



MAY, 2016 | REPORT

PRESSING THE UNDO BUTTON

A POLICY GAP ANALYSIS OF GHANA'S MINERALS AND MINING SECTOR
TO OPTIMIZE GAINS FROM THE SHEINI IRON ORE WEALTH



**Africa
Centre for
Energy Policy**

SUPPORTED BY:





Inset: A map of Ghana showing the location of the Sheini iron ore mine

Executive Summary

In the quest to improve the existing narrative of the impacts of Ghana's mining sector on the sustainable development of host communities and the nation as a whole, the discovery of iron ore mine in commercial quantities at Sheini in the Northern Region of Ghana presents an opportunity to review Ghana's mining sector laws and policies to identify gaps, and provide recommendations that can achieve transformative effects of the mineral's extraction. This report does precisely so. The minerals and mining sector policies of Ghana were compared against global and regional standards – specifically the NRG's precepts along the decision value chain, and the tenets of the Africa Mining Vision, to identify the strengths and weaknesses, and suggest actionable steps to secure the most benefit from the Sheini iron ore project. Specific findings of the analysis are highlighted below:

1. Although there exist policy initiatives on geological data gathering and investments, the efforts are slow due to resource constraints. This hinders the state's knowledge of its mineral resource potential to inform mining contractual terms. While the Sheini iron ore grade is known, this knowledge was unilaterally generated by the contractor. That there is no mechanism for parallel verification of this information by the government potentially weakens government's negotiation capacity with prospective contractors to develop the mine. It is important that government gets a second opinion about Sheini iron ore grade before any block is awarded for development. The Government of Ghana should also put in place the necessary strategic investment attraction mechanisms to get the mine developed.
2. Allocation of mineral rights is still by the open door, direct negotiation policy which fails to secure the most value for the state of its mineral resource wealth. A policy shift to open and competitive bidding will secure the most benefit from the Sheini iron ore mine. Moreover, although the Minerals Commission has launched an online portal where the mining licenses granted so far have been listed,

mining contracts still remain undisclosed. The absence of right to information law hampers the smooth operation of the very much needed oversight responsibilities of civil society and interest groups.

3. There is a weak link between the mining sector and local development. This is evidenced by the lack of adequate infrastructure, poor spatial arrangement, negative social impacts, and increasing poverty. The environmental impacts of mining on communities remain a challenge. Moreover, policies on compensation are inadequate to cover the various kinds of rights that run currently in land as well as communal entitlements to the use of land. Government must embark on an integrated long-term development plan that feeds into the development plans of mining companies to support sustainable local development.
4. The evidence of the link between favourable fiscal regimes to the investor and FDI as proxy for investment attraction to the mining sector is mixed and weak. Recent studies show that investment attraction to

the mining sector goes beyond the fiscals. Investors are interested in the availability of physical infrastructure, stable regulatory regimes, etc for their smooth operation. Sheini lacks the requisite infrastructure such as energy, water and transport to support the mine's development. To attract investors, the government must undertake strategic policy actions that will complement investors' efforts in infrastructure delivery.

5. Ghana's fiscal policies must be reviewed to inculcate additional profit tax. Tax administration must also be strengthened to check illicit financial flows in the sector. Fiscal accountability is fairly good but there is more room for improvement.

Based on the above findings, the following recommendations have been made:

1. The Government of Ghana should gradually phase out the first come first served approach and adopt the open and competitive bidding processes in the award of mineral licenses.

It has been established that the ideal means of awarding mining licenses is through open and competitive bidding processes because it allows for an efficient and just allocation of mineral rights. This process assumes that the awarding authority should have mapped out the mineral-bearing terrain. A move from the open door approach to an open and competitive bidding approach thus requires some strategic measures. These include massive investment in geo-scientific data generation to reduce geological risks of mining areas. This will boost competition for mining leases as investor interests will be heightened, and position the country to have a stronger basis to define fiscal terms that balance state and investor interests in a fair and equitable manner. Since the geology of the Sheini iron ore mine is known, it will be best for the government to adopt open and competitive bidding in the award of mining lease for the purposes of efficiency gains. It may however be necessary for government to reassess the accuracy of the data handed to it by investors.

2. The government should leverage mining investments for sustainable community development by mapping out infrastructure

priorities of the area.

One of the positive externalities of mineral extraction is the possibility of achieving sustainable development and poverty reduction outcomes by fusing community infrastructure needs into the development plans of the mining companies. It is important that government develops a comprehensive country development plan to inform contractual terms in the award of mining contracts. This will ensure that there is shared infrastructure between mines and host communities

3. Government should complement infrastructure finance through a PPP Arrangement.

Considering the difficulty of companies in raising funding to finance projects solely and the implications of such arrangements, it is appropriate for government to partner the companies to finance the needed infrastructure, especially railway development. Public private partnerships are encouraged in the development of project infrastructure because, given Ghana's

fiscal constraints and credit unworthiness, the government stands to gain financial and technical advantages through a PPP arrangement. The government of Ghana has already demonstrated commitment to infrastructure development through the establishment of the GIIF as well as petroleum revenue investments in transport infrastructure across the country. A portion of the revenues from the mining sector can be set aside to support mining-related infrastructure development finance through PPP. It is important that the government enacts a PPP law to regulate government-investor relations for optimal outcomes.

4. Government should establish a Minerals Revenue Management Framework to increase efficiency and accountability in the use and management of mineral revenues for current and future generation.

ACEP has developed a comprehensive formula for the distribution of mineral revenues between the government and affected communities to address the challenges of Ghana's mineral revenue management and mitigate the great danger that

mining communities face through environmental destruction, human rights abuses, community displacements and inadequate compensations (See Picture 1). This plan is also consistent with the provisions of the new Minerals Development Fund Act and will secure the socio-economic development of mining communities. To further ensure fiscal responsibility, budget expenditure must be guided by a value for money (VFM) framework. The role of a VFM framework is to set out a number of assessment tools for the appraisal and evaluation of projects that are time bound to ensure that the best of outcomes are achieved from the money spent on such projects.

5. Government should review some existing mining sector policies and pass new ones to secure the best outcomes from the Sheini iron ore development. The Minerals and Mining Act, 2006 (Act 703) should be amended to make provision for additional profit tax requirement to rake in more revenues in times of commodity price boom when companies enjoy supernormal profit. Act 703 should be amended to adopt open and competitive bidding, beneficial ownership register and

publication of mining contracts that are also easily accessible to the public. This will allow for proper tracking of the state's interest and empower civil society organizations to hold the government to account for all the decisions it makes on behalf of, and for the benefit of, citizens. The 2012 regulations on compensation and resettlement should also be reviewed to define compensation assessment for the various kinds of land rights in Ghana, as well as for communal rights in shared resources. There should also be a legal requirement to ensure that the expropriated receive maximum support in alternative livelihood investment of their compensation claims. To secure proper accountability, a

Mineral Revenue Management Act (MRMA) should be passed to clearly define revenue allocation and investment priorities so that mineral revenues can have maximum impacts. By enacting the Right to Information Bill, citizens and civil society organizations will be empowered to hold government accountable. This is likely to reduce the risk of corruption and associated cost on Ghana's sustainable development.

We believe that should the government act upon these recommendations, the Sheini iron ore exploitation will be a blessing and not a curse to the people of Ghana.

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Acronyms and Abbreviations

ABFA	ANNUAL BUDGET FUNDING AMOUNT
ACEP	AFRICA CENTRE FOR ENERGY POLICY
AMV	AFRICA MINING VISION
EITI	EXTRACTIVE INDUSTRY TRANSPARENCY INITIATIVE
FDI	FOREIGN DIRECT INVESTMENT
FPIC	FREE PRIOR AND INFORMED CONSENT
GDP	GROSS DOMESTIC PRODUCT
GFE	GROSS FOREIGN EXCHANGE
GIIF	GHANA INFRASTRUCTURE INVESTMENT FUND
ICMM	INTERNATIONAL COUNCIL ON MINING AND METALS
IFC	INTERNATIONAL FINANCIAL CORPORATION
IMF	INTERNATIONAL MONETARY FUND
LI	LEGISLATIVE INSTRUMENT
NRC	NATIONAL REDEMPTION COUNCIL DECREE
PNDC	PROVISIONAL NATIONAL DEFENCE COUNCIL
PPP	PUBLIC PRIVATE PARTNERSHIP
SAP	STRUCTUREL ADJUSTMENT PROGRAMME
SPV	SPECIAL PURPOSE VEHICLE
TP	TRANSFER PRICING
TPR	TRANSFER PRICING REGULATION
VAT	VALUE ADDED TAX

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CHAPTER ONE

INTRODUCTION

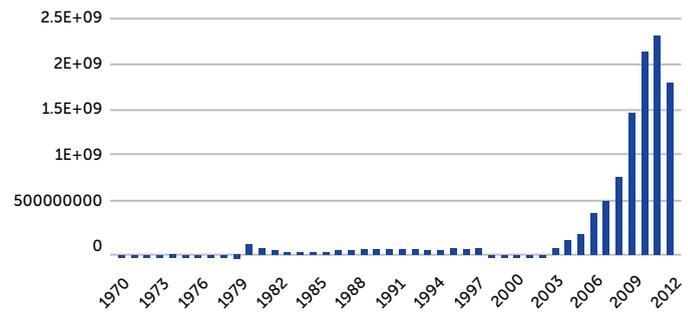
1.1 Background

The Republic of Ghana is enormously rich in natural resources and has been producing gold, bauxite, manganese and diamond in commercial quantities for several decades. Ghana's economy, until the oil discovery, depended heavily on revenues from the export of minerals, primarily gold. The country is the second largest producer of gold in the continent of Africa, with total contribution to Gross Domestic Product (GDP) reaching 8% in 2014 (Chamber of Mines, 2015). Total export from gold in 2014 amounted to \$3.3 billion with a corresponding sale volume of 2.6 million ounces. In the same period the Chamber of mines reports payment of GHC 1.2 billion (about \$343 Million) to the state. This

represents about 16.2% of the total receipts of the country in the fiscal year.

While minerals resources continue to play important role in the growth of the Ghanaian economy, its sustainability is threatened by increasing depletion¹. The World Bank estimates that mineral depletion has grown from the value of \$2,162,475 in 2000 to \$1,853,060,064 in 2013 (**Figure 1**).

Figure 1: Mineral Depletion in Current US Dollars



Source: World Bank (2015)

¹ Mineral depletion is equal to the product of unit resource rents and the physical quantities of minerals extracted. It covers tin, gold, lead, zinc, iron, copper, nickel, silver, bauxite, and phosphate. Figure 1 shows a faster rate of depletion of Ghana's mineral resources.

Due to the enormous opportunity it brings to increase the contribution of the minerals sector to GDP, the discovery of iron ore deposit in Sheini in the Northern Region of Ghana provides some relief to the likely fiscal lacuna associated with mineral

depletion trends in the country. This assertion is anchored on evidence of iron ore contribution to the economy of some iron ore producing countries (Table 1).

Table 1: Contribution of iron ore to Producer countries

Countries	Revenue	Employment	Production
Australia	75billion in export revenue , 10 billion in taxes and royalties yearly	60,500 highly skilled jobs	660million tons of production a year
South Africa	4.7% of global export market	25000 jobs	3.5% of global iron ore production, 0.8% of global reserves
Mauritania	14.9% of GDP, 42.8% of total revenue		
Guinea	US\$7.5billion per annum, 120% of GDP of Guinea	3000 jobs created	100million tonnes per annum

Source: <https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/mining-country-guides/Documents/guinea-mining-guide.pdf>

Guinea processes enormous deposits of iron ore, bauxite, gold and diamond. Mining contributed 21.6% of GDP and 90% of the country's total export in 2012². While In 2012, mining accounted for 26.5% of GDP of Mauritania, iron ore, gold and copper contributed 14.9%, 8.7% and 2.8% respectively. Iron ore accounted for 42.8% of the country's total export in terms of value to Mauritania's economy in 2012².

The importance of iron ore find to the Ghanaian economy is further reinforced by the global demand and supply trend. Iron ore is a key ingredient in steel making and its demand prospects are high, particularly in China, despite the economic slowdown (Table 2). China's economy has been the major driver for most commodities including iron ore demand.

Table 2: Top Ten Iron Ore Consuming Countries in 2013

COUNTRIES	CONSUMPTION IN MILLION TONNES
CHINA	779.0
JAPAN	110.6
USA	86.9
INDIA	81.2
RUSSIA	68.7
SOUTH KOREA	66.1
GERMANY	42.6
TURKEY	34.7
BRAZIL	34.2
UKRAINE	32.8

Source: Iron Ore Facts

It is estimated that the total supply of iron ore will increase by 200 million tons from 2016-2018 owing to addition from major mining producers (Valle SA, BHP Bilton, Rio Tinto, Global Resources limited) and potential projects such as that of Sheini in Ghana and Simandou in Guinea.

² See <https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/mining-country-guides/Documents/guinea-mining-guide.pdf>

³ See <https://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/mining-country-guides/Documents/guinea-mining-guide.pdf>

1.2 The Challenge

There are however concerns regarding the capacity of state actors to optimize the iron ore mine in Sheini to support Ghana's economic health and overall sustainable development. Government has, in the past, failed to negotiate for better share of the revenue from the extractive resource sector. ACEP estimates that out of the value of gold exported between 2010 and 2013, the total share of Ghana represented only 7% (US\$1.7 billion out of US\$23billion)⁴. This is largely due to inadequate comprehensive legal framework and policy gaps in the governance of the mining sector of the country. Moreover, there is growing dissatisfaction among the citizenry, especially those in mining communities, on how revenues from the natural resources are invested. Evidence suggest that mining communities are made poorer while multinational corporations and government share the revenues accruing from the sector. Stories abound of the incessant abuse of rights of mining communities. These include pollution of land, air and water bodies, which constitute the

livelihood of the people. The level of participation of communities in decision making can best be described as pseudo participation. They are mainly limited to accepting the decision of government granting concessions to mining companies and associated compensation packages. The adequacy of such compensation has been contested extensively by civil society and writers on the subject.

The wide array of challenges in the mining sector persist despite that Ghana has instituted laws and policies to regulate the sector; perhaps, the causes can be traced to mining sector policies themselves. Recently government out-doored Minerals and Mining Policy which seeks to rectify the mistakes of the past. The omnibus policy document prescribes a general framework for governing the minerals sector. However, there is the need to zero in on specific minerals by recognizing the peculiarities of each and how to integrate them into the economy to enhance economic growth.

⁴ Africa Centre for Energy Policy, Golden Days for Newmont, Public Interest Report, 2015.

1.3 The Purpose of this Report

Against the backdrop that the Sheini iron mine production may come online in the nearest future, it becomes imperative to explore for possible ways of changing the negative narrative of mining activities in the country. The purpose of this report is therefore twofold:

1. To analyse the history of Ghana's mining sector policies, and
2. To identify gaps in policy and practice that can affect the exploration and production of iron ore in Ghana and make recommendations.

1.4 Approach to the Analysis

The approach adopted involves using global and regional standards such as the NRGi's precepts along the decision value chain and the African Mining Vision as benchmarks for analysing the strengths and weaknesses of Ghana's mineral sector policies and regulatory regimes. The following specific tenets were analysed under four thematic areas of efficiency in exploitation, fiscal regime, revenue management and community impacts:

- i. Geological Information Management
- ii. Transparent Allocation of Rights
- iii. Synchronization of Development Plans and Operations with National and Local Priorities
- iv. Fiscal Fairness
- v. Infrastructure Requirements

- vi. Tax Administration
- vii. Fiscal Accountability
- viii. Revenue Management and Efficiency in Public Spending
- ix. Compulsory Land Acquisition and Compensation Issues
- x. Environmental Impact and Protection, and
- xi. Local Content.

The sources of information were largely desk-top based and through field visit to the local communities in the Sheini hills of the Tatala Sangule District of the Northern Region. Principal documents reviewed include the various Minerals and Mining Acts, the 2014 Minerals and Mining Policy, regulations on compensation, local content

and environment, development policies, among others. Other information sources consulted include World Bank reports, research by think tanks, the Ghana Minerals Commission's online portal, etc. However, some relevant persons were contacted through telephone calls, text messaging and emails to seek clarity and/or receive further information on secondary information.

CHAPTER TWO

A HISTORICAL ACCOUNT OF MINING SECTOR LAWS AND POLICIES, AND IRON ORE DISCOVERY IN GHANA

Iron ore exploration in the Sheini area, like any other mineral wealth ever mined in Ghana, will impact significantly on Ghana's sustainable development in general, and the livelihood, culture and socio-economic wellbeing of host communities in particular. In order to effectively identify and close current policy gaps in the mining sector so as to achieve maximum benefit from the iron ore find, it is important to first appreciate how the policies governing the mining sector in Ghana

today have evolved. This chapter thus analyses the evolution of mining sector policies in section 2.1 and provides brief highlights on the history of iron ore exploration in Ghana in section 2.2. Section 2.3 gives a general sense of the geography and life of the Sheini area to provide a sense of the extent of impact iron ore exploration will bring on local communities, depending on government's policy choices.

2.1 Evolution of Ghana's Mining Sector Laws and Policies

Ghana has been producing minerals for several decades. Some writers even make reference to earlier times as far back as the 15th century when the prominence of the mineral wealth of the country was higher than today. Between 1493 and 1600 the country was the leading producer of gold,

contributing about 35% of global output (Quashie et al., 1981, p38). This is not the picture today, even though Ghana still remains important as the 10th contributor to the global output. On the African continent however, Ghana places second to South Africa with an annual production of 3.1 million

ounces and 2.8 million ounces for 2014 and 2015 respectively, (Minerals Commission, 2015).

With this rich history, the country over the period failed to be consistent in policy formulation and practice to ensure that beneficiation is escalated to affect other sectors of the economy. The mineral sector was thus treated as an enclave economy with much focus on revenues to the state. Some significant gains have been made in narrow pursuit. Mineral contribution to the foreign direct investment has for the last two decades exceeded 50% of gross foreign capital into the country. At the same time the sector generates high foreign exchange, which exceeded 35% of gross foreign exchange earnings in 2013.

The policy environment since independence can be categorized into three eras inferred from practice and not strategic national policy documents. These are; the independence era, structural adjustment era, and the current era.

2.1.1 Independence Era

After gaining independence from British colonial rule, Ghana deliberately nationalized mining operations. Mining corporations were basically

state owned. This made the state an industry monopoly with the function to produce and export minerals. The period between independence and the 1980's witnessed a steady decline of the sector as the state companies faced management and financial challenges to drive the intentions of the nationalization agenda; to provide job security for local workers and control access to foreign exchange. The contrary result was brutal underperformance of the sector which almost collapsed the mining industry and reduced the foreign exchange earning of the country.

The nationalization policy was later governed by legislation. This was contained in the Minerals Act, 1962 (Act 126). Section 1 of the Act vested all mineral wealth in the President. Although the trusteeship power of the President did not affect private rights or interests that immediately preceded the Act, the validity of the latter was still subject to "...the provisions of any other enactment and to such conditions as may be prescribed." Consequently, the government through an executive instrument could nationalized all the mining concessions.

The policy space at the time was controlled by wide executive discretionary powers. The determination

of the fiscal terms was the function of the sector minister as opposed to specific provisions in the law. The president held mineral resources in trust for the people with preemption powers over all minerals raised in Ghana; including minerals sold by a contractor to a third party which had not left the borders of Ghana (section 7 of Act 126, 1962). These policy defects affected the attraction of private capital in the mining sector. At the same time, political instability and price volatility were not favorable to investment attraction. The pressure of

survival shifted on state managed companies who struggled to stay afloat. The situation could not change with the poor management structure that lacked transparency and accountability (Akabzaa, 2009). Therefore, by the late 1970's the country had two options: either to reform the sector to attract investment or inject public resources, which was nonexistent, in order to reverse the downward trend of the sector. Table 1 below shows the declining trend over the period.

Table 3: Minerals Production statistics from 1970 to 1990

Year	Gold (Ounces)	Diamond (Carats)	Bauxite (M/t)	Manganese (M/t)
1970	714,442	2,355,797	259,993	354,726
1971	693,770	2,542,100	361,038	455,253
1972	710,013	2,482,822	356,479	476,690
1973	731,711	2,375,582	330,351	533,789
1974	709,550	2,406,860	327,627	255,393
1975	583,103	2,255,227	383,087	282,291
1976	515,654	2,231,791	282,084	384,162
1977	531,084	2,085,511	271,090	343,228

Year	Gold (Ounces)	Diamond (Carats)	Bauxite (M/t)	Manganese (M/t)
1978	465,651	1,817,818	271,448	321,443
1979	387,730	1,391,058	213,679	342,051
1980	437,669	1,227,071	224,501	368,593
1981	349,870	1,016,580	179,598	260,409
1982	335,724	893,016	63,530	176,871
1983	311,707	529,767	52,676	177,154
1984	282,641	450,049	53,421	243,260
1985	283,819	505,295	122,512	325,905
1986	447,796	878,943	273,602	498,996
1987	328,939	435,900	196,255	295,061
1988	374,051	277,966	284,527	259,614
1989	418,070	160,729	347,065	333,743
1990	522,517	484,877	381,373	364,373

Source: Minerals Commission

*oz – ounce; ct – carat; mt – metric tonne

2.1.2 The Era of the Structural Adjustment Program

Following the abysmal performance and collapse of many state owned enterprises as a result of the state led policy of market control, Ghana's economy experience unprecedented decline and life had become unbearable. By the end of the 1980s the economy was in crisis, Growth had turned negative, basic institutions had virtually ceased to adequately function; and the incentive system badly distorted. In the neo-classical context, Ghana's economic decline has been blamed on inappropriate internal policies arising from attempts of past governments' to replace the functions of the markets with controls. In 1983, under the IMF's Economic Recovery Program (ERP), the Structural Adjustment Programme (SAP) was introduced by the PNDC government to replace the controls with the market system thereby improving the incentive systems. The programme set out to review the mining sector regulation and practice to be able to leverage private capital into the sector. Between 1983 and 1986 government begun diversifying its interest in major mining projects and set out to review the mining code to attract foreign direct investment (FDI). The consequence of this effort

was an appreciation of Gross Domestic Product in the years after 1985 (World Bank, 1992). The government promulgated a new law in 1985, PNDC law 153. This law provided needed security of investment and incentives to attract private sector investment. The fiscal terms were established in law to provide certainty and level playing field for contract negotiations. Incentives such as 3% royalty, removal of restrictions on transfer of dividend, no import duties and lower corporate taxes so as to facilitate an influx of investment into the mining sector (Aubynn, 1997; Hilson and Clive, 2005).

Despite the improvement in output and growth of the sector, effort to integrate the sector into the rest of the economy was not made. Government interest skewed towards revenue generation, regardless of how disproportionate it was. The only local content efforts were targeted at direct employment and capacity development of locals to fill positions occupied by expatriates (Section 54 of the PNDC Law 153).

Further steps taken in that transformational era included the repeal of Decree that gave the state

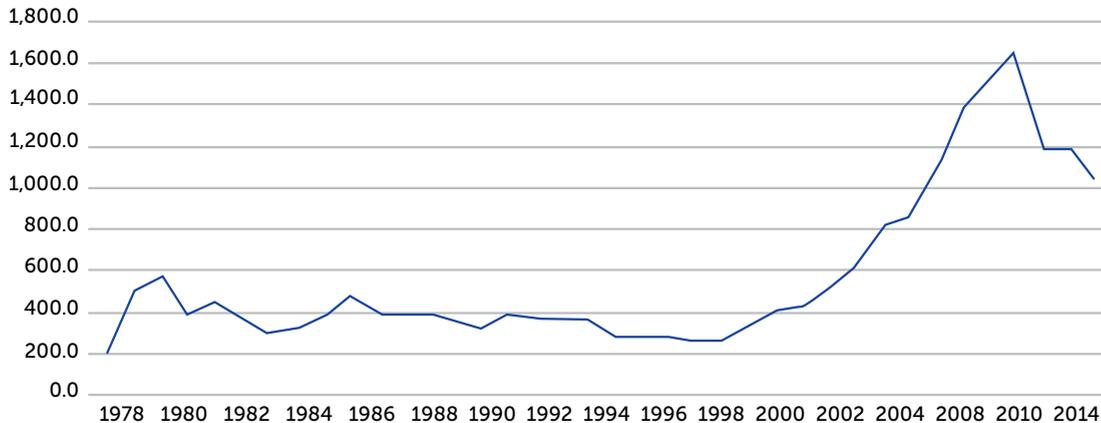
dictatorial control and participation over the sector as part of the transitions to the forth Republican regime. The first Parliament of the Fourth Republic passed Act 465 (1992) to repeal Mining Operations (Government Participation) Decree, 1972 (N.R.C.D. 132) and its further amendments in 1973. The Minerals Commission was also setup to be the technical regulator of the industry.

2.1.3 The New Era- Post 2006

The generous incentives provided for in the PNDC Law 153 of 1985, became a model for many African countries to realign their fiscal systems to compete effectively. Ghana was increasingly becoming less attractive to investment which prompted a revision of the mining Law in 2006 (Rutherford & Ofori-Mensah, 2011). The Minerals and Mining Act 2006 (Act 703) was passed to further incentivize investors and promote the growth in the mining sector.

The new Act, Act 703, sought to reduce government take though many criticized that the country was not gaining enough from the operations of the mines. Royalty was reduced from range of 3 to 12% in the PNDC Law 153 to 3to 6% tied to profitability. The reason for this reduction was difficult to comprehend given the reality that the country hardly ever got royalty above 3%. At the same time Ghana waived her right to acquire up to 30% participation in all mining operations to a capped 10%. Another incentive was the repeal of the additional profit tax. Ghana could never apply additional profit tax, however it decided to outlaw this provision; intriguingly, at the time when gold prices were rising. The figure below shows that Ghana stood a better chance to benefit from the windfall tax from the year 2008.

Figure 2: Gold Price Trend between 1978 and 2015 (U.S Dollars)



Source: World Gold Council

At the time Act 703 came to force in 2006, gold prices had risen from \$513/ounce in 2005 to \$632/ounce. Gold prices continued to rise, reaching a peak of \$1,625/ounce in 2012. Although prices declined between 2013 and 2015, actual gold prices were almost twice the price in 2006. The absence of additional profit tax implied a loss in government revenues.

2.2 History of Iron Ore Exploration in Ghana

Records available at the Geological Surveys Department reveal that Ghana had in the past undertaken exploration activities to establish the viability of iron ore production in the Shieni area. The most significant work was done by Jacques

in the 1950s and Geologists from Russia in the 1960s. Nine diamond drill holes were drilled along the 35 km of strike length explored from Kandini in the north to Kubalem⁵ in the south of Shieni. All of the samples taken during this phase of

⁵ <https://www.sec.gov/Archives/edgar/data/1303936/000106299313000311/exhibit99-1.htm>, Visited 15th May, 2016

exploration were assayed for iron and silica and a small number of samples were also assayed for phosphorous. The Russians also conducted a drilling test between 1961 and 1964. The drilling test confirmed the presence of the ore which was said to be viable and in commercial quantity. However after political disturbances in mid 1960s, the exploratory programme was abandoned.

The recent exploration activities conducted between 2000 and 2013 also confirms the presence of iron ore deposits with traces of other minerals. Preliminary assay of samples from the Shieni area indicates that two types of iron formation are present at the Shieni Hills project: Banded Iron Formation (BIF) and Granular Iron Formation (GIF). Bivariate plots of assay data indicate that these two types are chemically similar, but that on average BIF is more iron-rich and silica-depleted than the GIF.

Cadero has undertaken satellite imaging and geological mapping, geophysical surveys and drilling to ascertain the commerciality and purity of the ore content in the area. The company reports

that 67 diamond drill holes were completed totalling 9,478m of drill core, and 127 reverse circulation boreholes were completed with 1,923m of rock powder/chips collected. In total, 4,399 samples have been analysed in the Shieni Hills project area, for a total of 24 elements (aluminium oxide - Al₂O₃, arsenic - As, barium - Ba, calcium oxide - CaO, chlorine -Cl, cobalt - Co, chromium (III) oxide - Cr₂O₃, copper - Cu, iron - Fe, potassium oxide - K₂O, magnesium oxide - MgO, manganese - Mn, sodium oxide - Na₂O, nickel - Ni, phosphorous - P, lead - Pb, sulphur - S, silicon dioxide - SiO₂, tin - Sn, strontium - Sr, titanium dioxide - TiO₂, vanadium - V, zinc - Zn and zirconium - Zr).

The tests established inferred mineral resource of 1.3 billion tonnes (Bt), with mean grades of 33.8% Fe, 6.0% Al₂O₃, 37.3% SiO₂ and 0.27% P. The 33.8% iron ore content is above a cut-off grade of 15% Fe and within an optimized pit shell. The optimized pit used to constrain this estimate has a strip ratio of 0.93 (waste tonnes: ore tonnes). This indicates that, all things being equal, the ore deposits are good enough to mine.

2.3 Sheini - Geography and Life

Sheini is a small farming community located in the Tatale-Sangule District of the Northern Region of Ghana. It is about 170km east of Tamale, the Regional Capital. The district was recently created out on the Zabzugu-Tatale District in 2012. It is one of the poor districts in the country with significant infrastructure challenges.

The entire district is networked by dusty feeder roads, and some sections are hardly motorable especially in the rainy season. The connection from the Sheini village to Tatale is about 15km but due to the poor road network one need to do a detour through Zabzugu for more than 35km to connect to the district capital. Water supply, electricity, healthcare and educational facilities are inadequate in many communities in the district. Students are seen learning under trees, a make shift arrangement popularly known in Ghana as "school under trees". The poorer communities are worse off with inadequate teaching staff and teaching aids.

Even though, the topography of the northern region is generally flat, that of Sheini appears contrary to the rest of the region with many hills

and somewhat forested zones. The hills extend from the area around the Oti River to Sheini and surrounding communities along the Togo-Ghana boundary. Some of the hills extend between 150-400m above sea level. The ridges which trend about 30km have thick sequence of ironstones. These ironstones are the target of the Sheini iron ore exploration.

The main occupation in the area is farming. Crops such as yam, cassava, Guinea corn, millet, maize, hot pepper, tomato, and ground nuts are the main crops. These are crops that adapt well to the climatic conditions of the area. The area depicts a typical savanna wood lands with trees and variety of bushes. It also hosts naturally occurring cash crops such as mangoes and shea.

There are two seasons in a year; these are dry and wet seasons which informs the economic lives of the farmers in the area. The agricultural practice is mainly rain fed. Therefore, farmers prepare their land during the dry season (hamatan) in anticipation of the rainy season, typically between end of March and late October.

Given the right policy interventions, the iron ore mine at Sheini can have a transformative effect on the socio-economic fortunes of the people in the Tatale-Sangule District. The other side of the possibility chain is that; the socioeconomic lives of the people could be worsened if they livelihoods are not properly integrated into the new economic life.

CHAPTER THREE

ANALYSIS OF POLICY GAPS IN GHANA'S MINERALS AND MINING SECTOR

The discovery of the iron ore deposits in Sheini presents yet another opportunity to review the country's mining sector policies to ensure that Ghana's natural resources bring long term sustainable development to the government and citizens of the country. This policy gap analysis is therefore conducted within the framework of the Natural Resource Charter's extractive sector decision chain, interspersed with the tenets of

the Africa Mining Vision. Benchmarked against the framework which are outlined in sections 3.1 to 3.4, the strengths and weaknesses of Ghana's minerals and mining policies are identified, and recommendations made for improved policy initiatives that will secure positive outcomes from the Sheini iron ore mine development and production.

3.1 Efficiency in Exploitation Operations

3.1.1 Geological Information Management

Iron ore can be classified into several types based on geoscientific information. As the different types of iron ore reflect differences in quality, there exist

huge consequences on the market value that the mineral will command and the extent of ultimate revenues the government is likely to receive. Table 1 details the various iron or types.

Table 4: Types of Iron Ore

ORE TYPE	DESCRIPTION	ANALYSIS
Premium Brockman	Deposits contain high grade, low phosphorus, hard, microplaty hematitic ore	Typical composition for Premium Brockman ores is about 65% Fe, 0.05% P, 4.3% SiO ₂ , and 1.7% Al ₂ O ₃ .
Brockman	Similar to the premium brockman ores, although not as hard. Contains higher phosphorus, and has significant goethite content	Jimblebar reserves have a composition of 62.7% Fe, 0.10% P, 3.4% SiO ₂ , 2.4% Al ₂ O ₃ and 4.0% LOI (loss on ignition).
Other hematite	These ores form in a variety of geological contexts. In common is that the primary mineralogy is hematite	The composition can range from Pardoo where reserves contain 57.4% Fe, 0.09% P, 7.07% SiO ₂ , 2.4% Al ₂ O ₃ and 4.0% LOI to Koolan Island where reserves contain 63.8% Fe, 0.017% P, 6.13% SiO ₂ , 1.01% Al ₂ O ₃ and 0.46% LOI. 63.8% Fe, 0.017% P, 6.13% SiO ₂ , 1.01% Al ₂ O ₃ and 0.46% LOI
Marra mamba	Has ochreous hematite goethite mineralogy and surface enriched banded iron formations with a brown colour due to the goethite content	Typically contains about 62% Fe, 0.06% P, 3% SiO ₂ , 1.5% Al ₂ O ₃ , and 5% LOI.
Channel iron deposits	These pisolites, sometimes called 'yandi ores' are found in ancient paleochannels, resulting in cemented masses of concretionary iron oxides of hematite to hematite-goethite composition	Typical composition is about 58% Fe, 0.05% P, 4.8% SiO ₂ , 1.4% Al ₂ O ₃ and 10% LOI.
Magnetite	deposits contain high grade, low phosphorus, hard, microplaty haematitic ore	66.3% Fe, 0.02% P, 1.9% SiO ₂ , 0.4% Al ₂ O ₃ and 1.0% LOI

Source: Geoscience Australia⁶

⁶ O'Brien, R. (2009). Australia's iron ore product quality: A report on the quality of iron or resources in Australia. Available at <http://www.australianminesatlas.gov.au/mapping/files/australianironorequality.pdf>

The quality of a mineral resource, if foreknown, will inform the government about whether or not investors will be interested to mine, as well as the needed intervention to attract investors and/or take more in revenues from them through policies, laws and, in particular, contracts. Thus, to improve upon its negotiation capacity and engender competition in the mining sector, governments of resource-rich countries must possess and largely manage geological information. It is for this purpose and the avoidance of underestimation of the resource base that the Africa Mining Vision also encourages member states to develop comprehensive database of the mineral endowment.

Section 8 of Ghana's Minerals and Mining Act, 2006 (Act 703) provides for the establishment of a cadastral system within specified coordinates but fails to provide for broader framework for gathering and managing geological information. Moreover, the Act contains no provisions on how different types of minerals and metals should be treated in terms of fiscal terms. To address this gap in the Act, the Minerals and Mining Policy of Ghana which was enacted in 2014 is clear on

generating geo-scientific information to mining, and proposes commercialization of the geo-scientific information project as a strategy to raise the expensive resources that it requires. Commercialization has led to the granting of about 443 reconnaissance and prospecting licenses since the 1980s. However, there are some implications that come with commercializing the work of Geological Survey Department (GSD): it can lead, and has often led, to information asymmetry between the state and contractors. Currently, scanty information is known about the mineral potentials in Ghana. Moreover, the government sustains some revenue losses through the exemptions granted to incentivize these companies to explore for solid minerals.

There have been some efforts to support the geological mapping project. The European Commission, in 2002, granted an amount of 40 million Euros to the government of Ghana to, among other uses, construct a "modern geological infrastructure (maps, databases), including the geological mapping of virgin areas and airborne geophysics over the Volta and Keta Basins"⁷.

⁷ See <http://www.ghana-mining.org/ghanaims/Projects/tabid/152/Default.aspx>

The geological investigation and demarcation of areas suitable for small-scale mining has also been implemented (Minerals Commission, 2015). According to **subsection 3 (e) of section 21 of the Mineral Development Fund Act, 2016 (Act 912)**, 8% of mineral royalties that will be paid into the Mineral Development Fund by the Ghana Revenue Authority will also be allocated to the Geological Survey Department (GSD) to supplement its operations. It has been one year since Act 912 was passed and it might take some time to achieve full implementation of this provision. These notwithstanding, inadequacy of geological information to assist prospective investors in both Large Scale Mining (LSM) and small scale mining (SSM) sub-sectors remains a challenge (Minerals Commission, 2015). Should the government find alternative means of funding the GSD to undertake geo-scientific information generation and management, investment costs can be recouped through fiscal terms imposed on mining concessions over mapped areas. Another reason that the GSD has performed sub optimally in its role is that the Geological Survey Department Bill 2015 is yet to be passed. If passed, it would give

authority and autonomy to the institution to carry out its mandate effectively, particularly with fund-raising and project plans.

Fortunately for Ghana, the quality of the iron ore mine in Sheini has been uncovered by Cadero Group. The mine will produce lower quality ore (33.8% Fe) in lesser quantity than Simandou's 100 million tons per annum of high quality ore grade (66% – 68% Fe)⁹. Sheini will therefore not attract premium market prices as Simandou would. To make the Sheini iron ore mine competitive to attract investors in the sub region, the government might want to invest in the infrastructure necessary for smooth and efficient operation of the mine. Ghana can also opt to undertake independent assessment of the Sheini resource to give certified credence to the reported quality of the ore by Cadero.

3.1.2 Transparent Allocation of Rights

Transparency and accountability are fundamentally indispensable at each stage of the mineral resource management chain, and have been recognized by the Government of Ghana as one of the guiding principles of the minerals and mining sector

⁹ ibid

policy. For Ghana to pass the transparency and accountability test, the following three questions must be satisfied:

- a. Are information on solid minerals management available to hold officials from government, private sector and civil society accountable?
- b. Are there official oversight bodies to hold to account officials involved in the management of the mining sector? and
- c. Is the public well-informed enough to hold the government to account for the management of solid minerals?

Ghana's mining industry has existed alongside evolving patterns of global best practices in the extractive sector over the years. The standardized and universally acceptable process of awarding contracts has been described as open and competitive bidding process where the government, having mapped out its mineral resource potential, will publicly invite investors to bid for reconnaissance, prospecting, or mining rights over the potential mineral-bearing areas. This allows for allocation to the best among the equals; the most financially and/or technically superior investor who is not likely to abandon allotted rights, especially at the reconnaissance and prospecting stages. The process also enables

non-state actors such as civil society groups and interested citizens to have access to publicly available information about the tendering process and monitor the processes to check instances of corruption and conflict of interest among duty bearers.

Although the **2014 Minerals and Mining Policy (the Policy)** of Ghana provides that the objective of minerals licensing system is to allocate mineral rights to the best able, who can bring value to the sector and the economy, the Policy does not prescribe open and competitive bidding as the best approach to achieve this objective. **Section 5 of the Minerals and Mining Act, 2006 (Act 703)** vests discretionary powers in the Minister to grant mineral rights. The practice has been that any investor interested in mining resources must do so by application to the Minerals Commission which is mandated to advise the Minister on matters relating to the granting of mineral rights (**Sections 11 and 12 of Act 703**).

Information put out by the Minerals Commission indicate that "before applying for the mineral right the applicant must identify the area and the mineral to apply for. The applicant must also identify which

right he intends to apply for – reconnaissance (12 months), prospecting (up to 3 years), mining lease (up to 30 years), restricted reconnaissance or prospecting license for industrial minerals (12 months and 3 years respectively) or restricted mining lease (up to 15 years)”. In reality, therefore, the processes for awarding mineral rights in Ghana have rather been anything but open and competitive.

Between 1988 and 2017, about 317 companies applied for 532 mineral rights through the open-door approach, out of which 75 were for the purposes of solid minerals mining. Seventy-one of these solid mineral licenses are currently active while the rest have been cancelled (2), are under approval (1) and expired (1)¹⁰.

It may be argued that the Minister, in collaboration with the Minerals Commission, may have awarded these licenses based on some objective criteria. The issue, however, is that up until any of these licenses were awarded, Ghanaians were blinded to the processes hitherto because the evaluation of applications were not known to the greater

public to provide the platform for public scrutiny to influence the outcome of such processes. The only option available to the Ghanaian had been to pay a nominal fee, which in itself is a disincentive, to be granted access to a register of mineral rights maintained by the Commission. Accessibility to information is also limited by confidentiality provisions in **Article 20(1) of Act 703**. It is not clear in the Policy whether the register, apart from listing applications, ought to detail out the assessment and approval processes involved.

The wide discretion exercised by public officials in deciding which company to award licenses presents a moral hazard of corruption and vested interests that can lead to potential losses in revenue with huge opportunity cost implications for Ghana’s sustainable development goals financing. Mineral contracts are undisclosed. The absence of right to information law is a great barrier to transparency and accountability in the award of mining contracts. This challenge still remains, despite the commendable efforts by the Minerals Commission to have launched an online database repository of all mineral licenses in July 2016. The challenge can

¹⁰ Data is available on the Minerals Commission’s e-portal. To access data, a login/registration step (for new users) is required. See <http://ghana.revenuesystems.org/desktop/desktop?workSpaceId=120#>

be averted if the processes for awarding licenses are done in accordance with global best practices of open and competitive bidding.

3.1.3 Synchronization of Development Plans and Operations with National and Local Priorities

For solid mineral resource wealth to have transformative effects on the lives of people in host countries, there must exist a consistent national strategy that is clear on the country's development goals within the short, medium and long terms. To achieve the desired outcomes, especially of "...the balancing of local benefits with sustainable national poverty alleviation strategies" (Africa Mining Vision (2009), p 12), all policies including mining-sector policies must conform to this national strategy framework regardless the government of the day,

Ghana's journey to true development has more often than not been slow as a result of epochs of general policy inconsistency and lack of strategy continuity that have obtruded the potential of the mining sector contribution to socio-economic growth and development. Since the beginning of the fourth Republic, Ghana's experience of development planning has seen five (5) medium-

term-focused strategies that were designed to fit the priorities of the government of the day. The reinstatement of constitutional rule at the beginning of the fourth republic came with it a 25-year National Development Policy Framework (NDPF) which articulated the long-term socio-economic aspirations of the country to attain middle-income status by 2020. Between 1996 and 2000, the Rawlings-led government implemented the NDPF through the Vision 2020 medium-term strategy. However, the coming of the NPP government saw a shift from the NDPF to the Ghana Poverty Reduction Strategy (GPRS) 1 and 2 from 2003 to 2009. The Ghana Shared Growth and Development Agenda (GSDA) 1 and 2, instituted by the Atta Mills and Mahama-led administrations, was set to elapse in 2017. In the absence of a long-term national development plan, the new Akuffo-Addo-led government, which took office in January 2017, is set to continue the trajectory of implementing its designed blue-print for the country.

It is worth noting that not all of these medium-term national development strategies feature detailed actionable steps about mining sector development and how that will impact specific national development objectives such as economic

growth and poverty reduction that are common to these strategies. Similar strategies are lacking at the local level of governance. The weak linkage of the mining sector to local priorities is evidenced by the lack of adequate infrastructure, poor spatial arrangement, negative social and environmental impacts of mining, and increasing poverty levels in many host communities. To curb existing situation and mitigate against future occurrences,

3.2 Fiscal Regime

An important consideration for the Natural Resource Charter and the Africa Mining Vision is for Ghana to set responsive fiscal regimes that simultaneously serve the interest of investors and enable government to capture the most value from the resource wealth to eradicate poverty, and finance economic growth and development. Taxation is very effective if the government apportions risks and returns in a way that balances the interests of all stakeholders. In assessing the robustness of Ghana's mining sector fiscal regime, the following questions must be answered satisfactorily:

a. Are fiscal provisions more favourable to the

the **Minerals Development Fund Act, 2016 (Act 912)** has been passed with the objective to provide financial resources for the direct benefit of mining communities through a Mining Community Development Scheme which shall receive 20% of mineral royalty payments made to the Fund by the Ghana Revenue Authority (**Paragraph (b) of Section 2, Section 16(1), and subsection 3(b) of Section 21**).

investor?

- b. Is the tax system simple to administer such that revenue collection agencies are able to effectively play their roles? and
- c. Is the government held accountable for setting and implementing fiscal regimes?

3.2.1 Fiscal fairness

The Government of Ghana is very keen on attracting foreign direct investment to the mining sector through favorable fiscal provisions (Minerals and Mining Policy, p 36). This is evidenced by the significant reduction in fiscal terms following the passage of Act 703 in 2006, Ghana's current minerals and mining Act. Hitherto, the Minerals

and Mining Law, 1986 (PNDC Law 153) pegged CIT at 45% and royalties at a sliding rate of 3% to 12%. The government was entitled to take up to 30% free equity, and companies were required to pay additional profit tax of 25% beyond a certain profitability threshold.

Upon coming into force, Act 703 pegged CIT at 35% and reduced royalty to a 3%-6% sliding scale. Royalty under Act 703 has since undergone two amendments: the first amendment revised royalty downward to a flat rate of 5% in 2010. The second, done in 2015 and which is the state of the law today, grants the Minister the discretionary power to determine royalty rates through the making of a regulation to that effect. In addition to reducing state free equity to 10%, Act 703 has also abolished the 25% additional profit tax provided for in the previous law to be applied when the investor's profitability exceeds a certain threshold. This makes Ghana's mining fiscal system a regressive one. Thus, in times of commodity price boom Ghana will miss out the opportunity to rake in portions of the investor's supernormal profit. Investors also enjoy a tall list of tax exemptions.

Another favorable feature of Ghana's tax regime to

the investor is the thin capitalization provision that shrinks his taxable income base. In Ghana, interest on debts are tax deductible. Thus, the larger the quantum of debt financing, the lower the revenues that accrue to government from corporate income tax. Ghana's new Income Tax Act, 2015 (Act 896) promotes debt financing because it increased the debt-equity ratio of 2:1 under the old Internal revenue Act, 2000 (Act 592) to 3:1. What this means is that investors in the mining sector that contract larger debts are likely to pay less in taxes to government. For a country that is bedeviled by the ills of transfer pricing in the extractives, the country is likely to lose much revenues as thin capitalization could provide more tax savings to investors.

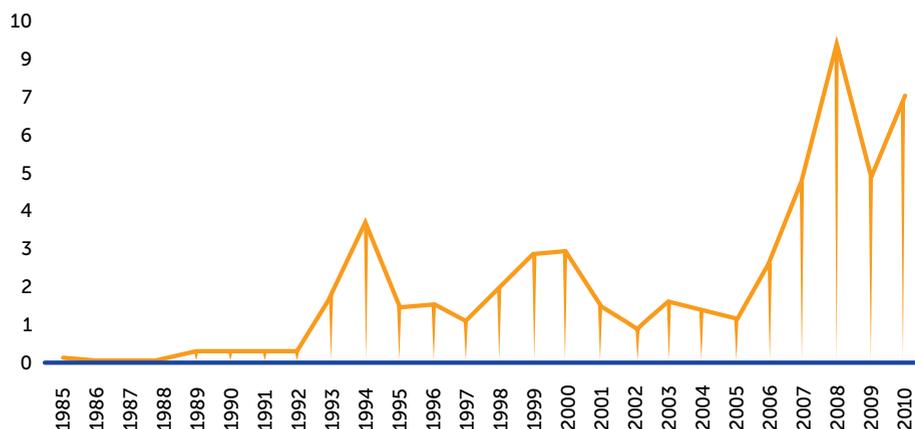
The question lingers, however, about whether or not the favorable fiscal regime in Ghana's mining sector has attracted foreign direct investment. Indeed, the number of mining right applications to the Minerals Commission doubled post 2006 following the fiscal term downsizing. Fifty of the 75 mining licenses granted since 1988 happened between 2006 and 2017. However, it is not clear whether foreign direct investment (FDI) trends in Ghana since 1986 have been driven by fiscal terms

in the mining sector.

World Bank data shows that between 1986 and 2010, FDI as share of Ghana's GDP was highest in 2008 at 9.52%. But the increase in FDI post 2006

was largely driven by the development of the jubilee oil field between 2008 and 2010, and not necessarily by increased investment in the mining sector as a consequence of favorable fiscal terms.

Figure 3: FDI as Percentage of GDP (1988 - 2010)



Source: World Bank (2013): Africa Development Indicators (Data downloaded: 8 February 2013). Mimas, University of Manchester.

Further, despite the 'strict' mineral sector fiscal regime in the pre-2006 period, FDI as percentage of GDP improved between 1992 and 1994, as well as between 1998 and 2000 largely due to reduced political risks. Ghana's return to constitutional rule

in 1992 and a subsequent peaceful election in 1996 must have boosted investor's confidence about security of their capital in the country. FDI has been declining in recent times. According to data from the Ghana Investment Promotion Centre (GIPC),

FDI in 2013 dropped by US\$1 billion, representing 19% dip, from the previous year. This could be explained by the protracted election petition, fallen commodity prices, and energy crisis, amongst others (Oxford Business Group, 2014).

There is evidence to show that favorable fiscal terms do not necessarily sustain investment attraction as there are a myriad of problems and constraints that generally dampen the interest of investors in the mining sector no matter the leniency of fiscal regimes. Some of these challenges include low grade of solid mineral, falling commodity prices, regulatory uncertainties, lack of adequate skilled labor on the domestic market, and poor macro-economic health that negatively impact on investment financing, among others. Also, according to the second edition of the Deloitte State of Mining in Africa report, there are a number of factors that auger for a successful mining operation to attract investors into host countries. These include available and well-functioning infrastructure in the form of roads, rail, ports, electricity and communications to support the mine¹¹, among others. Recent events

surrounding the development of the Republic of Guinea's iron ore mine confirm that an investor's cost consideration and profitability are not limited to taxation alone.

The Republic of Guinea, a country with over 2 billion tonnes of iron ore reserves of 66% – 68% Fe¹² grade has contracted with Simfer S.A. to exploit the resource at highly investor-friendly fiscal terms including a maximum royalty charge of 3.5%, 5 years of tax holiday and a stability clause that expires with the lease term. The Government of Guinea has also offered 5% credit for any investments made by the investors during the year. This allowance is deductible in calculating the taxable profit, together with investment requirement of up to 0.25% of Simfer S.A.'s annual turnover either in cash or in kind in local economy development. In spite of these favorable fiscal terms, Rio Tinto – one of the Simfer SA partners - declared its intent in October 2016 to conclude the sale of its 46.6% stake in the project by April, 2017. Also, after 10 years as a partner, the IFC which owns about 4.6% stake in the Simandou project intends to back off and recoup its costs.

¹¹ Deloitte (2015). State of mining in Africa. Second Ed. Available at file:///C:/Users/Pauline%20Anaman/Downloads/za_state_of_mining_africa_09022015.pdf

¹² ibid

According to the bankable feasibility study which the partners submitted to the government of Guinea during the first half of 2016, Simandou is a very expensive project to develop at a time of falling commodity prices¹³. The SIMFER partners have so far been unable to find an investor to finance the \$12 billion trans-Guinean railway of approximately 650km to transport the iron ore from the mine to the Guinean coast; the Simandou Port – a new deep water port located south of Conakry in the Morebaya River, and associated developments to provide utilities and supporting infrastructure including construction facilities, quarries, power stations, water supply facilities, access roads and accommodation.

3.2.1.1 Infrastructure Requirements of the Sheini Iron Ore Mine

In any typical mining project, the infrastructure needed include regional railroads, deep sea ports, local water supply, and power supply, among others.

The provision in the Minerals and Mining Policy of Ghana that mining companies will be expected to provide adequate infrastructure necessary for the

mine development purports to make infrastructure investment the contractor's onerous responsibility. Also, the Policy appears to do no more than only specify government's reactionary role of waiting for the investor to propose how their infrastructure development will fit well within local development plans, instead of a combination with the reverse. In practice, however, the government of Ghana's commitment to infrastructure development in recent times is encouraging.

In 2014, the Ghana Infrastructure Investment Bill was passed into law. **Subsections (1) and (2) of Section 2 of Act 977** stipulate the objectives of the fund which primarily includes mobilisation of revenue for investment in infrastructure for national development. Section 5 of the law gave sources of funds for Ghana Infrastructure investment Fund (GIIF) as 2.5% of VAT revenue, not more than 25% of Annual Budget Funding Amount (ABFA), proceeds from state owned equity investment, grants, donations, voluntary contribution and equity investment among others. The GIIF will coordinate its investments with the infrastructure priorities and development plan of the Government of Ghana, particularly in the energy, agriculture and transport

¹³ Andrew Topt (2016). Iron ore surges past \$55 as Rio Tinto exits Simandou. Published on 4 July 2016. Available at <http://www.mining.com/iron-ore-surges-past-55-as-rio-tinto-exits-simandou/>

infrastructure sectors¹⁴. The current government further intends to streamline the GIIF law with the objectives of the Ghana Investment Corporation (GIC) to secure adequate financing for public investment in infrastructure. These efforts are likely to attract investors to develop the Sheini mines as they tend to complement investor expenses on energy, water and transport infrastructure.

a. Energy infrastructure

Ghana has in recent times experienced a number of load shedding which has had negative effect on productivity and GDP. During these periods, mining companies relied heavily on diesel generators for continuity in operations. According to a study conducted by Institute for Statistical and Social and Economic Research (ISSER), by 2015 ending, GDP dropped by 2% as a result of load shedding. The study further added that small businesses owners' income also decreased by 48% due to irregular supply of power .

The Ghana Energy Commission forecasts that energy demand grows at 12% annually. In Ghana, installed capacity for power is currently 3628.5MW.

However, the country is able to generate only 2000 MW, which is woefully inadequate to cover industrial use. It will therefore important for additional capacity to be put in place with the coming of the Sheini iron ore project, considering that existing industries are struggling to have constant supply of power¹⁵.

One option for mining companies to explore is to plan either for a power source independent of the national grid or a power source supplemental to the grid for the development and operation of the Sheini iron ore mine. When this is done, there will be high self-sufficiency in power generation, and relieve pressure off the natural grid to increase supply to domestic consumers, while preventing the situation of disruptions in the operations of the mine. The World Bank (2015) however posits that self-supply of electricity is very expensive - in that plants will likely run on diesel or crude - and will only serve the mines. The best alternative therefore is through integration where mines and neighbouring communities share electricity supply. The nearness of Sheini to river Oti provides an avenue for government or private intervention

¹⁴ See <http://giif.gov.gh/>

¹⁵ See <http://www.myjoyonline.com/business/2015/may-15th/power-crisis-to-sink-gdp-to-2-percent-isser.php>

to generate hydro power to supply the mine and the neighbouring communities.

Tying the Oti hydro project to the mining project is another option which Government can promote with possible investors. This will improve access to electricity in the area, improve investment attraction to the area and boost the contractor's social license to operate in the host communities because only 21.5% of households currently have access to electricity. The sources of lighting for 69.9% of households is kerosene lamp (69.9%) and 6% of household is flashlight/torch. Also, the sources of fuel for cooking is not near green. About 93.9% of households use wood while 3.9% use charcoal. Gas is the third commonly used fuel for cooking and its use is in only 0.8 percent of households in the district¹⁶.

The government has major roles to play in ensuring availability of electricity in a reliable and affordable manner. The high tariff of electricity currently being experience is not a good incentive for investment attraction in energy intensive industries. The is the

need to restructure the power sector to be efficient at delivering cost effective power for the running of mines .

b. Water Infrastructure

There is a growing relationship between mining and the water sector. This is evidenced by mining companies' investments in water solutions. According to Bluefield Research, the global mining sector's capital investment in water solutions is estimated to grow from approximately US\$9 billion in 2014 to US\$17 billion in 2019¹⁸.

Ghana has a National Water Policy which recognizes the centrality of water to mining, and has the objectives of ensuring availability of water for mining operations as well as adequate protection of water in mining areas. There however remains the challenge of competing and conflicting demands of water between mining firms and surrounding communities. This is particularly evidenced by the shortage in water supply for domestic uses in some mining communities and the continued contamination of water bodies due to weak environmental regulation and monitoring.

¹⁶ Ghana Statistical Service. (2014). District analytical Report – Zabzugu-Tatale. Available at http://www.statsghana.gov.gh/docfiles/2010_District_Report/Northern/Zabzugu.pdf Accessed on 3/21/2017 at 4:04 AM

¹⁷ See [www.worldbank.org/content/dam/Worldbank/Event/Energy and Extractives/The power of the mine 2015 02 09.pdf](http://www.worldbank.org/content/dam/Worldbank/Event/Energy%20and%20Extractives/The%20power%20of%20the%20mine%202015%2002%2009.pdf)

¹⁸ Casey, E.B. (2014). The growing relationship between mining and the water sector. Available at <https://www.wateronline.com/doc/the-growing-relationship-between-mining-and-the-water-sector-0001>. Accessed on 3/23/2017 at 11:51 AM.

Competition for water resources between mining companies and host communities along the Sheini iron hills area is predictable in the absence of any concrete policy interventions. Water is very essential to the mining sector as it is used at every stage of the mineral extraction process. On average, iron ore extraction require as much water intensity as coal and nickel, and twice the water intensity of diamond and platinum. Moreover, the extraction of lower mineral grade require higher water intensity in the mining process because higher volume of ore will be extracted to generate the same amount of refined product (Toledan and Roorda, 2014)¹⁹. Iron ore discovered in Sheini has lower mineral grade of 33% Fe. By implication, more water will be required to support efficient mining operations. Meanwhile, access to water in these communities is very limited even though the River Oti flows through the District while a number of streams are also found at various locations. Due to seasonal and unreliable rainfall patterns, coupled with high temperatures, water bodies that serve as source of water for domestic uses dry up quickly and the water table drops, thereby limiting access to potable drinking water. According to the

Ghana Meterological Service, the mean annual rainfall deficit in the Zabzugu-Tatale District is between 500 mm and 600 mm while temperature is constantly high within the ranges of 21 Degree Celcius and 36 Degree Celcius.

Scanning the Sheini Area, River Oti will be the most ideal source of water for the mines as the smaller streams around would not be sufficient for community demand and industry. There must therefore be a firm policy requirement for any developer to invest in building the required systems for the transportation of water from river Oti.

c. Transport Infrastructure

Ghana has two operational ports in Takoradi and Tema that can connect Sheini to the global market. However, inland transport infrastructure is lacking to connect Sheini to the ports. There is a growing use of mineral slurry pipes globally to transport minerals from site to the ports as investors believe this option to be cost effective. This option is however not compatible with the Sheini mine in Ghana for three reasons. First, the intensity of water requirement for the operation of slurry pipelines

¹⁹ Toledan, P., and Roorda, C. (2014) Leveraging mining investment in water infrastructure for broad economic development: Models, opportunities and challenges. Columbia Centre on Sustainable Investment. Available at <http://ccsi.columbia.edu/files/2014/05/CCSI-Policy-Paper-Leveraging-Mining-Related-Water-Infrastructure-for-Development-March-2014.pdf> Accessed on 3/23/2017 at 11:48 AM.

cannot be supported in the Sheini area due to the impact of harsh climatic conditions on the water table and limited accessibility to water, even for domestic use. Secondly, slurry pipelines will benefit the mines at the expense of surrounding communities which need transport infrastructure to open up the local economy. Finally, there is the danger of environmental pollution if waste water from slurry pipeline is not properly treated. Upon decommissioning, slurry pipelines may become redundant, unless there is a compatible alternative use which, in turn, has cost implications for the contractor.

Roads in the Sheini area are in a bad condition. Also, all railways are concentrated in the Southern part of Ghana. There is currently a railway development master plan that intends to extend coverage of the railway to include northern part of the country. This will particularly benefit the Sheini iron ore project coming on stream for the transportation of iron ore to the ports. The table below highlights the various options and the implications for Ghana's iron ore mine development.

Table 5: Transport Infrastructure Requirements of Sheini

TYPE OF RAILWAY TRANSPORT	LINKAGE TO PROJECT AREA	POLICY IMPLICATIONS
Railway line(Brownfield)	This is existing rail line connecting Accra to Kumasi. It is 350km to the south of Sheini and is 820km away from Tema port. It is feasible to construct one rail line from project to Kumasi	The construction of rail line of about 350km would add to Ghana's transport infrastructure especially linking northern and southern Ghana

TYPE OF RAILWAY TRANSPORT	LINKAGE TO PROJECT AREA	POLICY IMPLICATIONS
Railway Line (Brownfield)	Existing railway line in Blita across the Togo boarder, it is 100km South East of shieni, this railway line extends to a port in Lome , the capital of Togo, already being used for transport of limestone and phosphate.	This option can set the discussion for a regional infrastructure between Ghana and Togo, with the aim of allowing for multiple usage and improving trade and communication among the two countries, linking several mining towns to a port. Public private partnership (PPP) is possible.
Rail Way Line (Green Filed)	Tema port lies approximately 390km south west of Sheini. Construction of new railway line connecting Sheini to Tema is a transport infrastructure option.	This is an option that needs dialogue between policy makers and company on the usage of the facility; whether multiple or not. There are huge investment demands on the company since it is green field and on Ghana government too, if a PPP arrangement is to be adopted for infrastructure financing.
Railway Line (Green Field)	Sheini is 820km away from Tema port. This option involves construction of new railway line from Sheini to Tema port via Yendi, Tamale, and Kumasi	This option would certainly improve Ghana transport infrastructure. But it has high financial demands.

TYPE OF RAILWAY TRANSPORT	LINKAGE TO PROJECT AREA	POLICY IMPLICATIONS
Railway line (Green Field)	Construction of a more direct railway route from Sheini to Tema port (440km to 470km)	This is also a good option that would improve transport infrastructure. However, depending on the funding, option, it could be single or multiple use, and the tariff could also go high

Source; Cadero Report 2013 and Ghana Railway Infrastructure Authority, 2013

3.2.1.2 Infrastructure Financing Options

There are various models of infrastructure financing that define the extent of state and contractor responsibility with implications for shared use between the mines and local communities. Infrastructure financing options include corporate finance where companies finance, build, own and operate infrastructure independently. It can imply companies' exclusive usage of infrastructure until project decommissioning when the state takes over the infrastructure. Under project financing, another infrastructure financing option, companies drive, finance, operate, invest, and maintain assets with the help of financial institutions (sovereign funds, pension funds, private equity). Payment is to be generated from project cash flow and payment period can reach 15 to 20 years. In a

contract financing arrangement, however, mining companies partly or fully invest in infrastructure but outsource responsibility of operation, maintenance and risk to third party companies. This is usually done to enhance better management, maintenance, and operation. This option can also limit usage of infrastructure. There is also infrastructure finance through special purpose vehicle where the company or consortium finances, constructs, owns and operates infrastructure through an independent financing vehicle. This is no recourse to the balance sheet of the company. It allows for multiple uses, and easy transfer of the infrastructure. It is easy to set up and free from government control. Public Private Partnership (PPP) has nonetheless become the most preferred mode of financing infrastructure provision. The

traditional role of the Government as the primary infrastructure and public service provider is gradually being supplemented with private sector expertise and financing. This new and innovative approach to the provision and financing of public infrastructure and services addresses the challenge if fiscal constraints experienced by countries as one of the major barriers to infrastructure delivery.

In view of the low level of infrastructure at Sheini, the best approach is PPP to provide the required infrastructure for a successful mining of the iron ore in Sheini. In Ghana infrastructure has been financed mainly by the government. According to current policy directions from the Ministry of Finance’s 2015 budget and policy statement, government is using PPP as an alternative source of funding for financing infrastructure. In line with this,

there are a number of initiatives undertaken which includes the creation of project development fund, infrastructure facility fund, and the viability fund scheme.

3.2.1.3 Ownership Models of Mine Infrastructure

There are three basic ownership models of infrastructure in mining projects that need critical policy decision by host countries. These are public sector ownership, private sector ownership, and third party ownership. The selection of each ownership model has its own advantages and disadvantages. Companies and host governments need to dialogue based potential mutual benefits to be derived from the infrastructure. The table below highlights the various ownership models, their advantages and disadvantages.

Table 6: Ownership Models of Iron Ore Infrastructure

PUBLIC SECTOR OWNERSHIP	PRIVATE SECTOR OWNERSHIP	THIRD PARTY OWNERSHIP
a. Government finances part or majority of the project, but it comes with huge debt	a. Limited government influence and control	a. Financial investors own and operate the project

PUBLIC SECTOR OWNERSHIP	PRIVATE SECTOR OWNERSHIP	THIRD PARTY OWNERSHIP
<p>b. State-owned enterprises manage the facility, with flexibility in decisions of project and usually have multiple usage. The basic risk include inefficiency, mismanagement and funding challenges.</p>	<p>b. Only private or company usage and maintenance of facility c. There is moderate regulatory and political risk and interference e. Lower access tariff for project f. Projects are delivered on time</p>	<p>b. It can serve small adjoining mines as well c. Limited government control and influence in decision making d. There is high political and regulatory risk e. operating cost and tariffs is high for project f. Monopoly of infrastructure</p>

Third party ownership is seen as a most viable option of owning infrastructure because, in Sub-Saharan Africa, most iron ore projects cannot offset the cost of transport facility even with high commodity prices. Since third party ownership is available for multiple usage, the project would generate revenue from other adjoining mines to cover for the rest of the cost.

3.2.2 Tax Administration

According to a 2009 minerals taxation regimes report commissioned by the Commonwealth

Secretariat and ICCM, companies will, among other things, invest in countries where tax authorities apply the laws and agreements consistently. Consistent application of tax laws require that fiscal regimes are simple and clearly spelt out in the relevant statute such that they are less susceptible to political capture and ad hoc amendments. This puts investors in a better place to assess their liabilities, reduces administrative costs, and limits the scope of misrepresentation.

Ghana's Minerals and Mining Policy resonates

with investors' tax administration requirement by proposing to standardize fiscal regimes including mineral royalty and corporate tax, as well as their methods of ascertainment; stabilization clauses; government participation; and other fiscal imposts and levies. Notwithstanding, some fiscal provisions have undergone amendments over the years, not strictly because they remained complex but because of the lack of implementation capacity. For example, effective from 19th March, 2010, mineral royalty was converted to a flat rate of 5% from 3%-6%. Due to the cumbersome nature of royalty calculation arising from the limited capacity of tax authorities, mining companies took advantage of this pitfall and paid only 3% maximum in royalty. The 5% flat rate was a subsequent policy response to simultaneously make tax calculation simple while increasing revenues to government (ACEP, 2016). Following the 2015 amendment to Act 703 to grant the Minister the discretionary power to determine royalties, Ghana's minerals royalty system does not appear stable as it may be bilaterally negotiated and be susceptible to political capture.

Another proxy to understanding the effectiveness

or otherwise of Ghana's tax administration system is the presence of transfer pricing. Section 31 (1) and (2) of the Income Tax Act, 2015 (Act 896) requires tax payers who have inter-company transactions or connected party transactions to comply with arm's length principle. One way transfer pricing occurs is when there is a transaction between persons who are in a controlled relationship such that such transactions, which do not meet the arms-length principle, are reported to be so.

According to the Global Financial Integrity's 2015 report, Ghana cumulatively lost about US \$4,013million in 2013 due to illicit financial flows. Illicit flows through trade mispricing alone costs Ghana 2% of GDP¹². The government of Ghana, in its bid to address the problem of transfer pricing, has streamlined customs operations, implemented transparency and governance initiatives, and introduced effective anti-money laundering regulations and financial oversight (ACEP, 2014). For example: in July 2012, the Transfer Pricing Regulation, 2012 (L.I 2188) was enacted by Parliament for the purposes of preventing tax base erosion and shifting of profits between jurisdictions,

²¹ An Oxfam/Ibis draft report presented to Civil Society Groups, including ACEP, at a national advocacy planning workshop organized in February, 2017 at IDEG in Accra, Ghana.

ensuring clarity in related party transactions, reducing the risk of economic double taxation, and defining prescriptive measures for dealing with related party transactions. Notwithstanding the existence of this regulation and other related efforts, inadequate capacity and technical ability of tax authorities, vis-à-vis the lack of adequate transparency in mining contracting can render existing interventions less effective. There is therefore the need for increased collaboration, information sharing, enforcement of sanctions and effective monitoring system (ibid) among revenue collection agencies.

3.2.3 Fiscal Accountability

The Government of Ghana signed on to the Extractive industry Transparency Initiative (EITI) in 2009 and achieved compliant status in 2010. The EITI seeks to strengthen transparency and governance throughout the extractive sector value chain to ensure that resource extraction brings positive returns to the Ghanaian populace. Ghana has been acclaimed as an exemplary country when it comes to implementing the Ghana EITI recommendations, and recently received the

Global EITI award in Peru²². Notwithstanding these achievements, the mining sector has been challenged by irregular royalty disbursement and receipts of dividends. For the entire 2014 fiscal year, only a tranche of royalty disbursement was made for 2012 operations²³. Also, an omission of a dividend payment of GHS 830, 928.06 in government receipts by AngloGold Ashanti was observed in March 2006 without a trace of where the dividend went²⁴. The situation has been compounded by failure of Metropolitan, Municipal and District Assemblies (MMDAs) to channel royalty disbursements directed by section 25 of the Minerals and Mining Act 703 into dedicated accounts. There is also little or no reporting about what licensing fees taken by the Commission are used for. What these irregularities mean for the Sheini iron mine is that, if left unchecked, there is the potential to reduce royalty disbursements which will eventually impact negatively on funds meant for development in mining communities.

²² Available at <http://citifmonline.com/2016/02/27/ghana-wins-global-eiti-award/> Accessed on 3/21/2017 at 7:26 AM

²³ <https://www.ghanabusinessnews.com/2011/02/07/eiti-report-reveals-plunder-of-mining-revenues-in-ghana/>

²⁴ GHEITI Report on the Mining Sector 2014 (2015)

3.3 Revenue Management and Efficiency in Public Spending.

Ghana has been mining gold and other precious minerals for over a century now. Yet, there are no specific laws that regulate the use and management of mineral revenues in specific sectors of the economy. Although Clause 6 of **Article 267 of the 1992 Constitution** provides a general framework for the distribution of revenue accruing to stool lands it is difficult to trace how these revenues have been invested to benefit local communities. The passage of the 2016 Minerals Development Fund Act is likely to address mineral revenue investment challenges to some extent. The Act only specifies that there will be a Mining Community Development Scheme that will receive money from the Fund to facilitate socio-economic development of communities in which mining activities are undertaken and that are affected by mining operations. The Act, when compared with the Petroleum Revenue Management Act has some shortcomings. The major challenge with the MDFA is that it restricts accountability of mineral revenue to only 20% of total royalty which goes to communities and regulatory bodies in the

sector, without accounting for the rest of royalties and taxes that come to the state. Also, there are accountability and economic linkage problems with the 20% allocated to the communities and institutions. For example the MDFA fails to specify which sectors of the local economy must receive mineral revenue investments, and what proportion of funds must go to capital and recurrent expenditure. There is also no framework to protect the interest of future generations. Consequently, the district Authorities often focus expenditure of mineral revenues on recurrent expenditure at the expense of infrastructure in pro-poor sectors of Agriculture Education and health.

Mining sector revenue net Article 267(6) allocation goes directly into the Consolidate Fund beyond which mineral revenue utilization dissipates. There exists no mechanisms to check and trace how mineral revenues are spent in the broader economy of the country²⁵. Management of mineral revenue in Ghana thus defies international best practices of oversight, accountability and

²⁵ Abubakar Seidu Ajarfor (2016). ACEP proposes new mineral revenue management framework . ModernGhana. Published on 6 February 2016. Available at <https://www.modernghana.com/news/673270/acep-proposes-new-mineral-revenue-management-framework.html>. Accessed on 14 February 2016.

transparency. It is important for Ghana to establish systems for assessing and collecting mineral revenues, establish stabilization mechanisms for insulating the economy from the effects of commodity mining price volatility, and develop principles for applying mineral revenues to high impact public investment projects at the national and community level; and to develop principles for the transparent and accountable governance of mineral revenues²⁶. The call for a Mineral Revenue

Management Law is most crucial to facilitate the efficient management and use of revenues from the mining industry, and from the Sheini iron mine in particular. The Zabzugu-Tatale District is very under-developed compared to other districts in the country. The existence of a definite mineral revenue investment framework will facilitate the district's accelerated development when the Sheini iron ore development comes online.

3.4 Community Impacts of Mining Activities

3.4.1 Compulsory Land Acquisition and Compensation Issues

The 1992 Constitution of Ghana vests all mineral resources in the president (**Article 257(1) and (6)**). This means that any private land rich in iron ore will become public land through compulsory acquisition. But the constitution also provides that once a person is deprived of his land, he must be compensated fully, promptly and adequately (**Article 20(2)**). The **Minerals and Mining (Compensation and Resettlement Regulations, 2012 (L.I.2175)** establishes the principles of

compensation estimation and payment to a person who holds interest in the subject matter of acquisition in accordance with constitutional provisions. However, there remains the challenge of identifying the appropriate interest holder, especially when many interests run concurrently in the same piece of land. There also exists no provision as to who is entitled to compensation of a compulsorily acquired area of communal use such as forest areas. A baseline study on the economic impacts of iron ore exploration in Sheini indicates that 95% of households in the area are

²⁶ Pius Amihere Eduku (2016). New mining law to enhance community development. Citifmonline. Published on 9th February, 2016. Available at <http://citifmonline.com/2016/02/09/new-mining-law-to-enhance-community-development/> Accessed on 14 February, 2016.

partly or significantly reliant on the forest and the mountains for food, medicine and fuel for cooking, which are the subject matter of acquisition, for some form of income (Armah et. al, 2016; ACEP, 2016). Development of the Sheini iron ore mine will mean that these people will lose their livelihood and source of income. Yet, the L.I. is silent on compensation of compulsorily acquired communal asset.

Another issue with L.I. 2175 is that although it provides for the establishment of a resettlement monitoring committee to effectively monitor the implementation of the resettlement plan, it lacks policy direction on supporting claimants of cash-based compensation to invest wisely as an effort to protect them from becoming worse off after expropriation. There is evidence that some mining companies have taken the initiative to support claimants but this is purely discretionary. It is important for there to be a policy that requires mining companies to provide such support mechanisms.

Since the livelihood, culture and socioeconomic

features of the local community will be affected, the consent, support and participation of the communities surrounding the Sheini iron ore mine is important for peaceful co-existence with the mining company. Continuous community dialogue on alternative livelihood arrangements is particularly important.

3.4.2 Environmental Impact and Protection

A typical mining activity comes with a lot of environmental issues such as soil, water and air pollution, waste production, land disturbances, water/energy consumption and mine closure issues. Pollution in mining areas without proper containment can destroy the ecosystem and affect environmental sustainability. Mining activities can reduce the quality and quantity of water downstream. Mining process is also an energy intensive process²⁷. Petroleum products are also used by trucks working in the mines. All these have implication for greenhouse gas emissions. Vegetation is also cleared for infrastructure such as roads, buildings, project area and power stations. Farmlands are affected which can threaten food security. When environmental issues are not

²⁵ See <http://www.miningfacts.org/Environment/How-can-mining-become-more-environmentally-sustainable/>

well addressed, it can lead to friction between community members and companies involved. It is due to these issues that the African Mining Vision urges member countries to adopt environmentally sustainable mining practices.

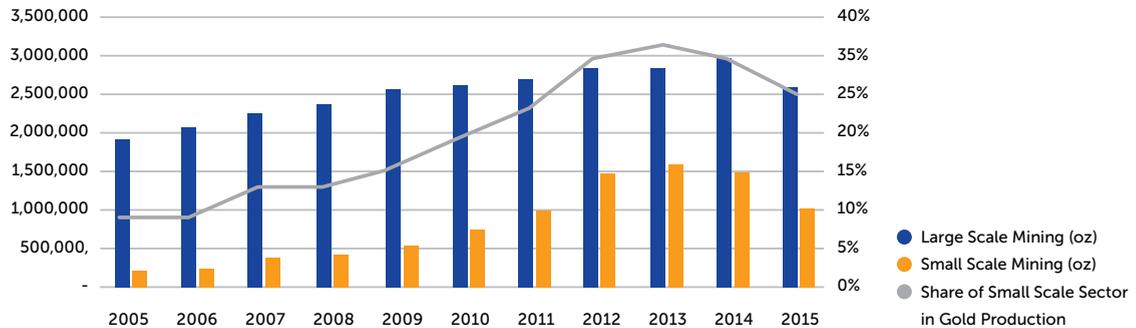
Environmental Protection Agency is responsible for enforcing environmental governance in Ghana. However, a lot of local communities are suffering from the negative environmental effect of mining including water pollution. There is clear lack of enforcement from agencies concerned. Therefore, there is the need for a stronger regulation on pollution and land degradation to control the impact of mining on communities. The institutions of state with mandate over the environment must

also be strengthened to deliver on their roles.

3.4.3 Local Content

Employments in the minerals sector, though not very high as compared to other sectors of the economy, has been increasing since the 1980's due to a number of policy interventions. The total labour force of the sector rose from 15,069 in 1987 to 22,500 in 1995 (Ghana Minerals Commission, 2000). Direct employment by producing members of the Ghana Chamber of Mines as at December 2004 stood at 10,624. This rose to 21,103 in 2013 following the passage of the L.I 2173 in 2012. Beyond this, there are several thousands of people engaged in small scale artisanal mining.

Figure 4: Share of Small Scale Sector in Gold Production



Source: Minerals Commission

Small-scale sector contribution to overall gold production in the country has increased significantly over the last decade (figure 1). This is an indication that Ghana's mining sector has opened up economic opportunities to local operators (ACEP, 2016).

These notwithstanding, there are many opportunities that Ghana has missed with its inability to link the mineral sector to the rest of the economy through forward, backwards

and side linkages. All gold output for example are refined outside the country. Inputs are also imported with no clear effort to domesticate some of the production processes to feed the sector. Local content in that regard is limited to supply of imported goods and services as well as direct employment. The contribution of the extractive sector to government revenues could potentially be more if value addition was incorporated into the production value chain.

CHAPTER FOUR

CONCLUSION, KEY FINDINGS AND RECOMMENDATIONS

The objective of the study was to analyse the policy gaps in Ghana's minerals and mining sector to inform policy decisions on the Sheini iron ore project development for better outcomes. The study shows a mixture of some progressive successes and failures. There have been massive improvement in the policy space regarding issues of compensation, revenue management, amongst others. However, transparency and accountability remains a challenge. Community

development continue to be slow-paced due to lack of comprehensive community development plans. These must be addressed to secure the most benefit from the Sheini iron ore project. Infrastructure is very important in mining projects, hence government's role in project infrastructure provision should be clear in order to open up the socio-economic potentials of communities surrounding the Sheini iron ore mine. Specific findings are highlighted below.

4.1 Key Findings

1. Although there exist policy initiatives on geological data gathering and investments, the efforts are slow due to resource constraints. This hinders the state's knowledge of its mineral resource potential to inform mining contractual terms. While the Sheini iron ore grade is known, this knowledge was unilaterally

generated by the contractor. That there is no mechanism for parallel verification of this information by the government potentially weakens government's negotiation capacity with prospective contractors to develop the mine. It is important that government gets a second opinion about Sheini iron ore grade

before any block is awarded for development. The Government of Ghana should also put in place the necessary strategic investment attraction mechanisms to get the mine developed.

2. Allocation of mineral rights is still by the open door, direct negotiation policy which fails to secure the most value for the state of its mineral resource wealth. A policy shift to open and competitive bidding will secure the most benefit from the Sheini iron ore mine. Moreover, although the Minerals Commission has launched an online portal where the mining licenses granted so far have been listed, mining contracts still remain undisclosed. The absence of rights to information law hampers the smooth operation of the very much needed oversight responsibilities of civil society and interest groups.
3. There is a weak link between the mining sector and local development. This is evidenced by the lack of adequate infrastructure, poor spatial arrangement, negative social impacts, and increasing poverty. The environmental impacts of mining on communities remain a challenge.
4. The evidence of the link between favourable fiscal regimes to the investor and FDI as proxy for investment attraction to the mining sector is mixed and weak. Recent studies show that investment attraction to the mining sector goes beyond the fiscals. Investors are interested in the availability of physical infrastructure, stable regulatory regimes, etc. for their smooth operation. Sheini lacks the requisite infrastructure such as energy, water and transport to support the mine's development. To attract investors, the government must undertake strategic policy actions that will complement investors' efforts in infrastructure delivery.
5. Ghana's fiscal policies must be reviewed to inculcate additional profit tax. Tax

Moreover, policies on compensation are inadequate to cover the various kinds of rights that run currently in land as well as communal entitlements to the use of land. Government must embark on an integrated long-term development plan that feeds into the development plans of mining companies to support local sustainable development.

administration must also be strengthened to check illicit financial flows in the sector. Fiscal accountability is fairly good but there is more room for improvement.

4.2 Recommendations

Based on the findings in 4.1, the following recommendations have been made:

1. The Government of Ghana should gradually phase out the first come first served approach and adopt the open and competitive bidding processes in the award of mineral licenses. It has been established that the ideal means of awarding mining licenses is through open and competitive bidding processes because it allows for an efficient and just allocation of mineral rights. This process assumes that the awarding authority should have mapped out the mineral-bearing terrain. A move from the open door approach to an open and competitive bidding approach thus requires some strategic measures. These include massive investment in geo-scientific data generation to reduce geological risks of mining areas. This will boost competition for mining leases as investor interests will be heightened, and position the country to have a stronger basis to define fiscal terms that balance state and investor interests in a fair and equitable manner. Since the geology of the Sheini iron ore mine is known, it will be best for the government to adopt open and competitive bidding in the award of mining lease for the purposes of efficiency gains. It may however be necessary for government to reassess the accuracy of the data handed to it by investors.
2. The government should leverage mining investments for sustainable community development by mapping out infrastructure priorities of the area. One of the positive externalities of mineral extraction is the possibility of achieving sustainable development and poverty reduction outcomes by fusing community infrastructure needs

into the development plans of the mining companies. Only 21.5% of households in the Zabzugu-Tatale District where the iron mine is located have access to electricity mains. The sources of lighting for the majority of households is kerosene lamp (69.6%). Also, for a community susceptible to the effects of climate change, majority of households (constituting 93.9%) use wood as the major source of fuel for cooking. This has attendant implications for the ecological cycle. Gas is the third commonly used fuel for cooking and its use is in only 0.8 percent of households in the district²⁸. Moreover, less than 30% of these communities have access to safe drinking water (International Reference Centre for Community Water Supply and Sanitation, 1981)²⁸. Transport infrastructure is almost lacking. By harmonizing development priorities of the communities surrounding the mining area with that of mining companies, government's financially constrained efforts to provide public goods will be complemented by company's efforts. The company in turn will

earn the social license to operate to mitigate risks of vandalism that could have negative implications for project cost and cash flows. Going forward, it is important that government develops a comprehensive country development plan to inform contractual terms in the award of mining contracts. This will ensure that there is shared infrastructure between mines and host communities

3. Government should complement infrastructure finance through a PPP Arrangement. Debt constitute a large portion of infrastructure financing. Return on investment depends on stability and profitability of project cash flow. In recent times, debt has reached 90% of infrastructure financing. Debt financing therefore becomes risky for corporate bodies if host countries lack the ability to complement investor efforts. Considering the difficulty of companies in raising funding to finance projects solely and the implications of such arrangements, it is appropriate for government to partner the companies to

²⁸ Ghana Statistical Service

²⁹ Tsikudo, B. (2009). Geophysical investigation for groundwater in the Gushiegu-Karaga and Zabzugu-Tatale districts of the Northern Region of Ghana using the electromagnetic method. Unpublished. Available at <http://ir.knust.edu.gh/bitstream/123456789/493/1/fulltxt.pdf> Accessed on 3/21/2017 at 3:57 AM.

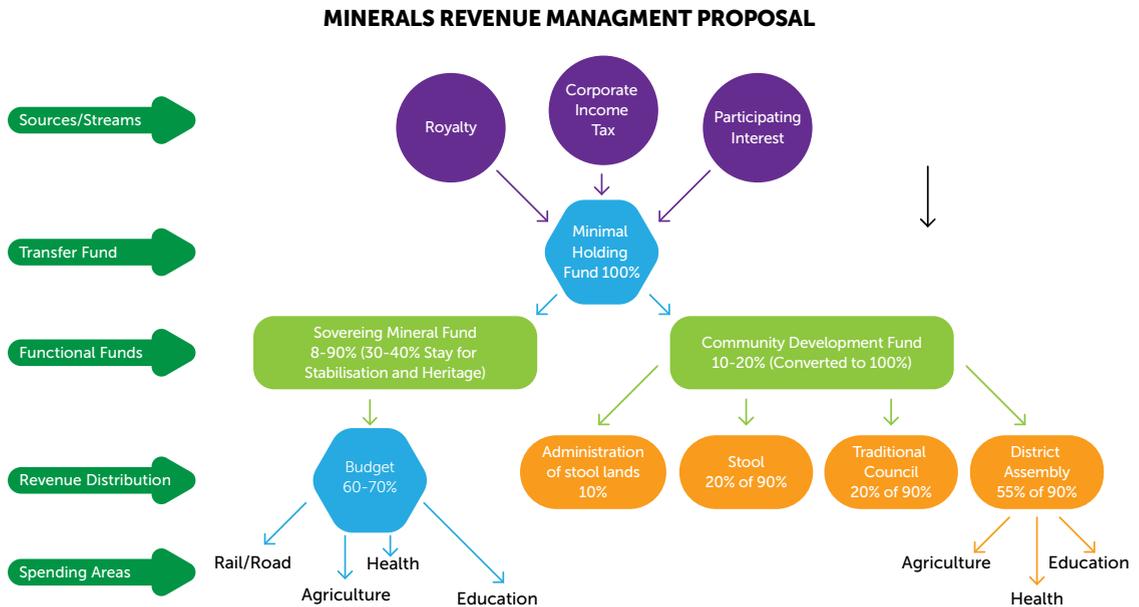
finance the needed infrastructure especially railway development.

Public private partnerships are therefore encouraged in the development of project infrastructure. PPP is better because, according to IFC report 2013, Sub-Saharan African countries' ability to finance iron ore related infrastructure is not only limited but also not a viable option due to a number of reasons. First, countries already have weak financial position and budgetary constraints. In addition, contracting loans to finance such large projects is done on good terms only when the country has a good credit rating, especially for frontier iron ore producing countries. The recent budget cuts due to fallen oil prices attest to Ghana's budgetary constraints. Moreover, the country's debt-to-GDP ratio has reached 72%, which is above globally acceptable worst limit. The World Bank's 2016 country economy classification categorized Ghana under its IDA program due to the country's lack of credit worthiness to qualify for IBRD lending category. The government therefore stands to gain financial and technical advantages through a PPP arrangement.

The government of Ghana has demonstrated commitment to infrastructure development through the establishment of the GIIF as well as petroleum revenue investments in transport infrastructure across the country. Revenues from the mining sector can be set aside to support mining-related infrastructure development finance through PPP. It is important that the government enacts a PPP law to regulate government-investor relations for optimal outcomes.

4. Government should establish a Minerals Revenue Management Framework to increase efficiency and accountability in the use and management of mineral revenues for current and future generation. ACEP has developed a comprehensive formula for the distribution of mineral revenues between the government and affected communities to address the challenges of Ghana's mineral revenue management and mitigate the great danger that mining communities face through environmental destruction, human rights abuses, community displacements and inadequate compensations (Picture 1).

Picture 1: Proposed Minerals Revenue Management Framework



Source: Africa Centre for Energy Policy

This plan is also consistent with the provisions of the new Minerals Development Fund Act and will secure the socio-economic development of mining communities. To further ensure fiscal responsibility, budget expenditure must be guided by a value for money (VFM) framework. The role

of a VFM framework is to set out a number of assessment tools for the appraisal and evaluation of projects that are time bound to ensure that the best of outcomes are achieved from the money spent on such projects.

5. Government should review some existing mining sector policies and pass new ones to secure the best outcomes from the Sheini iron ore development. The Minerals and Mining Act, 2006 (Act 703) should be amended to make provision for additional profit tax requirement to rake in more revenues in times of commodity price boom when companies enjoy supernormal profit. Act 703 should be amended to adopt open and competitive bidding, beneficial ownership register and publication of mining contracts that are also easily accessible to the public. This will allow for proper tracking of the state's interest and empower civil society organizations to hold the government to account for all the decisions it makes on behalf of, and for the benefit of, citizens. The 2012 regulations on compensation and resettlement should

also be reviewed to define compensation assessment for the various kinds of land rights in Ghana, as well as for communal rights in shared resources. There should also be a legal requirement to ensure that the expropriated receive maximum support in alternative livelihood investment of their compensation claims. To secure proper accountability, a Mineral Revenue Management Act (MRMA) should be passed to clearly define revenue allocation and investment priorities so that mineral revenues can have maximum impacts. By enacting the Right to Information Bill, citizens and civil society organizations will be empowered to hold government accountable. This is likely to reduce the risk of corruption and associated cost on Ghana's sustainable development.

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