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The boom, the bust, and the dynamics of oil resource management in Ghana

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Abstract: Oil resources are neither a curse nor a blessing. The sound management of these resources can make them beneficial or otherwise. In order to translate Ghana's oil resources into inclusive development amid high expectations, several laws and regulations have been passed and new institutions created. Despite the presence of the new institutions, laws, and regulations, spending from petroleum revenues appears to be rather thinly spread and not efficient. This defeats the purpose of diversification and leads to high debt and cost overruns. On a positive note, the Minister for Finance, the Public Interest and Accountability Committee, and Bank of Ghana have been complying with most of the transparency requirements specified in the laws. It is essential that spending from petroleum revenues is guided by a medium- to long-term inclusive development strategy that is based on proper needs assessment, global trends, feasibility studies, and possible growth dynamics of the country. In addition, expenditure of the annual budget funding amount needs to be rationalized and investment guidelines developed and implemented to focus within-priority expenditures to not more than three project/expenditure categories.

Keywords: oil boom, petroleum revenues, oil and macroeconomics, Dutch disease, diversification, Petroleum Revenue Management Law

JEL classification: Q32, Q33, Q38, Q43

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1 Introduction

‘Even without oil, we are doing so well. With oil as a shot in the arm, we’re going to fly.’¹ These were the words of President John Kufuor, under whose administration in 2007 oil was discovered in Ghana in commercial quantities. The announcement came with huge expectation throughout Ghana. Indeed, throughout the world petroleum discoveries inspire hope. This hope is derived from what the discoveries and revenues are expected to do. According to Ross (2012), oil discoveries and the revenues associated with them have the characteristics of ‘scale and superiority’. No matter how modest the finds are, they have consequences for the structure of the economy, the environment, and other social implications (Ablo 2015).

Exploration for oil in Ghana began in the then Gold Coast in the nineteenth century. Chitor (2012) reports that a limited exploration for petroleum began in 1896 in the Tano basin.² After the early attempts, oil discovery was first made in the Saltpond basin in the 1970s. The Saltpond discovery was not in commercial quantities, producing an average of about 600 barrels in 2009–10 (Gyampo 2010).

After discovering oil in commercial quantities in 2007, production began at the Jubilee field in December 2010. The field was estimated to produce 120,000 barrels per day. Petroleum reserves for the Jubilee field were calculated to be between 600 million and 1.8 billion barrels (Ayelazuno 2014). The World Bank estimated in 2009 that Ghana would earn US\$20 billion from oil production in the period 2012–30 from the Jubilee field. These expectations notwithstanding, the contribution of petroleum to government revenue has been less than 10 per cent, averaging about 7.5 per cent for the first five years of oil production (Benkenstein 2016). Ghana had only one field, the Jubilee, until two other fields started operation recently. The Tweneboa–Enyenra–Ntomme (TEN) and Sankofa fields started production in 2016 and 2017, respectively. The TEN field is expected to produce 80,000 barrels of oil per day and 180 million standard cubic feet of natural gas per day when it reaches its full potential. According to the Ghana National Petroleum Corporation (GNPC 2016), the TEN field has an estimated reserve of 239 million barrels of oil and 360 billion cubic feet (bcf) of natural gas. In the case of the Sankofa field, the estimated reserve is 204 million barrels of oil and 1071 bcf of natural gas (GNPC 2016). In a report in 2016, the Public Interest and Accountability Committee (PIAC) declared that Ghana earned US\$3.2 billion in the first five years of oil production (see PIAC 2016).

This paper shows that Ghana is a fairly modest producer of oil and has made some effort to learn proper oil governance from the experiences of other countries, but has not always managed to implement the lessons learned. While it has put in place a good number of institutions and sound regulations to ensure that the benefits from oil production are translated into broader-based development, this has not always worked. The management of oil revenues has not been protected from generally poor fiscal management.

The Africa Centre for Energy Policy (2014) reported that although transparency has been high in the petroleum sector, accountability and the collection of revenues, including surface rentals, have been poor. It called on the government to do more to spread the benefits of oil production.

¹ President John Kufuor made this observation in an interview in 2007 (see BBC 2007).

² Ghana has four main sedimentary basins. These are the Central basin (Saltpond), Western basin (Tano), the Eastern basin (Accra-Keta) and the inland Voltaian basin (Boateng, 2008).

There is enough experience from around the world to show that translating oil discoveries through production to revenues and inclusive growth is not necessarily a linear process. Inclusive growth has been particularly difficult to achieve in many places, and Ghana has been no exception so far. Can Ghana escape a resource curse?³ Our view is that it can, provided that it implements fully as soon as possible, and more diligently, the regulations that it has adopted.

The remainder of this paper is divided into five sections. Section 2 provides an overview of petroleum resources in terms of size, including a comparison with other African oil producers. It also introduces Ghana's fiscal and petroleum legal regimes. In Section 3, the accountability and transparency mechanisms that have been put in place for effective oil resource governance are discussed. Section 4 examines the petroleum management framework. In Section 5, oil and macroeconomic performance is discussed. Finally, Section 6 concludes.

2 Petroleum production and exploration in Ghana

The central coastline along the Gulf of Guinea in West Africa is endowed with hydrocarbons to the extent that the estimated reserves, if produced, can meet the petroleum needs of the European Union (Ayoade 2002). While Nigeria and Gabon have been producing oil since the twentieth century, Ghana is basically a frontier nation. But, as mentioned earlier, oil exploration is not new to Ghana. Edjekumhene et al. (2010) have indicated that the people of Nzema started reporting oil seepages around the onshore Tano basin around the 1800s, and this led to exploration by the West African Oil and Fuel Company. The government intensified the oil search by passing the Oil and Mining Regulations, 1957 (L1 221), the Mineral (Offshore) Regulations, 1963 (L1 257), and the Minerals (Oil and Gas) Regulations, 1965 (LI 257). These regulations and international collaborations led to the discovery of the first non-commercial oil in 1970 by Signal and Amoco Oil Company Limited at the Saltpond offshore field (Aratuo 2012). The Saltpond offshore field, which was estimated to have rather limited reserves, started production in 1978 by Agripetco, with a daily average output of 4800 barrels. In 1985, production declined to 580 barrels per day (Takyiwa 2014).

According to the GNPC (2013), the first natural gas discovery in Ghana was in 1973, around the offshore Cape Three Points by Zapata Oil Company Limited. Takyiwa (2014) has classified the history of oil exploration in Ghana into four phases. The first phase, spanning 1896–1969, was characterized by wildcat drilling and non-systematic exploration activities. This phase also witnessed the acquisition of the first two-dimensional seismic coverage in 1968. The second phase, spanning 1970–84, focused more on international oil companies-led offshore exploration activities. The first offshore deep water well was drilled by Philips Petroleum in 1978. The third phase saw the establishment of the GNPC and the involvement of a national oil company in exploration. There was an increase in two- and three-dimensional seismic coverage in 1985–2000. The current phase, 2001 to date, has involved restructuring and resourcing of the national oil company and the passing of appropriate legislations.

³ The curse of petroleum resources occurs when countries with large endowments of such resources generally perform worse in terms of economic development and good governance than those countries with little or no petroleum resources (see Auty, 2001; Sachs and Warner, 1995, 1999; Gylfason et al., 1999).

2.1 Regulating exploration and production

Prior to 2007, the major laws and regulations governing the petroleum sector in Ghana included the Ghana National Petroleum Corporation Act, 1983 (Provisional National Defence Council (PNDC) Law 64), the Petroleum Exploration and Production Act, 1984 (PNDC Law, 84), and the Petroleum Income Tax Law, 1987 (PNDC Law 188). A new petroleum and exploration law was passed in 2016 to replace the old one (PNDC Law 84). The weakness of the old law was, among other things, the limited transparency provisions. According to the Africa Centre for Energy Policy (2016), the current Exploration and Production Law (Act 919) has many positive attributes including a provision for an open and competitive public tender for the allocation of petroleum rights, a requirement for publication by the Minister for Energy and Petroleum, the reasons for vetoing the outcome of a competitive public tender, and the establishment of a public register for the disclosure of petroleum agreements, authorizations, and permits. These transparency provisions notwithstanding, Ndi (2018) has suggested that there are pockets of opposition to the law because of changes to the fiscal terms from production-sharing to hybrid or tax/royalty system. However, Kankam and Ackah (2014) have argued that the choice of hybrid fiscal system allows the state to meet revenue maximization as well as socio-economic objectives.

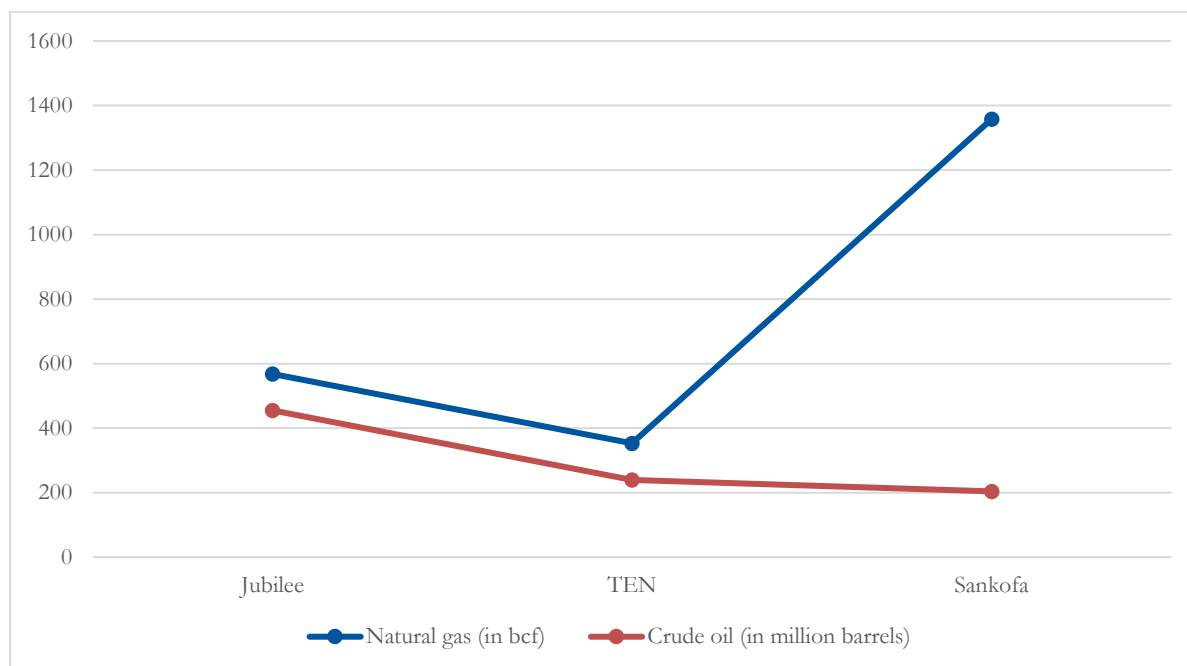
The main elements of Ghana's petroleum hybrid fiscal regime include royalty, corporate income tax, surface rentals, carried and participating interest, and additional oil entitlements (AOEs) (Sasraku 2016). According to Amoako-Tuffour and Owusu-Ayim (2010), the royalty rate is not fixed and ranges from 4 to 12.5 per cent of gross production of oil. In the case of natural gas, the royalty ranges from 3 to 10 per cent. There are clear discrepancies in the various laws. Petroleum corporate tax has been set at 35 per cent for all fields currently operating. This notwithstanding, the Petroleum Income Tax Law sets corporate tax at 50 per cent whereas Ghana's Income Tax Law, 2015 (Act 896) states income tax as 25 per cent. Section 10 of the Model Petroleum Agreement provides for an AOE. The AOE is triggered if the contractor's post-tax rate of return (ROR) exceeds the prescribed target for that year. The trigger points for the AOE are 12.5, 17.5, 22.5, and 27.5 per cent ROR. Surface rental is an additional source of revenue for the government. The Ghana Model Petroleum Agreement provides for a minimum of 10 per cent initial carried interest in all petroleum agreements and a negotiated participating interest thereafter. The GNPC holds and manages the carried and participating interest on behalf of the state.

2.2 The state of oil production

As indicated earlier, the Jubilee field produced a total of 161.9 million barrels of oil between 2010 and 2015. The Ghana Energy Commission reported in 2017 that the Jubilee field produced 26.9 million barrels in 2016; that is, 94,200 barrels per day on average. This was lower than the 2015 average, which was 106,939 barrels per day. With regard to prices, the average price at which Ghana sold its oil was US\$51 per barrel in 2015 and US\$40 per barrel in 2016.

Ghana's three operating fields had a total estimated reserve of 2279 bcf of natural gas and 898 million barrels of oil as at the end of 2016 (GNPC 2016). The Jubilee field has an estimated 455 million barrels of oil and 568 bcf of associated and non-associated natural gas. The TEN field contains an estimated 239 million barrels of oil and 353 bcf of associated and non-associated natural gas. Finally, the Sankofa field contains an estimated 204 million barrels of oil and 1358 bcf of associated and non-associated natural gas. Figure 1 presents a summary of the petroleum reserve estimates of Ghana.

Figure 1: Petroleum reserves of Ghana's operating fields



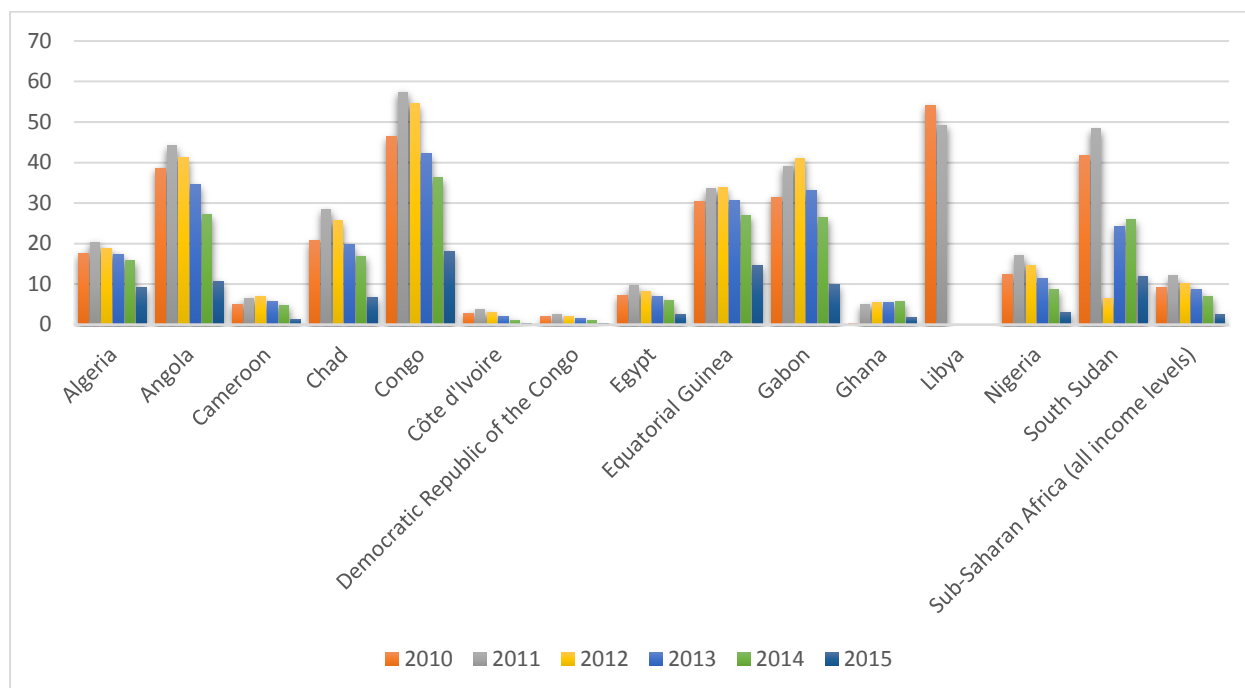
Source: Authors' illustration based on data from GNPC (2016).

2.3 Comparing production with other African countries

Africa has an estimated reserve of 129.1 billion barrels, representing 7.6 per cent of the total global reserve in 2015 (see *BP Statistical Review of World Energy* 2016). Libya and Nigeria have the largest petroleum reserves in Africa with an estimated value of 48.4 billion and 37.1 billion barrels, respectively, in 2015. Angola and Algeria follow with 12.2 and 12.7 billion barrels, respectively. Together, Libya and Nigeria contribute 5 per cent of global reserves and 66.2 per cent of Africa's total reserve. With regard to production, Africa produced 8.4 million barrels per day in 2015, contributing 9.1 per cent of global production. Nigeria was the highest producer with 2,352,000 barrels per day (Ghana's production for 22 days), followed by Angola with 1.82 million barrels per day and Algeria with 1.58 million barrels per day (*BP Statistical Review of World Energy* 2016). These statistics dwarf Ghana's production effort. Ghana's average production in 2015 was only 1.3 per cent of Africa's total and 4.5 per cent of Nigeria's production.

By 2015, Africa had 7.5 per cent of global natural gas reserves and contributed 6 per cent of global production. Cumulatively, Africa holds 496.7 trillion cubic metres in reserves and produces 211.8 billion cubic metres as of 2015. Nigeria, Algeria, Egypt, and Libya account for 92.1 per cent of Africa's natural gas reserves and 93 per cent of the continent's natural gas production. Figure 2 presents the contribution of oil rents to the gross domestic product (GDP) of selected countries in Sub-Saharan Africa (SSA).

Figure 2: Oil rents as a percentage of GDP in selected African countries



Source: Authors' illustration based on data from the World Development Indicators (2018).

On average, oil rents contributed 8.23 per cent of the GDP of SSA between 2010 and 2015. Oil rents had contributed 12.09 per cent in 2011 but this declined to 2.38 per cent in 2015 in SSA due to reduced oil prices. Among the countries compared, Angola recorded the highest average contribution of oil rent to GDP with 32.72 per cent. This was followed by Gabon with 30.16 per cent, South Sudan with 26.42 per cent, Algeria with 16.50 per cent, Nigeria with 11.02 per cent, Cameroon with 5.06 per cent, and Ghana with 3.92 per cent, over the period 2010–15. The implication is that oil price shocks should technically not have as much impact on economies such as those of Ghana, Cote d'Ivoire, and Cameroon. However, for Ghana, that has not been the case. The oil price fall in 2015 led to the request for an International Monetary Fund (IMF) facility, and a huge cut to the capital budget by an estimated 52.4 per cent.

2.4 Negotiating petroleum agreements in Ghana

Acheampong et al. (2016) have suggested that the Ghana Model Petroleum Agreement serves as the basis on which all petroleum agreements are negotiated. The GNPC represents the country and holds the carried and participating interest in all contracts. Thus, there is a high private sector participation in Ghana's petroleum industry. However, the equity share of the private sector depends on the contract. In the case of the Jubilee contract, Ghana has 13.64 per cent carried and participating interest and receives 5 per cent royalty, 35 per cent corporate tax, and surface rentals (PIAC 2016). The private sector participants in the Jubilee field are Tullow (the operator who owns 35.64 per cent), Kosmos Energy (24.08 per cent), Anadarko (24.08 per cent), and Petro SA (2.73 per cent) (see Tullow 2018). In the case of the TEN field, the operator Tullow has a share of 47.18 per cent, while Kosmos has 17 per cent; Anadarko, 17 per cent; GNPC, 15 per cent; and Petro SA, 3.82 per cent. Finally, the project partners for the Sankofa field include ENI (44.4 per cent), GNPC (20 per cent), and Vitol (35.56 per cent) (see ENI et al. 2017).

One of the biggest challenges in negotiating oil agreements is how to take adequate care of the interests of local people. According to Ross (2012), some of the challenges faced by local people in oil-bearing communities include land, air, and water pollution, loss of livelihoods, and the

increased cost of living. These challenges, if not properly managed, can lead to conflicts and other social tensions. In order to manage these and promote value addition, Ghana passed the Petroleum Local Content and Local Participation Regulation (LI 2204) in 2013. According to Acheampong et al. (2016), Ghana's local content regulations seek to achieve direct employment for Ghanaians, technology transfer, use of locally produced materials, and procurement of local goods and services. These regulations aim at the promotion of benefits to the broader economy through its forward and backward linkages. They further seek to promote value addition and to create jobs through the use of local expertise, goods and services, business, and finance in the petroleum industry value chain in Ghana.

The passing of the Petroleum Commission Act, 2011 (Act 821) created an independent upstream regulator for the petroleum sector. The Act mandates the Ghana Petroleum Commission to regulate and manage the deployment of petroleum resources and to perform functions such as licensing and monitoring of the implementation of the local content regulations. Section 10(2) of the Act clearly extricates the commission from the influence of the Ministry of Energy and Petroleum. The commission is governed by a seven-member board with a chairperson. Other members include the chief executive of the commission, the chief executive of the Ghana National Petroleum Company, and four other persons, at least one of whom should be a woman. The president appoints the chief executive officer of the commission.

3 Transparency and accountability measures

Transparency has often been considered as the central pillar around which the fight against corruption in the petroleum sector revolves. According to Mehlum et al. (2006), corruption in the form of rent seeking is a key factor behind the oil curse. McPherson and MacSearraigh (2007) identified the many forms of corruption in the petroleum industry. These include: policy corruption, administrative corruption, commercial corruption, and diversion of massive amounts of money through the diversion of production, products, or revenues. This is generally referred to as grand corruption. In order to promote good governance and limit the incidence of corruption, Ghana joined the Extractive Industries Transparency Initiative (EITI) in 2003. In 2007, Ghana became a candidate country by producing and publishing its first EITI report covering the period 2004–06. The country finally assumed the status of a compliant country after completing the validation process in 2010. The country has since been implementing the standard to the mining sector and later extended to cover the petroleum sector. On 24 February 2016, Ghana was honoured at the 2016 Global EITI Conference in Lima, Peru for turning recommendations in its EITI reports into policy reforms (see EITI 2016).

In addition to joining and implementing the recommendations of EITI, the Exploration and Production Law, 2016 (Act 919), the Petroleum Revenue Management Act (PRMA), 815 (2011) (amended in 2015 as Act 893), Petroleum Commission Law, 2011 (Act 821), and the Petroleum Local Content and Local Participation Regulation (LI 2204) all make provision for transparency and accountability. For instance, Section 56 (1 and 2) of the Petroleum Exploration and Production Law, 2016 (Act 919) mandates the Ghana Petroleum Commission to establish and maintain a public register of all petroleum licences, agreements, authorizations, and permits and requires the commission to make the information open to the public. Further, Section 39 (a and b) of the Petroleum Local Content and Local Participation Regulation (LI 2204) grants the public access to local content information held by the commission.

Ghana's PRMA made similar transparency provisions. For instance, Section 49 (1) of the Act states that the management of petroleum revenue and savings shall always be carried out with the highest

internationally accepted standards of transparency and good governance. This may be seen in one of the new creations of the Act, which is the establishment of the PIAC, armed with the objective of playing a watchdog role in the management of petroleum revenues. PIAC is charged under Section 51 of the PRMA to monitor and evaluate compliance with the Act. In addition, Section 48(2)(b) of the amended PRMA, 2011 (Act 815) mandates the Minister for Finance to publish the status of implementation of oil-funded projects annually. The Minister for Finance is required to report on the status of implementation and completion of oil-funded projects to parliament. Section 8 (1, 2, and 3) of the PRMA requires that, for the purpose of transparency and accountability, the records of petroleum receipts in whatever form shall be published by the Minister for Finance simultaneously in the *Gazette* and in at least two state-owned daily newspapers, within 30 calendar days after the end of the applicable quarter and that the information required to be made public shall also be published online on the website of the ministry and presented to parliament on the date of the *Gazette* publication. The Minister for Finance is also required to publish the total petroleum output lifted and the reference price in the same manner as provided in Subsections (1) and (2).

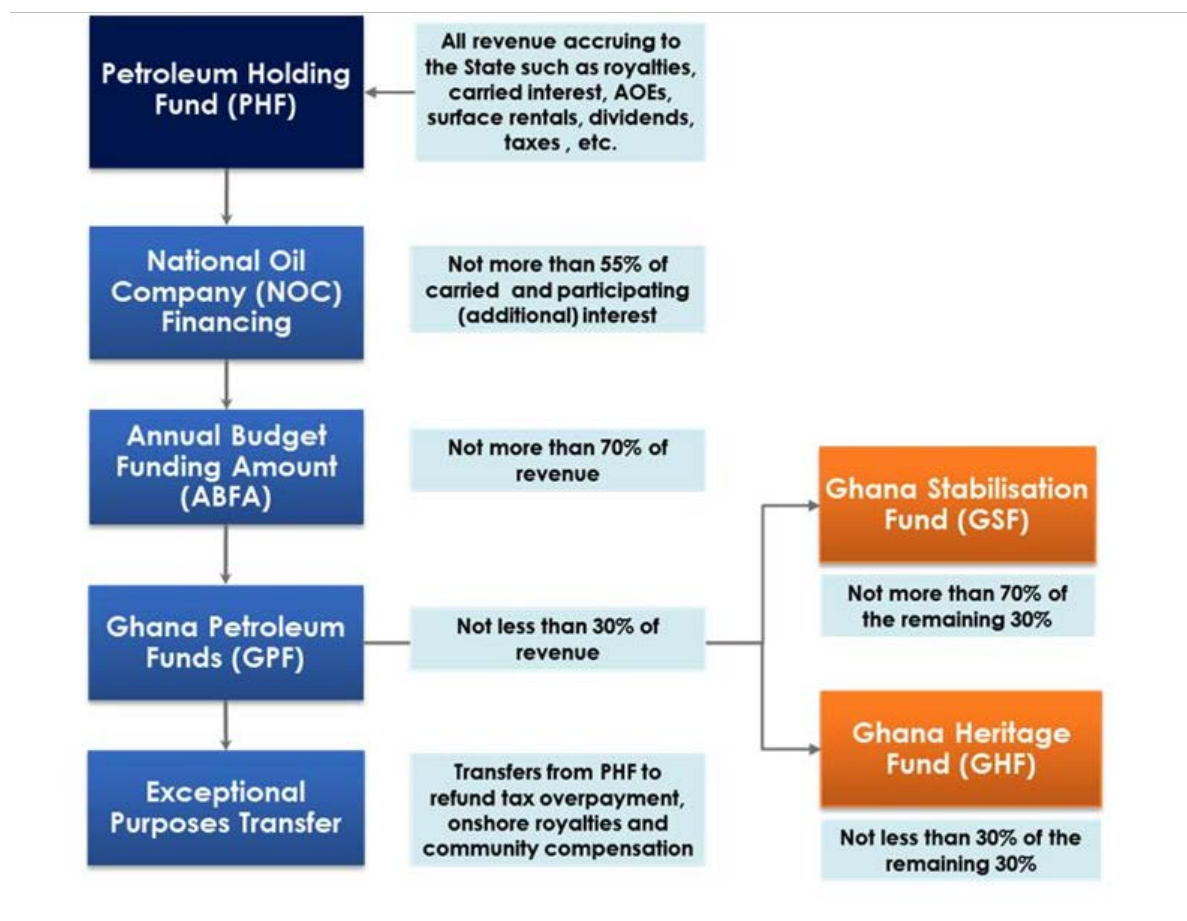
In addition to the above requirements, the PRMA also requires Bank of Ghana to present to the Minister for Finance and to the Investment Advisory Committee quarterly reports on the performance and activities of the Ghana Stabilization Fund (GSF) and the Ghana Heritage Fund (GHF) no later than the end of the month following the end of each quarter and to publish semi-annual reports on the GSF and the GHF no later than 15 February and 15 August each year. The report is required to be presented to parliament and published in the national dailies and also on the website of the bank. In the minds of the lawmakers these provisions were essential for the purpose of fast-tracking economic development and promoting equal and inclusive development with petroleum resources.

4 Petroleum revenues framework

Petroleum revenue has the potential to contribute significantly to economic development, if properly managed. However, petroleum revenue has four distinct qualities that can have negative macroeconomic implications. These are volatility, potential Dutch disease, exhaustibility, and the assumption that petroleum revenue is free money (Ossowski and Gonzáles-Castillo 2012; Ross 2012; Schubert 2006). Caballero (2000) has suggested that oil revenues are volatile and can lead to poor investments and negative impact on the economy due to unpredictable government revenue. According to Elder and Serletis (2010), changes in oil prices affect the macro economy through three main transmission channels. The first is the monetary and real balance channel that occurs when oil price increases lead to increases in the overall level of prices, thereby reducing real money balances held by households and firms and ultimately reducing aggregate demand. The second is the income transfer channel, where it is assumed that oil-importing countries transfer money to oil-exporting countries when prices are high. Finally, high or low energy prices have an effect on labour and capital productivity. Indeed, Elder and Serletis' (2010) assumption of a symmetric relationship between oil prices and the macro economy can best be identified in oil-importing countries. Regarding oil-exporting countries, Farzanegan and Markwardt (2009) studied the impact of oil price shocks on the Iranian economy and found that the Iranian economy was very vulnerable to the negative shocks of oil prices. The real effective exchange rate fell significantly (domestic currency depreciated) when there were negative oil price shocks. On the other hand, positive oil price shocks increased the real exchange rate and appreciated the domestic currency. According to Husain et al. (2008), fiscal policy is the main transmission mechanism of oil price shock in oil-producing countries.

PRMA 2011 (Act 815) and its 2015 amendment (Act 893) discussed earlier were intended to help avoid the oil curse and ensure that petroleum revenues promote inclusive development (Ghanney and Amoako-Tuffour 2016; Graham et al. 2016). The law established processes for the collection, expenditure, investment, and accountability of the use of oil revenues. The role of the PIAC has been discussed earlier. Figure 3 provides the framework for the Petroleum Revenue Management Law. All petroleum revenues (from corporate tax, royalties, carried and participating interest, surface rentals, AOE, etc.) are deposited in the Petroleum Holding Fund (PHF). The PHF is an intermediary fund designed to collect and disburse petroleum revenues (Oshionebo 2018).

Figure 3: Petroleum management framework, Ghana



Source: Based on PIAC (2018: Figure 2.3), reproduced with permission.

Under the PRMA, the GNPC receives 55 per cent or less of the carried and participating interest. The budget receives 70 per cent or less of the benchmark revenue. The benchmark revenue is the expected petroleum revenue based on a seven-year moving average.⁴ The percentage of petroleum revenue that goes into the budget is the annual budget funding amount (ABFA). The ABFA is shared between the priority areas, the Ghana Infrastructure Investment Fund and the PIAC. The remaining 30 per cent of the benchmark revenue goes to the Ghana Petroleum Funds, which is shared between the GSF (21 per cent) and the GHF (9 per cent). The GSF is used to cushion

⁴ See the first schedule (Section 17) of the Petroleum Revenue Management Act (PRMA), 2011 (815) for the formula. According to Section 7 of the amended PRMA (Act 893), the Minister for Finance can recommend a revision of the benchmark revenue to parliament if it becomes evident that unexpected changes in price or quantity can lead to high over or under projection.

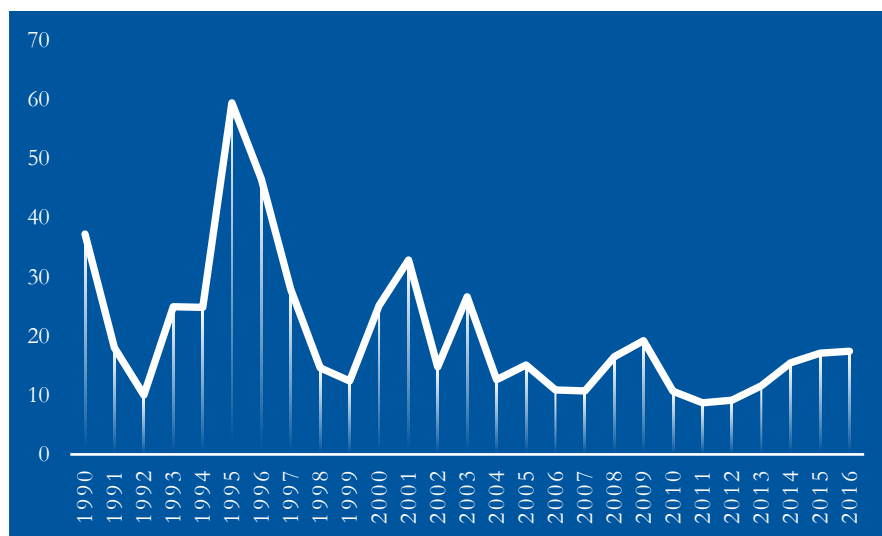
government expenditure when there is a petroleum revenue shortfall, and an excess of the cap is sent to the sinking (debt repayment) and contingency funds. The GHF is an endowment for future generations. The PRMA sets out the framework to regulate the allocation and management of revenues realized from petroleum production in Ghana. The amendment of sections of the Act in 2015 was intended to strengthen it and make compliance easier.

5 Oil and macroeconomic performance

Petroleum production has affected Ghana’s macroeconomic performance in different ways. On the positive side, oil contributed about US\$3.2 billion to the economy in the first five years of production, an average of 7.5 per cent of government revenue and about 4 per cent of GDP. According to Fosu (2017), the petroleum sector contributed 30 per cent of industrial sector output in 2013 and 28.3 per cent of export revenue in 2014. The contribution of petroleum to export revenue fell to 18.7 per cent in 2015 and then to 12.2 per cent in 2016 on account of lower oil prices. In 2011, Ghana’s GDP rose to 14 per cent from 7 per cent in 2010 (World Development Indicators 2018). However, the high growth was petroleum exploration-led and short-lived as GDP growth declined to 3.9 per cent in 2015 and to 3.6 per cent in 2016. By the end of 2012, both the primary balance and the overall balance had plummeted by about 6 per cent (Younger 2016). This shortfall was caused, among others, by high oil revenue expectations, election-related over-expenditure, and the implementation of the single-spine salary structure.

According to Bawumia and Halland (2017), although the fiscal deficit fell from 6.2 per cent in 2010 to 4 per cent in 2011, it deteriorated again to 9.3 per cent in 2014. IMF (2014) estimates that although government taxes in Ghana averaged 18.9 per cent of GDP from 2010 to 2014, government expenditure increased from 20.1 per cent in 2010 to 28.2 per cent in 2014. The bulk of the increase in government expenditure went towards expenditure on goods and services, driven by the wage bill. Indeed, Younger (2016) has suggested that expenditure on personal emoluments increased by 1.6 per cent of GDP between 2010 and 2012 while the average contribution to GDP of oil over the same period was 1 per cent. Although Ghana chalked up some legal and regulatory successes in the initial stages of oil production, there were serious concerns about rising public debt, declining capital expenditure, and a deteriorating external payment position (Bawumia and Halland 2017). Figure 4 shows Ghana’s inflation trends for 1990–2016.

Figure 4: Ghana’s inflation performance, 1990–2016



Source: Authors’ illustration based on data from the World Development Indicators (2018).

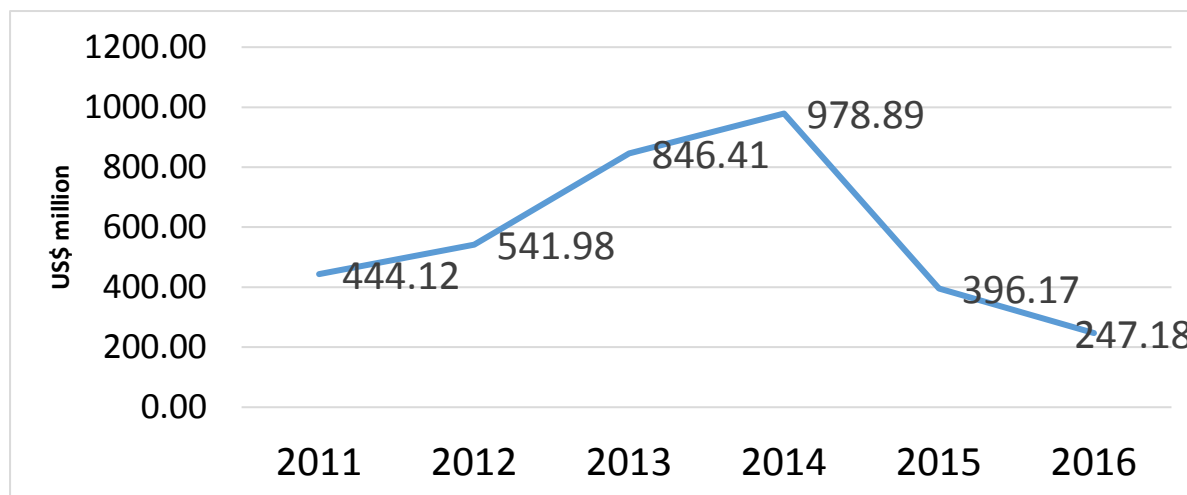
Even though Ghana recorded single digit inflation in 2011 (8.73 per cent) and 2012 (9.16 per cent), there has been an upward trend since. In addition, the cedi depreciated by 31 per cent against the US dollar in 2014.

5.1 Dutch disease

One of the biggest concerns for new oil economies is the Dutch disease. Under the Heckscher–Ohlin model, countries exporting natural resource are expected to specialize in their main export. However, when such export diversification is dominated by petroleum, there is little room for a spillover effect to other sectors (Ross 2012). Cordon and Neary (1982) have argued that this is due to currency appreciation and loss of competitiveness of the non-tradable sectors. That is, a boom in the oil sector can channel labour and capital from the non-tradable sectors through the resource movement effect. Coupled with this, currency appreciation associated with such a boom can lead to a high cost of inputs, thus making the output of the manufacturing and agriculture sectors relatively expensive.⁵ In addition, oil resources are non-renewable and will therefore be exhausted, given time and technology.

Ghana has always been aware of the possibility of the Dutch disease and policymakers have often mentioned the need to avoid that from the beginning of the oil journey. Learning from the experiences of countries such as Nigeria, Norway, and Trinidad and Tobago, the government organized a number of international conferences, regional and sub-national consultations, and study tours to discuss the best ways to avoid the Dutch disease. The aim was to learn lessons especially on how petroleum revenues have been managed in these countries. Figures 5 and 6 show petroleum revenues from 2011 to 2016 and the contribution of petroleum to government revenues in Ghana, respectively.

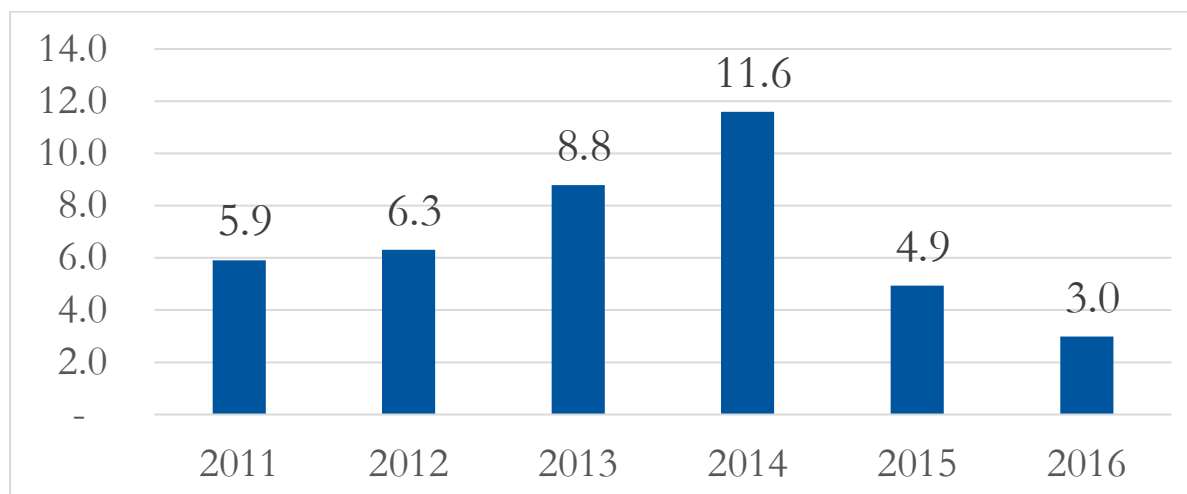
Figure 5: Petroleum revenues in Ghana, 2011–16



Source: Ministry of Finance (2018).

⁵ The combined effect of resource movement and currency movement is what is commonly referred to as the Dutch disease.

Figure 6: Petroleum revenue as a percentage of government revenue in Ghana



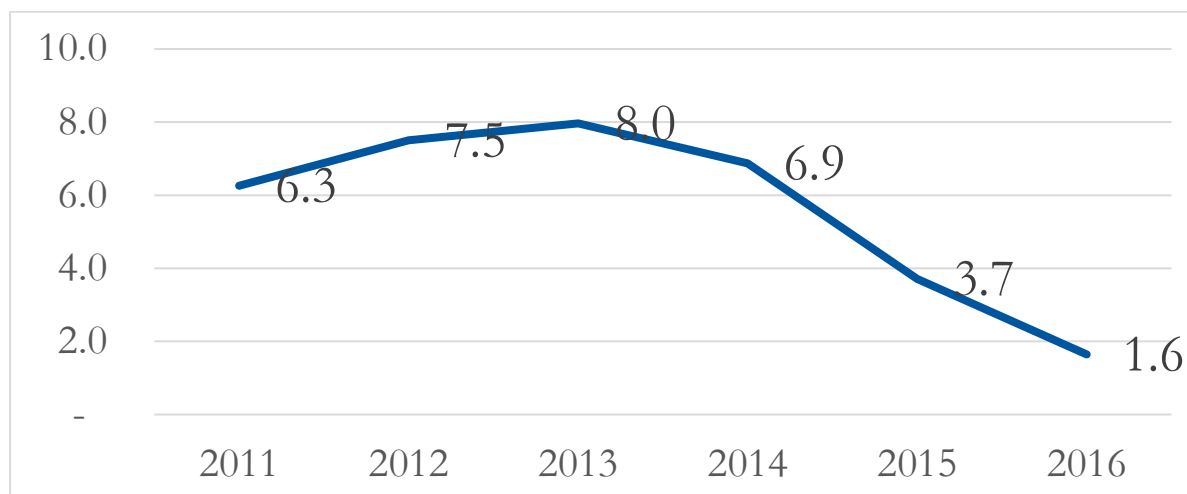
Source: Ministry of Finance (2018).

The contribution of the petroleum revenue to government revenue has been significant, especially considering that donor support was dwindling over the same period. Many analysts have expressed the view that the management of petroleum resources has been less than satisfactory, despite the passing of good laws and regulations. The essential problem has been the recurring rapid rise in public consumption expenditures and, hence, the growing deficit. Ghana approached the IMF for a US\$900 million facility in 2014–15 and experienced a higher-than-budgeted-for cash fiscal deficit of 9.5 per cent of GDP and faced other fiscal challenges (IMF 2015). In the face of weak fiscal management, unstable petroleum revenues have not been of much use, and the elaborate rules have not been followed.

According to Bleaney and Halland (2016), there is no empirical evidence of a correlation between fiscal indiscipline and petroleum discovery and production. However, this assertion may not be the case in most oil-producing countries in Africa, as most of the fiscal challenges of oil-producing economies may be self-inflicted. Indeed, that is Ghana's story. Bawumia and Halland (2017) have recounted how the government did little to manage public expectations and also hoped to earn political dividend from the petroleum discovery in 2007 with the impending 2008 national elections. This happened in three ways. First, the petroleum discovery gave false hope that there was more fiscal space than there really was. Second, institutional quality, in the form of nominal fiscal rules, independence of the central bank and regulatory entities were not supported by political consensus. Finally, there was selective compliance with the PRMA; for instance, Section 48(3) of the PRMA was never complied with until 2017–18. These factors affected macroeconomic stability. According to Witter et al. (2017), even though Ghana's real GDP growth has been modest between 2012 and 2016, the fiscal deficit averaged 9 per cent for the same period. In addition, inflation has been rising steadily since 2012, reaching 17.47 per cent in 2016.

Oil-producing countries recognize these fiscal challenges and deploy different strategies to minimize the impact of oil price shocks on their economies. These strategies include diversification, establishment of a stabilization fund, hedging, and application of fiscal rules (Bartsch 2006; Davis et al. 2003). Ghana implemented similar strategies. The Ghana Petroleum Funds were established as a sovereign wealth fund charged with the responsibility of investing and saving petroleum revenues (Oshionebo 2018). These funds consist of the GSF and the GHF. The purpose of the stabilization fund is to cushion government expenditure during periods of unanticipated petroleum revenue shortfall. Figure 7 indicates that the contribution of petroleum to GDP reduced from 8 per cent in 2013 to 1.6 per cent in 2016 due to falling oil prices.

Figure 7: Share of petroleum output in GDP, 2011–16



Source: Ministry of Finance (2018).

However, the Petroleum Revenue Management Law allows the Minister for Finance to cap the GSF. The excess from the cap can be used for debt repayment. Specifically, Section 5 of the amended PRMA, 2015 (Act 893) stipulates that there can be withdrawals from the GSF to offset petroleum revenue shortfall, to transfer into the contingency fund, or for debt repayment (sinking fund). According to PIAC (2016), the GSF should have had a balance of US\$604 million by December 2015. However, the fund was capped at US\$100 million in the 2016 budget. The Africa Centre for Energy Policy estimates that about 62.4 per cent of the GSF has been used to repay debt (AccraFM.com 2016). This clearly defeats the primary aim of the fund, which was to help government deal with oil price volatility. Moreover, the government's commodity price risk management programme, which was expanded in May 2011 to deal with volatility, was cancelled in 2013, thereby exposing the country to significant oil price shocks (IFS 2015). The GHF seeks to satisfy intergenerational equity requirements of petroleum production by supporting the development for future generations when petroleum reserves have been depleted.

Another strategy Ghana employed to deal with the effect of oil price shocks on the economy was diversification. Section 21 of the PRMA lists a number of areas in which the government can invest its oil revenues. These priority areas were arrived at based on public consultations and include agriculture, education, health, roads, alternative energy, security, potable water, sanitation, and environmental protection. In selecting the priority areas, the budget process is followed. That is, the medium-term fiscal framework, the available fiscal space, and the strategic initiatives of the government are considered before the priority areas are proposed. The proposed priority areas are then sent to cabinet for discussion and preliminary allocations. After the budget approval by parliament, ministries, departments, and agencies (that are chosen as priority areas) select specific projects that receive oil revenues. According to Section 21 (4 and 5), for any financial year, a minimum of 70 per cent of the ABFA shall be used for public investment expenditures consistent with the long-term national development plan. In order to maximize the impact of the use of the petroleum revenue, the Minister for Finance is expected to prioritize not more than four areas for the medium term (over a three-year period) in the absence of a long-term development plan. This provision is to help diversify from oil and develop areas where Ghana has competitive advantage, such as agriculture. However, there have been reports that oil revenues are spread over too many

projects (Reportingoilandgas.org 2016) that are outside of the priority areas.⁶ In addition, instead of complementing existing revenue sources to these sectors, oil revenue is gradually replacing traditional sources. There is always one broad priority area that is used to spread spending of oil revenues over many ‘non-selected areas’. For instance, in the first three years of oil revenue spending (2011–13), ‘roads and other infrastructure’ always featured as a priority area. Under this category, government spent on housing, roads, rail, markets, coastal protection, education, and health, although they had not been earlier considered to be priority areas. This was repeated in the second triennium (2014–16). In the third triennium (2017–19), government selected another broad priority area, ‘road, rail and other critical infrastructure development’. The selection of broad priority areas and unconstrained spending within them are major reasons for the ABFA being thinly spread.

Furthermore, in establishing the PIAC, the aim of monitoring and evaluating compliance with the PRMA by government and other relevant institutions in the discharge of their duties, in relation to the use and management of petroleum revenues and resources, as required by law was paramount. The law expected PIAC to do the following:

- provide a formal active voice in the use and management of petroleum revenues, by providing space and a platform for the public to debate whether spending prospects and management of revenues adhere to development priorities;
- provide independent assessments on the use and management of petroleum revenues and resources to assist parliament and the executive in the oversight and performance of related functions; and
- ensure that petroleum revenue is sustainably and efficiently managed.

Although a critical institution, PIAC’s findings are often not implemented (Oshionebo 2018). It is perceived to be a critical accountability institution that has been turned into a report-writing body with little action.

5.2 Local content regulations

Ghana passed the local content regulations in 2013, ostensibly to ensure that the local oil industry generates benefits to the broader economy through its forward and backward linkages (Acheampong et al. 2016). An Enterprise Development Centre has been established to support local firms in the petroleum sector. According to the Petroleum Local Content and Local Participation Regulation (LI 2204), local content refers to the percentage of Ghanaian produced materials, financing, personnel, goods, and services rendered to the oil and gas industry and can be measured in monetary terms. According to a report by the Ghana Petroleum Commission, as of 2014, the oil and gas industry employed 7000 people out of which the international oil companies (IOCs) had 3612 people. The distribution of employees by nationality was 80 per cent Ghanaian and 20 per cent expatriate. In the IOCs, a smaller proportion of Ghanaians were employed (64 per cent), while expatriates made up 36 per cent of persons employed. Tables 1 and 2 show the actual numbers.

⁶ In the past, oil revenues have been allocated to the office of the president, parliament, Musicians Union of Ghana, and the Microfinance and Small Loans Centre among others that were not in the priority areas.

Table 1: Employment distribution in the upstream petroleum sector as in 2015

National	Industry employees	Percentage	International oil companies	Percentage
Ghanaian	5600	80	2315	64
Expatriate	1400	20	1297	36
Total	7000	100	3612	100

Source: Ghana Petroleum Commission (2016).

Table 2: Local content employment performance as in the last quarter of 2014 (selected companies)

IOCs and ISPs	Operation date	No. of Ghanaian staff	No. of expatriate staff	Targets set in LI 2204 (%)	Actual performance (%)
Tullow	2006	255	127	70–80	66.8
Eni Ghana	2009	24	16	70–80	60
Baker Hughes	2009	95	56	70–80	62.9
FMC Technologies	2009	72	24	70–80	75
Kosmos	2004	32	1	70–80	96.9
Modec Ghana	2010	138	66	50–60	67.6
Nov Ghana	2009	34	8	70–80	81
Technip	2009	36	6	70–80	85.7
Schlumberger	2010	420	166	50–60	71.6

Source: Ghana Petroleum Commission (2016).

According to Acheampong et al. (2016), the prescriptive nature of the local content regulations may create implementation challenges. Various supply chain and local content targets are set by the Petroleum Local Content and Local Participation Regulation (LI 2204) for operations in the oil and gas sector. As of December 2015, 474 companies were registered with the Ghana Petroleum Commission to provide both direct and indirect services. According to the commission, 321 (68 per cent) of the firms were indigenous companies, 107 (23 per cent) had foreign ownership, and the remaining 46 (10 per cent) were joint venture companies. Even though about 68 per cent of the companies registered to access contracts in the upstream petroleum value chain are Ghanaian owned, they received less than 25 per cent of the total value of the contracts awarded between 2010 and 2015. Out of a cumulative total value of US\$6,262,757,339.85, indigenous companies received only a little over US\$1 billion (Ghana Petroleum Commission 2016).

6 Conclusion

Oil resources are neither a curse nor a blessing. Sound management of these resources can make them beneficial or otherwise. Oil revenues can be used to finance economic development, if properly managed. In the same vein, oil production and revenues can lead to conflicts, corruption, stunted growth, and non-competitive and declining manufacturing and agricultural sectors. Ghana discovered oil in commercial quantities in 2007; the government, recognizing both negative and positive effects of petroleum production in neighbouring countries, organized a number of stakeholder consultations and study tours. One major outcome of these consultations and tours was the passing of the PRMA in 2011. Among other objectives, the PRMA seeks to provide a framework for the collection, allocation, and management of petroleum revenues in a responsible, transparent, efficient, accountable, and sustainable manner to ensure inclusive development in line with Article 36 of Ghana's 1992 constitution. Indeed, the PRMA created the Ghana Petroleum Funds, an independent PIAC, and placed transparency and accountability responsibilities on the Minister for Finance, PIAC, and Bank of Ghana.

In an effort to manage volatility and the Dutch disease, the PRMA created the GSF as an insurance against petroleum revenue shortfall and mandated the Minister for Finance to select four priority areas, in the absence of a long-term development plan to develop over a three-year period. In

addition, the law satisfies an intergenerational equity requirement, by setting aside 9 per cent of the benchmark revenue to be invested in the GHF as an endowment for future generations.

Despite these provisions, it is reported that petroleum revenues are spread over too many projects. Apart from defeating the purpose of diversification, spreading thinly also leads to cost and time overruns. Indeed, oil revenues have been used to tackle many national projects (thinly spread), which has weakened the impact of petroleum investments on the social and economic development of the country. In addition, the law gives authority to the Minister for Finance to cap the GSF. This has led to the depletion of the GSF to less than 20 per cent of its estimated value and renders it incapable of cushioning the government in case of oil revenue shortfall. Even though the priority areas have been reduced to four in 2018, the challenge has been the ‘thinly spread within priorities’. That is, when a priority area like agriculture is selected, funds may be spent on many expenditure lines such as irrigation, fertilizer subsidy, seeds, agriculture training, and extension.

On a positive note, the Minister for Finance, PIAC, and Bank of Ghana have been complying with most of the transparency requirements by publishing petroleum-related reports on their websites and/or in the newspapers. In the 2017 edition of the Natural Resource Governance Index, published by the Natural Resource Governance Institute, Ghana scored high in terms of petroleum sovereign wealth management, transparency, and management of the national oil company but scored low in oil revenue management through the budget and local impact of petroleum resources. Further, PIAC, which was facing financial challenges prior to 2016, now receives its budget from the ABFA. Finally, although thinly spread, oil revenues have been used to construct and maintain some roads, irrigation dams, schools, and other critical infrastructure.

In order to diversify and enhance sustainable growth, it is important that petroleum revenue expenditure is focused on a medium- to long-term inclusive development strategy that is based on proper needs assessment, global trends, and possible growth dynamics of the country. This will help convert petroleum revenues into long-lasting physical, human, and financial resources.

It should be possible to rationalize ABFA expenditure and develop investment and reporting guidelines to reduce within-priority expenditure to not more than three project/expenditure lines. This will help to identify and measure efficiency savings and improve petroleum revenue management.

There is a need for value addition through refining and active local participation to link the petroleum sector to other sectors. There should be fiscal adjustment by building the GSF to cushion the government in times of petroleum revenue shortfall, and policymakers should strive to effectively manage the non-oil economy through proper diversification.

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