Strategic Significance of National Oil Companies: Lessons for Tanzania

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ABSTRACT

This essay examines the genesis of national oil companies (NOCs) and the political economy underpinning the diverse forms in which they are structured and operate. It also examines how they contribute to the development needs of the countries that have established them. The essay draws mainly from a desk review of relevant literature, institutional records and interviews from selected knowledgeable informants, and it aims to promote informed dialogue on this subject that has caught the attention of stakeholders in Tanzania in recent years following the discovery of a substantial amount of natural gas in the deep sea. The underlying proposition is that the benefits of hydrocarbon to the country can be maximized when a NOC exists, but it must operate within a robust institutional framework. As the case studies demonstrate, the robustness of the institutional framework, in turn, depends on the historical trajectory, broader institutional landscape and political economy underpinning the country's development path. The authors argue that the Tanzanian NOC has vast potential for contributing to economic transformation in the country given the vast hydrocarbon resources, provided that the proper institutional and policy conditions are put in place.

1.0 INTRODUCTION

Recent discoveries of large deposits of natural gas in Tanzania have stimulated not only increased flow of foreign direct investments (FDI) but also domestic debates in policy and civil society forums on the oil and gas subsector. The issues at the centre of the debate include governance of these natural resources; economic and social benefits to the country and to local communities; utilization of natural gas for promoting domestic industries and for substitution of other sources of energy such as charcoal; and structure of ownership and participation. Different views exist among stakeholders. Some stakeholders suggest, for example, that the state must own these resources and participate more directly in the industry. Others suggest that the activities be left in the domain of the private sector, mainly the international oil companies (IOCs). The former views are grounded on the precedence drawn from experiences in the mining sector, where concessions with international mining companies are said to have limited benefits to Tanzanians. The latter views are predicated on the technological advantage and financial capital of IOCs relative to state-owned companies, and the often unwarranted arguments for limiting engagement of the state to creating conditions that allow markets to function well and not engaging in commercial activities. Another argument related to this view is the nature of risks involved in the exploration of hydrocarbons, often in relation to the relative capacity to absorb risk.

Such differences in opinion reflect the different levels of understanding of the history and fundamentals of the oil and gas industry. Naturally, it is not expected that people with different professional backgrounds and engaged in different economic activities will have the same view of the industry. The diversity of views emanating from these differences, however, warrants a closer look at the motives and dispositions behind different points of view. Some countries with massive wealth in hydrocarbons have chosen to use most of it for internal economic demands, in the spirit of what Collier and Venables (2011) term ‘resource nationalism’. Yet, others have chosen to invest in asset accumulation, including foreign assets. The former choice is most likely to be favoured in developing countries that are dependent on a narrow range of primary commodity exports. The case may also apply to countries at an advanced stage of development that succumb to populist pressures from strong interest groups.

Eifert et al. (2003) and Collier and Venables (2011) discuss in detail how different settings in the institutions of governance and decision-making yielded different outcomes, giving the examples of Malaysia, Chile, Norway, and Indonesia as countries that escaped the dangers of populist spending. The diversity of views provides the potential for the emergence of pressure groups demanding transparency and accountability to ensure that natural resources benefit all citizens of the country. These pressure groups can take the form of civil society organizations, political parties, and even different arms of government, namely the parliament versus the executive, or the local government authority versus the central government. Such opportunities, however, can generate positive results only if all stakeholders are well informed and their interests have legitimate intrinsic value. Otherwise, pressure can lead to conflict, potentially undermining the optimization of the resource extraction process itself and the contribution of those resources to socio-economic transformation.

Resource nationalism, therefore, demands careful and proactive design of governance and economic management. Sound governance and economic management provide lasting effects and a more stable environment for sustainable national development. This must be underpinned by a robust framework for promoting inclusiveness and a political economy that is capable of balancing populist pressures on one hand, and spearheading notable inclusive development on the other. The term 'political economy' derives from its contemporary meaning and application. When invented in the eighteenth century, the term was used in studying the economies of states or polities. Today, political economy has come to embody the study and discourse of economic policy and how political forces affect the choice of economic policies, their distributional outcomes, and institutions of governance.[1]

The relevant elements of political economy in the context of resource extraction, or more specifically the oil and gas industry, concern decisions on revenue utilization and management, types of fiscal regimes, and institutional arrangements that ultimately dictate the contribution of the sector to the nation's economic development. For example, it as political economy in the sense of institutional setup, constitutional powers and the practice of governance that produced different outcomes in the

[1] See Alesina (2007)

management of oil revenues between Chile, Malaysia, and Nigeria.[2] In Chile, for example, the parliament provided safeguards against possible government abuse of oil revenues, while in Malaysia, the executive branch, under the prime minister, provided safeguards against the populist spending potential of the parliament. In Nigeria, relatively more independent states exercise control over some oil revenues that are not subject to the control of the federal government, and none of the states had shown appetite for prudent accumulation of assets in place of recurrent spending and hegemonic influence.[3] Decisions to establish national oil companies (NOCs), the extent of their mandates and autonomy, their structure, and their contribution to development objectives vary by country, driven primarily by differences in political economy.

This paper sets out to examine the genesis of NOCs and how these institutions have contributed to the development needs of countries that have established them. The essay draws largely from a desk review of relevant literature, institutional records and interviews from some knowledgeable informants rather than from rigorous analysis of data. It does, however, serve to enhance dialogue on this subject and to locate the evolution of the Tanzanian NOC within a broader industry context, drawing some lessons in the process. The key proposition underlying this essay is that the benefits of hydrocarbon to the country can be maximized when both the NOC and operating institutional framework are robust.

The paper is structured as follows: Section 2 reviews the factors behind the growth and expansion of NOCs globally. Section 3 examines the basic features of five selected NOCs, and presents an overview of the Tanzanian oil and gas industry and the evolution of its national oil company. Section 4 discusses fundamental aspects of competition and collaboration reflected in NOCs' global ambitions, and section 5 draws implications and lessons for Tanzania with reference to Tanzania Petroleum Development Company (TPDC) as a national oil company.

[2] Collier and Venables (2011) provide a detailed account comparing these countries.
[3] The Dutch experience vividly demonstrates the dangers of a lack of safeguards, see e.g. Van Eerd (2010).

2.0. GROWTH AND EXPANSION OF NOCs

2.1. Do national oil companies matter for national development?

The formation of NOCs is the most direct form of state participation in the ownership and development of hydrocarbon resources. McPherson (2008) outlines the three forms of state participation as full equity participation, carried equity participation and production sharing. As McPherson observes, the most common kind of direct participation has been through NOCs, and as will be seen in subsequent discussions, different combinations of these three forms are undertaken through NOCs as principal agents of most governments (see also Pirog 2007; Tordo 2011). Some governments, however, apply different forms of direct participation, as is the case with Norway's State Direct Financial Interest (SDFI) and the Netherlands' non-operating participation through Energie Beheer Nederland B.V (EBN).

Whatever the form, resource nationalism appears to be central to state participation, which emanates from the desire of governments to assert control over natural resource assets for strategic and economic reasons. While the formation of NOCs began in the early years of the twentieth century, as evidenced by the founding of Argentina's Yacimientos Petroliferos Fiscales (YFP) in 1922 and Mexico's Petroleos Mexicanos (PEMEX) in 1938, a significant move toward resource nationalism began in the 1970s, manifested by widespread establishment of NOCs, nationalization of hydrocarbon assets from international oil companies (IOCs), and the formation of government cartels, most notably the Organization of Petroleum Exporting Countries (OPEC). By and large, the creation of NOCs was partly associated with, and was a host country response to, frustration with the conduct and actions of IOCs, such as unfair deals and 'unreasonable' profits (see e.g. Mommer 2000; Parra 2004; Guzman et al. 2006; Marcel and Mitchell 2006; Stiglitz 2007; Kaushal 2009; Ward 2009). Following this trend, ownership and control of the global hydrocarbon industry, measured by proven reserves, shifted from IOCs (dominant before 1970) to NOCs. Bukurura and Mmari (2014) indicate that, of the top 25 oil companies in the world as measured by production in Barrel of Oil Equivalent per Day (BOED), 16 are NOCs. While some countries resorted to outright nationalization, such as Kuwait and

Venezuela, other countries applied fiscal regimes and legislation to award concessions and licencing rights to their NOCs, as was the case with Indonesia, Malaysia and Norway. The Netherlands did not nationalize the assets of IOCs, but vested an automatic right to 40% of hydrocarbon concessions with the government through state-owned EBN. Even countries that have traditionally preferred private oil companies over NOCs, like the United States, acknowledged the concerns that gave rise to NOCs. For example, the 1977 memorandum of the Chairman of the Senate Committee on Energy and Natural Resources on the study of the British National Oil Corporation carried out by Edward Krapels reads:

> There is no simple explanation for the rise of the government oil company. It seem clear, however, that strong elements of economic and political nationalism, coupled with concern over the role of foreign controlled oil enterprises, have been major factors in many countries. (Krapels 1977, p. III)

The chairman went on to note that, although no serious consideration had been given to the establishment of an NOC in the United States, the concept might be more relevant at present than it had been in the past.

While the 1990s and early 2000s witnessed market reforms and liberalization across many sectors, there has not been much evidence of a reversal in the trend of resource nationalism. In Norway, for example, the NOC Statoil had its assets stripped, but a new state entity, Petoro, was formed to manage the SDFI in hydrocarbons. In addition, despite the issuance of Statoil shares to the public through the New York and Oslo's stock exchanges, the state still owns the majority stake. In 2007, Venezuela's government directed IOCs to give up their significant assets in the prolific Orinoco River Basin to its NOC or risk complete nationalization. Such pressures have also been reported in recent years in Russia, where IOCs were ordered to give up some of their gas interests to the Russian NOC, Gazprom, and in Bolivia's nationalization. What has been seen from the 1990s to date is what James (2011) refers to as the third wave in the historical trend of NOCs' increasing control of hydrocarbon reserves, during which NOCs are expanding their operational and financial capabilities. Figure 1 summarizes the trend toward increasing resource nationalism in three waves (see James 2011, p. 10).

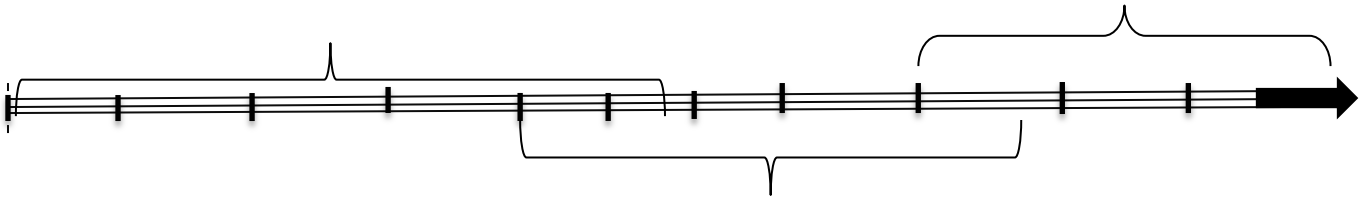
Figure 1: Summary of trends of NOC roles and influence

Third Wave: expansion of operational and financial NOCs (1990s–today)

- 2008: IOCs hold 6–8% of world reserves (O&G/2/2/09)
- IOCs driven toward technology, project delivery, capital, downstream roles
- NOCs active operators at home and competing developers abroad

First Wave: Prevalence of IOCS
(1900s–1960s)

- 1970: IOCs hold 85% of world reserves (O&G/2/2/09)



Second Wave: resource sovereignty of governments
(1950s–1980s)

- Government control of reserves and production
- IOCs driven toward production-sharing roles
- NOCs given carry, production-sharing roles in some fields, custodial roles in others

This proliferation of NOCs and seemingly strong support for resource nationalism justify a short review of possible explanations for this trend. McPherson (2008) and the Baker Institute for Public Policy (Myers, 2007) examine the drivers behind government decisions around the world to establish NOCs, and in effect, exercise more control over hydrocarbons. These are grouped into two broad categories, namely, commercial objectives and non-commercial objectives.

Although the first category appears rather straightforward, it generates some debate, particularly in relation to the choice of fiscal regime. Proponents of a royalty or tax concession regime view it to be similar to the production-sharing agreement (PSA) regime in terms of granting revenue-generating capacity to the state. Proponents of the PSA regime, on the other hand, contend that PSAs are more advantageous than concessions in maximizing resource rents, especially in periods of rising prices. While this debate is not intended here, it suffices to point out that the global trend

associated with the period of growing resource nationalism was accompanied by increasing preference toward PSAs. Thus, many NOCs are established to maximize revenue for the state. In addition to taxes, royalties and other fees, the establishment of NOCs that engage directly in upstream production and other value-addition activities across the value chain enhances their revenue capture by adding dividends to the stream of revenue flows to the treasury. The rents associated with high prices of oil and prolific resources in low-cost producing areas are primary drivers of such commercial objectives.

As McPherson (2008) shows, this objective – and the extent to which commercial objectives are pursued differs by country – is influenced by differences in macroeconomic management framework; fiscal capacity; efficiency of the NOCs in question; and institutional capacity. Macroeconomic management is an important consideration given the potential consequences of large flows of revenues directed at expanded social spending or investments beyond the existing national capacity to manage. The growth of non-oil sectors is imperative to avoiding the Dutch disease that can potentially lead to the collapse of the economy. The integrity of the national budgetary process, transparency and accountability are key to securing beneficial commercial objectives. Efficiency of NOCs is equally important in ensuring the achievement of commercial objectives. This is dependent on the existence of a well-designed institutional framework of governance that guarantees operational autonomy on sound business practice, transparency and accountability, and a credible fiscal regime. A credible fiscal regime, according to Collier and Venables (2011), is one that is designed to anticipate changes in circumstances rather than on the sole requirements of the legal process. A combination of these factors enables the state capacity to be built in ways that enhance design of good fiscal regimes and its effective application.

Non-commercial strategic objectives, on the other hand, are more difficult to generalize, as variations across countries are much larger. The drivers of non-commercial objectives differ markedly as well; some are more natural, such as geological conditions and geographical location, and some result from evolving technology and the geopolitical landscape (see e.g. Pirog 2007). McPherson (2008) identifies four non-economic objectives: NOCs as symbols of national sovereignty; regulation of private-sector practice; technology transfer and capacity building; and

integrated development in the non-oil sectors. With the exception of the first, however, these objectives seem related to the economy, especially in developing, resource-rich countries, and perhaps are not best described as non-economic. The important consideration is the need for careful balance between commercial objectives and other strategic objectives, so that NOCs are able to sustain global competitiveness and ensure sustained production. This is difficult to achieve in practice, but as will be seen, there are examples that show it is possible given certain conditions.

The regulatory function of the state is undertaken more effectively if state capacity exists. As Collier and Venables (2011) put it, NOCs can play a key role in strengthening industry knowledge and capacity necessary to the design of a good fiscal regime, and in effect, the ability to regulate the industry effectively. Regulation in the oil and gas industry ranges from technical to economic to environmental, and demands deep understanding of complex geological and engineering processes, linkages across upstream, midstream and downstream segments, and global energy markets. The engagement of NOCs directly in these industry spheres allows national staff to build expertise that regulatory agencies and the government can draw upon for more effective regulation. In some instances, NOCs have undertaken regulatory functions alongside commercial activities, but this has changed in many countries, with a few exceptions such as Malaysia, discussed later in the paper.

As in many other industries, technological development and managerial capacity are necessary ingredients for competitiveness in the oil and gas industry. This is especially so in the current environment of stiff competition for hydrocarbon markets, increasing geological challenges associated with increasing depth of hydrocarbon deposits, and the increasing importance of non-conventional oils and natural gas found in shale rocks. IOCs have accumulated immense technical knowledge and technological capability stemming from several decades of industry operation and innovation. Transfer of this knowledge through generic training in colleges and employment of local staff by IOCs is not sufficient to create the critical mass of skills and technology within resource-rich countries without proactive engagement of the state, mainly through the NOC. The examples of Norway, Malaysia and Brazil discussed later in this paper show the role of NOCs in this respect.

Integrated economic development through stronger linkages between the oil and non-oil sectors is one of the fundamental pillars of success in resource-rich countries. It is not surprising, therefore, that the goals of many NOCs around the world include the use of hydrocarbon resources for national economic development. NOCs contribute to this objective through a variety of ways. Most notable are local content, job creation, financing of strategic economic infrastructure and income distribution. Many NOCs introduce local content rules that must be applicable in their joint ventures with IOCs; these are intended to to stimulate the local supply industry, employ nationals in the oil value chain and associated industries, and supply affordable and reliable energy that promotes industrial development (see e.g. Kanervisto & Pereira 2013). Again, the examples of Norway, Malaysia and Brazil, among others, demonstrate this point.

2.2. The Tanzania National Oil Company: Multiple objectives too?

The Tanzania Petroleum Development Corporation (TPDC) is a national oil company established in 1969 under the Public Corporations Act 17 (Government Order No.140). It became operational in 1974. It was established to promote the development of the petroleum industry across all segments of the value chain. Prior to the current PSA regime, Tanzania operated its oil and gas industry under the concession regime, guided by the Mining (Mineral Oil) Ordinance of 1958 and the Mining Act of 1979 until 1980, when the Petroleum (Exploration and Production) Act, 1980 was enacted. Large acreages were awarded to the IOCs, primarily British Petroleum (BP) and Shell International Oil Company (Shell), which were awarded exploration rights for the entire coastal basins in 1950. The concession was relinquished in 1964. This period was associated with surplus oil in the world and low oil prices. The second concession was awarded to Azienda Generali Italiana Petroli (AGIP) in 1969, which was subsequently joined by the American Oil Company (AMOCO). The AGIP/AMOCO concession was relinquished in early 1982. Early discoveries of natural gas in Songo Songo and Mnazi Bay were made during this period but were regarded to be of less commercial value.

Under the production-sharing agreement (PSA) regime that followed the 1980 Act, TPDC was required to participate in exploration work, although IOCs retained all exploration risks. In case of any discovery of resources, profits are shared between

the IOCs and the state, in a regime that allows the exploration and development costs to be recovered gradually at an agreed rate. Since 1980, 35 PSAs have been signed, and 24 were still active at the end of 2015.

The relinquishment of the Songo Songo and Mnazi Bay gas fields by Agip was the first test that serves to explain why NOCs are important for domestic industry development. TPDC decided to carry out further exploration work on the two fields and drilled five appraisal wells in Songo Songo at a cost of USD 100 million, leading to reserves estimates at around 1tcf. This led to development work at the Songo Songo gas fields, which included the construction of a gas-processing facility and a 232-kilometre natural gas pipeline transporting gas to Dar es Salaam. Commercial production was commissioned in July 2004. The Mnazi Bay field development was carried out under the PSA with Artumas Energy in 2001, leading to the installation of a gas-processing facility in the Mnazi Bay area and the construction of a 27-km pipeline to transport gas to Mtwara. Commercial production of the Mnazi Bay gas field started in 2006.

TPDC's work was not limited to the two onshore fields. It undertook exploration work that included acquisition of seismic data in other areas, both onshore and offshore, in order to promote open acreage. Between 1999 and 2000, TPDC conducted a massive data-acquisition campaign that produced 2D deep offshore data in the Indian Ocean from the Kenyan border south to Mozambique. The data have attracted significant interest from players in the global oil and gas industry and revealed geological information about the deep offshore area, leading to discoveries in the existing large reserves in the deep sea. Clearly, therefore, the successful discoveries of today are strongly linked to the deliberate efforts of TPDC as a NOC to pursue upstream activities, despite the difficulties in the operating environment that followed the petroleum sector reforms of the mid-1990s.

In the midstream and downstream segments of the value chain, TPDC engaged actively by importing crude oil beginning in 1977, processed locally at the TIPER refinery. This move was prompted by an oil embargo imposed by the Middle East oil-producing countries, which made it difficult for IOC importers to fulfil national oil needs. Further, a study conducted by UNIDO in 1982 revealed that as a result of relatively small oil consignments imported by individual companies, high freight charges and associated overheads had an adverse impact on the economy. The

government then directed TPDC to take over the bulk importation of refined petroleum products in 1983 and distribute the same to oil-marketing companies. This was a strategic use of an NOC to ensure energy security that may have been triggered by geopolitical considerations, among others.

The engagement of TPDC in the midstream and downstream activities enabled it to implement other value-addition industrial projects and production of by-products. These included the Lube Oil Blending Plant, the Bitumen Plant and the Songo Songo gas-to-electricity project. In addition, the NOC was financially strong and did not rely on the treasury to finance its operations and development projects, including those in the upstream.

It was the reforms that started in 1996, following World Bank and International Monetary Fund advice that significantly reduced TPDC's scope of operations. One aspect of these reforms was the stripping of TPDC of its commercial activities. TPDC continued with exploration and production roles, which were to be funded from government subsidies. These reforms, however, were implemented rather hastily, without putting in place a robust regulatory framework and carefully considering its consequences. In the upstream, the exploration capacity of TPDC declined dramatically due to limited financial and human resources after the termination of its own sources of funding and the reduction of its staff from over 260 to 65. Its functions were then biased towards regulation and monitoring, along with its role as a licence holder for all PSAs. In the downstream, the refinery was closed and importation of petroleum products became haphazard and inefficient, leading to revenue losses due to weak data capture, dumping behaviours, and collusion among oil-trading companies. The current system reverted to the bulky procurement once undertaken by TPDC and has led to improved stability in the domestic supply and pricing regulated by the Energy and Water Utilities Regulatory Agency (EWURA). However, significant local value-addition industries once promoted by TPDC, including petroleum refining, disappeared.[4]

Some recent industry reforms recognize the importance of maintaining the NOC as a commercial entity, which gives it the ability to perform other strategic and economic functions. The potential conflicts of interest and inefficiency that may result from lack

[4] TPDC of the 1980s must be understood in the broader context of state-owned enterprises at the time; see e.g. World Bank 1988.

of clarity and boundaries between regulatory functions and commercial operations will be resolved when this separation of functions becomes effective as a result of the enactment of Petroleum Act of 2015 that established a separate upstream regulatory authority. While it is too early to assess the outcomes of these recent reforms and corporate restructuring, they reflect the contemporary direction of reforms in the emerging resource-rich countries and the best practices from successful country experiences. The next section discusses experiences from selected countries.

3.0. SELECTED CASE STUDIES OF NOCs

There are more than 100 national oil companies worldwide, and more than 30 in Africa alone (see e.g. McPherson 2003 and PwC 2014). This section provides a brief discussion of the experiences of five NOCs selected from countries with different histories and political economies. Of these, two are in Africa (Sonatrach and the Nigerian National Petroleum Corporation (NNPC)), one is in Latin America (Petrobras), one is in northern Europe (Statoil), and one is in Asia (Petronas). Petrobras and Sonatrach were established fairly early, before the wave of more radical resource nationalism in the 1970s, while the remaining three were all established in the 1970s. In discussing these cases, attention is placed on five areas: grounds for establishment; ownership structure; contributions to local content development; economic linkages and multipliers; and roles in technology transfer.

3.1. *Petrobras* (Brazil)

Petrobras is among the oldest NOCs, having been established in 1953. As Goldstein (2010) writes, Petrobas was established for both commercial and non-commercial objectives. Key non-commercial objectives were employment generation, price and overall control in the hydrocarbon sector, and promotion of industrial development. Since its establishment in 1953, it remained firmly under the 100% ownership of the Brazilian government until the year 2000, when the initial public offering (IPO) allowed institutional investors and more than 400,000 individuals to own stakes. It is principally a commercial oil and gas company, regulated by the National Petroleum Agency and under the policy oversight of the National Council of Energy Policy.

Throughout its existence, Petrobras has played a key role in the industrial development of Brazil. The petrochemical industries were established to add value to petroleum products, and heavy machinery and equipment industries were developed to serve the domestic supplier and service industries that emerged to serve the Brazilian oil and gas industry. Heavy investment in the downstream industries by Petrobras brought about significant opportunities for local content development and sectoral linkages, with significant multiplier effects. Iron and steel production, automobile assembly, petroleum processing, chemical production and cement

making are among the major industries in Brazil (Nations Encyclopedia 2015). While vast export earnings from coffee supported the industrialization process under its import-substitution industrialization strategy from the late nineteenth century, as Aldrighi and Colistete (2013) observe, rapid adoption of foreign industrial technology and growth acceleration occurred in the second half of the twentieth century, a period associated with intensified activities in the oil and gas industry and investments in downstream industries.

Over the years, Petrobras invested in knowledge networks, with IOCs as partners, to overcome challenging geology, particularly the depth of the sea, high temperatures and the presence of heavy crude. The company made heavy investments in technology, research and development, and established a reputable research centre as early as 1966. According to Goldstein (2010), Petrobras allocated 15% of its gross receipts to research and development (see also De Oliveira 2011).

3.2. Sonatrach (Algeria)

Sonatrach is an Algerian NOC founded in 1963. It was established to overcome the legacy of political and economic backwardness attributed to the colonial power (Entelis 1999). Thus, the independent government of Algeria sought to use hydrocarbons as means to exert state control over the national economy and to develop the economic and social infrastructure. While exploitation of hydrocarbons had commenced before Sonatrach was established, it was undertaken mainly by IOCs until nationalization in 1971 shifted control of resources to an NOC. Sonatrach's majority stake in projects gave it about an 80% share of Algerian hydrocarbon production. Sonatrach also played a direct role in regulation before the Hydrocarbon Law of 2005 established the Hydrocarbon Regulatory Authority (HRA) and the National Agency for the Development of Hydrocarbon Resources (ALNAFT). The former is in charge of downstream activities and the latter, of upstream activities.

In order to build its capability and enhance local content, Sonatrach engaged in significant joint operations in oil and gas installations, co-owned key infrastructure, and promoted strong downstream sector investment. Sonatrach's activities are closely linked with other sectors in the economy through the provision of affordable energy and also generating revenue that is invested in the development of other

industries desired by the state. Algeria is among the top three producers in Africa and the largest exporter of natural gas to Europe. According to Entelis (1999), the Algerian state provided heavy subsidy for domestic consumption, averaging 10.5% of GDP, and nearly 99% of the population was connected with electricity. While Sonatrach and the hydrocarbon sector contribute significantly to the Algerian economy, it also poses some risks due to its excessive dependency. The World Bank (2015) estimates that hydrocarbon accounts for a third of GDP and 98% of export earnings.

In terms of technological development and national capacity, Sonatrach has developed significant in-house capability through partnership with IOCs. Its early engagement in the Liquified Natural Gas (LNG) export since 1964 and strong emphasis on mastering oil and gas technology have helped to reduce its dependency on experts, creating in the process a large pool of skilled professionals in Algeria, an important aspect of local content enhancement.

3.3. Statoil (Norway)

Statoil is a Norwegian NOC established in 1972. It remained 100% state-owned until 2001 when partial privatization through IPO allowed individuals and institutions part ownership. Thurber and Istad (2010) provide a detailed account of the evolution of Statoil since its establishment (see also Leskinen, Berken, Razafinjatovo and Garcia, 2012). Statoil was established as a state entity for managing petroleum resources. Prior to the founding of Statoil, IOCs were major operators, led by ConocoPhillips, an American company that made the first commercial discovery on the Norwegian continental shelf in 1969. The first Norwegian firm to enter the oil business was Norsk Hydo, in which the Norwegian government had stake. Norsk Hydro went into partnership with Italian and French oil companies to form the Petronord joint venture, which engaged in upstream activities on the continental shelf.

During the early period of oil exploration, there were no laws or regulations, and most industry activities were managed under the Ministry of Industry. A decree was issued in 1965 that provided for some licencing guidelines, and further work by the Industry Committee of Storting (parliament) issued ten principles that guided the industry until

a formal law was enacted in 1985, and subsequently the comprehensive Norwegian Petroleum Act 29 of 1996. These principles are commonly referred to as “the Ten Oil Commandments”, also referred to in Bukurura and Mmari (2014: Appendix 1). Statoil, which in 2007 merged with Norsk Hydro, operated with special advantages in licencing and access to acreage during the initial years, but this preferential treatment was shelved in the mid-1980s when new legislation was enacted that created distance between the commercial oil company and the government. This separation of roles was viewed as necessary to avoid conflicts of interest and to enhance competitiveness.

While the industry operated without a formal petroleum law until 1985, it was grounded on the fundamental pillars of clear and separate roles for each relevant entity. The Ministry of Industry was responsible for policy making and licencing, until this role was transferred to the Ministry of Petroleum and Energy formed in 1978.. The Minister was also responsible for exercising control over Statoil on behalf of the state and an enabler of oversight through the parliament. The maturity of the institutions of democratic governance allowed transparent and objective control of the industry for the common good. Parliamentary oversight includes the issuing of concession licenses by the Council of State and approval of all plans for development and operations after technical scrutiny by the Norwegian Petroleum Department (NPD). The NPD is responsible for technical and economic regulations and provides advice to the Ministry. Statoil became increasingly focused on commercial operations and its arm’s-length relationship with the government became more apparent over time. Its governing board is independent, and as a general rule, no politician or a civil servant is allowed to serve on Statoil’s board. Direct government involvement through the boards of state companies was banned in 1962 following an accident involving the state mining company, on whose board the minister of industry sat, that was blamed on government negligence (see e.g. Gordon and Stenvoll 2007; Thurber and Istad, 2010; Musacchio and Lazzarini 2012).

It is worth noting that the oil and gas industry structure in Norway changed gradually as it grew in terms of volume of operations, technical and managerial capability, and legal and regulatory expertise. As Norway operates on the basis of a royalty/taxation or concessions fiscal regime, the primary and direct sources of government revenue

from petroleum were the petroleum tax and royalty, and subsequently the dividends from Statoil. From the start of the oil operations, the fiscal regime was broadened to include both taxation and revenue management. The marginal tax rate is 78%, which is composed of a 28% corporate tax and 50% special oil profit tax. In 1981, a special Oil Taxation Office (OTO) was established under the Ministry of Finance to deal exclusively with oil and gas taxation, in recognition of the size of revenues and the complexity of industry and international transactions. In order to maximize government take, in 1985 the Norwegian government transferred some of Statoil's assets to the State Direct Financial Interest (SDFI), initially managed by Statoil on behalf of the state but subsequently managed by a separate entity, Petoro AS. At the time of the establishment of Petoro in 2001, the state also formed GASSCO AS as an operator of all oil and gas transport infrastructure from the Norwegian continental shelf.

Statoil played significant roles with respect to local content in Norway. Under its long-term industry development philosophy and orientation, it engaged very effectively with domestic service suppliers, thanks to the existing technological and managerial capabilities in other industries such as fishing, hydro energy and shipbuilding, which helped to build a strong domestic service-supplier base. As Thurber and Istad (2010) observe, local content development was given priority despite implications such as cost overruns and schedule delays, signifying a deliberate trade-off between short-run profits and long-term industry development. Its upstream engagement was an important enabler of local content, after it assumed the role of an operators in 1981, just a few years of its establishment and when it was granted withwhat Thurber and Istad (2010) refer to as 'golden' block.

The linkage with other sectors is visible through its linkage with the domestic technology and industrial sectors, an important base for the domestic supplier and service industries. As petroleum revenue as a share of the state's revenue increased, it was considered prudent to manage these revenues in ways that would not adversely affect other sectors of the economy. As a result, a decision was made to establish a Government Petroleum Fund in 1990 (it became the Government Pension Fund in 2006). This is a sovereign wealth fund invested outside Norway, and the use of returns from this fund is guided by a strict fiscal action rule that has

served to ensure a stable macroeconomic environment conducive to economic stability and growth.

3.4. Petronas (Malaysia)

Petronas, currently one of the largest 25 oil companies in the world as measured by production and hydrocarbon reserves, is a Malaysian NOC that was formed in 1974 under the Petroleum Development Act no. 144. Although oil concessions had begun in early 1900 with the Anglo-Saxon Petroleum Company followed by other dominant players, mainly Shell, Esso[5] and Conoco (Von der Mehden and Troner 2007), the 1970s oil crises and emerging resource nationalism triggered the direct involvement of the Malaysian government in the oil and gas industry. It was established following the New Economic Policy of 1973 that sought to exercise state control of the modern sector and to provide greater opportunities to the Malay people. It was vested with complete ownership and control of the petroleum resources in the country and given exclusive right to the oil and gas value chain. The government of Malaysia also adapted the production-sharing contract (PSC) regime that was already in place in neighbouring Indonesia. This regime differed sharply from the petroleum concessions granted earlier by state governments, whereby oil companies had exclusive rights to explore and produce hydrocarbon resources. The companies then paid royalties and taxes to the respective state governments.

Although control of resources was vested in Petronas, it was also required to operate commercially and on profits. Petronas has since grown from merely being the manager and regulator of Malaysia's upstream sector into a fully integrated oil and gas corporation, with more than 100 subsidiaries and about 40 joint-venture companies in which it has at least a 50% stake. With profit shares of about a 70/30% split between the state and OICs, a royalty of 10%, low cost-recovery thresholds, and participating interest that ranges between 15% and 60% of PSCs, Petronas' and the Malaysian government's take from their oil and gas industry is reasonably high.

At its inception, Petronas launched a major scholarship programme and capacity development that aimed to create a critical mass of skilled technical personnel and a bureaucracy. It also formed upstream and downstream subsidiaries that commenced

[5] Esso later became Exxon and then merged with Mobil to become ExxonMobil.

operations by taking over some ongoing concerns from Conoco. In addition to strategic cooperation with IOCs, strategic integration of the natural gas industry with the rest of the economy was also central to enhancing local content and local technological development in Malaysia. It undertook to switch operator roles or conduct joint operations with IOCs such as ExxonMobil, Royal Dutch Shell, Hess and Murphy Oil as part of the PSC.

Petronas established its own refinery and LNG plant in 1983 and its first fertilizer plant in 1985. It also established petrochemical industries that served to diversify its economy from agricultural exports, especially rubber, coconut, palm oil and hardwoods, to one driven by petrochemicals, machinery and electronics and maritime services. Energy policy was linked strongly with incentives to promote manufacturing, which included heavy energy and gas subsidies. Petronas provides direct employment to over 30,000 people in its domestic and foreign operations, while its involvement in other strategic state investments provides indirect employment and stimulates other economic activities.

The Malaysian regulatory regime represents a unique structure in which a regulatory function is seen to be independent but is located inside an NOC. The Petroleum Development Act, 1974 clearly vests the rights that are normally reserved for governments with the national oil company. Section 2(1) of the Act provides that

> 2.(1) *The entire ownership in, and the exclusive rights, powers, liberties and privileges of exploring, exploiting, winning and obtaining petroleum whether onshore or offshore of Malaysia shall be vested in a Corporation to be incorporated under the Companies Act 1965 or under the law relating to incorporation of companies.*

The architects of the Act did not wish to leave most things to the discretion of any authority. They devised an instrument of formal handover of the rights to the national oil company and named Petronas as the company. Implied in this transfer was the right to regulate. Thus Petronas became an active commercial player as well as regulator. Whereas the commercial role is carried out by its subsidiary Petronas Carigali, that of regulator is carried out by its subsidiary Petroleum Management Unit (PMU).

The PMU exercises its control through, licensing, audit of operator costs, enforcement of Health Safety and the Environment (HSE), reservoir management and various regulations and guidelines, including the Petronas Procedures and Guidelines for Upstream Activities. The success of the PMU can only be attributed to the unique culture and political economy of the Malaysian community, which promotes transparent and strong accountability, and thus it may not work in other jurisdictions. It is also worth noting the close relationship between Petronas and the prime minister's office, including the requirement for the board to report to the prime minister, which has shielded it from the influence and self-interest of politicians.

3.5. Nigerian National Petroleum Corporation (Nigeria)

The Nigerian National Petroleum Corporation (NNPC) was established in 1977 as a successor to the Nigerian National Oil Company (NNOC), established in 1971. The timing of the formation of NNOC is closely linked with the Nigerian entry into OPEC, which pressured its members to nationalize oil assets (Nwokeji 2007). The oil industry was mainly in the hands of IOCs, with the Nigerian government limited to regulation and collection of various fees and taxes. The Nigerian Petroleum Act enacted in 1969, more than ten years after oil production began in 1956, provided impetus for engagement of the state in the industry, as it limited upstream petroleum and mineral prospecting licences to Nigerian citizens and locally incorporated companies. It also provided discretionary options for the state to own part of all new concessions.

Initially, NNOC was charged with responsibility for managing Nigeria's majority stake in the oil industry across all segments of the value chain, as regulatory functions were carried by the Department of Petroleum Resources established in 1970. The two institutions were, however, merged in 1977 to form NNPC, which was to carry out both commercial and regulatory as well as policy functions. Throughout the period thereafter, the regulatory regime changed frequently according to the political and economic policies of the Nigerian leadership, which was also characterized by a series of military juntas. Nwokeji (2007) provides a detailed account of how the political economy evolved in Nigeria and how it shaped the oil industry. For example, under the Buhari regime in 1983, the Ministry of Petroleum and Energy, under leadership of the president, was responsible for oversight, but regulatory functions were still carried out by the Petroleum Inspectorate of NNPC. The Babangida regime

in the late 1980s reformed the industry by transferring regulatory functions from NNPC to the Ministry of Petroleum and creating operating subsidiaries of NNPC, which was converted into a holding company. These reforms were short-lived, as the new regime in the late 1990s sought more control over resources, and transferred policy and regulatory functions to the president's office. Later, the Obasanjo regime, which came to power in 1999, separated these roles again.

The regulatory environment today has many levels and components, each under different bodies. The Ministry of Petroleum Resources undertakes primary supervisory oversight and policy formation. While the Department of Petroleum Resources within the Ministry has regulatory functions, including licencing, there are other entities with regulatory oversight in the industry. These include the Nigerian Content Monitoring Board (NCMB), which supervises and monitors local content development; the Ministry of Environment, responsible for environmental management; the Petroleum Inspectorate within NNPC, which issues exploration licences; and the National Oil Spill Detection and Response Agency, responsible for responses to oil spillages.

The evolution in the reform process of the Nigerian regulatory regime shows the strong influence of the political economy on this industry that Nigeria depends on so heavily. Petroleum products generate over 90% of export earnings and over three-quarters of government revenues. In recognition of this dependency, the government sought to push for greater local content and participation of Nigerians through various means. The Babangida regime between1985 and 1993 attempted to reform the industry to allow the Nigerian public to participate through public bidding on oil blocks, but those reforms were undermined by corruption and patronage. According to Nwokeji (2007), leaders used the allocation of blocks to favour cronies and also acquired resources by proxy of family members. Subsequent regimes continued the discretionary allocation of blocks and awarding of lucrative contracts with NNPC to business associates. Although inclusion of local content requirements in the development plans was stipulated in the 1969 Act, implementation was poor. A more recent attempt to enhance local content by increasing indigenous participation, building local capacity and creating linkages for industrial growth was reflected in the Nigerian Content Development and Monitoring Act of 2010, but as Bukurura and

Mmari (2014) observe, collusion between state operatives and politicians has continued to undermine development in the sector.

The Nigerian oil industry has, on the one hand, benefited from its sizeable resources and from operational partnership with giant IOCs such as Shell, Chevron, Texaco, Total and recently, new players from China, India and Korea, making it rank among the ten largest producers of oil, in addition to its natural gas reserves of over 180 Tcf. On the other hand, though, major problems confront the oil industry in Nigeria. These include, among others, a lack of clear focus; frequent reforms in the regulatory framework, driven primarily by the struggle for resource control; limited transparency; and theft and corruption.

4.0. BETWEEN COMPETITION AND COLLABORATION: NOCs' GLOBAL AMBITIONS

A casual and superficial glance at the oil and gas industry creates an impression that IOCs and NOCs are always in competition. This is only partially true. Historically and strategically, these entities have, in most cases, found areas of collaboration and work together in recognition of their mutual benefits and interdependence (see e.g. Mommer 2000; Brinded 2006; Marcel 2006; James 2011; Coll 2012; Painter 2012). Some commentators even suggest that alliances between international and national oil companies should be regarded as much a business strategy as competition (Mirani 2009; Dutto, Guzman & Suresh 2010).

Such collaborations have several advantages. These include not only the sharing of reserves in the face of declining global resources but also the exchange of experience and contacts for raising international investment financing, the sharing of expertise and technology in complex and tough geological settings, and global penetration on the part of ambitious NOCs with a global agenda. This enables diversification of investment portfolios and extends NOCs' reach into geographical areas and oilfields from which they were previously excluded. Collaboration between IOCs and NOCs manifests itself in different forms. The most common type of alliance is the joint venture (JV), first created to develop already discovered resources, as happened in the Middle East in the late 1960s and 1970s with a shift from the concession model to production sharing (Marcel 2006). More recently, IOCs and NOCs have formed JVs to explore new opportunities, as when ExxonMobil and Rosneft joined in the exploration and drilling of oil in the Kara Sea of the Arctic, and Canadian and Brazilian companies formed joint ventures. The swapping of shares in existing and already operational enterprises is another mechanism for collaboration. This enables a partner to make entry into an oil and gas area that it did not previously have access to (Gaughan 2005: 333). Examples of such partnerships include ENI Group's entry into some African countries and Chevron and ExxonMobil's ventures in Venezuela (see Dutto et. al. 2010; Henderson 2012; Kanervisto and Pereira 2013).

In recognition of the importance of collaboration in the oil and gas industry the International Energy Forum (IEF), at its 11th meeting in Rome in April 2008, advocated increased cooperation between NOCs and IOCs. The initiative led to the first NOC-IOC meeting hosted by Kuwait a year later on 30-31 March 2009. The forum is now institutionalized.

For an emerging natural gas economy such as Tanzania's, strategic collaboration with experienced oil companies, national or international, is important in many ways and has many advantages worth pursuing. The successes of and advances made by Petrobras, Petronas, Sonatrach and Statoil, among the case studies discussed above, are partly attributable to deep collaboration and strategic alliances with international oil companies.

5.0. IMPLICATIONS FOR TANZANIA

Do NOCs matter, and what does this imply for the Tanzanian NOC and overall institutional arrangement in the oil and gas industry? Indeed, as the case studies suggests, the existence of a NOC matters for a resource-rich country, but it all depends on the historical and broader institutional landscape and the political economy underpinning the country's development path. The objectives for which NOCs were established are essential in helping countries use their hydrocarbon resources to transform their economies. This is true for developing countries, and is also true for sustaining development momentum in the resource-rich member countries of the Organisation for Economic Co-operation and Development (OECD). The success of these objectives depends crucially on a number of factors, which has important policy implications for Tanzania as follows:

First is the commitment of the government to support the progressive transformation and development of TPDC into a vibrant and competitive commercial national oil company. Mechanisms should be established to grant it more operational autonomy but with strict operational and financial performance targets in place of the current set-up, which paves the way for other authorities to issue directives that may inadvertently become counterproductive. Government involvement in the NOC should be limited to issues of policy and periodic reporting on the implementation of policies, performance targets and compliance with regulations. It requires political and financial support concomitant to its importance to the national economy. This is a more effective mode of state participation that can create significant capabilities and enhance local content.

Second, the capacity of institutions across the industry must be given adequate attention. This includes those responsible for policy making, the oversight bureaucracy, and the tax and national audit agencies. Their knowledge of the industry is absolutely necessary if they are to be effective in addressing industry constraints and providing advisory support and oversight to the NOC. It is the strength of such institutions along with sound legislation that will permit prudent management of hydrocarbon resources and revenues arising from their exploitation, ensuring that the collection and use of gas and oil revenues is transparent; that the

government take is maximized; that spending is directed to quality investments that stimulate economic growth and prevent distortions; and that intergenerational equity is taken into account to provide the necessary means for the social and economic development of future generations. The Petroleum Act of 2015, the Oil and Gas Revenue Management Act of 2015, and the Tanzania Extractive Industries (Transparency and Accountability) Act of 2015 are a step in the right direction, but more important is the framework for their full operationalization.

Third, it is necessary that there be a clear separation of functions and clarity of roles for each entity in the value chain. Policy formulation and coordination, regulation and oversight, and commercial operations must be separated in law and in fact. The NOC must be relieved from multi-institutional interference in its activities, and if the need for a supervisory entity arises, its functions, mandates and limits must be clearly stated in the regulations. In addition, its capacity and staff expertise must be strong.

Fourth, while the regulatory framework must be robust and stable, it must also be capable of accommodating legitimate changes in the global technological, economic and geopolitical environment that affect the development and competitiveness of the industry. This includes policies, legislation and regulations, along with the instruments established by law for supervision and enforcement. They must reflect the dynamic nature of the industry, and through foresight, promote an appropriate energy mix and depletion policy to guarantee security of supply and the sector's contribution to the desired socio-economic transformation.

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