond mining, and after only gaining independence in 1966, the government lacked the physical capital to develop the sector on its own. In 1969, a joint venture was developed between De Beers and the Government of Botswana to incorporate Debswana (Jerreris, 2009).[1]

At Debswana's inception, the government only had a 15% equity stake in the company. However, as more mines were eventually discovered, the government renegotiated with DeBeers and eventually purchased a 50% equity stake by 1975. In the early 1980s, while the international diamond market was weak, Debswana stockpiled large amounts of unsold diamonds. In 1986 when the market recovered, Debswana negotiated the sale of the stockpile to DeBeers. Some of the stockpiles were paid in cash, while the other portion was paid in shares in De Beers. This allowed the Government of Botswana to earn 5% equity in DeBeers. Later in 2001, De Beers was restructured, and the Government of Botswana purchased a larger shareholding, raising to 15% equity. Through this shareholding, the Government of Botswana was able to appoint two (2) directors to De Beers' board and was able to learn that all the diamonds were sold to De Beers affiliate company for marketing, the Diamond Trading Company (DTC), which is located in London, England (Jefferis, 2009).

During the 1970s and 1980s, Botswana emerged as one of the world's major diamond provinces. By the late 1980s, Botswana had become the world's leading diamond producer. Over the 1970 to 2000 period, diamond rents allowed Botswana to be the fastest-growing country in the world. Despite this, Botswana experienced some Dutch Disease deindustrialization in the agriculture sector. This was evidenced by the decline in agriculture's share of GDP from 40% in 1966 to 2% by 2006 (Jefferis, 2009). Dutch Disease is notably worrisome as it causes the deindustrialization of the non-booming good-producing industries, which are often turned to for support and the generation of export revenue at the end of the boom.

To make the most of the country's diamond reserves and to prepare Botswana for life after diamond mining, the government developed a plan to transform the country into a diamond center with downstream capabilities that will add more value to diamonds. As a result, in 2005, the government adopted the Diamond Beneficiary Policy (Mbayi, 2011).

[1] Debswana was fully capitalized by De Beers, but 15% of the shares were issued free to the Government of Botswana (Kojo, 2010).

First, the Diamond Beneficiary Policy required rough diamond sightholders[2] (traders) to move down the value chain if they wanted to access Botswana's rough diamonds.[3] Second, the Policy required local processing to occur. In other words, the sightholders could only access processed (polished) diamonds rather than unpolished rough diamonds. Therefore, the earliest segment of the diamond pipeline that the sightholders could enter is the polished trading segment. This arrangement effectively allowed 84% of the allocation to sightholders to be processed. This move was not met with opposition as companies were required to pay taxes on rough diamond exports, but not on polished ones (Weiss, 2016). Third, foreign investors were encouraged to enter joint ventures with local companies. Fourth, foreign companies were encouraged to hire local labor. Fifth, foreign companies were encouraged to train local labor. While not in the Beneficiary Policy, in 2015, the government directed all Central Government, Local Authorities, and Parastatal Organizations to procure all their goods and services from locally based manufacturers and services providers. This was done to help stimulate economic activity within Botswana and reduce the leakages from the circular flow of income (Weiss, 2016).

Indeed, the Diamond Beneficiation Policy was critical in facilitating the capturing of a larger share of downstream revenues in Botswana. It also allowed the localization of a small niche of highly skilled, high-value services to support the value chain, manufacturing operations, and downstream marketing to jewelry manufacturers (Koitsiwe & Adachi, 2017).

The Government of Botswana continues to capture a fair share of the diamond rents through income tax, royalties, and as a joint owner of Debswana. This hybrid rent-earning arrangement allows the government to earn approximately 80 cents of every dollar of profits generated by Debswana (Kojo, 2010). While primary commodities are traditionally known to be volatile, the government has been able to receive stable revenues from the relative price stability of diamonds. This relative price stability arises from De Beers' ability to control both the demand and supply of diamonds (Kojo, 2010). In 2008, the government and De Beers entered a joint venture to form the Botswana Diamond Valuing Company (BDVC), whose objective was to coordinate the shift sorting, cutting, polishing, and aggregating of diamonds in Botswana (Koitsiwe & Adachi, 2017).

The government of Botswana also established a diamond hub, and a diamond technology park in Botswana (Weiss, 2016). This was complemented by the DTC opening a subsidiary in Gaborone, the capital of Botswana. The corresponding DTC Botswana was a joint venture between the DTC and the Government of Botswana. This hub created an avenue for the diamond trade and allowed small players to become directly involved in diamond commerce (Mzumara, 2012).

[2] A 'sightholder' is a company on the DTC's list of authorized purchasers of rough diamonds.
[3] The diamond value chain is sometimes referred to as a pipeline due to its length. The segments include diamond exploration, mining, rough sorting and valuing, rough trading, rough manufacturing and polishing, polished trading, jewelry manufacturing, jewelry trading.

Good macroeconomic management was also achieved in Botswana through the implementation of the Pula Fund, a natural resource fund, and the adoption of fiscal rules.

Local Content Policy in Trinidad and Tobago

As mentioned before, T&T's oil industry is more than a century old. The Government of the Republic of Trinidad and Tobago (GORTT) introduced a LCP labeled the "Local Content and Participation Policy and Framework" in 2004. This 14-page long document acknowledged that only 10% of the value of the energy industry is captured domestically. While it endorsed the idea of local content, it proposed no LCRs to improve the local content in T&T.

In 2006, the GORTT introduced LCRs in the production sharing contracts (PSCs) awarded in the upstream industry. Some of the LCRs included:

- the requirement for operators to maximize their utilization of goods and services produced in T&T;
- the requirement for operators to submit their work programmes to the Ministry of Energy and clearly state the level of local content they plan to achieve;
- the requirement for operators to unbundle contracts to match the capabilities of domestic subcontractors;
- the requirement for the operators to advertise contracts locally to ensure domestic suppliers get a chance to participate in tendering; and
- the placement of greater weight on local content for local contractors to allow them to win contracts over foreign competition.

Provisions were also introduced to encourage capacity development. They include:

- operators were required to provide preference to nationals over foreigners in employment;
- operators were required to provide training for nationals so that they may eventually replace expatriates;
- the training for the nationals should be equivalent to the standards of the operator; and
- operators were required to facilitate the transfer of technology to nationals in the areas of fabrication, information technology, maritime services, marketing, operational management, and business support services (Tordo & Anouti, 2013).

Despite the deficiencies in T&T's LCP framework, T&T continues to capture some value from its hydrocarbon industry via:

- the taxes paid by the hydrocarbon industry to the GORTT;
- the employment of nationals in the hydrocarbon industry; and
- ad-hoc corporate social responsibility programmes of multinational energy companies.

Perhaps, one of the greatest successes that T&T managed to achieve in local content is its experience with platform fabrication in La Brea. Historically, offshore platforms were fabricated in the US. The platforms were assembled in Trinidad, but the local content in the projects was also low and utilized approximately 9% of local input. This situation was addressed in 2005 when British Petroleum Trinidad and Tobago (BPTT) facilitated the creation of local content in the offshore platform fabrication industry through the construction of the Cannonball platform at La Brea, Trinidad. A joint venture was formed between the local company Weldfab Ltd., and the foreign company, Chet Morrison Ltd., to develop Trinidad Offshore Fabricators Ltd. (TOFCO) (Charles, 2019).

TOFCO spent six months, in the first instance, training workers to prepare for the Cannonball project. The training was conducted in technical vocational areas, namely welding, and fabrication, electrical installation, plumbing, instrumentation, and occupational safety. Some 230 employees, of which 80% were citizens of T&T, were involved in the Cannonball project. An estimated 40% of local input was used in the project. This local input included services such as marine transportation, the purchase of goods sold by hardware stores, the rental of equipment from domestic contractors, and the subcontracting of support services such as janitorial and security. Following the success of the Cannonball project, TOFCO was procured to construct several additional platforms for offshore T&T. Table 2 provides an overview.

Table 2

Platforms Constructed by TOFCO

Year	Client	Project	Tonnage
2004-05	BPTT	Cannonball Deck and Jacket	1800
2005-06	EOG	Oilbird Deck and Jacket	3000
2006-07	BPTT	Mango Deck and Jacket Cashima Deck and Jacket Amherstia	1900 2000 500
2007-08	BGTT BPTT EOG	Poinsettia Deck Savonnette (Deck and Jacket) Toucan Deck	3000 3000 2000
2009-10	BPTT	Serrette Deck and Jacket	3000

Year	Client	Project	Tonnage
2010	BHP	Angostura Gas Bridge and Flare	700
2013	BPTT/ EOG	Oilbird deck and jacket	1000
2014-2016	BPTT	Juniper (jacket, topsides, and piles)	5670
2018-2021	BPTT	Cassia C	8100

Source: Adapted from Jones (2011); Warner (2017) interviews

While TOFCO initially started conducting greenfield work by building new platforms, it experienced periods where it was unable to get work to construct new platforms locally. This is because a multinational oil company will not procure services to build a platform every year. Subsequently, TOFCO adapted by undertaking brownfield work and performing maintenance functions for platforms. In 2018, TOFCO got work to fabricate the jacket and bridge landing for the Cassia C platform for BPTT. The topsides and bridge link for the Cassia C platform were constructed in Altamira, Mexico.

Limitations in T&T's LCP Framework

Despite the success of the TOFCO in offshore platform fabrication, there are several limitations regarding T&T's LCP framework. They include:

1. The absence of regulatory measures to ensure compliance. The GORTT does not impose any penalties or fines for non-compliance with its 2004 LCP or the 2006 LCRs in the PSCs. Additionally, there is no framework to address situations in which multinational companies inaccurately report on their local content compliance.
2. The weak institutional capacity in the GORTT for the monitoring of the implementation of the LCRs. The Ministry of Energy and Energy Affairs (MEEA) is the lead agency for the coordination of government policy regarding the energy sector. The MEEA relies upon the information supplied by multinational companies to determine the companies' level of local content. However, the MEEA has no framework to verify if the information supplied is inaccurate or deliberately falsified.
3. The absence of any framework to encourage local and foreign collaboration. While joint ventures do occur in the hydrocarbon industry in T&T, especially between the multinational companies for the exploration of offshore blocks, there is no framework to encourage stronger collaboration between locals and foreign firms in T&T's hydrocarbon industry.
4. The absence of any framework to promote entrepreneurship by locals in the hydrocarbon sector. There is scope for the development of strong backward and forward linkages to the hydrocarbon sector. Furthermore, T&T has several universities which produce graduates in technical fields which are useful for the hydrocarbon sector.

Unfortunately, there is an absence of any accelerator or business incubation programme that is geared toward creating entrepreneurship in the hydrocarbon sector in T&T.

5. The existence of several bilateral treaties with foreign countries, would prohibit the discrimination of foreign suppliers. LCP essentially requires national treatment. However, as T&T is a member of the CARICOM Single Market Economy (CSME), a common market, discrimination in labor and services would be inconsistent with the World Trade Organization's rules on national treatment. CARICOM service contractors that are facing discrimination could legitimately request their government to raise a dispute at the WTO. Notably, similar disputes were raised by the US against India on its "Made-in-India" and "Digital India" programmes (Tordo & Anouti, 2013).

Local Content Policy in Guyana

Following the commercial discovery of oil offshore Guyana in the Stabroek block, the Government of Guyana took steps to develop a LCP for its hydrocarbon industry. Draft LCPs were prepared in 2017, 2018, 2019, 2020, and 2021. In 2021 the government passed the Local Content Policy Law (LCPL).

In summary, the goals of the LCPL are:

- to facilitate the participation of Guyanese nationals and businesses in the hydrocarbon sector;
- to develop a mechanism through which Guyana might use participation via equity investment, employment, and the supply of goods and services in sector activities, to build capacity that can support and enhance the petroleum and other sectors (such as agriculture, food processing, mining, manufacturing, forestry, ITC, construction, and other strategic sectors) for industrialization and national development;
- to develop an implementation strategy that is rooted in a pragmatic and collaborative approach to enabling maximum participation of Guyanese, while benefiting investors; and
- to ensure that the policy mechanism is flexible enough to adapt to changing circumstances.

The LCPL acknowledges several limitations faced by Guyana as it aspires to maximize its capture of value from the hydrocarbon sector. They include:

- Guyana is a small country and is presently unable to influence the price of oil on the world market. Therefore, it will be a price taker and vulnerable to volatility in oil prices.
- Guyana (in 2021) lacked the technical and financial capabilities to undertake a lot of the work in the hydrocarbon industry. Additionally, many emerging entrepreneurs do not have access to the specialized equipment required to perform many jobs.
- There are physical risks associated with hydrocarbon extraction and processing activities.

- There are environmental risks associated with the hydrocarbon industry. This includes both the negative externalities and environmental degradation which may occur from accidents, as well as the effects of climate change caused by the combustion of hydrocarbons and the release of anthropogenic greenhouse gasses (GHGs).
- The hydrocarbon industry does not generate many jobs. Therefore, there is a strong likelihood that reliance on the hydrocarbon industry will result in the transitioning of the Guyanese economy to a dual-sector economy. Additionally, employment may be generated from the multiplier effect of government spending.
- There is strong potential for the development of backward and forward linkages. Despite this, no country has ever achieved 100% local content.
- There is a temptation to adopt a localist approach to local content, where the revenues from the hydrocarbons are used to develop the infrastructure and improve the lives of the people in the geographic locations that are in close proximity to the hydrocarbon deposits. Since the hydrocarbon deposits are not uniformly distributed, it can lead to the uneven development of a country. Additionally, since demographic groups are unevenly distributed across a country, the localist approach could lead to demographic discrimination. In other words, one group of people will reap the most benefits, while other demographic groups would be neglected.

The LCPL:

1. Advocates for the employment of Guyanese nationals in the hydrocarbon industry;
2. Endorses the training of Guyanese nationals;
3. Encourages the transfer of knowledge and technology through integration, participation, equity investment, and retention of profits;
4. Highlights targets for the achievement of local content on a phased basis in sector areas over 10 years. The areas targeted include: a) license or petroleum agreements; b) FEED Detailed Engineering and other services; c) Fabrication, Construction, and Storage; d) Materials and Procurement; Research and development; e) Transportation, supply, and disposal services; f) Well drilling services; g) Health, safety, and environmental services; h) Information systems, information technology, and communication services; i) Marine operations and logistics services; j) Financial and insurance activities.

Notably, the aspirations in the LCPL are not LCRs. There is no mandate for the operators to fully comply and achieve the local content targets. Additionally, there are no penalties for non-compliance, nor a system to properly detect the non-compliance.

While the absence of actionable LCRs prevents Guyana's LCPL from violating the WTO's rules on national treatment and non-discrimination, it runs the risk of being a "paper policy". In other words, since there are no LCRs and penalties, there is nothing to force the operators to comply with the objectives of the policy. Another author, Elias-Roberts (2020), also

acknowledged that Guyana's LCP will not automatically result in the increased capture of local content in the country.

Key Requirements for an Effective Local Content Policy Framework

In the review of the experiences of the case studies considered in this study, several lessons can be learned. First, the host country must recognize that it may not have the technical and financial capacity to undertake a lot of the technical work in the hydrocarbon industry at the onset. However, non-technical work can be implemented by local entrepreneurs. Given this situation, the government can try to capture more value from the hydrocarbon value chain by encouraging the operators to delegate most, if not all, of the non-technical work to locals.

While this may be a reasonable request, multinational companies are likely to have the capacity to undertake all the functions in the entire hydrocarbon value chain. Additionally, they may be more cost-efficient in conducting all the functions that local stakeholders require. For this reason, multinational companies may be reluctant to award non-technical contracts to local entrepreneurs. This can be addressed by the government through moral suasion. If this fails, then the next option would be to introduce LCRs that mandate the operators delegate these non-technical functions to the locals. However, a situation arises. How does the government ensure that the aforementioned jobs are delegated to the locals? This can be addressed by requiring the operators to report on the local content that they achieve in their operations. The operators could be encouraged to accurately report the local content achieved in their projects. The government can verify this information by occasionally procuring a consultant team to conduct an assessment to validate the information. If the government finds that the operators are consistently falsifying information, then it can consider introducing penalties for deliberate fraud.

To develop local capacity in technical work, several approaches can be taken. The first is to encourage education and training at the university level. This can be done through the strengthening of the capacity at the university level and introducing new training programmes. To implement this, the government should encourage collaborations between the industry stakeholders and the local universities to develop appropriate academic programmes. This can be complemented if the industry stakeholders also provide funding for these academic programmes.

The second approach is to encourage training with on-the-job experience. Again, partnerships between the industry and the local universities will be key to achieving this. An on-the-job training programme can be integrated as part of the academic programme, whereby successful graduates may obtain practical experience in the industry that matches their academic training. Beyond the on-the-job training, the government can introduce a LCR that mandates only qualified locals to be eligible for junior positions in technical jobs. Junior technical professionals can work alongside experienced ex-pats to gain technical competencies.

The third approach is to encourage capacity development by allowing local entrepreneurs to get work. To address the issue of the deficient capacity of local entrepreneurs, partnerships should be encouraged with more competent foreign companies. The government can encourage this by mandating that technical jobs in specific categories should have a minimum level of local equity participation. In other words, as a condition to win certain technical jobs, local entrepreneurs must have a percentage of equity participation in the project. Certainly, joint ventures will be the key to helping build local capacity.

The fourth approach is to promote capacity development by encouraging the spillover of capital and equipment to local entrepreneurs. This can be addressed through trade policy where the government could restrict the re-export of specialized equipment back to the country of origin after the completion of jobs. Technological spillover can also be facilitated by encouraging local entrepreneurs to purchase specialized equipment.

The WTO and TRIMS

The first article of the General Agreement on Tariffs and Trade (GATT), which governs trade in goods, requires unconditional and universal most-favored-nation (MFN) treatment among all members. The principle of national treatment requires that the products of locals and foreigners should be treated equally (VanGrasstek, 2013). If these two principles are applied, then no country that has entered a common market should be legitimately allowed to legislate that operators in their hydrocarbon industry should provide preferential treatment to indigenous citizens over the citizens from the other common market countries.

Moreover, the WTO's Trade-Related Investment Measures (TRIMs) discourage the use of LCPs and LCRs. The WTO refers to TRIMs as investment measures that can restrict and distort trade. The TRIMs agreement prohibits WTO members from applying any measure that discriminates against or restricts the output of foreign products (WTO, 2015). The LCRs prohibited by TRIMs include: mandating a foreign firm to purchase or use domestic goods; limiting the number of imported goods that a firm may purchase or utilize; restricting foreign exchange necessary to import; and restricting exports (Kayizzi-Mugerwa & Anyanwu, 2015).

As mentioned before, the US raised a dispute at the WTO on India's implementation of the "Make in India" and "Digital India" programmes. Under the Make in India programme, the government provides a capital subsidy of 20% to solar power systems made in India. Similarly, under the Digital India programme, the government subsidizes 25% of the cost of producing electronics in India. After reviewing the matter, the WTO Dispute Settlement Body ruled against India with the judgment mandating that India provide "national treatment", allowing imports to be treated on a par with domestically manufactured products (Kanth et al., 2015).

It is discernible that the US has also utilized LCRs to promote the production of renewable energy (Kanth et al., 2015; Meyer, 2015). In fact, Meyer (2015) found LCRs in 44 programmes in 23 states in the US. The author states:

> Since 2001, California has provided over $2 billion in subsidies for the purchase of solar panels. Minnesota has allocated $150 million for solar energy subsidies from 2014-2023, in addition to $11 million per year for wind and other renewable energy since the mid-1990s. Nor is the trend confined to left-leaning states. Kansas has allocated $150 million in subsidies to encourage wind and solar energy businesses. Mississippi doled out $173 million in subsidies to renewable energy firms in 2010 alone (p. 1939).

An argument can be made that the WTO rules on national treatment and TRIMs are obstacles to the capacity development of hydrocarbon-rich developing countries.

Chang (2003) contends that

> the WTO rules and other multilateral trade agreements should be rewritten in such a way that a more active use of infant industry promotion tools (e.g. tariffs, subsidies) is allowed. Allowing the developing countries to adopt the policies (and institutions) that are more suitable to their stages of development and other conditions they face will enable them to grow faster, as indeed they did during the 1960s and 1970s. This will benefit not only the developing countries but also the developed countries in the long run, as it will increase the trade and investment opportunities available to the developed countries in the developing countries. That the developed countries are not able to see this is the tragedy of our time (p. 29).

Notably, the Doha round of multinational trade negotiations stalled due to disagreements on how to address the problems developing countries face in implementing WTO agreements. Although the Doha round considered agriculture and services trade rather than hydrocarbon trade, it proposed a 2.5% reduction in the value of agricultural subsidies in all developed countries. European countries, and the US, despite being developed countries and major producers of various agricultural commodities, refused to reduce their agricultural subsidies. Subsequently, they demonstrated that they are willing to protect their inefficient producers (Amadeo, 2018). Therefore, prohibiting LCRs through TRIMs effectively "kicks away the ladder" for development for developing countries.

Political Economy of the Hydrocarbon Industry of Guyana and T&T

The political economics of the hydrocarbon industry is a critical issue for both Guyana and T&T. The following subsections will discuss the relevant issues in more detail.

Guyana

The Guyana-Suriname Basin (GSB) has emerged as a major hydrocarbon exploration frontier in recent years. The discovery of commercial, recoverable hydrocarbons in the Zaedyus well offshore French Guiana in 2010 and the Liza 1 well offshore Guyana in 2015 have significantly altered the perception of the basin's resource potential. The GSB is a sedimentary basin that spans the coastal area of French Guiana, Suriname, Guyana, and the eastern part of Venezuela (Antillean Arch), with most of it lying deep offshore (Bryan, 2021).

The United States Geological Survey (USGS) assessed the undiscovered conventional oil and gas resources within 31 geologic provinces along Central and South America and the Caribbean in 2001. The GSB emerged as the third-ranking province in terms of oil resources, with estimated undiscovered reserves of 13.6 billion barrels of oil and 32 trillion cubic feet of gas. However, recent discoveries by US oil major ExxonMobil suggest that the resource potential of the GSB could be much higher than previously estimated, with the current estimate standing at more than 18 billion barrels of oil equivalent (Bryan, 2021).

The geological similarities between the South American and African coastal areas have also played a significant role in attracting energy companies to explore the GSB offshore. The "Atlantic Mirror Theory" suggests that the South American and African continental shelves were once connected, and the geological structures on both sides of the Atlantic Ocean mirror each other. The Zaedyus well's discovery validated this theory, as it was drilled in a similar geological setting to Ghana's Jubilee field, which was discovered in 2007. However, subsequent appraisal wells offshore French Guiana were unsuccessful, indicating that the geology of the GSB is uneven (Bryan, 2021).

Notably, the hydrocarbon endowment of the GSB has revived the dispute between Venezuela and Guyana over the Essequibo region.[4] The dispute dates back to the 19th century and intensified in the 1960s when large-scale mineral deposits, including bauxite, gold, and diamonds, were discovered in the region. The dispute has led to tensions between the two countries, and there have been various incidents, including Venezuelan troops inundating the border areas in 1999 and seizing an oil exploration vessel operating in disputed waters claimed by both Venezuela and Guyana in 2013. The dispute was taken to the International Court of Justice (ICJ) in 2018, and in June 2020, the ICJ held a hearing on the matter, which Venezuela did not participate in, arguing that the ICJ did not have jurisdiction (ICJ, 2020). In September 2020, the United States announced that it would join Guyana on sea patrols in the area (Wilkins, 2020).

The PSC Guyana has with Exxon Mobil has room for improvement. The multinational oil company is allowed a cost recovery of 75% of the aggregate value of the oil. The remaining 25% is shared 50/50 between the GoG and the MNOC. Additionally, there is a 2% royalty on

[4] The GSB resides in the Essequibo region. The dispute is a border dispute regarding the exclusive economic zone (EEZ) of Guyana and Venezuela west of Guyana's Essequibo River.

the sale of the crude. Therefore, the effective tax for the GoG is only 14.5% of the value of crude oil (Bryan 2021; McLean et al., 2021).

Despite this, since oil exportation began in 2020, the GoG has earned huge oil rents. In fact, in 2020, Guyana posted the highest economic growth in the world at 43.5% despite the occurrence of the COVID-19 pandemic. In 2021, it continued to experience strong growth at 18.5% (Alleyne et al., 2022). However, as the Government of Guyana (GoG) increases its spending and borrowing to match its newfound oil wealth, it runs the risk of accumulating huge debt. This highlights the need for cautionary spending and adherence to the Hartwick Rule as noted by Hosein et al. (2018), and Charles (2020).

In the case of Guyana, the discovery of significant oil reserves has the potential to transform the country's economy, but it also presents a range of challenges. One of the most pressing issues is ensuring that the country maximizes the value it can generate from the oil industry. This will require strong governance and local content frameworks.

T&T

Historically, only T&T was a hydrocarbon producer and exporter in the Caribbean Community (CARICOM). Cuba and Suriname were believed to contain some hydrocarbon deposits. Curacao, Aruba, and St. Croix also operated oil refineries.

The first oil well in T&T was drilled in 1857 by the Merriniac Oil Company (Bissessar & Hosein, 2001). Commercial oil production in T&T began in 1908. Exports of crude oil began in 1910. Its first refinery was built in 1912 (Bryan, 2021).

By 1913, two new companies, United British Oilfields (UBOT) and Trinidad Leaseholds (TLL) a subsidiary of Shell, started to drill and initiated the commercialization of oil so that by 1919 about 1.9 million barrels were produced annually (Premdas & Ragoonath, 2020). Employment in the oil industry had grown from 801 persons in 1912 to 8,280 in 1925, to 8,000 in 1939 to 15,000 in 1944. Workers left the sugar industry to seek employment in the oil sector (Bryan, 2021).

Natural gas found associated with oil was either flared or reinjected into wells as a form of tertiary recovery. The commercial use of natural gas in T&T began in the electricity generation from Trinidad and Tobago Electricity Commission (T&TEC) Penal Power Station in 1953. This was eventually followed by the use of natural gas as a feedstock for cement manufacturing by Trinidad Cement Limited (TCL), and fertilizer production by Federation Chemical Limited (Fedchem) (Jobity & Pantor, 1995; Punnett & John-Toney, 2001).

Notably, before gaining independence in 1962, the role of the state in the hydrocarbon industry was minimal. When T&T was a British colony, the state created laws and provided basic protection and security. However, the MNOCs controlled the oil industry locally. After gaining independence, the newly formed government was interested in leveraging the hydrocarbon sector to propel the development of the country. Natural gas was seen as a potential sector to assist in the economic development of the economy.

Several commercial finds of natural gas were also found in the 1960s and the 1970s in the South Eastern Galeota field, the South Eastern and the North Eastern Coast of Trinidad (Pantin, 1988). This made natural gas industrialization more feasible for the government. Subsequently, the government took the lead in industrialization. This resulted in the development of several state-owned enterprises involved in business activity, including the National Energy Corporation of Trinidad and Tobago Limited (NEC), the Trinidad and Tobago Urea Company (TTUC), the Fertilizers of Trinidad and Tobago Limited (Fertrin), the Trinidad Nitrogen Co Ltd (Tringen), and the Iron and Steel Company of Trinidad and Tobago (ISCOTT). Unfortunately, several of these state-owned enterprises were poorly managed and incurred losses (Pantin, 1988).

Although the Government of the Republic of Trinidad and Tobago (GORTT) eventually privatized several of these enterprises, the government was instrumental in proving to the private sector the viability of the downstream natural gas sector.

Eventually, T&T entered into the liquefied natural gas (LNG) business, after Cabo LNG convinced the government about the project viability. A consortium of Amoco, British Gas, Cabot LNG, and the National Gas Company of Trinidad and Tobago (NGC) was used to develop Atlantic LNG, the project developer for the export of LNG from T&T. The first export of LNG from T&T occurred in 1999. Over the 1999 to 2008 period, LNG exports allowed T&T to enter an economic boom (Boopsingh & McGuire, 2014).

The boom came to an end as a result of several factors, including the global financial crisis and economic recession in 2008, the unexpected self-sufficiency of the US from the shale revolution, and the eventual decline in natural gas production in T&T.

Both the oil and natural gas industries experienced a decline in production in the 2010s. The refinery industry suffered a blow after the GORTT shut down its loss-making state-owned refining company in 2018. Natural gas curtailments have negatively affected downstream production and have resulted in the closure of several plants. Additionally, the state-owned company NGC incurred several lawsuits as it was not able to fill its natural gas contract obligations to several companies (OPM RTT, 2017).

While the natural gas industry was partially supported by the operationalization of the Juniper and Angeline fields in 2017 and 2019 respectively, there was weak drilling activity. The last major bid rounds for acreage occurred in 2014. There is no announced deep water drilling

offshore T&T. There was weak interest in the bid rounds in 2022. T&T is facing the reality that it is a mature oil producer, with over 100 years in the business. The geology in the offshore blocks is extremely complex, the deep water exploration is very risky, and the likelihood of success matching the GSB is low. Given this outlook, it would be rational for the GORTT to try to encourage development and economic activity by strengthening the local content policy framework, to extract more value from the existing hydrocarbon economic environment.

Recommendations for Guyana and T&T

From the document analysis of the case studies of successful local content policies in countries considered in this study, several recommendations can be made for Guyana and T&T. The lessons highlight the need for the development of partnerships to help build local capacity and to try to encourage local participation at all stages of the hydrocarbon value chain.

The hydrocarbon value chain is composed of three segments:

- upstream – exploration and production;
- midstream – transportation and processing; and
- downstream – marketing and distribution.

Generally, the foreign multinational companies operating in the hydrocarbon value chain in T&T, and Guyana, are vertically integrated, and can provide all the services that they require. Nevertheless, there is scope to outsource some of these services and functions to local stakeholders. This can be achieved through the implementation of a local content policy, which would allow local stakeholders to acquire a greater share of the value-added from the hydrocarbon value chain. This effectively strengthens the backward and forward linkages between the hydrocarbon sector and the other sectors of the economies. Table 3 provides a summary of the various opportunities.

Table 3

Opportunities in the Hydrocarbon Value Chain

Upstream (Exploration & Production)	Mid-stream (Refining)	Downstream (Sale of Final Product to Market)
Technical	Technical	Technical
Chemical Engineering	Chemical Engineering	
Mechanical Engineering	Mechanical Engineering	
Electrical Engineering	Electrical Engineering	
Instrumentation	Instrumentation	
Operations / Production	Operations / Production	
Piping Engineering	Piping Engineering	
Petroleum Engineering	Petroleum Engineering	

Process Engineering	Process Engineering	
Subsea Engineering		
QA / QC / Inspection		
Structural Engineering		
Field Telecommunications		
Wireline Field Operations		
Diving		
Underwater Welding		
Wells and Xmas Tree Engineering		
Process Engineering		
Project Controls		
Drilling		
Platform Fabrication		
Well Logging		
Geophysics		
Geochemistry		
Marine biology		
Mud Logging		
Hydrographic Surveying		
Aerial Surveying		
Semi-Technical	Semi-Technical	Semi-Technical
Economic Evaluation and Market Research	Economic Evaluation and Market Research	Economic Evaluation and Market Research
Marketing and Promotion	Marketing and Promotion	Marketing and Promotion
Legal	Legal	Legal
Health and Safety	Health and Safety	Health and Safety
Accounting	Accounting	Accounting
Tax Administration	Tax Administration	Tax Administration
Information Technology	Information Technology	Information Technology
Navigation		
Compliance		
Non-Technical		
Materials / Logistics / Stores	Materials / Logistics / Stores	Materials / Logistics / Stores
Tent and Equipment Rentals	Tent and Equipment Rentals	Tent and Equipment Rentals
Administration	Administration	Administration
Food and catering sales	Food and catering sales	Food and catering sales
Janitorial	Janitorial	Janitorial
Public Relations/ Communication	Public Relations/ Communication	Public Relations/ Communication

Purchasing	Purchasing	Purchasing
Security	Security	Security
Driving	Driving	Driving
		Hotel and Guest House Accommodation

Due to T&T's long history in the hydrocarbon industry, several people (workers) possess the technical skills to perform technical jobs. As Guyana is a new entrant to the hydrocarbon industry, many of the technical skills may be lacking at the onset. Nevertheless, local capacity can be built (in both T&T and Guyana) by the operators awarding contracts to local entrepreneurs, and encouraging the local entrepreneurs to form joint ventures with more competent foreign firms.

While this was practiced in Norway and allowed the country to build strong capabilities in various technical fields, the multinational operators are likely to be reluctant to voluntarily award contracts to local entrepreneurs with insufficient technical and financial capabilities. Given that both T&T and Guyana are democracies and are eager to attract foreign direct investment (FDI) to monetize their hydrocarbon resources, an adversarial approach will not be adopted by either government. Instead, a more feasible approach would be for the governments to mandate a minimum level of equity participation in specific technical projects. For example, if an operator is outsourcing work for underwater welding, the government can mandate that at least 5% local equity participation is held by the winning contractor. While 5% equity is relatively small, it ensures that locals will be involved in the project. This will provide an opportunity for local entrepreneurs to gain experience and develop competencies. Additionally, a LCR specified in this manner will not be inconsistent with TRIMs as it does not directly grant preference to local stakeholders over foreign stakeholders.

Semi-technical and non-technical activities can be performed by local stakeholders in T&T and Guyana. Therefore, to promote local content, local entrepreneurs should be the front-runners for this selection. T&T's PSCs already have requirements for operators to maximize their utilization of local goods and services as much as possible. Guyana's LCPL has similar requirements for the use of local goods and services. But these requirements are expressed more like requests of the governments rather than mandates. In other words, there is nothing that ensures the multinational operators try to use the local goods and services as much as possible. Additionally, in instances where desired local goods and services are not available, there is nothing in place to stimulate the production of these goods and services.

To facilitate the actual use of semi-technical and non-technical goods and services by the operators, the governments can either a) create a special purpose company or b) create a unit in a ministry to promote the use of the non-technical goods and services by the hydrocarbon operators. This special purpose company or unit will effectively be strengthening the backward and forward linkages to the hydrocarbon sector as it promotes these non-technical goods and services. Assistance can be provided to the local entrepreneurs producing the semi and non-

technical goods and services to access specialized training, market research, marketing strategies, business-to-business matchmaking and marketing, and networking. This can be complemented with the development of a business incubation programme that targets these semi and non-technical goods and services. Additionally, training and capacity building can also be undertaken with these local entrepreneurs to help them learn to export their services. This approach is also favorable as it will not violate the WTO's TRIMs.

For Guyana, another area that needs attention is educational skills development. The study of Ghana and Norway's local content policy experiences highlights the importance of educational development as a component of local content. Presently, T&T has several universities that offer degree programmes in aviation, nautical science, electrical, mechanical, industrial, process, utilities, energy systems, chemical, civil, and petroleum engineering. The National Energy Skills Center Centre (NESC), and the Youth Training and Employment Partnership Programme (YTEPP) also offer diplomas and short courses in technical vocational subjects. Perhaps, collaborations can be done between the post-secondary educational institutions in T&T and Guyana to help develop Guyana's educational capabilities. They can be provided regarding the curriculum content and methods of teaching. Moreover, collaborations should also be undertaken with the private sector to help craft programmes that suit the needs of the hydrocarbon industry.

The educational capacity building should be completed by the development of an apprenticeship programme. This should be streamlined to ensure that the educational training of the graduates matches their on-the-job training (OJT). For example, a graduate of industrial engineering should be matched to on-the-job training that intensely utilizes their industrial engineering skills rather than being allocated to an OJT programme to sit and do nothing. This can be beneficial to both countries.

Notably, as the hydrocarbon industry is capital-intensive and tends to employ a low percentage of the labor force, a large percentage of the OJT graduates could find themselves without technical employment at the end of the apprenticeship programme. The potential unemployment can be avoided through the development of a business incubation programme for technical graduates. The graduates could be trained to develop energy services businesses, which can support the local hydrocarbon industry. As capacity is developed, entrepreneurs can consider exporting their services. This approach is highly desirable for countries as it will produce graduate technical entrepreneurs, which in turn can help generate more income in their respective countries.

Conclusion

Hydrocarbon resources can generate large rents, which in turn can catapult the development of countries. Unfortunately, if a country does not have a proper policy framework, a lot of the

rents can escape the grasp of the local stakeholders as the multinational operators are likely to have the capacity to undertake all the functions within the hydrocarbon value chain.

Developing effective policies to capture value from the hydrocarbon value chain requires a solid understanding of the economics of local content. Well-crafted local content policies can facilitate the creation of backward linkages, which encourages the sourcing of input from the local economy, as well as forward linkages which develop new products from the hydrocarbon inputs. Local content policies can also develop local capacity through technology transfer, creating local employment opportunities, and increasing local ownership and control.

T&T and Guyana are blessed to be endowed with commercial reserves of hydrocarbons. However, the countries' capture of their fair share of the hydrocarbon rents will not automatically occur. The governments of both T&T and Guyana recognized this and have developed local content policies. While both countries' LCPs inherently share similar goals of maximizing the value captured by their local stakeholders, in the absence of actionable local content requirements and penalties, there is nothing to force the operators to comply with the objectives of the LCP.

This deficiency was partially addressed by T&T with its introduction of LCRs in the PSCs in 2006. However, there is still scope to strengthen the backward and forward linkages to the hydrocarbon sector. Caution must be exercised in introducing local content requirements as they violate the WTO's rules on national treatment and non-discrimination. The experience of several countries, such as Nigeria, Norway, Ghana, and Botswana reflects the potential of partnerships. Indeed, the experience of TOFCO in T&T demonstrates the effectiveness of partnerships in building local capacity.

Therefore, this study argues in favour of the development of joint ventures to facilitate knowledge and skill spillover as well as technology transfer. Furthermore, this study argues in favor of the use of partnerships between the private sector and local academic institutions to help build local capacity. Once the local content policy is implemented properly, the hydrocarbon sector will not be a damnation for countries. Instead, it can be used as a stepping stone to usher in diversification and economic development.

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