



WIDER Working Paper 2017/179

Regulatory structures and challenges to developmental extractives

Some practical observations from Ghana

Toni Aubynn*

October 2017

Abstract: At the heart of an effective extractive resource-based economic transformation and development is an effective regulatory framework that guides the promotion of investments into the sector, the procedure for responsible extraction, and the management of the utilization of such resources. Ghana's endowment with significant amount of ferrous and non-ferrous minerals, including gold, bauxite, manganese, diamonds, and iron ore, as well as hydrocarbons, is well known. The country has been mining gold for over a century, ranking second in production in Africa. The country has also undergone various regulatory transformations that have resulted in improvements in the mining sector in the country. Drawing largely on the case of Ghana, this paper seeks to share the experience of a regulator and offers some perspectives on the purpose, content, and challenges of the practical regulation of an extractives sector in a lower middle-income economy. The paper looks at both the design and content of a regulatory system in the mining sector of Ghana and throws light on the practical challenges (technical and political) of implementation. In light of the increasing allure of resource nationalism in current times, the paper also briefly explores the manner in which relationships are established and maintained by the regulatory bodies with both large multinational companies and small artisanal mining operations. It also offers a brief reflection on three key international standards and arrangements (the International Finance Corporation, the Extractive Industries Transparency Initiative, and the International Council on Minerals and Metals) to highlight their impact on domestic regulations. Conclusions are drawn to underscore the importance of effective and collaborative regulations in maximizing the transformative potential of resource extraction in less developed, resource-endowed countries.

Keywords: development, extractives, regulatory, resource-based, transformation

* Ghana Minerals Commission, Accra, Ghana; Kwesiaubynn@gmail.com.

This study has been prepared within the UNU-WIDER project on 'Extractives for development (E4D)', which is part of a larger research project on 'Macro-economic management (M-EM)'.

Copyright © UNU-WIDER 2017

Information and requests: publications@wider.unu.edu

ISSN 1798-7237 ISBN 978-92-9256-405-6 <https://doi.org/10.35188/UNU-WIDER/2017/405-6>

Typescript prepared by Gary Smith.

The United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Denmark, Finland, Sweden, and the United Kingdom.

Katajanokanlaituri 6 B, 00160 Helsinki, Finland

The views expressed in this paper are those of the author(s), and do not necessarily reflect the views of the Institute or the United Nations University, nor the programme/project donors.

1 Introduction and background

It is now well established that resources-rich, low-income countries (LICs), even though they produce fewer minerals than their high-income counterparts, depend more on the extraction of natural resources for their economic development and transformation (McKinsey Global Institute 2013). This places natural resources extraction at the heart of the socioeconomic development and transformation of resource-endowed LICs. Central to the transformative and developmental power of natural resource extraction is an effective regulatory framework that guides the promotion of investments in the sector and the establishment of effective procedures responsible for the extraction and management of the utilization of such resources. The role of an effective regulatory regime in promoting economic growth and development has excited considerable interest among researchers and practitioners in recent years (Jalilian et al. 2007; World Bank 2004).

One key question is how regulatory structures contribute to the harnessing of the natural resource extraction for socioeconomic development and transformation. Another is how regulation can be improved to ensure it plays its expected role in the attraction of investment and the management of the utilization of natural resources in LICs.

Ghana is currently a lower middle-income economy with per capita income of about US\$1,100 and a population of 24 million (Government of Ghana 2013). The country is endowed with significant amounts of ferrous and non-ferrous minerals, including gold, bauxite, manganese, diamonds, and iron ore, as well as hydrocarbons. It has been mining gold for over a century and currently ranks second only to South Africa in gold production in Africa. By virtue of its former name—Gold Coast—Ghana has historically been touted as being adorned with gold and other natural resources. The country's mining sector has also undergone various reforms, including a regulatory transformation that is believed to have resulted in the improvement of the mining sector of the country.

What experiences can be shared as key inputs to ensure that the development of the extractive sector positively impacts on the socioeconomic transformation of resource-rich LICs? Drawing largely on the case of Ghana, this paper seeks to share the experience of regulation in the extractive sector and offers some perspectives on the purposes, content, and challenges of the practical regulation of an extractives sector in a resource-endowed lower middle-income economy. The paper looks at both the design and content of a regulatory system in the mining sector of Ghana and throws light on the practical challenges (technical and political) of implementation. In the light of the increasing allure of resource nationalism, the paper also briefly explores the manner in which relationships are established and maintained by the regulatory bodies with both large multinational companies and artisanal and small-scale (ASM) mining operations. It also offers a brief reflection on three key international standards and arrangements (the International Finance Corporation (IFC); the Extractive Industries Transparency Initiative (EITI); and the International Council on Minerals and Metals (ICMM)), to highlight their impact on domestic regulations. Conclusions are drawn to underscore the importance of effective and collaborative regulations in maximizing the transformative potential of resource extraction in less developed resource-endowed countries.

There is an abundance of literature on natural resource extraction and its impact on resource-rich countries, and a growing body of work that focuses on natural resources governance (Auty 1993, 1998, 2000; Collier and Venables 2011; Roberts 2013) which informs the background to this paper. The paper also relies quite heavily on the author's own experience in the field, as well as documentary

materials at the Ghana Minerals Commission, the Ghana Chamber of Mines, Ghana Statistical Services, the Bank of Ghana, and the ICMM.¹

The rest of this paper is organized as follows. Section 2 begins with a brief discussion of the prevailing thought on the role of natural resource endowments in development. This is followed by a brief but general examination of the role of regulatory structures in mineral resource development (Section 3). Section 4 focuses on Ghana's case, with a relatively detailed look at the trajectory of the country's regulatory structures since the colonial era, with contrasts being drawn between the policies of the early post-Independence years, the reformed policies of the post-1983 period, and the gradual evolution of policies subsequently. The post-1980s regulatory reforms reveal an interesting dynamic in the contribution of mining to the economy, and so this period is examined more fully in Section 5 regarding both the regulatory reforms themselves and their impact on the various benefit streams within the economy. A key emerging outcome of recent regulations in resource economies has been the more active promotion of local content and value-addition frameworks. Section 6 provides a brief examination of Ghana's local content policy framework and its implications for the integration of the country's mining sector into the economy. Section 7 concentrates on the regulatory challenges from the practical perspective of the regulator and provides some suggestions on how the extraction of Ghana's mineral resources can play a truly catalytic role in Ghana's development. Section 8 offers a brief reflection on three key international standards and arrangements, namely the IFC, EITI, and ICMM. The final section draws some conclusions on the role of regulatory structures in enhancing the contribution of mineral resource extraction to the socioeconomic development of the country.

2 Resource extraction and development: current thinking

Economically advanced countries such as Canada, the United States, and Australia are well known to have been built partly at least on the back of mining (Slack 2010). This has created the expectation that economically less developed countries with rich endowments of mineral resources should have an easy escape from poverty, as the harnessing of such resources should naturally propel their transformation and development. However, negative examples from resource-endowed countries such as Nigeria, Venezuela, and Peru, among others, have provided formidable grounds for some to question the role of mineral resource endowments in socioeconomic development. Indeed, the discourse of development and mining in recent times has focused largely on whether the endowment of natural resources is a curse or blessing—the *resource curse* theory and how such a curse, if indeed it exists, can be either exorcized or the blessings enhanced. The 'resource curse' theory, argues that natural resources have negative effects on economic growth and development (see Auty 1993, 1998, 2000; Sachs and Warner 1997).

Proponents of this theory argue that countries with abundant natural resources tend to be poorer and experience a slower rate of economic growth than their resource-poor counterparts. Adherents of this line of thought are not persuaded about the role of mining as a growth engine, particularly because most mining in developing countries is a capital-intensive enclave industry—foreign-owned, operated largely by expatriates and arguably with little integration in the local economy. The resource curse theory questions the wisdom of placing extractive activities at the core of any policy that seeks to achieve sustainable development. While there may be theoretical

¹ The author is currently the chief executive officer of the Minerals Commission of Ghana, with nearly 20 years of previous experience in the extractive sector, including oil and gas. He has also written a number of academic papers on mining-related subjects.

and even empirical evidence supporting this line of thinking, a group of scholars like Davis (1998, 2011), Brunschweiler and Bulte (2008), and Wright and Czelusta (2007) have rightly questioned the basis of the generalization of the resource curse theory. They argue that the reported negative outcomes of the mineral economies are case-specific, with mixed and heterogeneous economic performance.

Indeed, economic theory provides no convincing explanation as to why resource abundance should be inherently dysfunctional. The growth and development of many economies, including those of Norway, Botswana, and South Africa, have been substantially attributed to the abundance and exploitation of mineral resources. Davis (1998: 220) puts it more succinctly when he observes: 'When the entire mineral economies are examined, the heterogeneity and inter-temporal variability of their performances prevents any generalisation of development pattern.' Indeed, Auty (2000) and Auty and Mikesell (1998) admit that the additional rent and foreign exchange obtained from the export of commodities should provide a source of additional investment and higher economic growth. The ICMM, in its Resource Endowment and Partnership for Development studies, adopts a more positive outlook and argues that a search for the benefit of mining to society should not focus largely on problems, but rather for solutions and success stories that can be replicated through appropriate policies. This paper proposes that contrary to the popularly held view that Ghana has not benefited from its mineral endowments, the facts on the ground suggest that Ghana is a (potentially) 'blessed' country rather than 'cursed'.

3 The role of regulatory structures in mineral resource and development

This section deliberately avoids the temptation of engaging into the intricacies of the definitions of 'policy' and 'regulation'. Suffice to say that regulation policies are the 'rules of the game' governing decision-making by socioeconomic actors, such as individual firms as producers or consumers. They are a purposeful course of action designed and implemented mainly by government agencies with the objective of shaping future outcomes in ways that would be more desirable than would otherwise be expected. Furthermore, regulations have the force of law, prescribed by a superior or competent authority, relating to the actions of those under that authority's control. Regulation policies can take many forms and the specific forms of regulation policy adopted in developing countries have changed over time (Jalilian et al. 2007; Minogue 2006). Roberts (2013) asserts that regulatory variability seen in sub-Saharan Africa (SSA) is based on the push and pull of domestic elite-driven governance orientations, including, among others, post-conflict and constitutional transitions, transnational influences and impositions. Ghana, like many African countries since Independence, has experienced regulatory variability ranging from command and control to relatively liberal structures that also reflect the governance orientation and, to a greater extent, external influences and impositions (including influences and impositions arising out of the World Bank and International Monetary Fund (IMF) conditionalities). The outcome of a regulatory system can be assessed against the yardsticks of effectiveness and efficiency. To assess the effectiveness of regulation, one needs to assess the extent to which it achieves the goals set by the government for the regulatory authority.

According to Parker (1999), a well-functioning regulatory system is one that balances accountability, transparency, and consistency. Similarly, effective regulatory agencies must not only operate within their legal powers but must also be accountable for the consequences of their actions. *Transparency* relates to regulatory decisions being reached in a way that is revealed to all interested parties. Regulatory *consistency* ensures predictability and a 'level playing field', which also underpins legitimacy. Inconsistent regulatory decisions undermine public confidence in a regulatory system and could also create uncertainty for investors. One area that undermines

regulatory consistency is political interference, which often alters the regulatory rules of the game for short-term political advantage. This makes a strong case for some kind of ‘independent’ regulator.

Jalilian and colleagues (2007: 87) argue that:

from the 1960s to the 1980s, market failure was used to legitimise direct government involvement in productive activities in many developing countries, by promoting industrialisation through import substitution, investing directly in industry and agriculture, and by extending public ownership of enterprises. However, following the apparent success of market liberalization programmes in some developed countries, and the evidence of the failure of state-led economic planning in developing ones (World Bank 1995), the role of state regulation was redefined and narrowed to that of ensuring an undistorted policy environment in which efficient markets could operate.

4 Trajectory of mining regulations in Ghana

Since the beginning of Ghana’s independence in 1957, several variants of mining and allied regulation policies have been implemented with the aim of ensuring the most effective exploitation of the country’s mineral resources and the maximization of their benefits. The recent regulatory framework in the mining sector of Ghana was part of the deregulation framework adopted under the Structural Adjustment Programmes (SAP) of the early 1980s, which in a way reflects the role of external factors in influencing the regulatory framework in the country. As we note below, the key driver for the chosen mode of regulation of the mining sector under the SAPs was the disappointing record of investment and the imperative to drive this higher. The central objective of regulation in the mining sector since the early 1980s has been to promote sustainable development and poverty reduction through the extraction of the country’s mineral resources. Efficiency and effectiveness have also been key drivers of mineral sector regulation to ensure greater attraction of foreign direct investment (FDI) to the sector, increased mineral production and revenues, and from that enhanced foreign exchange earnings and greater employment.

The purpose of this section is not to enter into the debate on whether the country has benefited from its mineral exploitation or the counterfactual argument of what would have happened if other policies had been implemented. The question I seek to answer is: what regulatory paradigms have Ghana adapted to ensure the sustainable and beneficial exploitation of its mineral resources? By examining the trajectory of mining regulations in Ghana in this section, I seek to underscore the point that the last three decades have seen significant progress in minerals production and benefits due largely to the implementation of relatively effective mining regulation policies. The following section examines various key regulation policies as they relate to mining since the colonial era.

4.1 Pre-and immediate post-Independence mining policies

It is not known exactly when mining began in the country. Tsikata (1997) suggests that the existence of large mineral resources including gold, diamonds, bauxite, and manganese was among the key reasons for Britain’s imperial adventures in Ghana during the nineteenth century, even though the country’s influential position in mining dwindled steadily over that period (Acquah 1995; Dumett 1999).

There have been several estimates of the historical production of gold by Ghana. One estimate puts it at approximately 2,488 metric tonnes (80 million ounces) between the first documentation of gold mining in 1493 and 1997 (Kesse 1985; Ghana Chamber of Mines 1998). The World Bank asserts that Ghana accounted for 36 per cent (8,153,426 ounces) of total world production of gold during the period 1493–1600 (Tsikata 1997). Yet, it is believed that regular shipments of gold from the ports of Ghana, then the Gold Coast, in the early parts of the eighteenth century between 1471 and 1880 was over 14.4 million ounces (Acquah 1995; Dumett 1999). While these estimates may be exaggerated, they clearly underscore the significant amount of gold production by the country over the years.

Ghana's first real mining regulation policy is believed to have been formulated under British colonial rule during the latter half of the nineteenth century, when large-scale mining by British and other foreign investors began in Ghana. The regulations that ensued from the colonial mining policy were largely influenced by British mining interests and were designed to achieve the following four key objectives.

- 1 establish a legal and administrative framework to facilitate mineral operations;
- 2 ensure security of tenure for grantees of mineral rights;
- 3 help manage problems that would arise in the relations between mining companies and representatives and members of local mining communities;
- 4 raise revenue for the colonial government through the levying of duties and income tax.

These objectives reinforced the widely held view that the central aim of colonial mining regulation policies was to ensure self-sufficiency for the British Empire and not to secure the beneficial interests of Ghana. The timing of the development of manganese and bauxite mining in Ghana belies the ulterior interest of the British colonialist (Graham 1982). A manganese mine at Nsuta in western Ghana was hurriedly established in 1917 at the request of the British wartime Ministry of Munitions to meet the increasing wartime needs for the metal. Similarly, even though concession had been granted as early as 1926 for the mining of bauxite in the Awaso area, also in western Ghana, production did not start until the early 1940s, when other sources of the commodity had been cut-off from the Allied forces during the Second World War. Furthermore, it is largely believed that beneath the promulgation of the Mercury Ordinance in 1932, which effectively criminalized indigenous gold mining, was the need to draw more local labour into the European-dominated mining sector (Akabzaa and Darimani 2001).

The impact of the mining policies and regulations during the colonial period can reasonably be described as a mixed bag, as the country saw the construction of some major infrastructure projects such as rail and roads from the port city of Takoradi to key mining areas such as Tarkwa, Prestea, Dunkwa, and Awaso. However, by the mid-1950s the fortunes of the mining sector had started to dwindle, largely due to the growing struggle for independence that had created some disquiet among investors and increased the political risk within the country. The immediate post-colonial government took steps to reverse that situation. In 1960, the government appointed a commission to investigate the prevailing situation in the mining industry in Ghana (Tsikata 1997). The commission's recommendation culminated in a new Minerals Act 1962. The intent of the policy can be summarized as maximizing government revenue, control of mineral resources, and the generation of employment. According to Tsikata (1997), the key points of the Minerals Act 1962 are as follows:

- all minerals in their natural state were vested in the president for and on behalf of the people;
- the government held the sole right to export minerals;

- the power of control of land rights were vested in the state; and
- the granting and determination of duration of mineral rights were vested in the state.

Since then, and until the mid-1980s, the country has adopted variants of state-controlled economic management policies and has maintained permanent sovereignty over minerals in their natural state (Leith 1996; Walde 1983). For instance, through the policy of nationalization and renegotiation of existing agreements, the government gained control over five gold-mining operations (Tarkwa, Prestea, Bibiani, Dunkwa, and Konongo mines) and one manganese operation, hitherto owned by British companies. This was achieved through the creation in 1961 of the State Gold Mining Corporation (SGMC) and the Ghana National Manganese Corporation (GNMC). The government further consolidated its position in 1972 when it enacted an Act that allowed the government to acquire majority shares in mining companies. This culminated in the acquisition of 55 per cent shares in Ashanti Gold Fields Corporation (AGC),² Ghana Diamonds Company (GCD), Ghana Alcoa Bauxite Company (GABC), and the takeover of the African Manganese Company's (AMC) operations at Nsuta.

4.2 Economic growth and decline

The 1950s and 1960s witnessed significant growth in the output of key commodities of the country, namely cocoa and gold, largely due to the high quality and improved prices of cocoa, massive infusion of input subsidies and private investment, as well as high gold prices. This greatly expanded the foreign exchange base and the overall production of the country. Gold production reached a peak of 0.9 million ounces produced from about 30 mines in the country in 1960 (Barning 1990).

Since Independence in 1957, mineral production has experienced varying fortunes, often responding to the significant changes of prevailing policy and political frameworks. In the 1960s, for example, Ghana produced about 0.9 million ounces (about 27,000 kilograms) of gold, 0.4 million tonnes of manganese, 0.5 million tonnes of bauxite and 3.2 million carats of diamonds per annum (Ewusi 1986; GLSS 1989). However, by the mid-1970s, after various coups and the establishment of military governments (Supreme Military Council (SMC I & II) and the Armed Forces Revolutionary Council (AFRC)), things had begun to take a turn for the worse (in the face of adverse economic policies, weak overall economic performance, and various external events such as the global economic depression and oil crises). The production of manganese declined so much that by 1983 output was less than 0.2 million tonnes. Similarly, gold production plummeted from 920,000 ounces in 1960 to only 236,000 ounces in 1983.

In spite of the relative abundance of natural and human resources, a combination of internal and external factors steadily brought the economy of Ghana into decline in the late 1960s, of which a fall in mineral activity was a central part. By the second half of the 1970s the economy was a shambles and desperately in need of some form of redemption. The average annual gross domestic product (GDP) growth rate between 1975 and 1983 was -3 per cent, while the per capita GDP growth rate was -7 per cent. Agricultural output also declined at a rate of 0.3 per cent annually. Output of cocoa, the lifeline of the country's economy, had fallen from an average annual output of about 0.5 million tonnes in the 1960s to less than 0.2 million tonnes between 1975 and 1983. Again, by 1983 mineral production had also fallen drastically. A case in point is gold, the output of which fell to one-third of its 1960 level, with only four mines left in operation. In addition,

² Lonrho, of Britain, had owned AGC. The share structure after this acquisition was 55 and 45 per cent respectively for the government of Ghana and Lonrho.

roads and general infrastructure were in a deplorable condition (Leith and Lofchie 1993; Tabatabai 1989: 404).

The pace of decline accelerated through the 1970s and beyond. Between the latter half of the 1970s and the early 1980s, the economy was virtually at a standstill. National income per annum fell by around 0.5 per cent between 1970 and 1982, while real income per capita fell by over 30 per cent. The poor performance of Ghana's economy in the immediate post-Independence years is particularly striking given that at the time of Independence the country had a real GDP per capita of over US\$450 (in 1995 prices), which was more than 40 per cent higher than in Botswana (Roe and Samuel 2007). By 1985 Ghana's GDP had declined to only US\$313 and Botswana had outpaced Ghana, growing at 7.9 per cent while Ghana grew at only 1.4 per cent.

5 The regulatory structures of the 1980s and beyond

The steeply declining fortunes of mineral production during the 1970s and early 1980s has been blamed less on the absence of ore and more on the overall impact of the macroeconomic malaise of the country, as well as production constraints of the sector (Barning 1990; Hutchful 1996). The unfavourable macroeconomic environment coincided with increased concerns over political unrest and the possibility of expropriation or sudden changes in taxation policies, as well as the prevailing laws on repatriation of profits. These factors combined precluded any new large-scale direct foreign investment (Warhurst and Bridge 1997: 2).

The political and economic exigencies of the time, including the continuing decline in most economic indicators, made a compelling case for the government, the Provisional National Defence Council (PNDC), to begin negotiations with the IMF and the World Bank for economic assistance and policy guidance, which culminated in the adoption of the SAP, locally christened the 'Economic Recovery Programme' (ERP) in 1983.

The policies and regulations introduced from that date typified the free market and private property ownership advocacy of neoliberalism. This stood in stark contrast with the previous state control of mining, which saw the state as dirigistic or neo-patrimonialist. As a resource-rich developing country, it was no surprise that special attention in the Ghanaian reforms was paid to the mining sector to enable it to play a leading role in the revival of the ailing economy through the conversion of mineral assets into other national wealth. More specifically, Ghana developed a set of new mining codes that have come to best illustrate the so-called *first generation of mining codes in Africa* since the 1980s (Campbell 2004). According to Campbell (2004), Ghana's mining codes of the 1980s (Minerals and Mining Law 1986, PNDCL 153) reflect a new generation of liberalization approaches, including the privatization of state enterprise and very extensive deregulation. Numerous mining operations previously owned by the state were privatized and new private investment in the sector actively encouraged. The next section takes a closer look at the key legislative and institutional reforms that were introduced as part of this major change.

5.1 Mining legislation

The key legislative framework in place for mining in Ghana since the mid-1980s is laid down in the Minerals and Mining Law 1986, PNDCL 153 (Law 153) as amended by the Minerals and Mining Amendment Act 1993, Act 475 (Act 475), and since 2007 amended and replaced by the Minerals and Mining Law 2006 Act 703. Within the current legal framework, all minerals in Ghana are vested in the president on behalf of and in trust for the people of Ghana. Thus, regardless of who owns the land upon or under which minerals are situated, the state is the owner of all minerals

occurring in their natural state within Ghana's land and sea territory, including its exclusive economic zone (EEZ).³ According to the law governing mining in Ghana, the exercise of any mineral right requires a licence to be granted by the minister responsible for mining, who in turn acts as an agent of the state for the exercise of powers relating to minerals.

The World Bank (2002: 152) notes quite correctly that building effective regulatory structures in developing countries is not simply an issue of the technical design of the regulatory instruments, but also involves the quality of the supporting regulatory institutions and their capacity. During this period new institutions such as the Minerals Commission and the Environmental Protection Agency (EPA) were established, in 1986 and 1994 respectively, to provide regulatory effectiveness. The Minerals Commission in particular has the authority under the Constitution to regulate, manage, and advise the government on the utilization of mineral resources and coordinate policies in relation to minerals. It also seeks to ensure a one-stop shop for investors in the minerals sector in order to reduce the problems of complex bureaucracy and administrative inertia.

5.2 Investment

In order to attract venture capital into the mining industry in Ghana, the government also undertook a review of its tax and incentive regimes in respect of mining, and introduced what may be described as relatively generous investment incentives for mining companies, including the following:

- Reduction of corporate tax from 50–55 per cent prior to implementation of SAP, to 45 per cent in 1986 and later scaled down further to 35 per cent in 1994. In 2002 the corporate tax rate was further reduced to 25 per cent but was reversed to its 1992 level of 35 per cent in 2012 (Government of Ghana 2013).
- Exemption from payment of customs import duties in respect of plant, machinery, equipment, and accessories imported specifically for mining.
- Sweeping changes, in 2012, in the fiscal imposts for mining. For example, capital allowance was increased from 20 per cent prior to SAP in the first year of production and 15 per cent per annum subsequently, to 75 per cent and 50 per cent respectively in 1986. In 2002, capital allowance was revised further to 80 per cent in the first year and 50 per cent subsequently in a reducing balance approach. Capital allowance has since 2012 been changed to a flat rate of 20 per cent for a fixed period of five years.
- A negotiable foreign exchange retention regime of a minimum of 25 per cent.⁴

The government, through SAP, also provided finance for the purchase of spare parts and materials, and for the rehabilitation of infrastructure such as roads and railways. This new climate of support led to significantly increased investment in the mining sector, making it a major springboard for the economic recovery of the 1980s up to the mid-1990s. What, then, has been the impact of these policy and regulatory changes on minerals production and the benefit streams for the economy

³ The EEZ is a sea zone prescribed by the United Nations Convention on the Law of the Sea over which a state has special rights regarding the exploration and use of marine resources, including energy production from water and wind. It extends no more than 200 nautical miles from the territorial sea baseline.

⁴ Under this programme, mining companies could retain up to 75 per cent of their profits anywhere and in any currency. Prior to that, companies operating in Ghana were required by law to keep nearly 80 per cent of their profits in the country. Under the new regime, each mining company negotiates directly with the government the exact percentage that can be retained outside the country, but not higher than 75 per cent.

since the 1980s? In the next section, I will examine in some detail the contributions of mining or minerals sector to the economy of Ghana.

5.3 Contribution and benefits stream

The mining industry globally has been generally criticized for not contributing ‘enough’ to their host countries. In Africa, and Ghana in particular, the criticism has been heightened in the last decades when commodity prices, particularly gold, have experienced an unprecedented bull rally (Africa Union Commission and United Nations Economic Commission for Africa 2009; United Nations Economic Commission for Africa 2011). The impression created, especially by anti-mining NGOs and a certain section of the media, is that mining is not only environmentally destructive but does not make any meaningful contributions to the socioeconomy of the country. This impression of extreme environmental degradation and limited benefits associated with the mining industry has often overshadowed the contribution it makes to the economy. I focus in what follows on the sector’s contributions to investment and associated capital inflows to the economy, and on domestic revenue, foreign exchange earnings, and employment

5.4 Capital injection and production of minerals

During the decade prior to 1985, the mining industry had virtually stagnated. There were no significant new investments in the country in general and the mining sector in particular. However, largely as a result of the policy measures described above, coupled with favourable world market prices for some minerals, a substantial re-capitalization of the mining industry, notably gold, has occurred. Between 1983 and 2016 the Ghanaian mining sector experienced cumulatively over US\$16 billion in new FDI for exploration, the establishment of new mines, as well as the expansion and rehabilitation of already existing ones.⁵ This represents 35–65 per cent of the total annual investment in Ghana over the period, with global leading gold-mining companies such as South Africa-headquartered Gold Fields and AngloGold Ashanti and the US-based Newmont Gold all investing heavily in the country

Undoubtedly these investments have provided enormous spin-off benefits, including the provision of supporting infrastructure (roads, houses, schools, and hospitals, extension of electricity), on-the-job training opportunities for Ghanaians, and the transfer of technology. These are benefits that will remain in the country long after the mining companies are gone.

There is no doubt that the mining sector has witnessed a phenomenal growth in production since the implementation of mining sector policies of the 1980s. Available data from the Minerals Commission clearly confirm the doubling of production of all minerals since 1983. Gold, by far the major mineral, has increased more than tenfold from its immediate pre-1980 volume to a peak of nearly 4.5 million ounces in 2013. Also, over 1,000 small-scale gold-mining concessions have been granted following the legalization of small-scale gold mining in 1989. Production from the ASM sector has gained significant prominence, from contributing less than 1 per cent in 1990 to over 30 per cent of total gold produced in 2013.

5.5 Domestic revenue generation

One of the major areas of benefit from mining has been and remains the generation of domestic revenue to the state (Table 1). The current Minerals and Mining Law of Ghana (Act 703), with its recent amendments in 2012, requires large-scale mining operators to contribute 5 per cent of their

⁵ Presentation at the West Africa Institute of Mining Conference, Accra, 1–2 August 2017.

gross revenue as royalties to government. Eighty per cent of this amount is retained by the central government; 10 per cent goes to the Minerals Development Fund; 1 per cent goes to the Office of the Stool⁶ Lands Administrator to cover administrative expenses; and the remaining 9 per cent is allocated among the District Assemblies, traditional councils, and affected stools. Additionally, mining operators are required to pay 35 per cent of profits in corporation tax, and dividends on the government's statutory 10 per cent free-carried interest in all private mining companies.

⁶ A 'stool' in the Akan traditional system of mostly the middle to southern Ghana means a royal throne or seat and is symbolic of the divinity and power of its people. In Ghana it is estimated that about 80 per cent of the lands are vested in the customary sector made up of stools, skins (in the north reflecting the animal skins their leaders sat on), and families. The Office of the Stool Lands Administrator manages the resources accruing to the lands controlled by this customary sector.

Table 1: Mining sector contribution to domestic revenue (1990–2012)

Year	Corporate tax	Mineral royalties	Pay-as-you-earn (PAYE) taxation	Reconstruction levy	Total IRS (GRA)	Percentage of mining to total
1990	2,825,941,158	1,893,436,000			52,818,068,300	8.94
1991	821,844,979	3,021,277,000			61,485,625,496	6.25
1992	455,051,883	4,545,804,000			74,931,531,366	6.67
1993	4,393,447,293	7,485,121,000	2,649,306,000		113,236,997,000	12.83
1994	7,214,082,000	12,783,689,000	4,810,802,000		166,595,941,000	14.89
1995	20,392,973,000	20,911,926,000	7,951,763,000		275,513,201,000	17.88
1996	9,160,528,000	35,527,027,000	16,834,543,000		424,491,908,000	14.49
1997	9,868,796,000	34,594,950,000	25,022,023,000		605,782,577,000	11.47
1998	14,450,773,000	49,841,242,000	31,016,506,000		785,436,693,000	12.13
1999	31,117,108,000	48,620,419,161	27,839,260,000		901,663,758,000	11.93
2000	15,789,167,000	118,736,935,173	59,243,800,000		1,409,445,273,000	13.75
2001	24,812,893,000	127,358,386,430	76,111,678,000	4,251,467,579	1,950,162,751,000	11.92
2002	23,501,158,000	153,452,471,032	101,457,668,000	26,474,633,878	2,757,747,781,032	11.06
2003	68,137,702,000	194,387,579,429	141,049,450,000	16,785,882,702	3,824,078,389,429	10.99
2004	100,331,114,000	215,743,706,000	134,357,711,000	36,346,622,100	5,333,114,704,000	9.13
2005	269,889,639,000	235,951,903,000	194,058,939,000	22,957,004,700	6,446,385,048,000	11.21
2006	404,361,775,000	316,254,789,000	216,525,776,000	11,085,262,400	7,333,916,866,000	10.20
2007*	47,415,690	40,882,042	34,587,597	–	901,242,340	14.42
2008*	73,554,697	59,004,892	47,139,242	–	1,222,272,177	15.32
2009*	124,600,880	90,415,902	103,061,985	–	1,731,633,034	18.21
2010*	241,578,780.28	144,697,000	132,469,709.91	–	2,441,331,841.81	21.29
2011*	649,902,536	222,024,706	161,822,107	–	3,746,024,194	27.61
2012*	893,773,828	359,392,853	207,495,934	–	7,461,202,977	20.72

* Contributions for 2007–11 are in GH¢. All others are in cedis; IRS: internal revenue service; GRA: Ghana revenue authority.

Source: data from Minerals Commission, *Statistical Overview of Ghana's Mining Industry* (1990–2003); IRS/GRA data (2004–11).

The collection of these taxes over the years has positioned the mining sector as the leading contributor to domestic public revenue in Ghana. Table 1 shows the revenue contribution to the state by mining companies. Government receipts from the mining sector have mostly reflected general production levels, price, and the tax rate at any particular period, and have evidently been increasing over the years.⁷ Between 1995 and 2003, for example, the total annual average contribution by the sector to Ghana's domestic revenue was the equivalent of approximately US\$40 million, representing an average of approximately 10 per cent of total government domestic receipts. This was a period that saw a dramatic fall in the gold price: it reached a 20-year low of US\$255 per ounce and saw unimpressive gold production levels. However, after that Ghana witnessed significant growth in receipts from the mining sector to peak in 2012 at 27 per cent of total government revenues (US\$708 million). The drastic decline in commodity prices since then, the hardest hit of which was gold, coupled with the expansion in domestic revenue sources, especially resulting from the novel inclusion of revenues from oil production,⁸ have meant a dip in the sector's contribution to overall domestic revenue generation, to a low of 16 per cent in 2016.⁹ That notwithstanding, the mining sector has maintained its leadership as the single most important revenue generator for Ghana.

5.6 Foreign exchange

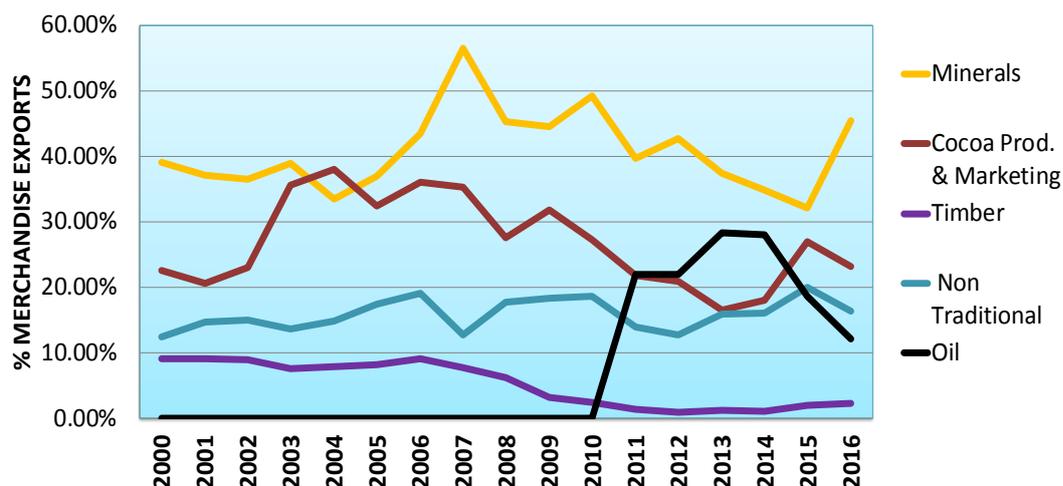
In terms of foreign exchange or receipts from merchandised export for Ghana, mineral exports have maintained a consistent leadership as the country's number one earner since 2000. The share of minerals to total foreign exchange earnings of Ghana has increased from 14 per cent in 1990 to an average of 41 per cent since 1993, outpacing cocoa as the country's most important foreign exchange earner (Bank of Ghana 2010; ISSER 1996–2010). Between 1995 and 2002, for instance, the annual average export earnings of Ghana were approximately US\$1.7 billion, of which mining contributed about US\$690 million. As shown in Figure 1, in 2012 mining earned over US\$4.0 billion or 42 per cent of gross merchandise exports value, with similar trends in percentage contribution in spite of the inclusion of oil in Ghana's basket of exports. Gold has always assumed a strong position by all indicators in the mining industry and has contributed 86–95 per cent of the earnings from the country's total mineral exports since 1986.

⁷ This section on revenues and the next section on foreign exchange impacts draw upon Aubynn et al. (2015).

⁸ Ghana began production and export of oil in commercial quantities during the last quarter of 2010.

⁹ Presentation at the West Africa Institute of Mining Conference, Accra, 1–2 August 2017.

Figure 1: Trends in total exports by key sectors



Source: author.

Critics of the industry have questioned the extent to which the high foreign exchange earned from mineral export is retained in Ghana (Akabzaa 2001; Akabzaa and Darimani 2001). Available records at the Minerals Commission, Ghana Chamber of Mines, and Bank of Ghana however, indicate that on average mining companies have returned more of their export proceeds than they are statutorily required to (Aryee 2014; Ghana Chamber of Mines 2012). This is contrary to the commonly held view that mining companies retain their earnings in offshore accounts.¹⁰ As we have noted earlier, mining companies are permitted by the Minerals and Mining Laws of Ghana to operate external accounts in order to purchase operational inputs that are not available in Ghana and also to amortize their foreign loans. The amounts to be held in these accounts are negotiated directly by individual companies with the government. So far, retention amounts approved by the government of Ghana since the mid-1980s have ranged between 25 and 80 per cent.

Table 2: Total mineral revenue and mineral revenue returned (2009–12)

Year	Total mineral revenue (US\$)	Mineral revenue returned (US\$)	Percentage of mineral revenue returned
2009	2,384,836,583	1,812,255,608	76
2010	3,290,792,703	2,222,901,896	68
2011	4,245,370,284	3,173,491,961	75
2012	4,525,657,336	3,268,084,143	73

Source: data from Ghana Chamber of Mines (2013).

Table 2 shows that since 2009, mining companies have kept an average of about 27 per cent of their exports in overseas accounts and returned approximately 72 per cent to Ghana. Similar ratios pertained in earlier years. For instance, according to the Bank of Ghana (2001), between 1998 and 2000, of the total export earnings of US\$756 million for minerals, one-quarter (US\$177 million) was repatriated to Ghana. This amount has since increased to reflect production and price dynamics. In 2012, the sector returned approximately US\$3.2 billion, representing 73 per cent of total mining export receipts. Clearly, mining companies returned far more than is required by law. The significant return of foreign exchange through local commercial banks and Ghana's central

¹⁰ The former governor of the Bank of Ghana, D. Paul Acquah, confirmed this in a speech he delivered at the 79th Annual General Meeting of the Ghana Chamber of Mines. See Ghana News Agency report of 9 June 2006: www.ghanadistricts.com.

bank (Bank of Ghana) has contributed immensely to the relative stability of the local currency—the cedi—and the overall balance of payments of the country.

5.7 Employment generation

To what extent does mining contribute to employment in Ghana? In terms of numbers, the massive retrenchment occasioned by the implementation of SAP from 1983 onwards had an initial debilitating effect on employment in the mining sector. Before the 1980s, the sector was estimated to have directly employed about 27,000 Ghanaians. By 1987 the number is believed to have shrunk to 15,000, largely due to the massive retrenchment exercise at the long-established Obuasi Mines. However, total direct employment in the mineral sector surged to about 23,000 by 1995. By 2004 this number had reduced to approximately 18,000 Ghanaians, attributable to the closure of the Teberebie Mines and redundancies at the Damang Mines.¹¹ According to the 2012 *Annual Report* of the Ghana Chamber of Mines, the sector at that time directly employed approximately 23,000 people. The Minerals Commission put it significantly higher at 27,000, including other mining contractors. But of great significance is the fact that analysts, including the Chamber of Mines, have long estimated that indirectly the mining industry offers employment of about five times this number through local purchases and the award of various kinds of contracts (Ghana Chamber of Mines 2001). These estimates, which relate only to large-scale mining, are substantially increased when we also consider the large army of youth employed in the informal, less regulated ASM in Ghana, which has been variously estimated at 500,000–1,000,000 (e.g. McQuilken and Hilson 2016).

Critics of the industry argue that open-pit mining lacks the capacity for significant employment generation.¹² This is due largely to its capital-intensive nature and short lifespan. This is true to some extent. For example, the closure of the Tarkwa and Prestea underground operations in 1999 and 2002, respectively, led to over 2,000 job losses. Similarly, the closure of the Teberebi surface operations after less than ten years of operations also led to about 500 labour redundancies, although it is believed that about 70 per cent of the retrenched labour force were engaged by emerging operations at Damang, Tarkwa, and Akyempim (Aubynn 1997a, 1997b). These have often created some nostalgia for underground mining, which is believed to be more labour intensive.

On the other hand, one can argue that the use of the newer technology of open-pit mining in the early 1990s has been rather timely, allowing new operations in areas such as DamangWassa, Akyempim, Iduaprim, Tebeberbe (in the Western Region), Amansie, Chiraano, Kenyaasi, Nkawkaw, and Akyim, which were not previously known to produce gold, to be brought onstream and actively benefit from the production of gold. This development provided a conduit to absorb the mass of underground miners who would otherwise have been retrenched following the evidently poor performance of the country's underground mines.

Furthermore, incomes from this sector are high relative to those in other sectors, with the potential for high savings and higher standards of living. In short, the proportionate contribution of mining to total household wages and salaries is far higher than its contribution to employment numbers.

¹¹ This estimate includes employees in the exploration area, contractors as well as suppliers to the large-scale mining companies. It does not include artisanal and small-scale miners.

¹² Open-pit gold mining has become common in Ghana only in recent years (since the 1990s) relative to underground mining, as the fortunes of the latter, which was then dominant in the country, began to dwindle.

As we have also noted above, the high incomes translate into significantly high pay-as-you-earn (PAYE) tax for the government, as well as high social security (SSNIT) contributions.

From the foregoing, it is clear that the prioritization for major support of the mining sector under SAP has paid good dividends in terms of employment, foreign exchange earnings for the country, and capital injections. It remains to be seen how these dividends have translated into social improvement and sustainable development. That question is discussed next.

5.8 Gross domestic product and integration into the economy

The GDP of a country is a measure of the total final outputs of goods and services produced by the economy within the country's territory. Typically, mining provides only a modest *direct*¹³ contribution to a country's GDP (ICMM 2012, 2014). However, in Ghana the data suggest that the contribution of mining to GDP has seen steady improvements since the implementation of the SAP in the 1980s. In 1991 the industry contributed only a little over 1 per cent to Ghana's GDP. Since 1992, mining has contributed an average of 5 per cent to Ghana's GDP, and like all other indicators this has steadily improved since the 2000s, reaching a high of 14 per cent in 2012 (ISSER 1996–2012).

In an earlier paper I have looked at the relationship between mining's contribution to GDP and exports and observed a rather poor linkage of the sector with the rest of the national economy (Aubynn 2015). The relatively low but increasing share of GDP, coupled with low linkages of mining with the economy, may partly be explained by the absence of the industrial base for the manufacture of inputs required by the rather technology-intensive industry, leading most being imported. The steady increases in mining GDP values may, however, reflect the gradual increase in local participation in mining support services such as drilling, exploration and explosives, cement, lime and high-density pipe (HDPE) manufacturing and supplies in the sector. The following section focuses attention on the now topical issue of local content, which in my view is key to the maximization of the benefit of resource extraction by local economies.

6 Local content: the evolution of regulatory approaches

Historically, with few exceptions, most resource-rich SSA countries have focused primarily on the direct contributions of mining to government coffers through royalties and taxes. However, in the last decade, a number of established and emerging resource economies have sought to promote non-fiscal measures in the mould of the so-called local content and value addition to enhance the benefits of resources extraction (Amoako-Tuffour et al. 2015). These measures have sought to better integrate extractive resource activities with local economies, expand employment opportunities, and stimulate broad-based growth of the non-resource sectors. To put it simply, local content means securing direct and indirect opportunities for employment and procurement of local goods and services, while at the same time fostering the development of local skills, technology transfer, and the use of local manpower and local manufacturing.¹⁴

In Ghana, both the Minerals and Mining Act Law 2006 (Act 703), and its predecessor Act 153 of 1986, sought to promote a localization policy and facilitate improved production linkages. Indeed, Clause 50(3) of Act 703 calls for the eventual 'localization' of mining staff. In particular, the passage

¹³ Although, as noted earlier, some of the indirect contributions may be high.

¹⁴ This section and the following on employment builds on Amoako-Tuffour et al. (2015).

of the Minerals and Mining (General) Regulative Instrument (LI), 2012—LI 2173—marked the beginning of the implementation of local content policies in the mining sector.

LI 2173 provides a clear interpretation of Act 703 and focuses on three areas, namely: (1) the employment and promotion of a local workforce; (2) the procurement of locally produced goods and services; and (3) additional licensing and reporting requirements. Of interest to our present purposes are the first two, as discussed below.

6.1 Employment and promotion of local workforce

First, the regulation requires holders of mineral rights to hire national staff in various employment categories (subject to some exemptions, such as small companies or regional offices). The Minerals Commission works with mining companies to identify staff positions that can be filled by Ghanaians, local candidates who can be trained to replace foreign staff, and training programmes and timings for local staff to replace expatriate staff. This provision requires existing licence holders to present for approval a programme for the recruitment and training of Ghanaians, including plans for the replacement of expatriate staff by Ghanaians.

Second, the regulation aims to promote local knowledge and to minimize the number of expatriates assigned to jobs that are not extremely complex and for which local capacity exists. The regulation specifically imposes a ceiling on the number of expatriate staff a mining lease holder can employ: it requires that the percentage of expatriate staff should not exceed 10 per cent of the total senior staff within the first three years and 6 per cent after three years of the coming into force of the LI. In other words, within six years of the passage of the LI, mining leaseholders can have maximum expatriate staff numbers not exceeding 6 per cent of the total senior and management staff of the holder. Unskilled labour and clerical positions are generally to be reserved for Ghanaians.¹⁵

Third, to ensure effective implementation of the regulations, all mining leaseholders are required to provide a list of senior staff employees, including expatriate employees, their positions and job descriptions. In addition, a comprehensive five-year plan of replacement of expatriates by Ghanaians, including training programmes, are to be submitted to the Ghana Minerals Commission for review and approval. Applicants for new licence or mineral rights are similarly required to present a proposal in respect of the employment and training of Ghanaians.

6.2 Procurement of locally produced goods and services

On the topic of the purchase of local goods and services (excluding labour), LI 2173 clearly states its preference for local products to the maximum extent possible and consistent with safety, efficiency, and economy. It enjoins holders of mineral rights to give preference to materials and products made in Ghana; service agencies located in the country and owned by citizens; and companies or partnerships registered under the Ghanaian Company Code or Partnership Act. The aim of this regulation is to promote the procurement of local products and services. To achieve this aim, both mineral title holders and mining support providers are required to do the following:

- Submit a procurement plan, covering five years, to be submitted within a year of commencement of the regulation.
- Specify how they will procure and use local products to the maximum extent possible.

¹⁵ This section on employment, and the following one on procurement, draw upon Aubynn et al. (2015).

- The procurement plan will be guided by a Procurement List developed by the Minerals Commission, which will be revised annually.
- Mining businesses with approved procurement and localization plans by 31 January of each year are to submit an annual report which demonstrates the level of compliance to the Minerals Commission.

6.3 The state of implementation

Since the regulation came into force in 2013, the Minerals Commission has worked with the Ghana Chamber of Mines towards its practical implementation. Most of the major mining companies submitted both their localization and procurement plans to the Commission for approval by the end of 2014 and 2015. These plans have been reviewed by a committee. Between 2012 and 2013, the Commission undertook a process of broad consultations based on which an initial list of 18 items earmarked for local procurement was pruned down to eight. While this may seem a significant reduction, in reality the eight items constitute over 60 per cent of the value of the total local procurement budget of the companies concerned. In 2014, following the successful implementation of the first edition of the local procurement list, the latter was increased by an additional 11 items to a total of 19. So far, an average of 80 per cent compliance has been recorded by the Commission, with a total of US\$183 million of goods and services procured at home in Ghana in 2015. These were purchases that were otherwise likely to have been made abroad.

With respect to the localization of employment, all the major mining companies submitted their plans, which were reviewed by a committee established at the Commission and which includes representation from Immigration Services. This means that approval for residence and work permits for expatriate staff of mineral rights holders will depend on satisfactory compliance with localization regulations.

7 Key regulatory challenges

The previous sections have underscored the very impressive change to the key indicators of mining and the macro- and socioeconomy of Ghana in the past three decades. The assumption has been that the impressive performance of the mining sector has been due to the regulatory changes introduced since the reforms starting in 1983. However, as a student and practitioner of mining policies and sector regulation in Ghana for close to two decades, one cannot help but observe a number of regulatory challenges and bottlenecks that need to be addressed if Ghana is to achieve the full benefits of minerals extraction. I have estimated the following four as being prominent among the challenges, and discuss them in some detail in the following sections.

- multiple regulations and inter-institutional conflicts;
- capacity of regulators;
- political will and interference; and
- the balancing act of dealing with large-scale multinational and local small-scale mining sectors.

7.1 Multiple regulations and inter-institutional conflicts

The mining sector is, arguably, not only the most regulated sector in Ghana, it is also the sector whose regulation engages by far the largest number of regulatory institutions. The 1992 Constitution of Ghana and the Minerals and Mining Law of 1986, as amended in 2006, mandate the Minerals Commissions to regulate and manage the utilization of Ghana's mineral resources,

including the coordination of policies in relation to them.¹⁶ However, currently at least six other institutions—namely, the EPA, Forestry Commission, Water Resources Commission, Ghana Revenue Authority, Ministry of Finance, and the Bank of Ghana—exercise additional strong and direct regulatory authority over the sector. The resulting complexity of regulations and interpretation, as well as conflicts among regulators, has in many cases led to undue delays and bureaucracy in permit processing. A classic example of the institutional conflict is the confusion between the Minerals Commission (the Inspectorate Division) and the EPA as to who has the ultimate authority to regulate tailings dam construction. Both institutions claim the authority to regulate the construction of any tailings dam, to the effect that while the EPA insist on the plastic lining of all tailings, the Minerals Commission argues that the imperative of lining of tailings dams with plastic sheeting should be dependent on the nature of the soil. They argue further that where proven to be technically feasible, clay lining would achieve the same outcome. This has created serious concerns among mining companies who continue to seek clarity in the area. Similarly, in October 2015, the Bank of Ghana announced certain regulatory changes in respect of the export of gold in the small-scale mining sector. The areas of new regulations were deemed to be outside the scope of the Bank of Ghana. This led to the association of Licensed Gold Exporters (LGE) taking the matter to court. In the event, the government found it necessary to temporarily suspend the granting of new export licences and renewal of expired ones. Even though the matter has been successfully resolved out of court, one can surmise that the loss of revenue and foreign exchange during the period of the suspension has been considerable.

These multiple regulations and their attendant inter-institutional conflicts do not only defeat the purpose for which the Minerals Commission was established—to be a one-stop shop for investment in the mining sector—but they also create needless layers of bureaucracy and institutional tensions. The recent merger of the hitherto stand-alone Mines Department, whose duty is largely one of mine inspection, with the Minerals Commission as its Inspectorate Division and the subsequent relocation to the same office premises has clearly improved regulatory efficiency and effectiveness. Thus, the original idea of a one-stop shop Commission modelled on the Australian Department of Minerals and Mining is not only achievable, but also relevant today if regulatory efficiency and the effectiveness of the Minerals Commission are to be enhanced.

7.2 Capacity of regulators

Institutions and regulations are only as good as the capacity of its human resources. After over a century of mining in Ghana and with relatively good training institutions such as a dedicated university (University of Mines and Technology) for the training of mining professionals, Ghana can be said to have relatively good-quality human resources in the area of mining. As indicated earlier in this paper, the country is endowed with substantial mineral resources and its predominant mineral, gold, appears to spread throughout most of the nation, leading to a number of major mines and numerous small-scale (legal and illegal) mining activities across the country. Currently (September 2016), the Minerals Commission has a total staff strength of 220, less than 40 per cent of which is technical. Most of the technical staff (mining engineers, geologists, mineral processing engineers) have solid academic backgrounds (mostly second degrees holders) with significant industry experience and are generally highly competent. However, more than half of the Commission's technical staff are in their fifties, posing potential challenges for succession.¹⁷ Similarly, the sheer volume of monitoring, inspections, and extension work required to be done make it impossible for fewer than 100 staff to fully and effectively accomplish all the tasks that are

¹⁶ Minerals Commissions Act 1993, Act 450, section 2(1).

¹⁷ The statutory retirement age in Ghana is 60 years old.

required. In particular, the absence of adequate staff at the district level has been blamed as one of the reasons for the increasing spate of illegal mining operations in the country. The inadequacy of staff has also meant insufficient inspection and monitoring of the operating mines. For example, the current situation in which the country's flagship Obuasi Mine has had to be placed under care and maintenance for a revised programme of development of the mine has also been partly blamed on a failure of the Inspectorate Division to effectively monitor the development of the mine to notice early warning signs.¹⁸ The reason for the failure to reach the required number of staff with the relevant skill sets is not dissimilar to the generally unattractive remunerations and other conditions of employment that most public sectors face—particularly in African countries. The Commission is currently undertaking the refurbishment of some of its regional and district offices to make these more attractive and also to enable them to accommodate the anticipated increase in the number of staff.

Similarly, the equipment and other resources that the technicians need for their work to be effective raise further significant capacity challenges. Apart from the machine laboratory, which has been described as being in a good condition, the environmental and assay laboratories currently require major investment in order to meet the challenges of the modern mining industry.

7.3 Political will and interference

One of the key features of the post-SAP regulatory structures in Ghana has been reductions in the previously unnecessary bureaucracy and political interference in the minerals title application processes. For example, the application for minerals title is now based on a first-come-first-served principle and should begin at the Minerals Commission. The law endows the minister responsible for mining with the ultimate power to grant or terminate any mining title. Yet, the same law ensures that the power is not capriciously exercised. The regulations enjoin the minister to seek the advice of the Minerals Commission, and the minister's decisions are largely based on this advice.¹⁹ This principle has largely held in Ghana. However, there have been a few, even if outlying, instances in which ministers have instructed that specific concessions be processed by the Commission for some companies, contrary to the advice offered. Similarly, it is common knowledge, backed by anecdotes, that some individual politicians (not necessarily representing the position of government or parties) have used their influence to intervene in the seizure of equipment used by illegal miners in their operations. Even though this practice may be the exception rather than the rule, it needs to be checked to avoid gradual escalation and to also maintain the integrity of regulations and their implementation. To overcome the temptation of political interference and to deepen transparency, as well as to reduce other human intervention in the minerals titling (granting of concession) processes, the Commission is establishing a digitized mineral cadastre system that allows applications for mineral titles to be done via the internet.²⁰ This, combined with an open tender system, will hopefully reduce to the barest minimum the incidence of interference and human intervention in the granting of minerals titles and improve efficiency and transparency of the system.

Another area of concern is the creeping 'regulator uncertainty' that occurs in the aftermath of political change. It is fast becoming a norm that new political parties, which win general elections, begin office with a significant dose of suspicion of the regulator and often question their loyalty

¹⁸ The Obuasi Mine is estimated to have over seven million ounces of gold reserves.

¹⁹ The law enjoins the minister to seek the advice of the Minerals Commission, and where the minister disagrees with the Commission, the minister must provide reasons for the disagreement.

²⁰ This process is expected to 'go live' by April 2017.

to the new government.²¹ Some regulatory agencies become punch bags for needless public ridicule and opprobrium. During this period of ‘sparing’ for trust between political appointees and technocrats, instances of direct interventions in the day-to-day activities of regulators become common. One example, widely publicized in the local and social media, is the recent action (in May 2017) of the minister of lands and natural resources, announcing the interdiction of nine district mining officers of the Minerals Commission and their assistants without recourse to the policies of the Commission. Similarly, normal processes of recruitment by the Commission have had to be halted at the insistence of the sector minister for an indefinite period, compounding the capacity challenges outlined earlier in this paper. These burgeoning attempts at interfering and truncating the activities of regulatory agencies during political transitions have occurred under the rulings of both dominant political parties in Ghana, the National Democratic Congress (NDC) and the New Patriotic Party (NPP). This has the impact of not only directly affecting the image and credibility of public institutions, but also the psyche of employees who work there, who feel unjustifiably victimized as a result of political change.

7.4 The balancing act of dealing with large-scale multinational and local small-scale mining sectors

Ghana has two broad categories of mining operations: the large-scale, operated largely by multinational mining giants such as Newmont, Gold Fields, and AngloGold Ashantis; and a mass of small-scale miners, including many unlicensed operators locally known as *galamseys*. Ghana is among the few countries where small-scale mining is legalized and regulated (Small-Scale Mining Law 1989, PNDCL 218). Yet, it is also an area where an estimated 70 per cent of the over one million operators work outside the confines of the law.

As noted in earlier sections of this paper, large-scale mining companies produce the bulk of Ghana’s gold (an annual average of three million ounces in 2011–15). Gold production by small-scale miners cannot be dismissed as unimportant, as their contribution has grown from negligible levels in the 1990s to over one million ounces (in 2013). Laws and regulations exist for both categories of miners and these are managed mainly by the Minerals Commission and the EPA. Regulation of large-scale mining operations has been largely formal and relatively simple.

However, the same cannot be said of small-scale miners. The mass of small-scale mining operators, dominated by the *galamseys*, has been associated with the devastation of the physical environment of some areas, including the massive pollution of a number of river bodies in Ghana such as the *Ankobra*, *Tano*, and *Abirem*. The *galamseys* operate substantially in utter defiance of the law. Interestingly, their negative operations are known to be carried out in the full glare of law enforcement institutions and with disregard for any real sense of sound environmental management. There have been instances, often reported in the media, in which unregistered mining operators have invaded the concessions of some large-scale mining companies. The most recent (February 2016) case in point is the invasion of AngloGold Ashanti property at Obuasi by a large mass of illegal miners (estimated at 5,000). Clearly, while large-scale miners are held to strict regulatory standards, the same cannot currently be said of small-scale miners.

The question that has often been raised is why small-scale miners are not held to the same regulatory standards as large-scale miners. Several reasons have been given to explain their defiance of the law in spite of the existence of clear laws and regulations to guide their operations. Several reasons include: the long and complex application process; lack of finance in an activity that has

²¹ This situation may have arisen and perhaps been made worse by instances in which some public servants have shown open bias and declared support for certain political parties.

increasingly become capital intensive; lack of knowledge about the licence acquisition process; and the lack of capacity to fully enforce the law due to the sheer numbers of people (estimated at 1.5 million) involved in small-scale mining in the country vis-à-vis the available resources for policing.

While these stated reasons are no doubt very important and potent, the major challenge, in my view, is the lack of political will by successive governments to resolutely address the challenges posed by illegal small-scale miners. The culprits here are the two biggest political parties (the NDC and NPP), which are the only political parties to have run the affairs of government under the Fourth Republic Constitution since 1992. As noted in two previous papers (Aubynn 2009, 2010), successive governments have considered the political economy of enforcing the small-scale mining regulations potentially too costly to their electoral fortunes in view of their numbers as a potential source of significant electoral votes and the lack of alternative employment opportunities.²² They have had to engage in a delicate balancing act of attracting and protecting FDI in the country while at the same time ensuring the availability of opportunities, including the opportunity to engage in mining by local citizens. In the event, politicians of successive governments have often competed in their expression of support, overtly or tacitly, towards the operators of illegal mining.²³ This lack of political will to enforce the laws and regulations on small-scale mining has not only strengthened the hands of these unregistered operators, but has also emboldened them to invade the concessions of some large-scale mining companies. Some analysts have attributed the recent (February 2016) invasion of AngloGold Ashanti property at Obuasi by a large mass of illegal miners as an expression of this ‘emboldenment’ occasioned by the lack of political will to enforce the laws. It is imperative that a bipartisan approach is found in the enforcement of the country’s Minerals and Mining Law if a race to the bottom, with devastating environmental consequences, is not to be reached. There should be a collective understanding that illegal mining is a ‘no-go’ while encouraging and supporting regularized small-scale mining.

8 International standards and domestic regulations

The intense globalization of the last four decades and the rapid geographical mobility of multinational finance and investments have raised concerns about domestic governments’ ability to effectively regulate firms’ conduct, particularly multinational firms, in the area of environment, taxes, and working conditions. There has also been a fear that firms and industries might take advantage of differences in national regulations by shifting polluting and labour-intensive activities to countries with lax regulations (Korten 1995). This section offers a brief reflection on three key international standards and arrangements—the IFC, EITI, and ICMM—to highlight their impact on domestic regulations.

²² This becomes more pronounced during the national elections year as major political parties compete in their tacit or overt declaration of support for *galamsey* and their assurance of assistance to them once they win power.

²³ At some point in 2012 the arrest of a group of illegal mining operators in the Obuasi area by National Security was described by a member of parliament as ‘state terrorism’. Some people have also interpreted the failure of government to act decisively in the face of the illegal occupations of the Obuasi Mine as the lack of political will to act in the face of impending elections. It must, however, be said that there have been significant efforts by the current NPP government to fight the menace of *galamsey* in a more comprehensive manner. Both the current president of Ghana and the minister responsible for mining have demonstrated open commitment and leadership to this cause, supported by the local media. It remains to be seen to what extent this effort will be sustained and not curtailed by political expedience.

8.1 International Finance Corporation

The IFC is a member of the World Bank Group and a key actor in development financing, representing the private sector financing wing of the World Bank. In Ghana, the IFC has since 2006 provided some financing for two key mining companies, AngloGold Ashanti's Iduapriem Mine in the Western Region and the Newmont Ghana Gold Company, among others.

The relevance of the IFC to current regulatory structures is its flagship performance standard framework, the *IFC Performance Standards on Environmental and Social Sustainability* (IFC 2012), which is an amalgamation of eight performance standards that clients have to meet throughout the life of investment by the IFC. Even though these standards are largely for compliance by clients, a cursory review of most of the policies and sustainability guidelines by the EPA of Ghana and the Minerals Commission reveals a significant reference to the IFC framework. In particular, both the EPA and the Commission guidelines on community resettlement rely largely on the *IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement* framework.

8.2 The Extractives Industries Transparency Initiative

The EITI is a global standard by which information on the oil, gas, and mining industries is published. It was first launched in September 2002 by UK Prime Minister Tony Blair at the World Summit on Sustainable Development in Johannesburg, following years of academic debate, as well as lobbying from civil society and companies on the management of government revenues from extractive industries.²⁴ Like the IFC standards, the EITI Standard is not a *prescription* for governance of the extractive sector, but rather a *tool* that informs the way the sector is governed. It requires countries and companies to disclose information on the key steps in the governance of oil, gas, and mining revenues.

Ghana has been part of the technical discussions since 2003 and formally signed on to the EITI in 2004, achieving Compliant status in October 2010. By achieving Compliant status, Ghana has completed a rigorous, independent assessment of their disclosure and reporting practices (GHEITI 2010). Similarly, Ghana was judged the first country to provide data on the payments made to regional levels of government. Currently, even though the implementation of EITI is voluntary, all the key extractive companies in Ghana are compliant. Indeed, the country has since 2012 been pursuing the enactment of legislation on EITI that will back the initiative and make compliance mandatory.

8.3 International Council on Mining and Metals

The ICMM is a chief executive officer-led organization that brings together 23 mining and metals companies and 34 national and regional associations, supported by collaboration and continuous dialogue with a broad range of stakeholders, including governments, international organizations, representatives of communities and indigenous peoples, civil society, academia, and other industrial sectors in the value chains of minerals and metals.²⁵ It was established in response to the key challenges identified by the Mining, Minerals and Sustainable Development Project's agenda for change.²⁶ In 2003, the ICMM developed (and revised in 2015) a set ten Principles that

²⁴ Wikipedia, Extractive Industries Transparency.

²⁵ www.icmm.com/en-gb/hub.

²⁶ See www.icmm.com/en-gb/hub for details on the ten Principles.

serve as a best-practice framework for sustainable development in the mining and metals industry. Strict membership commitment to their ten Principles is required.

In Ghana, the three leading gold-producing companies—Gold Fields, AngloGold Ashanti, and Newmont Gold—are all members. The Ghana Chamber of Mines, which represents the large-scale mining companies and their associates, also represent the industry in Ghana at the level of association. Like the IFC and the EITI frameworks, the ICMM Principles are voluntary and member-driven, but with strong peer compliance requirements. Similarly, in 2010, the Minerals Commission developed policy guide on corporate social responsibility (CSR), which expressly indicates association with the ICMM Principles.

In sum, even though the above-discussed international standards and principles have been voluntary and self-regulatory, so to speak, they have had immense impacts on best-practice regulation in Ghana's extractives sector. Their implementations have, in a great measure, addressed some of the capacity challenges of regulatory institutions in Ghana as compliance and assessments are largely conducted externally. In a way, this has created greater transparency, encouraged innovation, and, in some cases, created the opportunity to follow internationally acceptable practices.

In the case of the EITI, the implementation of the standards has, among others, enhanced the demand side of social accountability by providing public insight into revenues generated from the exploitation of the country's mineral resources. It has also created the platform for public debate on spending.

9 Conclusions

The role of natural resource extraction in the socioeconomic development and transformation of resource-endowed LICs is no longer a myth. Evidence abounds, in the literature, about the potential of resource-endowed countries harnessing their resources to propel growth and development. What remains to be fully understood, however, is the role that a regulatory framework can play in promoting and accelerating such transformation and development. Drawing on the case of Ghana, this paper has discussed in some detail the powerful influences that regulatory structures can have in changing the dynamics of resources extraction to benefit a country's growth and development. The study did not undertake a direct correlation between specific regulations and their impact on mining and economic growth. However, evidence of significant improvements in all the macroeconomic indicators on mining, including FDI inflow, production, domestic revenue, and foreign exchange since the implementation of Ghana's post-1980s liberalized mining regulatory framework, provides ample credence to the potential of a well-managed liberalized regulatory regime in catalysing minerals-driven economic growth in the country. The recent (2013) implementation of new localization and content policies is a conscious effort to more fully integrate mining into the local economy.

The ability of the state to provide effective regulatory institutions with high levels of technical and other capacities is key to how well regulatory regimes can drive the transformation and economic development catalysed by mineral extraction. The establishment of institutions such as the Ghana Minerals Commission and the EPA, with relative independence, during the 1980s and 1990s respectively, and the relative *efficiency* of the regulatory policies and instruments that they are asked to operate, are likely to have contributed in no small measure to the relative success of Ghana's case. Collaboration among regulatory agencies, as well as regulated organizations, is also imperative for efficiency and effectiveness of regulation. The practice of regulation by 'policing' and insistence

must give way to regulation by collaboration and assistance. Similarly, the implementation and adaption of international standards have proven to be an effective tool for addressing some of the capacity challenges of regulatory institutions, including the transfer of internationally acceptable practices in developing countries in general, and Ghana in particular.

There are, however, some critical challenges that need to be addressed if the benefits of regulatory reforms are to be fully harnessed. For example, the creeping political interference in the affairs of these regulatory institutions, inadequate human resource capacity, multiple regulations, and inter-institutional conflicts threaten to reduce or significantly erode the gains made by the new regulatory structures of Ghana.

References

- Acquah, P. (1995). *Natural Resources Management and Sustainable Development: The Case of the Gold Sector of Ghana*. New York: United Nations Conference on Trade and Development (UNCTAD).
- Africa Union Commission and United Nations Economic Commission for Africa (2009). *Africa Mining Vision*. Addis Ababa: AUC-UNECA.
- Akabzaa, T. (2001). *Boom and Dislocation: The Environmental and Social Impacts of Mining in the Wassa West District of Ghana*. Accra: Third World Network Africa.
- Akabzaa, T., and A. Darimani (2001). 'Impact of the Mining Sector Investment in Ghana: A Study of the Tarkwa Mining Region'. Legon: Structural Adjustment Participatory Review International (SAPRI) Network.
- Amoako-Tuffour, J., Aubynn, T., and Atta-Quayson (2015). 'Local Content and Value Addition in Ghana's Mineral, Oil, and Gas Sectors: Is Ghana Getting it Right?'. Accra: African Centre for Economic Transformation.
- Aryee, B.N. (2014). 'Strengthening the Impact of the Mining Sector on Development: Supporting More Ghanaian Mining Companies to Industrial Action and Structural Transformation Agenda'. A presentation by the Mineral Commission at the National Policy Dialogue on Economy-wide Consequences of Ghana's Dependence on Minerals. Third World Network Africa, March.
- Aubynn, A. (1997a). 'Liberalism and Economic Adjustment in Resource Frontiers: Land-Based Resource Alienation and Local Responses: Reflections from Western Ghana'. Working Paper. Helsinki: Institute of Development Studies, University of Helsinki.
- Aubynn, A. (1997b). 'Economic Restructuring Dynamics and Environmental Problems in Africa: Empirical Examples from the Forestry and Mining Sectors of Ghana'. Working Paper. Helsinki: Institute of Advanced Studies, United Nations University.
- Aubynn, T. (2015). 'Mineral Resource Policy Dynamics and the Contribution of Mining to Ghana's Development'. In K. Appiah-Adu and M. Bawumia (eds), *Key Determinants of National Development: Historical Perspective and Implication for Developing Economies*. Burlington, VT: Gower Publishing Limited.
- Aubynn, T., J. Amoako-Tuffuor, and O. Kutando (2015). 'Governance as It Relates to Local Content in the Mining Sector in Ghana'. Position Paper. Accra: African Centre for Economic Transformation (ACET).
- Auty, R.M. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis*. New York: Routledge.
- Auty, R.M. (1998). 'Resource Abundance and Economic Development'. Research for Action Paper 44. Helsinki: UNU-WIDER.
- Auty, R.M. (2000). 'How Natural Resources Affect Economic Development'. *Development Policy Review*, 18: 347–64.
- Auty, R.M., and R.F. Mikesell (1998). *Sustainable Development in Mineral Economies*. Oxford: Clarendon Press.
- Bank of Ghana (2001) *Bank of Ghana Annual Report 2000*. Accra: Bank of Ghana.
- Bank of Ghana (2010) *Bank of Ghana Annual Report 2010*. Accra: Bank of Ghana.

- Barning, K. (1990). 'A Review of Mineral Exploitation Activities in Ghana 1984–1990'. In K. Barning (ed.), *Symposium of Gold Exploitation in the Tropical Rainforest Belt of Southern Ghana*. Accra: Minerals Commission.
- Brunschweiler, C., and E. Bulte (2008). 'Linking Natural Resources to Slow Growth and More Conflict'. *Science*, 320(5876): 616–17.
- Campbell, B. (ed.) (2004). 'Regulating Mining in Africa: For Whose Benefit?'. Discussion Paper 26. Uppsala: Nordiska Afrikainstitutet.
- Collier, P., and T. Venables (eds) (2011). *Plundered Nations? Success and Failures in Natural Resource Extraction*. Basingstoke: Palgrave Macmillan.
- Davis, G.A. (1998). 'The Mineral Sector, Sectoral Analysis, and Economic Development'. *Resources Policy*, 24(4), 217–28.
- Davis, G.A. (2011). 'The Resource Drag'. *International Economics and Economic Policy*, 8: 155–76.
- Dumett, R. (1999). *El Dorado in West Africa: The Gold Mining Frontier, African Labour and Colonial Capitalism in the Gold Coast, 1875–1900*. Athens, OH: Ohio University Press.
- Ewusi, K. (1987). *The Impact of Structural Adjustment Programme in a Developing Country: The Case of Ghana's Experience*. Tema: Ghana Publishing Corp.
- Ghana Chamber of Mines (1998). *The Impact of Mining on Local Economy: Annual Report of the Ghana Chamber of Mines*. Accra: Ghana Chamber of Mines
- Ghana Chamber of Mines (2001). *Annual Report of the Ghana Chamber of Mines*. Accra: Ghana Chamber of Mines
- Ghana Chamber of Mines (2012). *Annual Report of the Ghana Chamber of Mines*. Accra: Ghana Chamber of Mines.
- Ghana Chamber of Mines (2013). *Annual Report of the Ghana Chamber of Mines*. Accra: Ghana Chamber of Mines.
- GHEITI (2010). *Ghana Extractive Industries Transparency Annual Report 2010*. Accra: GHEITI Secretariat.
- GLSS (1989). *Ghana Living Standard Survey*. Accra: Statistical Service.
- Government of Ghana (2013). *Public Expenditure and Financial Accountability (PEFA) Performance Review: Final Report*. Rotterdam: ECORYS.
- Graham, R. (1982). *The Aluminium Industry and the Third World: Multinational Corporations and Underdevelopment*. London: Zed Books.
- Hutchful, E. (1996). 'Structural Adjustment in Ghana 1983–1994'. In P. Engberg-Pedersen, P. Gibbon, P. Raikes, and L. Udsholt (eds), *Limits of Adjustment in Africa*. Copenhagen: Centre for Development Research.
- ICMM (2012, 2014). *The Role of Mining in National Economies*. London: ICMM.
- ICMM (2014). *The Role of Mining in National Economies*, 3rd edition. London: ICMM.
- Institute of Statistical and Social Research (ISSER) (1996–2012). *The State of Ghana's Economy*. Accra: University of Ghana.
- Jalilian, H., C. Kirkpatrick, and D. Parker (2007). 'The Impact of Regulation on Economic Growth in Developing Countries: A Cross-Country Analysis'. *World Development*, 35(1): 87–103.
- Kesse, G.O. (1985). 'The Mineral and Rock Resources of Ghana'. *Journal of African Earth Sciences*, 7: 601–10.

- Korten, D.C. (1995). *When Corporations Rule the World*. West Hartford, CT: Kumarian Press.
- Leith, J. (1996). *Ghana: Structural Adjustment Experience*. San Francisco, CA: International Center for Economic Growth.
- Leith, J., and M. Lofchie (1993). 'The Political Economy of Structural Adjustment in Ghana'. In H. Bates and A. Krueger (eds), *Political and Economic Interaction in Economic Policy Reform: Evidence from Eight Countries*. Oxford: Blackwell.
- McKinsey Global Institute. (2013). 'Reverse the Curse: Maximizing the Potential of Resource-Driven Economies'. London: McKinsey & Company
- McQuilken, J., and G. Hilson (2016). *Artisanal and Small-Scale Gold Mining in Ghana: Evidence to Inform an 'Action Dialogue'*. London: IIED.
- Minogue, M. (2006). 'Apples and Oranges: Comparing International Experiences in Regulatory Reforms'. In M. Minogue and L. Carino (eds), *Regulatory Governance in Developing Countries*. Aldershot: Edward Elgar.
- Parker, D. (1999). 'Regulation of Privatised Utilities in the UK: Performance and Governance'. *International Journal of Public Management*, 12(3): 213–35.
- Roberts, C.W.J. (2013). 'Extractive Sector Regulations in Africa: Old Practices and New Models for Change'. In H. Besada (eds), *Governing Natural Resources for Africa's Development*. Ottawa: North-South Institute Forum.
- Roe, A., and J. Samuel (2007). *The Challenge of Mineral Wealth: Using Resource Endowments to Foster Sustainable Development*. London: ICMM.
- Sachs, J., and A.M. Warner (1997). *Natural Resource Abundance and Economic Growth*. Cambridge MA: Center for International Development and Harvard Institute for International Development, Harvard University.
- Slack, K. (2012). 'Mission Impossible? Adopting a CSR-based Business Model for Extractive Industries in Developing Countries'. *Resource Policy*, 37(2): 179–84.
- Tabatabai, H. (1989). 'Economic Stabilization and Structural Adjustment in Ghana, 1983–86'. *Labour and Society*, 11(2): 390–425.
- Tsikata, F.S. (1997). 'The Vicissitudes of Mineral Policy in Ghana'. *Resource Policy*, 23(1–2): 9–14.
- United Nations Economic Commission for Africa (2011). *The International Study Group Report on Africa's Mineral Regimes*. Addis Ababa: Economic Commission for Africa.
- Walde, T. (1983). 'Permanent Sovereignty Over Natural Resources, Recent Developments in the Minerals Sector'. *Natural Resources Forum*, 7: 239–51.
- Warhurst, A., and G. Bridge (1997). 'Economic Liberalisation, Innovation and Technology Transfer: Opportunities for Cleaner Production in the Minerals Industry'. *Natural Resources Forum*, 21(1): 1–12.
- World Bank (1995). *Bureaucrats in Business: The Economics and Politics of Government Ownership*. Oxford: Oxford University Press for the World Bank.
- World Bank (2002). *World Development Report, 2002: Building Institutions for Markets*. Washington, DC: World Bank.
- World Bank (2004). *Doing Business in 2004: Understanding Regulation*. Washington, DC: World Bank.

Wright, G., and J. Czelusta (2007). 'Resource-Based Growth, Past and Present'. In D. Lederman and W.F. Maloney (eds), *Natural Resources: Neither a Curse nor Destiny*. Washington, DC: World Bank and Stanford University Press.