

Scaling up value creation and local development in the mining sector in Ghana



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Abbreviations

ACEP	Africa Centre for Energy Policy
ACET	African Centre for Economic Transformation
AfDB	African Development Bank
AGI	Association of Ghana Industries
AGOA	Africa Growth and Opportunity Act
ATP	Ashanti Technology Park
AMDC	African Minerals Development Centre
AMV	Africa Mining Vision
ASM	Artisanal and small scale mining
B2B	Business-to-business
BITs	Bilateral investment treaties
BGR	German Federal Institute for Geosciences and Natural Resources
BoG	Bank of Ghana
CCSI	Columbia Center on Sustainable Investment
CET	Common external tariff
CIF	Cost insurance and freight
CMT	Cut, make and trim
CMV	Country Mining Vision
CORFO	Chilean Economic Development Agency
CSR	Corporate social responsibility
CSOs	Civil society organizations
DTF	Distance to frontier
ECA	Economic Commission for Africa
ECOWAP	ECOWAS Regional Agricultural Policy
ECOWAS	Economic Community of West African States
ELTS	ECOWAS Trade Liberalisation Scheme
EPA	Economic partnership agreement
EPCM	Engineering, procurement and construction management
EPZ	Export processing zone
EU	European Union
FTA	Free trade area
FDI	Foreign direct investment
F.O.B	Free on board
FR	Flame resistant
FZ	Free Zone
GATS	General Agreement on Trade in Services
GCI	Global Competitiveness Index
GDP	Gross domestic product
GFI	Global Financial Integrity
GFZB	Ghana Free Zones Board
GHEITI	Ghana Extractive Industries Transparency Initiative
GIPC	Ghana Investment Promotion Centre

GNI	Gross national income
GNP	Gross national product
GNPC	Ghana National Petroleum Corporation
GRA	Ghana Revenue Authority
GRPS	Ghana Growth and Poverty Reduction Strategy
GSS	Ghana Statistical Service
GVC	Global value chains
HACCP	Hazard analysis and critical control points
HS	Harmonized System Code
ICMM	International Council on Mining and Metals
ICT	Information and communications technology
IFC	International Finance Corporation
IFF	Illicit financial flows
ITC	International Trade Centre
ILO	International Labour Organization
IMF	International Monetary Fund
IPR	Intellectual property rights
ISO	International Organization for Standardization
ISSP	Industrial Sector Support Programme
LCP	Local content policies
MIC	Middle-income country
MIT	Massachusetts Institute of Technology
MNE	Multinational enterprise
MoF	Ministry of Finance
MoTI	Ministry of Trade and Industry
MSMEs	Micro-, small and medium-sized enterprises
MVA	Manufacturing value added
NANTS	National Association of Nigerian Traders
NSDF	National Spatial Development Framework
NSDP	National suppliers' development programme
OASL	Office of the Administrator of Stool Lands
OECD	Organization for Economic Cooperation and Development
OEM	Original Equipment Manufacturer
PNDC	Provisional National Defence Council
PPE	Personal protective equipment
PPP	Private-public partnership
QGRL	Quantum Global Research Lab
R&D	Research and development
RECs	Regional Economic Communities
RVC	Regional value chains
SDP	Suppliers' development programme
SEZ	Special economic zone
SEBRAE	Brazilian Micro and Small Business Support Service
SMEs	Small and medium-sized enterprises
SoE	State-owned enterprises
STEM	Science, technology, engineering and mathematics
TVET	Technical and vocational education and training

UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
US	United States of America
USAID	United States Agency for International Development
USGS	United States Geological Survey
VDP	Vendor development programme
WAFOR	West African Forgings Ltd.
WEF	World Economic Forum
WIPO	World Intellectual Property Organization
WITS	World Integrated Trade Solution
WTO	World Trade Organization

Preface

Africa is the most mineral-rich continent by square kilometre and, for more than one century, has been engaging in industrial-scale mining for export to supply the world's most advanced industrial sectors. The continent, however, is entangled in a paradox: notwithstanding its rich endowments and highly coveted resources, the mining sector has failed to drive economic development and wealth creation in many countries. Resource-rich countries have been unable to attract sufficient investment in other diversified activities along their value chains, commensurate with their share of global resources. Sadly, countries remain over-dependent on the export of raw materials and continue to import most of the inputs that the mining sector needs to operate. Mineral value chains are the weakest link of African mineral-rich economies, and Ghana is no exception.

In Ghana, as elsewhere in Africa, mineral resources, in particular gold, have shaped the economic landscape for more than 100 years. The country is the second-largest African gold producer and ranks tenth in the world, and produces other minerals such as bauxite, manganese, iron ore and diamond. It also has proven reserves of many other minerals, including lithium. Commercial oil production commenced in 2010.

The economic contribution of the mining sector in Ghana cannot be overstated. Mining has no doubt brought in significant fiscal payments: total fiscal receipts attributed to the mining sector alone accounted for 22 per cent of government revenue in 2016. The sector is also the largest source of investment inflows from the world's biggest gold-producing countries and the leading export earner, with a total share of 45.5 per cent in 2016, far ahead of the second and third main exporting

sectors, namely, cocoa, which accounted for 22.3 per cent, and crude oil, at 12.5 per cent of total export earnings.

In Ghana, however, as elsewhere on the continent, the potential of the industry to serve as a springboard for economic diversification and sustainable livelihoods has not been sufficiently realized. In 2015, it was estimated that the large-scale gold sector spent some \$1.2 billion on operational expenditure, which was equivalent to 3 per cent of the country's gross domestic product in that year. Only a handful of domestic manufacturing firms or service providers, however, have been able to truly take advantage of those procurement opportunities. The country still imports 80 per cent of the procurement needs of mining firms, and when they are sourced locally, they are not always manufactured in the country. Domestic firms have been limited by a range of structural and cyclical factors, including weak supply chains and insufficient intersectoral linkages. In contrast with other diversified mineral-based economies, the mineral sector in Ghana is distinctly removed, with few links to other sectors, including at the strategic and operational policy levels.

The key question that therefore faces policymakers and industries in Ghana and in other resource-rich African countries is how best this strategic sector can roll out its full potential to create and capture more value using domestic factors of production, thereby unleashing the momentum for wider industrial spillover effects to diversify the economy from commodity dependency. To complement its national vision to transform Ghana, the Government embarked on a country mining vision process in 2014. This process is intended to onboard the broad tenets of the Africa Mining Vision, namely, leveraging



the mining sector for broader industrial development, on the basis of the specific circumstances in Ghana. One of the early aspects identified was the potential to scale up upstream linkages, using the gold mining industry as an anchor.

The present report is the outcome of the first phase of this process. Under the leadership of the Government of Ghana, the African Minerals Development Centre, with the support of the Economic Commission for Africa, the Federal Institute of Geosciences and Natural Resources of Germany and the African Center for Economic Transformation, conducted consultations and a thorough assessment of the mining sector's contribution to the various dimensions of economic links. The report is supported by evidence and provides an in-depth review of the challenges and opportunities facing the mining supply chain in Ghana.

A fundamental issue addressed in the report relates to the local content regulation currently in place in Ghana, which is aimed at increasing local employment and procurement. An assessment of the effectiveness of the policy to date has showed a glass half full. While local employment targets were met in large part for current employment categories, it was unclear how the strategy would address skills needed for the future of the industry and for mining-related manufacturing sectors. The effectiveness of local procurement was mixed: there was a clear decline in the share of "true local procurement" over the years, pointing to inherent challenges on the supply side.

The authors of the report underscore the need to improve the business climate and remove red tape to address the structural weaknesses that, on the one hand, deter the country's efforts to implement diversification

and industrialization policies and, on the other, prevent local businesses from engaging with the mining sector. Priorities identified include improving the business climate to make local industries more competitive, access to finance, bridging infrastructure deficits, providing incentives to small and medium-sized enterprises and scaling up the quality of human capital. The specific role of economic clusters is highlighted.

Regulation alone is not a panacea for supply chain development; it must be informed by a sound understanding of the market conditions and the dynamics facing mining suppliers. Governments often lack this detailed knowledge, and therefore rules become an obstacle rather than an incentive. The report provides a detailed market analysis to inform the debate regarding the future of local content and supply chain development in Ghana and the potential of a number of key mining input products and services to be produced and sourced locally at a larger scale. It also provides insight into regional opportunities in three other gold-producing countries: Burkina Faso, Côte d'Ivoire and Mali.

One of the key recommendations contained in this report outlines the need to set up a national suppliers' development programme. That proposal was endorsed by the Government and the initiative was formally launched at the ministerial level in Accra on 2 November 2017. In rolling out the programme, it goes without saying that it is critical to scale up domestic suppliers' capacity, capabilities and competitiveness. The programme is a multi-stakeholder process, based on partnerships between government, the mining industry, suppliers and training institutions. The

main purpose is to increase the depth and breadth of national suppliers, using mining as an anchor and eventually branching out to other sectors. It is innovative in its approach by also including a strategic pillar on innovation and technology to prepare Ghanaian firms to move up the value chain and improve their productivity now and in the future, as technological progress changes the face of the industry. It also provides the space to reflect on the future, with or without the mining industry.

Last but not least, none of the above will be possible without proper institutional coordination and appropriate policy sequencing, coherence and consistency. There is a need to not only bring back the debate on strategic planning at the national level, but also coordinate national policies with regional trade and the industrial agenda.

In summary, this report provides the background and context and sets the scene for the mining sector in Ghana and its links, or lack thereof, with the rest of the economy. It presents strategic and achievable opportunities to add value and propel both the country and the region using dynamic and diversified value chains. The analysis contained in the report will also serve in the implementation of the national suppliers' development programme itself and as guidance on the institutional environment needed to make this possible. It is the goal of the partners engaged in this initiative that Ghana, West Africa and the continent be equipped to transform their economies on the basis of currently underutilized natural resources for the benefit of their citizens and future generations.

Executive summary

1. Introduction

Historically, Ghana's economic landscape has been shaped by the mining sector, which has been dominated, primarily, by gold production. The beginning of commercial exploitation of oil in 2010 further accentuated the footprint of the extractive sector. The contribution of that sector to the country's economy continues to fall short of its potential, however. Ghana has other mineral reserves, including deposits of diamonds, iron ore, manganese and bauxite, but many of these also remain under-exploited. However, as interest in the mining sector grows and as the country embarks on strategic reforms to better leverage that sector, with a view to developing an industrial economy, it is expected that efforts will be made to exploit these other mineral reserves.

While mineral extraction in Ghana has contributed to the country's development since its independence, the extent to which the country has tapped the potential of the sector to create broader economic linkages, both within the extractive sector and in other economic sectors, has remained limited. In the mining sector, few strong domestic upstream industries have been developed to support the mining industry. Indeed, the country still imports 80 per cent of mining procurement needs and, when those needs are sourced locally, they are sometimes still manufactured abroad and merely packaged and distributed by companies within the country. This has tremendous loss implications in terms of value and employment creation. There are several reasons for these limited linkages, including:

- (a) The lack of political consensus around how to strengthen the linkages between mining and industrialization;
- (b) An inadequate and often weak industrial base, which is unable to supply the mining industry with competitive goods and services on a sustainable basis;
- (c) The strong presence of a class of businessmen that are essentially intermediaries between importers and the mining industry;
- (d) Domestic business environment hurdles and administrative red tape that are not conducive to the development of linkages in this sector; and
- (e) Insufficient commitments from the mining industry to support local sourcing, beyond a commitment to promote corporate social responsibility and to meet certain locally-established content targets.

Like many other resource-rich countries in Africa, Ghana was severely affected by the contraction of the commodity market in 2014 following a significant fall in global demand for raw materials, the subsequent crash in commodity prices and the rebalancing of the Chinese economy. Since then, the country has struggled to address a series of macro-economic challenges stemming, inter alia, from repeated fiscal deficits, the depreciation of Ghana's national currency (the Ghanaian cedi) and high inflation. This has further underscored the systemic vulnerability of the current Ghanaian economic model, whose performance is directly correlated with commodity price fluctuations.

For Ghana to reach its goal of becoming a resilient middle-income country, a radical reassessment of the country's approach to

long-term sustainable development is needed. Indeed, to address the country's systematic economic vulnerability, Ghana must broaden and deepen its economic base and reduce its dependency on the mining sector so that it can strengthen its resilience to external shocks.

2. Summary of findings

This report is the outcome of the first phase of Ghana's engagement in implementing the Africa Mining Vision, through the Country Mining Vision (CMV) process. The overall objective of the CMV is to support Ghana's broader industrial development agenda by using the mining sector as a key leverage tool.

To support the CMV process, an in-depth analysis of mining procurement in Ghana, an outlook for value chain development in the country, and Ghana's potential as a West African hub, was conducted by the African Minerals Development Centre (AMDC), in collaboration with the German Federal Institute for Geosciences and Natural Resources (BGR). This report assesses the main challenges facing the Ghanaian economy, looks at market analysis opportunities and proposes a number of recommendations for the future. The key findings of the report are as follows:

2.1 Improving the business climate and facilitating investment

The report highlights the structural weaknesses currently impeding the country's drive to diversify its economy and promote industrialization, as well as other productivity and competitiveness challenges preventing local industries from exploiting opportunities to support the mining industry and other economic sectors.

The competitiveness of Ghana's supply chain is conditional on the existence of a **business**

environment that promotes the productivity of domestic firms. Today, firms operating in Ghana face numerous challenges, including cumbersome administrative procedures, complex fiscal regimes, unfair trade policies favouring imports at the expense of local manufacturers, high border tariffs, weak logistics networks and high energy prices. These factors drive up the cost of doing business and severely impede firms' capacity to participate competitively in the supply chain.

In addition, the **current industrial tissue is weak** by international standards, as there are insufficient tools to implement the country's industrial policies, particularly for small and medium-sized enterprises (SMEs). The issue of informality must be addressed. At the same time, there are a large number of local firms that are too small to participate in a meaningful manner in value creation; it is therefore important to promote the expansion of those firms. Furthermore, the regulations governing the use of the term "Manufactured in Ghana" remain vague and open to interpretation.

The report also notes that **investment incentives available to SMEs** are insufficient: interest rates are too high; credit remains inaccessible; entrepreneurs and business start-ups are not sufficiently nurtured; subsidies are insufficient to support technological acquisition; and targeted industrial instruments to support infant industries are limited.

To foster linkages, particularly in higher value-added activities, Ghana must also improve its **investment climate**. Today, certain foreign investment preconditions, such as capital requirements for joint ventures, are restrictive and tend to encourage investments in extractive activities, rather than promoting investment in other industrial activities. Strong supply chains in higher value-added products will require the procurement of foreign technology and know-how. Moreover, the framework to protect intellectual property rights,

essential for business development and innovation, is also too weak.

A **highly educated workforce** is an essential prerequisite for effective technology transfer and knowledge spillover. Labour productivity in Ghana remains low by international standards and skills mismatches have a negative impact on the absorptive capacity of supply chains. Moreover, the quality of the workforce remains a major challenge. The report highlights the challenges facing human resource development in Ghana and proposes some concrete recommendations to foster capacity building. These include improving academic curriculums so that greater emphasis is placed on science, technology, engineering and mathematics, scaling up institutional capacities to respond to specific needs of the industry, addressing skills gaps and facilitating the movement of talent across West Africa.

2.2 Assessing local content regulation in Ghana

To encourage local sourcing, Ghana passed a local content regulation in 2012. The report assesses the effectiveness of the measures prescribed by the regulation, which pertain to employment creation and local procurement. Cognisant of the fact that the regulation was adopted fairly recently, the report nonetheless points out certain regulatory weaknesses that need to be addressed to ensure that the measures remain effective and relevant over time.

Ghana measures local procurement performance with two distinct metrics: **total local procurement** refers to every item purchased locally, irrespective of whether these are manufactured within the country or imported, whereas **true local procurement** refers to products manufactured in Ghana. The report finds that there have been notable improvements in the performance of mining

companies with regard to total local procurement. Indeed, the share of total local procurement as a percentage of overall procurement commitments increased from 80.6 per cent in 2014 to 92.8 per cent in 2016. However, there was a marked decline in true local procurement, from 78 per cent in 2014 to 52.3 per cent in 2016.

This deterioration is related to a number of factors, including: (i) the overall weakness of the industrial landscape, which makes it difficult to find reliable suppliers capable of providing high-quality and competitive products within agreed timeframes but who can also honour last-minute orders; (ii) supply side issues, such as technical difficulties that prevent local firms from meeting quality standards; (iii) geological differences across mines, which mean that mine-specific products and rapid response strategies are needed to address what are often local challenges, and (iv) other cost-driving issues, including high energy prices that undermine the competitiveness of local suppliers.

2.3 Market analysis of procurement

The report focuses on the value contribution of the mining industry with a particular emphasis on upstream linkages in Ghana. In that regard, Kaiser Economic Development Partners assisted BGR with the development of a demand model for West African mining that identified key local procurement opportunities that could reduce costs or bolster efficiency and also identified related constraints on production.

The demand model looked at the economic potential and market realities for local procurement in Ghana and three other gold-producing West African countries, namely Burkina Faso, Côte d'Ivoire and Mali. It estimated mining operational expenditure on procurement in 2015 for all mining companies operating in 2015 in those three countries, based

on publicly reported expenditure figures. The model looked at procurement spending in 32 product and service categories. Spending in each category was verified using available bottom-up procurement data from the region and refined on the basis of input from relevant experts.

Mining company profiles were also developed using secondary research and interviews with supply chain officials. The 14 companies profiled accounted for approximately 80 per cent of industrial gold production in the four countries in 2015.

Ten product opportunity case studies were developed on the basis of input from mining companies, expertise gained by the research team from previous interactions with suppliers in the region, and secondary research on supplier capacity and existing support mechanisms. A gap analysis was conducted to identify major constraints regarding the realization of opportunities identified in the case studies, and a number of recommendations on steps that could be taken to promote domestic procurement were formulated.

The demand model estimated the overall cost of procurement in the four countries at **\$2.66 billion in 2015**. Of the four countries assessed, Ghana was by far the largest gold-producing country and therefore had the largest market potential in West Africa. Ghana therefore has considerable potential to develop as a regional hub. For the purpose of the analysis, ten of the country's largest mines in operation were surveyed. These accounted for total procurement spending of \$1.21 billion and Ghana alone accounted for 45.5 per cent of the four countries' total procurement expenditure. However, despite Ghana's major gold-production, the market remains small by international standards.

2.4 Establishing a national suppliers' development programme

To build and strengthen domestic supply chains, the report recommends the establishment of a national suppliers' development programme (NSDP). To do so, scaling up domestic suppliers' **capacity, capabilities and competitiveness** are critical conditions for reversing the trend of de-industrialization and for strengthening linkages between the mineral sector and other economic activities. Ghana's large resource endowments, combined with a solid local customer base in the mining and oil and gas industries, naturally provide a comparative advantage and the necessary foundations upon which a competitive supplier base can be established.

Some critical preconditions must be met for the NSDP to be implemented successfully. Policy coherence and coordination among relevant Government agencies and within the mining industry are crucial. The NSDP is, moreover, a multi-stakeholder process, and effective partnerships involving all relevant stakeholders must be established. Further, access to markets, including at the regional level, must be secured, and information regarding business opportunities must be made more widely available.

This report proposes a framework for the establishment of the NSDP, based on six core pillars, namely:

- (a) **Promoting sustainability and inclusiveness:** this pillar will ensure the long-term success of the NSDP and help reconcile the interests and expectations of industries and local communities;
- (b) **Increasing the depth and breadth of national suppliers:** a range of measures will be enacted to support new and confirmed/existing suppliers, and potential suppliers will be identified through business

incubators and other entrepreneurship programmes;

- (c) **Enhancing skills and promoting workforce development:** this pillar is the soft arm of the NSDP and will ensure that workers at mines and suppliers have the necessary skills and competencies to perform their jobs effectively;
- (d) **Branching out to other economic sectors and promoting territorial development:** this pillar is a critical one if Ghana is to foster links between the mining industry and other economic sectors. The pillar will help foster linkages across industries by providing a platform for inter-industry collaboration. Opportunities for the development of horizontal linkages, in particular linkages using mining infrastructure to enable territorial development, will also be explored.
- (e) **Developing research, technological and innovation capabilities:** this strategic pillar is necessary to prepare Ghanaian firms to move up the value chain and improve their productivity; those firms will receive support to facilitate their access technology and promote innovation.
- (f) **Looking beyond the mine:** this pillar will provide a forward-looking agenda that will lay the foundations for a post-mining economy. Issues relating to mine closure and rehabilitation will be examined, as will steps that should be taken to promote the transfer of knowledge acquired in the mining and related industries to the region and beyond.

2.5 Establishing mineral supply clusters

The report also looks at the role of mining sector economic clusters in spurring value creation and local development in Ghana. Specifically, how can the mineral sector help

spur industrialization in the economy at large, how can scaled-up domestic industrial activity strengthen economic activity in the mineral sector, and how can Government-supported geographical and sector-specific clusters reinforce those developments?

Industrial clusters foster agglomeration and provide positive externality benefits among economic activities located in or linked with the clusters. Clusters established within the Government-supported Free Zones would have a particularly export-oriented focus. The report notes that several of these Zones are particularly suitable for the establishment of clusters related to Ghana's mineral sector that would help firms providing services to mining firms while also benefiting from mining sector outputs and infrastructure. In this connection, the report focuses on the Shama Export Processing Zone, Ashanti Technology Park and the Suame Magazine informal industrial area. Each of these provides a sectoral area of expertise, and can be linked both remotely or geographically with the country's mineral endowments and areas of mining activity, provided that steps are taken to enhance their domestic market orientation.

To ensure the success of mineral supply clusters, industrial, mineral, trade and free zones policies, which at present lack coherence, must be better coordinated. Furthermore, stakeholders must acquire a deeper understanding of how enhanced industrialization can strengthen mining operations, and how mining outputs can more effectively support domestic industries.

2.6 Getting institutional coordination right

To ensure that policies are coherent and consistent, relevant Ministries, governmental agencies, private sector actors and academic/research institutions must coordinate policies effectively, set shared priorities and adopt

strategic plans for action at the national, regional and international levels.

Although Ghana has a strong institutional framework, the country needs to establish specific agencies that can (i) coordinate efforts to enhance productivity and competitiveness; (ii) support national mechanisms to promote innovation; (iii) improve the regulatory framework governing intellectual property rights;

and (iv) ensure overall coordination and monitoring of policies across ministries and agencies. There is also a need for an independent body to take a key role in oversight to ensure the effective implementation of agreed policies, support the Government through policy analysis, and translate policy into action. The report puts forward some suggestions on how coordination mechanisms can be improved, including, in particular, through the NSDP.



Chapter 1: Overview of the economic landscape in Ghana

1. Overview of the economic landscape in Ghana

1.1 Introduction

Ghana is richly endowed with vast reserves of mineral resources,¹ many of which remain under-exploited. In 2016, the mining and quarrying sector, which includes hydrocarbon extraction, accounted for 6.8 per cent of real GDP² (down from 8 per cent in 2015), 57.5 per cent of export revenues³ and 25.1 per cent of fiscal revenue (GSS, 2017).

Ghana is the second largest gold producer in Africa, after South Africa, and tenth largest globally, and accounted for 2.9 per cent of global production in 2016 (USGS, 2017).⁴ In 2007, significant reserves of offshore hydrocarbons were discovered and commercial exploitation began in 2010. Together with the cocoa industry, the gold and petroleum sectors currently dominate the country's economic landscape and are the principal sources of the country's fiscal and foreign exchange revenues. Other sources of export revenue include timber, bauxite, manganese and diamonds.

In the two decades prior to the collapse of commodity prices in 2014, Ghana experienced strong economic growth. That growth was driven by high commodity prices resulting from China's insatiable appetite for raw materials and a surge in investment that led to the discovery of important reserves of petroleum in the Jubilee oil field in 2009. Growth rates reached a record 15 per cent in 2011, when the country started commercial oil production, making it one of the fastest growing economies in the world that year (Aryeetey, and Baah-Boateng, 2015). During that period, Ghana outperformed many of its West African counterparts, and became one of the fastest growing economies in the region. In 2010,⁵ Ghana graduated from least developed country status and was reclassified as a lower-middle income country.⁶

Economic growth slowed in tandem with the fall in commodity prices in 2014, which resulted from weak global demand and the rebalancing of the Chinese economy. In 2015 and 2016, the country's economic performance was considerably weaker than in previous years, in particular due to macro-economic

1 Mineral resources include mining (large and small scale proceeds) as well as oil and gas.

2 Source: MoF, Budget Statement and Economic Policy 2018. This figure is provisional, based on real GDP in purchaser's value, i.e. GDP at basic prices plus indirect taxes.

3 Source: MoF, Ghana's balance of payments, Budget Statement and Economic Policy 2018. This figure is revised: in 2016, total exports (f.o.b.) amounted to \$1,136.9 million, of which \$ 4,919.5 million was from gold, \$ 100.2 million from manganese, \$38.7 million from bauxite, \$2.1 million from diamonds and \$ 1,345.2 million from crude oil.

4 See <https://minerals.usgs.gov/minerals/pubs/mcs/2017/mcs2017.pdf>.

5 Ghana rebased its national accounts in 2010. This statistical review revealed that income per capita had already crossed the \$1,100 threshold in 2007. The rebasing exercise involved a change in the base year, changes in methodologies and concepts, and data revisions.

6 The World Bank classifies MICs as countries with per capita GNI – a measure that is very similar to per capita GDP – of between \$976 and \$11,905.

imbalances, fiscal deficits, the depreciation of the Ghanaian cedi and high inflation rates. Ghana's economic performance picked up again, however, in 2017. Such a highly variable economic performance underscores the vulnerability of the country's economic structure, which relies on a limited number of exports and is highly dependent on global commodity prices. For Ghana to achieve its goal of becoming a resilient middle-income country, a radical reassessment of the country's approach to long-term sustainable development is needed. In order to strengthen its resilience to external shocks, Ghana must broaden and deepen its economic base, and must, in particular, promote economic activities that can address domestic and regional economic needs.

This study evaluates the extent to which mining industry procurement opportunities in Ghana can stimulate the development of local supply chains. In particular, it evaluates the potential impact of establishing a suppliers' development programme and economic clusters to support local economic development, create business opportunities for the domestic private sector, and position Ghana as a regional industrial hub. While the mining industry will remain a mainstay of the economy, the study looks more broadly at supply chains that would be able to meet the long-term needs of other industries.

This study considers only upstream linkages with the mining industry. Downstream linkage opportunities, including those related to the use of industrial minerals, and upstream, mid-stream and downstream linkage opportunities with the petroleum sector are not covered;

these will be considered in forthcoming stages of the Country Mining Vision process.

1.2 Ghana's overall economic performance

This section provides a macroeconomic overview of Ghana's economy, looks at challenges impeding its structural transformation and highlights the weaknesses of the current extractive-sector-led development paradigm, which focuses mainly on capturing and investing rents, in contrast to building viable linkages within the mining sector and with other economic sectors.

1.2.1 Macroeconomic overview

The economy of Ghana has performed relatively well in recent years. The country recorded high growth rates for over a decade, mainly as a result of a rise in commodity prices, including, in particular, global cocoa and gold prices, and the start of oil production in late 2010. GDP growth rates stood at 14 per cent in 2011, 9.3 per cent in 2012, and 7.3 per cent in 2013. Despite the slowdown in the country's economic performance between 2014 and 2016,⁷ it is believed that the economy has since recovered and real GDP growth is estimated to have reached 7.9 per cent in 2017.⁸ This recovery is remarkable, particularly given the persistent global economic slowdown and the headwinds that continue to impede growth in a number of major African economies.⁹

FDI picked up sharply following the discovery of oil in commercially-viable quantities in

7 In 2016, the growth rate was estimated at only 3.7 per cent of GDP. The economy grew much less rapidly because of a number of factors, including low global oil prices, damage to the Kwame Nkrumah floating production, storage and offloading (FPSO) vessel, high cedi exchange rate volatility, high rates of inflation and a persistent electricity crisis.

8 Source: Ministry of Finance 2018. Budget Statement and Economic Policy. See <http://www.mofep.gov.gh/sites/default/files/budget-statements/2018-Budget-Statement-and-Economic-Policy.pdf>.

9 According to IMF projections, the global economy grew by 3.1 per cent in 2016, due to sluggish economic activity in the United States of America, the Eurozone and China. Growth in advanced economies declined to 1.6 per cent in 2016 (compared to 2.1 per cent in 2015).

Table 1

Key macroeconomic indicators

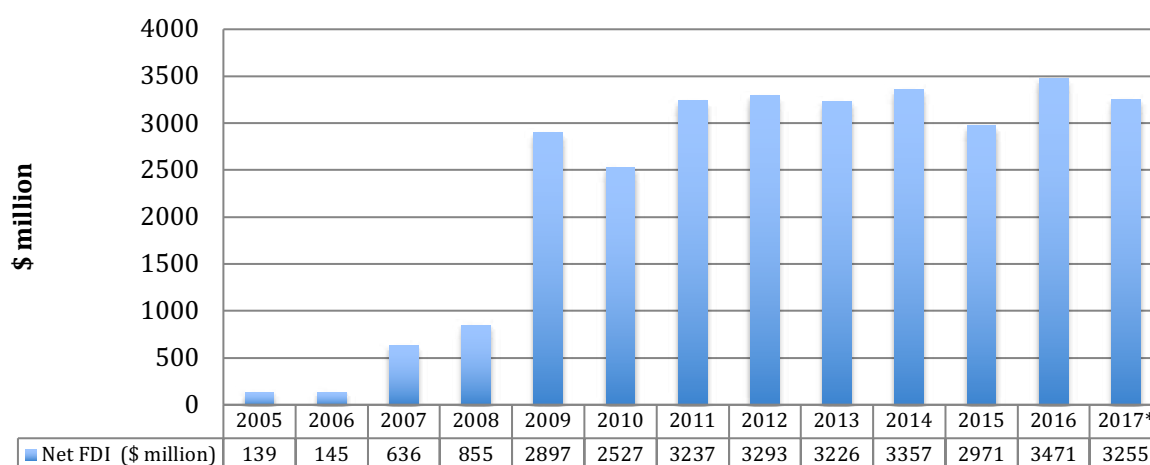
	2012 Actual	2013 Actual	2014 Actual	2015 Revised	2016 Revised	2017 Estimates
Real GDP growth rate (incl. oil), (%)	9.3	7.3	4.0	3.8	3.7	7.9
Non-oil GDP at constant 2006 prices (growth, %)	8.6	6.7	4.0	4.0	5.0	4.8
Headline inflation (period end, %)	8.8	13.5	17	17.7	15.4	11.6*
Fiscal deficit (% of GDP)	(11.5)	(10.1)	(10.2)	(6.3)	(6.4)	(4.8)
Net FDI (% of GDP)	7.9	6.6	8.7	7.9	8.1	n/a
Gross capital formation (% GDP)	31,8	27,7	26.6	24,6	22.5	n/a
Domestic revenues (exc. grants), % GDP	19.6	17.1	20.6	19,1	18.4	n/a
Gross external debt (% GDP)	23	28	39.1	42.8	40.8	n/a
Gross public sector debt (% GDP)	47.8	55.9	70.2	71.6	73	68.6
Average lending interest rate	25.7	25.6	29	27.5	31.68	28.97

Sources: IMF, 2016b; GSS, Sep. 2017; BoG 2017; MoF, 2017; * Inflation estimate is for end-September 2017.

2007. From 2012 onwards, FDI levels were largely sustained, despite slower growth rates and other macroeconomic challenges, as a result of ongoing investments in the oil sector.

In 2015, there was a contraction in FDI levels as oil prices fell. Ghana's FDI target for 2017 was \$5 billion.

Figure 1

Net FDI inflows (\$ million): 2005–2017*

Data for 2017 is for January to September only.

Source: BoG, 2017; GIPC, 2017.

FDI totalled \$3.25 billion¹⁰ in the first three quarters of 2017 – an 80 per cent increase over the equivalent period in 2016. According to GIPC, this was due to an improved investment climate and increasing investor confidence, as well as innovative Government initiatives, including the “One District, One Factory”, the “Planting for Food and Jobs” and the “Accra Marine Drive” projects. According to the GIPC Quarterly Investment Report (Q3) 2017, a total of 139 new investment projects (111 foreign projects and 28 joint ventures) were registered between January and September 2017, with most FDI inflows concentrated in the manufacturing sector.¹¹ The Netherlands – a key joint venture partner in the energy sector – was by far the greatest source of foreign investment in that period, and made investments totalling an estimated \$2.4 billion. China was the country that invested in the largest number of projects in Ghana, and provided FDI for a total of 25 projects in the first three quarters of 2017. At full capacity, the 139 new projects are expected to generate 7,273 jobs for Ghanaians (GIPC, 2017).

Thanks to the Central Bank’s efforts to control the money supply, **headline inflation**¹² decreased from 15.4 per cent in 2016 to 11.6 per cent by the end of October 2017, thereby reversing the trend of increasing inflation rates that had prevailed in the previous five years (see Table 1). It is estimated that, within the headline measure, core inflation (which excludes food and energy) decreased from 18.2 per cent in 2016 to 13.5 per cent in

October 2017 while food price inflation declined from 9.7 per cent in December 2016, to 8.2 per cent in October 2017 (MoF, 2017).

The Ghanaian cedi was particularly volatile in 2014 and 2015, and **depreciated in value** by approximately 31.3 per cent in 2014 against the United States dollar. In 2016, the cedi stabilized and depreciated by only 4.3 per cent against the dollar, as a result of the Government’s tighter monetary policy and improved foreign exchange earnings. This trend continued in 2017, with a cumulative depreciation of only 4 per cent against the dollar (MoF, 2017), when favourable domestic and external conditions helped to further stabilize the currency. Ghana operates a free-floating exchange rate regime.¹³ The depreciation of the cedi has seriously eroded the value of investments and the confidence of foreign investors.

Ghana has undertaken important reforms to improve its **fiscal performance** (notably through measures to improve fiscal discipline,¹⁴ structural reforms and efforts to address inflationary pressures), and the fiscal deficit stood at 4.6 per cent of GDP in September 2017. This was slightly below the 4.8 per cent target set for that year. The country’s fiscal performance has improved significantly since 2016, when the deficit reached 6.4 per cent of GDP. On the domestic front, the country has encountered significant challenges in meeting its fiscal consolidation targets¹⁵. In particular, the impact of energy-related challenges on households and firms has

10 See GIPC Quarterly Investment Report (Q3) 2017: <http://www.gipcghana.com/press-and-media/downloads/reports/23-q3-2017-gipc-quarterly-investment-report/file.html>.

11 Key projects include Early Power Limited (which has an estimated project value of \$2.5 billion), which aims to generate electricity that can be sold to the Electricity Company of Ghana; and Afcons Infrastructure Limited, (which has an estimated project value of \$398 million), which aims to lay railway track and construct embankments and bridges.

12 Headline inflation is a measure of the total inflation within an economy, including with regard to food and energy prices (e.g., the prices of oil and gas). It is much more volatile and prone to inflationary spikes than other measures of inflation.

13 Source: <https://www.state.gov/e/eb/rls/othr/ics/investmentclimatestatements/index.htm?dliid=254203&year=2016>.

14 With mounting public debt and fiscal deficits, Ghana embarked on a fiscal consolidation programme in 2014 following IMF approval of a three-year extended credit facility of \$918 million.

15 In 2016, total revenues and grants were short of target by 11.1 per cent and total expenditure exceeded Ghana’s target figure by 16.2 per cent).

contributed to a shortfall in total revenues. On the external front, petroleum receipts in 2016 were 49.2 per cent below target, due to a lower than expected benchmark price for crude oil and the ensuing lower tax revenues from that sector. In 2017, the petroleum sector recovered and thus provided greater fiscal revenue to the State.

Like many other resource-rich countries, it is estimated that, between 2002 and 2011, Ghana lost some \$14.39 billion (equivalent to approximately \$1.44 billion per year on average) due to **illicit financial flows** (IFF), primarily from trade mis-invoicing (ACEP, 2015). The figures are even more shocking if IFF is estimated for longer timeframes. Indeed, the country is estimated to have lost approximately \$40 billion between 1960 and 2012 (GFI, 2014). IFF is a major source of domestic resource leakage. It significantly reduces countries' foreign exchange earnings, lowers fiscal revenues, negatively affects government capital and social spending and thus deprives governments of the necessary resources to reduce poverty and finance their socio-economic development needs.

Ghana's extractive sector is particularly prone to IFF. Notwithstanding its significant contribution to the economy, the sector is subject to corruption, resource smuggling and illegal mining activities (Galamsey) as well as to tax

evasion, in particular through various practices such as transfer pricing, trade mis-invoicing,¹⁶ reported price of gold proceeds relative to the market price of gold and thin capitalization.¹⁷ Although it is difficult to calculate the revenue lost from illegal mining activities in Ghana,¹⁸ estimates indicate that IFF from illegal mining in 2013 were approximately \$1.7 billion (ACEP, 2015).

Ghana's **debt outlook**¹⁹ has improved significantly: the country's debt-to-GDP ratio declined from 73 per cent in 2016 (3 percentage points above the debt sustainability threshold) to 68.9 per cent in September 2017. As a result, the debt service ratio declined from 45 to 43.9 per cent²⁰ between 2016 and September 2017 respectively. The ratio is expected to decline further to 41.8 per cent by the end of 2017.

In 2017, Ghana's **external trade position** improved due to increased revenue from the country's three main export commodities, namely cocoa, gold and petroleum. Higher earnings from the cocoa and gold sector were the result of higher production, while the petroleum sector benefited from higher world prices for crude oil. As a result, in the first three quarters of 2017, Ghana's trade balance recorded a surplus, equivalent to 1.5 per cent of GDP as opposed to a deficit of 4.3 per cent, as had been the case for the equivalent

16 It is estimated that illicit outflows through **export under-invoicing** amounted to \$5.11 billion for the period 2002-11, averaging \$568 million per year. **Import over-invoicing** was estimated at \$2.21 billion for the same period. Import **under-invoicing** was estimated at \$4.64 billion, while **export over-invoicing** reached \$2.43 billion. In total, it was calculated that illicit outflows billion through **trade mis-invoicing** were approximately \$7.32, while illicit inflows due to trade mis-invoicing amounted to \$7.07 billion. The combined effect of these illicit flows may have cost the Government some \$3.86 billion in lost tax revenue (source: ACEP, 2015).

17 A company is said to be **thinly capitalized** when its capital comprises a much greater proportion of debt than equity, i.e. its leverage, is too high. This is a cause of concern for revenue authorities, because it may result in very high interest payments.

18 It is difficult to estimate the total revenue lost from illegal mining in Ghana as most illegal mining output is probably smuggled abroad. The country's total mineral revenue was estimated at \$4.8 billion in 2013 (Chamber of Mines, 2013). The Chamber however estimated that illegal mining activities account for approximately 35 per cent of total gold output: 10 per cent higher than the output of the Gold Fields Group, the largest mining company in the country.

19 Public external debt covers those contracted or guaranteed by the central Government, and major State-owned enterprises (SoEs), as well as short-term liabilities contracted by the BoG for reserve management purposes. These BoG liabilities do not include swaps contracted with resident banks and fully collateralized credit lines with foreign institutions. It is worth noting that SoEs have significant amount of US dollar denominated obligations with resident commercial banks and possible US dollar-denominated arrears associated with their commercial activities, the total of which could exceed \$1 billion.

20 This is equivalent to 45 per cent tax revenue or 6.8 per cent of GDP.

period in 2016. Total exports increased by 25.1 per cent and total non-oil imports fell by 5.3 per cent.

1.2.2 Economic structural outlook

Despite high growth rates, the **structure of the economy** in Ghana has remained largely unchanged over the years (see Annex 1 for the distribution of GDP by economic activity between 2006 and 2015). This is not a surprising fact in that many African resource-rich countries have traditionally focused on the extraction and export of commodities, with little value-added activity performed at the domestic level. Although many resource-rich countries have attempted to promote economic diversification and move away from resource dependency, many of those countries have continued to opt for a “revenue-first” model, whereby priority is given to maximizing revenues from resource rents, notably through exports of unprocessed minerals. Over time, this has created economies that are excessively dependent on mineral rents and highly concentrated in unprocessed mineral production and exports. These economies are extremely vulnerable to commodity price shocks.

Ghana’s economy is highly skewed towards commodity production. The country is classified as a ‘factor-driven’ economy (WEF, 2016) because it exports and competes primarily on the use of its factor endowments (i.e., unskilled labour and natural resources). As a result the Ghanaian economy remains highly sensitive to world economic cycles, commodity prices and exchange rate fluctuations.

Although its share has declined steadily relative to other economic sectors in the last decade,²¹ the **agriculture sector** was once the backbone of the Ghanaian economy. In

2016, the sector grew by 3.0 per cent, contributed an estimated 18.9 per cent to GDP (GSS, 2017) and absorbed almost two-thirds of the labour force. For 2017, the contribution of agriculture to the economy was forecast to decline marginally to 18.5 per cent (MoF, 2017).

Ghana derives substantial foreign exchange earnings from cocoa, although there have been a number of recent successful attempts to diversify agricultural production, particularly in the horticulture sector, to fresh fruits (pineapples), and fresh vegetables and cashew nuts (UNIDO, 2013). At the end of 2016, cocoa was the major export crop, but other key crops included yams, palm oil, timber, grains and kola nuts. Livestock, forestry and fishing are also important agricultural products.

However, the vast majority of people working in the agricultural sector are still involved in subsistence farming, which remains largely characterized by low-productivity activities and informal entities. Although not sufficient to foster value-added transformation, the sector provides household income for the majority of the rural population.

The **services sector** is the dominant economic sector, and contributed approximately 56.8 per cent of GDP in 2016. Although the sector was estimated to have grown by 4.7 per cent in 2017, its share of GDP is likely to have fallen marginally to 55.9 per cent, due to the expansion of the industrial sector. The ICT sector outperformed other services sectors, with a growth rate of 10.7 per cent in 2017. Figure 2 shows the contribution to GDP made by each sector of the Ghanaian economy.

The **industrial sector**, which comprises mining and quarrying,²² manufacturing,²³

21 With the continued expansion of the mineral sector, the relative share of agriculture has declined.

22 The mining and quarrying subsector covers the extraction of natural minerals, in the form of solids, liquids or gases. This subsector in Ghana produces mainly hydrocarbons, gold, diamonds, manganese, bauxite, salt, stones and sand.

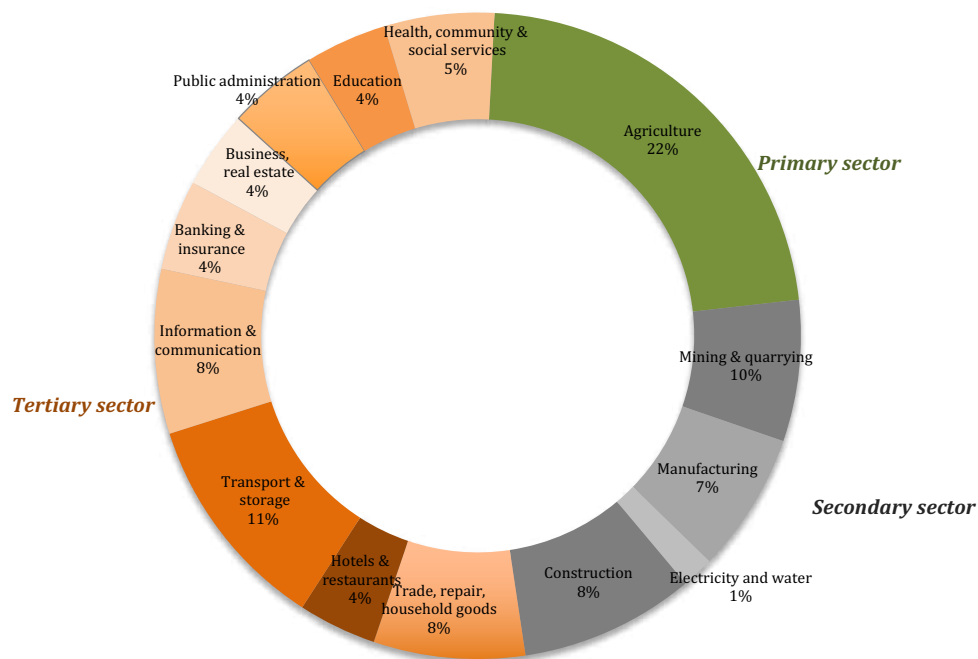
23 Ghana’s manufacturing activities include the production of food, beverages, tobacco, textiles, petroleum refinery and cement.

construction,²⁴ electricity, and water and sewerage,²⁵ accounted for 25.6 per cent of GDP in 2017 compared to 24.3 per cent in 2016. Industry recorded a high growth rate of 17.7 per cent in 2017, thanks to the recovery of the petroleum sector, which registered 69.2 per cent growth in 2017,²⁶ following a sharp decline in 2016. The manufacturing²⁷ subsector grew by 3.1 per cent in 2017. The sector as a whole is expected to recover slowly from the sharp decline that occurred during the power crisis, when the industrial sector's

share of GDP dropped from 10.2 per cent in 2006 to 7 per cent in 2017, losing about 40 per cent of its share in a decade.

In 2017, the non-mineral manufacturing sector accounted for 62.5 per cent of industrial output and contributed 16 per cent of GDP, thereby registering a modest positive growth rate of 3.4 per cent. The electricity and water subsector grew the fastest, by 6.2 per cent, while construction contributed 8 per cent of GDP (GSS, 2017).

Figure 2
Real GDP²⁸ contribution by sector (per cent), 2017

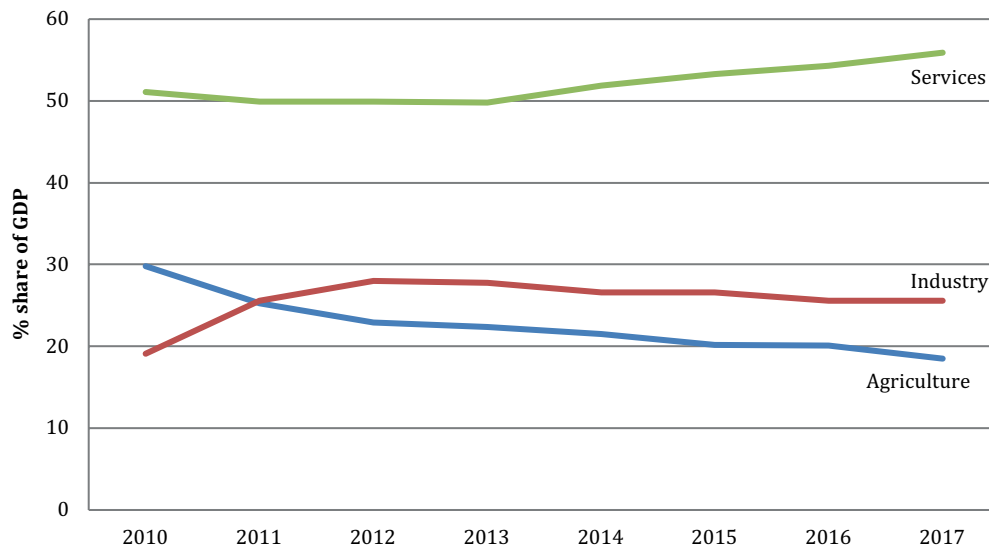


Source: GSS, 2017.

24 Construction deals with the construction, repair, maintenance, alteration and demolition of buildings, highways, streets, bridges, roads, sewers, railways and communication systems.
 25 The activities of the public sector-dominated electricity and water and sewerage subsectors include production and distribution of electricity and water and management of sewerage. Prior to rebasing, the electricity and water and sewerage subsectors had been lumped together.
 26 This figure is higher than previously projected and is principally due to the deferment of the FPSO Turret Remediation Project to 2018, which allowed for increased production in 2017.
 27 Ghana's manufacturing activities include the production of food, beverages, tobacco, textiles, petroleum refinery and cement.
 28 GDP at Constant 2006 prices in purchasers' value (i.e. basic price plus net indirect taxes).

Figure 3

Sectoral contribution to GDP at basic prices (per cent), 2010–2017



Source: GSS, 2017.

The steady decline in the contribution to the economy made by the industrial sector suggests that Ghana may be suffering from “Dutch disease”, a situation whereby the mineral sector crowds out investments in other productive sectors, such as agriculture and industry. This, in turn, leads to declines in those sectors and further increases the country’s dependency on the extractive sector.

The growing economic weight of the services sector, shown in Figure 3, does not necessarily reflect an evolution towards the high value-added service activities that tend to comprise an increasing share of economic activities in emerging economies. In the case of Ghana, this actually reflects a lack of opportunities in other economic sectors, which in turn, leaves the labour force with no other choice but to seek employment in the low-productive service sector.

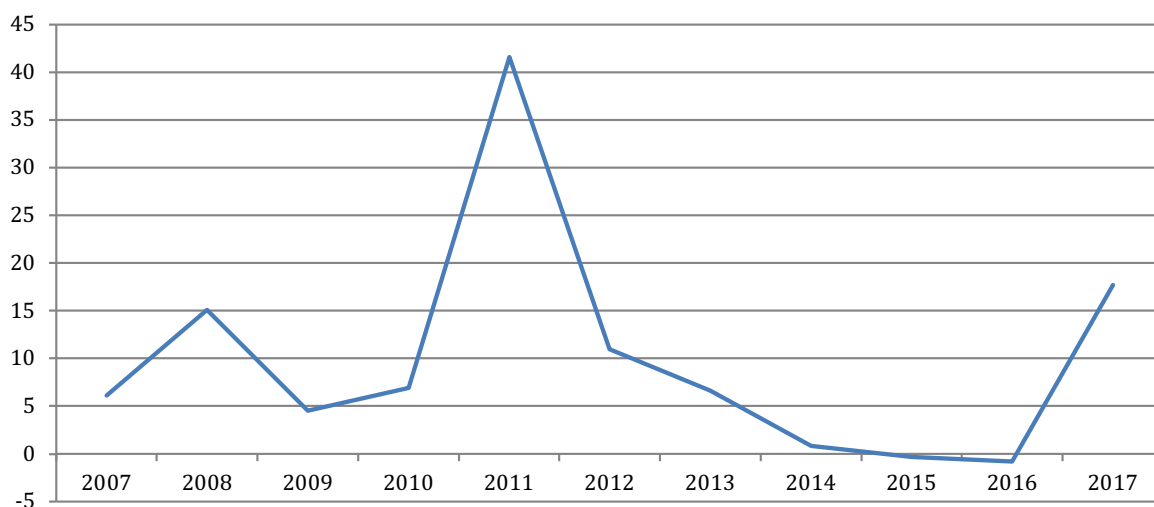
As depicted in Figure 4, while **industrial value added growth** increased steadily in the

mid-2000s, with a peak of 41.6 per cent growth in 2011, growth decreased sharply from 2011 onwards. It was only in 2017 that the sector again registered a double-digit growth rate when it grew by 17.7 per cent.

The contribution made to the economy by the manufacturing sector has also declined over the years, and has been overtaken by the contribution made by the mining and quarrying sector. However, this trend is expected to be reversed as new investment projects come on stream, such as the “One District, One Factory” project and steps are taken to address the country’s persistent power shortages. In the first three quarters of 2017 for example, the manufacturing sector received the lion’s share of investments, following the construction of a new generating plant that will supply electricity to the national grid.

As shown in Figure 5, although there is a correlation between industrial and manufacturing value added, the latter grew far less than

Figure 4
Industrial value added, real growth (per cent), 2007–2017

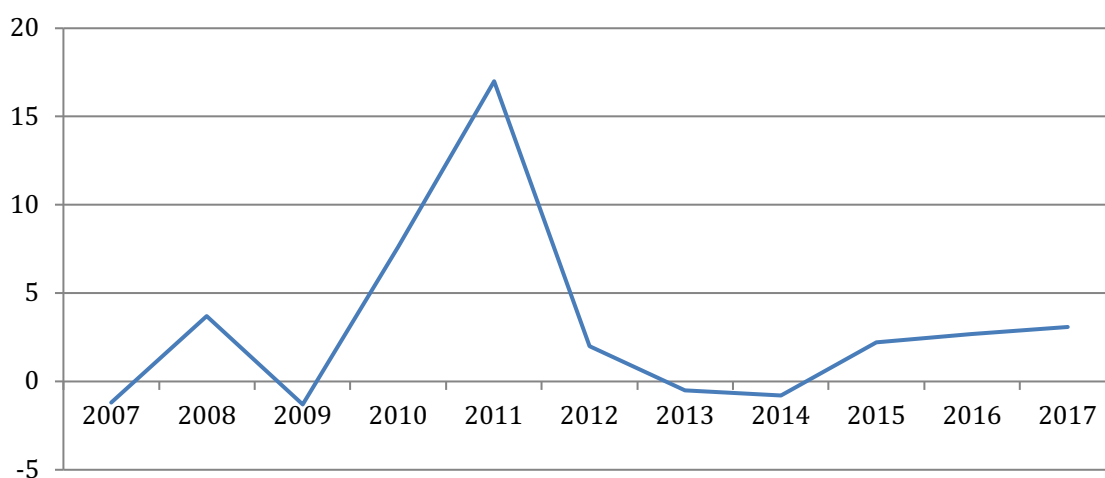


Source: GSS, 2017.

the former, and registered negative growth in 2013 and 2014. The weak performance of the manufacturing sector was due to better outcomes in other industrial sectors, such as construction and mining and utilities.

This persistent deterioration in Ghana’s industrial base makes it clear that steps must be taken to boost firms’ productivity (the domestic private sector is very small, is rarely part of the formal economy and accounts for

Figure 5
Manufacturing value added, real growth (per cent), 2007–2017



Source: GSS, 2017.

a limited share of manufacturing activity) as well as competitiveness challenges, in particular those facing SMEs and local industries in general. These include the difficulties related to conducting business in Ghana,²⁹ which stem from high interest rates on business loans (28.97 per cent in September 2017), insufficient and inefficient infrastructure services, obsolete equipment and an unfavourable business climate.

As shown in Table 2, petroleum production has made an increasing contribution to

Ghana's economy since 2011. Overall, the **mining and quarrying sector**, which accounted for 2.9 per cent of GDP in 2010, saw its contribution increase to 9.6 per cent in 2017. Together, the mining, oil and gas sector comprised 37.5 per cent of all industrial activities in 2017, up from only 13.7 per cent in 2010, mainly due to a multi-fold increase in oil and gas production, which alone accounted for 29.3 per cent of industrial activity in 2017. The contribution made to the economy by mining only remained relatively stable over the same period.

Table 2
Real GDP by economic activity (Ghanaian cedi, billion)

	2010	2011	2012	2013	2014	2015	2016	2017
Total GDP at market Prices*	24,101	27,486	30,040	32,237	33,522	34,808	36,104	38,960
Overall industry contribution to GDP	5,053	7,157	7,948	8,476	8,542	8,513	8,475	9,971
Share of industry to GDP	21.0	26.0	26.5	26.3	25.5	24.5	23.5	25.6
Mining & quarrying*	690	2,116	2,462	2,747	2,834	2,660	2,458	3,744
Of which mining only	625	744	793	778	776	583	733	824
Of which petroleum	65	1,372	1,669	1,969	2,058	2,077	1,725	2,920
Share of mining only to mining & quarrying (%)	90.6	35.2	32.2	28.3	27.4	21.9	29.8	22.0
Share of petroleum to mining & quarrying (%)	9.4	64.8	67.8	71.7	72.6	78.1	70.2	78.0
Share of mining & quarrying to GDP (%)	2.9	7.7	8.2	8.5	8.5	7.6	6.8	9.6
Share of mining only to GDP (%)	2.6	2.7	2.6	2.4	2.3	1.7	2.0	2.1
Share of petroleum to GDP (%)	0.3	5.0	5.6	6.1	6.1	6.0	4.8	7.5
Share of mining & quarrying to industry (%)	13.7	29.6	31.0	32.4	33.2	31.2	29.0	37.5
Share of mining only to industry (%)	12.4	10.4	10.0	9.2	9.1	6.8	8.6	8.3
Share of petroleum to industry (%)	1.3	19.2	21.0	23.2	24.1	24.4	20.4	29.3

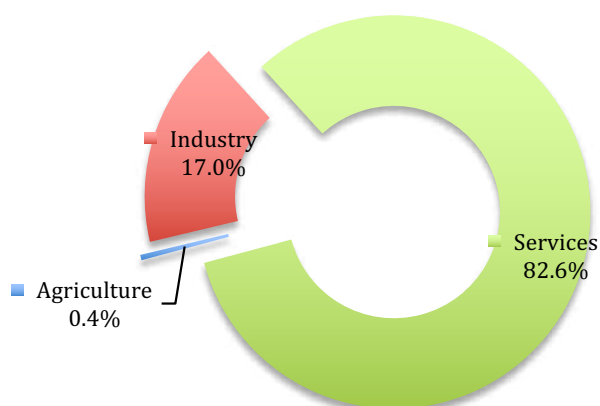
* Constant 2006 prices in purchase value (i.e. basic prices plus net indirect taxes)

Source: GSS, 2017; * includes mining, oil and gas.

29 See <https://www.ft.com/content/35173348-ee6d-3279-b3b7-22322a39242f>.

Figure 6

Overall sectoral distribution of non-household firms³⁰ per category (per cent), 2015



Source: GSS, 2015.

1.2.3 Sectoral distribution of economic activities in Ghana

Despite high growth rates in the industrial sector, the Ghanaian economy remains largely services oriented. Figure 6 shows that, in 2015 some 82.6 per cent of non-household firms provided services. Only 17 per cent were classified as industrial firms and a mere 0.4 per cent were classified as agricultural firms.

Table 3 suggests that within the **industrial sector**, the manufacturing subsector accounts for the largest number of firms (92 per cent). Although the mining and quarrying subsector contributes the lion's share of GDP, mining and quarrying companies comprise only 0.5 per cent of the country's non-household industrial firms. However, these firms are extremely large and most of them are foreign-owned.

Table 3

Industrial sector: Sectoral analysis of non-household firms, by activity, 2014

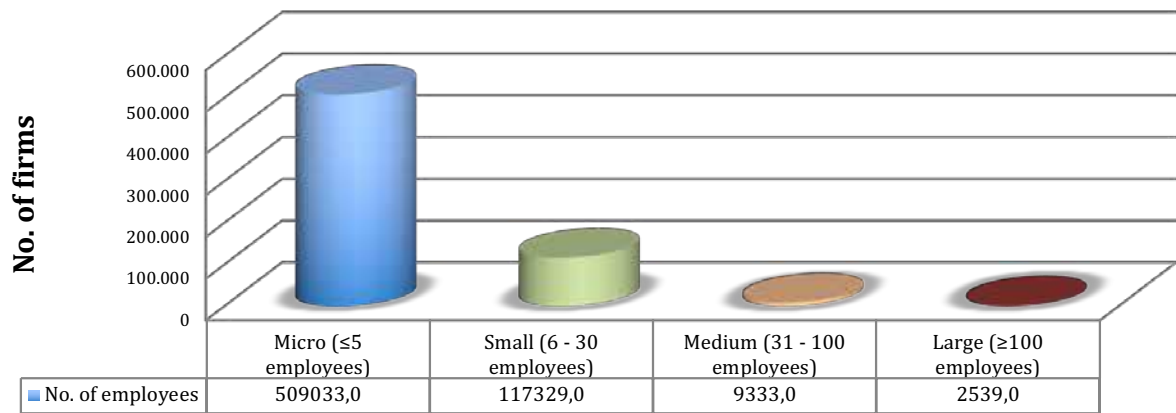
	No. of firms	% of total firms in industrial sector
Manufacturing	99,437	91.9%
Mining and quarrying	580	0.5%
Electricity and gas	621	0.6%
Water supply, sewerage and Waste management	953	0.9%
Construction	6,651	6.1%
Total	108,242	100%

Source: GSS, 2015.

30 Data in this section covers only non-household establishments. These include all units of production whose physical locations are fixed and can be described and traced. For a comprehensive definition, see Ghana Statistics Office data.

Figure 7

Distribution of non-household (industrial sector) firms by size, 2014



Source: GSS, 2015.

Nonetheless, Ghana boasts a very large number of indigenous MSMEs, which are active in all sectors of the economy. Most MSMEs are involved in lower value added activities and operate, primarily, in the services sector, which generated 54.3 per cent of GDP in 2016. MSMEs comprise 99.6 per cent of non-household industrial firms in Ghana. Figure 7 shows the distribution of non-household industrial sector firms in 2014, disaggregated by size. It underscores the structural weakness of the industrial tissue in Ghana and the importance of moving from low-productive economic activities to higher productive ones, as key condition to transform the economy, create better-paid employment and increase value creation.

1.2.4 Labour market outlook

The labour market in Ghana is characterized by **high levels of labour participation** but **rampant unemployment and a large and growing informal sector**. The labour market

is challenged by important **skills gaps and low capabilities**, associated with the relatively poor levels and quality of education and skills. Coupled with low levels of technology, this results in poor productivity, low production outcomes and weak income levels.

Rising unemployment is due to the fact that Ghana's employment growth has lagged behind economic growth for many years. For example, while economic growth averaged 8 per cent per year between 2005 and 2012, job creation during that period is estimated at only 4 per cent per year (Honorati and Johansson de Silva, 2016). This implies that only 0.5 per cent of new jobs were created for every 1 percentage point increase in economic growth.³¹

This discrepancy is due to the fact that, for decades, growth in Ghana has been driven, primarily, by capital-intensive productive sectors, such as large-scale agricultural commodities, mining activities and more recently,

31 In economics, this is known as employment elasticity. Low elasticity implies fewer jobs for a given level of economic growth, but can also indicate higher growth in labour productivity. Ghana's employment-growth elasticity is below Africa's average, estimated at 0.72 per cent, but is in line with what is observed in lower middle income countries, which averages 0.6 per cent. (Honorati and Johansson de Silva, 2016).

petroleum exploration and extraction, which are known to create limited though high value added jobs. In the absence of strong linkages, little indirect high-value jobs have therefore been created.

Furthermore, the limited diversification of the economy and the low value added nature of other economic activities have created a labour market that is struggling to absorb country's growing labour force, and, consequently, the country's already high **under-employment**³² is on the rise. Estimated at 10 per cent in 2015, Ghana's worsening under-employment is driven primarily by informality and insufficient job opportunities. Increasingly, those entering the labour market are forced into low-paid and low-productivity service sector jobs.

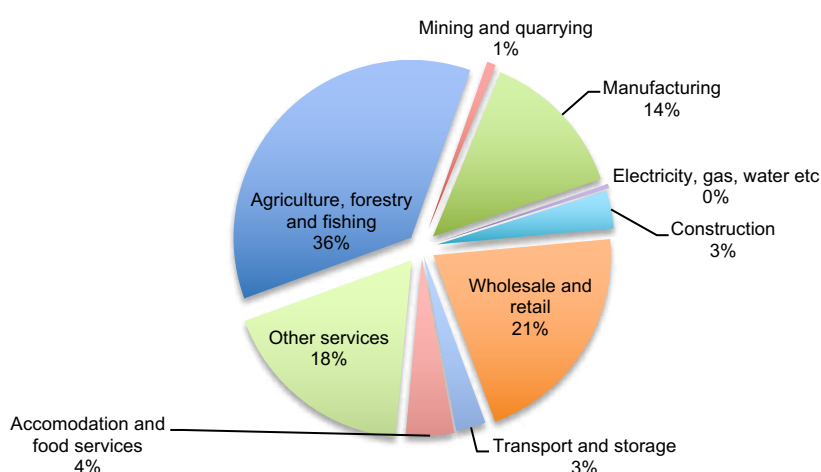
It has been calculated that, in order to absorb the increasing numbers of young people entering the labour market, the Ghanaian economy will need to create some 300,000 productive and inclusive jobs, namely jobs accessible

to the entire population, including those from rural and urban areas, by 2020 (Honorati and Johansson de Silva, 2016).

The 2015 Labour Force Report estimated that, in 2015, 67.9 per cent of the labour force was employed, 9.1 per cent were unemployed and 23.3 per cent were not in the labour force. The 2015 Labour Force Report adopted a rather "relaxed" definition of **unemployment**, namely persons aged 15 years and older who, within the reference period, had been without jobs and "potentially" available for jobs. Based on that definition, the total unemployment rate for Ghana in 2015 stood at 11.9 per cent.

The unemployment rate is higher in rural areas than in urban areas, with wide disparities across regions. Youth unemployment (i.e. for individuals aged between 15 and 35) is particularly high and, in 2015, was estimated at 16.9 per cent.³³ Individuals with only a secondary school education have a higher unemployment rate, namely 24.4 per cent, while

Figure 8
Sectoral distribution of non-household employment, 2015



Source: 2015 Labour Force Report.

32 Underemployment is a situation in which people in a labour force are employed at less than full-time in regular jobs or in jobs inadequate with respect to their training or economic needs.

33 The unemployment rate for 15–24 year olds stands at 25.9 percent.

the unemployment rate for individuals with a post-secondary or higher education qualification stood at only 13.0 per cent (2015 Labour Force Report).

Figure 8 shows the sectoral distribution of non-household employment in 2015, according to data contained in the 2015 Labour Force Report. The services sector as a whole was the main employer in Ghana and, in 2015, employed 46 per cent of the labour force. Some 36 per cent of the labour force worked in agriculture, forestry and fisheries. Industry accounted for only 18 per cent of total non-household employment.

A notable shift has been observed over the last two decades in the structure of the economy in Ghana, with a related impact on employment. As mentioned above, the focus of economic activity has shifted from agriculture to low-productive service activities, and has largely skipped the industrial sector. Table 4 provides details of that shift over the period 1991 – 2012, and shows that the increasing

contribution to the economy of a certain sector is not accompanied by a corresponding percentage increase in employment in that sector. For example, while the extractive sector has tripled its contribution to the economy over 20 years, it has only doubled its share of employment during that period (from 1 to 2 per cent). (Honorati and Johansson de Silva, 2016). Data for 2015 indicates that direct employment in the mining and oil and gas sectors accounted for only 0.8 per cent of total employment. This underscores the absence of strong economic linkages.

The labour market in Ghana remains vulnerable and is characterized by **high rates of informality**, as shown in Figure 9a, as a result of insufficient formal employment opportunities. Informality is often associated with poor compliance with labour standards, low salaries, the absence of formal contracts and social security coverage, long-term precarious employment situations for workers, and the perpetuation of the vicious circle of poverty in low-income households.

Table 4
Percentage value added and employment per sector

	Sectoral Value added (%)			Share of employment (%)		
	1991	2005	2012	1991	2005	2012
Agriculture (incl. fishing)	36	32	24	61	53	43
Industry	28	20	27	11	15	14
<i>Of which: Manufacturing</i>	21	10	8	9	12	9
<i>Mining and utilities³⁴</i>	<i>3</i>	<i>4</i>	<i>10</i>	<i>1</i>	<i>1</i>	<i>2</i>
<i>Construction</i>	4	6	9	1	2	3
Services	36	48	48	29	31	43
<i>Of which: wholesale, retail trade, restaurants and hotels</i>	8	11	10	17	18	25
<i>Transport, storage and communications</i>	12	16	17	2	3	4
<i>Other activities</i>	16	21	21	10	10	14

Source: World Bank, 2016.

34 Includes mining, oil and gas.

The 2015 Labour Force Report reveals that the informal sector, which comprises mostly small-scale business enterprises and is not highly organized, employs 90 per cent of the country's labour force. Women are more likely to be employed in the informal economy than men (54.9 and 44.1 per cent of female and male workers respectively). Informal employment is also more prevalent in rural areas (96.2 per cent) compared to urban areas (84.1 per cent).

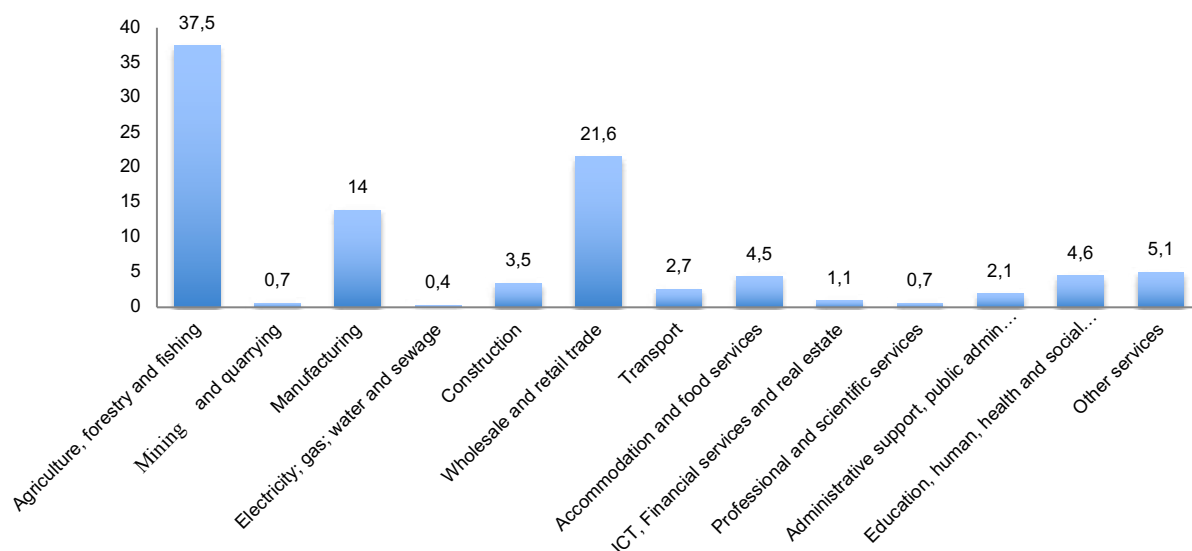
The informal sector is estimated to contribute between 20 and 40 per cent of the country's GNP (Ghana Labour Market Profile, 2013). This share is growing: only 2 per cent of the 250,000 people entering the labour market each year are absorbed into the formal sector, while the remaining 98 per cent must find jobs in the informal economy.³⁵

Informal employment³⁶ is cross-sectoral, with agriculture trade and commerce accounting for most informal jobs. As shown in Figure 9a, the services sector is the largest provider of informal employment, and provides 43.9 per cent of informal jobs, followed by agriculture, which provides 37.5 per cent and industry which provides 28.6 per cent. There are significant regional variations in the distribution of informal employment, ranging from 84.1 per cent in the Greater Accra region to almost 94.6 per cent in the Northern region.

The **small size of business establishments** is also a challenge in Ghana. As shown in Figure 9(b), 75 per cent of the labour force is employed in MSMEs, while large firms, although capital intensive, employ a much smaller proportion of the labour force.

Figure 9a

Persons aged 15 years and older currently employed in the informal sector by industry (per cent), 2015



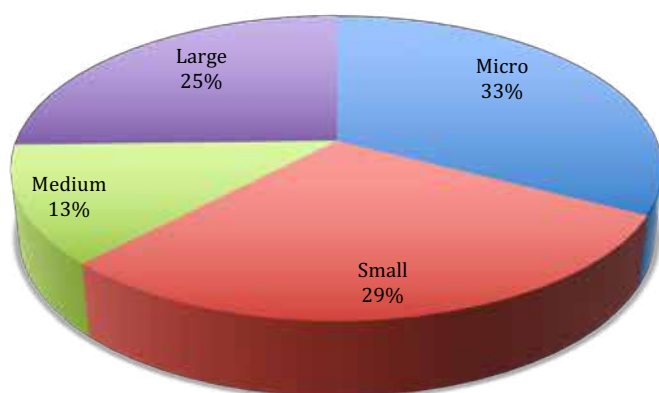
Source: 2015 Labour Force Report.

35 Estimated according to the Ghana Living Standards Survey for the period 2012 – 2013.

36 Informal employment forms part of the non-observed economy (NOE) which corresponds to the whole set of activities that are not usually measured by traditional means (i.e. administrative registers, enterprise-based surveys and/or household-based surveys) because of economic or administrative factors. The NOE contains three components: illegal activities, underground activities and informal employment activities.

Figure 9b

Employment by size of firm (per cent), 2014



Source: GSS, 2015.

The labour market situation makes economic transformation particularly challenging, as it will make it difficult to take advantage of any meaningful employment opportunities that could be created by high growth rates.

Most Ghanaians are employed in relatively low-skilled jobs, which, altogether, account for over 70 per cent of employment in Ghana. Again, this reflects the limited economic opportunities and the current economic

structure of the country, particularly its weak industrial base.

As shown in Table 5, some 80 per cent of employment is considered vulnerable (i.e., comprising work performed by own account workers or by contributing family workers). This underscores the lack of medium and large-scale industrial activity capable of creating sustainable job opportunities with decent salaries.

Table 5

Employment by type of activity (per cent), 2015

	Number of people employed	% of employment
Paid workers	1,884,299	20%
Own account workers	5,987,073	65%
Contributing family workers	843,194	9%
Domestic workers	42,370	0%
Casual workers	347,280	4%
Apprentices	59,984	1%
Others	106,741	1%
TOTAL	9,270,941	100%

Source: 2015 Labour Force Report.

Table 6

Total unemployment rate (per cent) disaggregated by education level, 2015

Education qualification	Total unemployment rate (%)
No education	10.5
MSLC/BECE	11.3
Secondary	19.3
Post-secondary	11.7
Tertiary	7.3
TOTAL	11.9

Source: 2015 Labour Force Report.

The **quality of employment** is clearly a major concern in Ghana. Moreover, the fact that Ghana has a huge informal economy in which large numbers of people work as own account workers or in low-productive employment is an indication of the relatively low level of education and the lack of economic opportunities for qualified labour.

As shown in Table 6, unemployment rates are highest among individuals who have received little education. Paradoxically, there is also significant unemployment among individuals who have received post-secondary and tertiary education. This is because Ghana has not managed to create enough jobs to absorb the country's highly qualified workers, and because certain educational courses in Ghana fail to teach students the skills they will need to find employment, particularly in areas such as science, technology, engineering and mathematics, and fail to develop students' analytical, critical, communication and entrepreneurial skills and ICT competencies.

The quality of employment depends, in part on the financial resources invested by the

Government in its education system. **Government expenditure on education** (as a percentage of total Government expenditure) can be used as a proxy for assessing the priority assigned by Governments to education relative to other public investments, as well as the Government's commitment to investing in human capital development. Table 7 shows that in 2014, expenditure on education as a share of total Government expenditure was 21.0 per cent. That figure was slightly lower than in 2013. These are relatively high rates, compared to the world average, which stood at 14.2 per cent in 2012. There are however, concerns that the Government's high levels of expenditure have not yet delivered expected outcomes in terms of enrolment (particularly at the tertiary level), retention,³⁷ results and skills acquired. (See Table 8)

Most Government expenditure on education in the period in question was spent on school infrastructure projects, including, in particular, projects to bridge infrastructure gaps in rural areas. While those projects were certainly necessary, few resources were left over for teacher training, updating school curriculums

37 Table 8 sheds no light on an important factor in education, namely retention rates. Indeed, while enrolment levels are often very high, a significant number of learners do not reach the sixth grade. School dropout rates are particularly high among girls in rural communities. The dropout rate at the primary level accounts in part for the lower enrolment rate at junior high school level and subsequently at high school level. Education policies should aim not only to ensure that all children are enrolled in school, but also that all children remain in the education system at least until they graduate from junior high school.

Table 7

Expenditure on education, 2007–2013

	2007	2008	2009	2010	2011	2012	2013	2014
Total Government expenditure on education (as a percentage of GDP)	5.5	5.8	5.3	5.5	8.1	7.9	6.1	6.2
Expenditure on education (as a percentage of total Government expenditure)	24.1	23.6	22.7	21.2	30.8	37.7	21.7	21.0
Expenditure on primary education (as a percentage of Government expenditure on education)	34.2	34.6	33.1	30.9	45.5	32.3	24.4	21.7
Expenditure on secondary education (as a percentage of Government expenditure on education)	34.8	34.0	38.0	37.1	27.4	40.8	37.2	36.9
Expenditure on tertiary education (as a percentage of Government expenditure on education)	26.0	25.9	23.9	25.9	13.1	18.5	19.4	18.3

Source: World Development Indicators 2017, World Bank.

and improving educational outcomes. Despite the country's high expenditure on education, school dropout rates remain extremely high and very few students pursue a post-secondary education.

Ghana, unlike many low-income countries had a relatively high gross enrolment ratio in primary education for both sexes in 2015 (109.9 per cent), as shown in Table 8. At the secondary level, the gross enrolment ratio was

significantly lower, however, (61.4 per cent) and at the tertiary level, the gross enrolment ratio was only 16.2 per cent, which was lower than most middle-income countries (in China, India and Indonesia, for example, gross enrolment ratios were above 25 per cent). Ghana's literacy rate was estimated at 71.8 per cent (2015 Labour Force Report).

However, if the levels of education attained are examined closely, a more complex picture

Table 8

Enrolment rates in primary, secondary and tertiary level (per cent), 2005–2015

	2000	2009	2013	2014	2015	2016
Gross enrolment ratio, ³⁸ primary, both sexes (%)	86.0	105.5	108.5	106.5	109.9	108
Net enrolment rate, ³⁹ primary, both sexes (%)	64.8	76.2	86.3	88.6	90.6	87.4
Gross enrolment ratio, secondary, both sexes (%)	41.0	49.8	61.1	57.9	61.4	62.1
Net enrolment rate, secondary, both sexes (%)	34.7	43.4	51.4	51.1	54.8	54.2
Gross enrolment ratio, tertiary, both sexes (%)	..	8.8	14.3	15.8	16.2	..

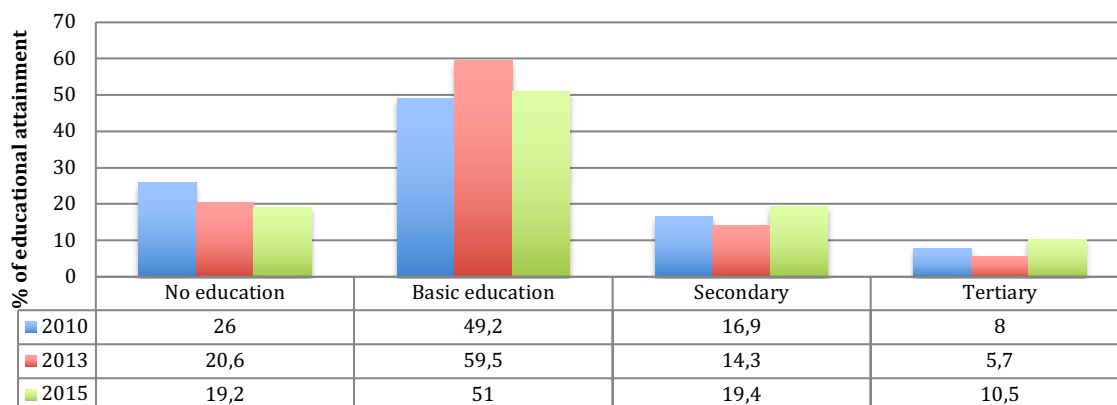
Source: World Development Indicators, 2017, World Bank.

38 Gross enrolment ratios indicate the capacity of each level of the education system. A high ratio may reflect a substantial number of overage children enrolled in each grade because of repetition or late entry rather than a successful education system.

39 The net enrolment rate excludes overage and underage students and more accurately captures the system's coverage and internal efficiency. Differences between the gross enrolment ratio and the net enrolment rate show the incidence of overage and underage enrolments.

Figure 10

Levels of educational attainment of the working-age population (individuals between 15 and 69 years of age)



Source: 2015 Labour Force Report.

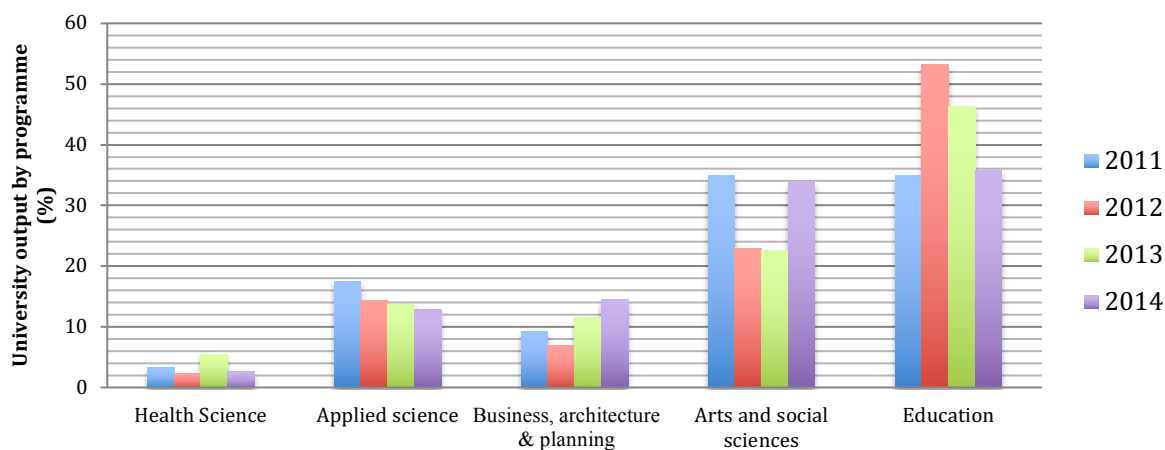
emerges. While enrolment ratios may be high, many students drop out of the education system. Figure 10 shows the percentage of the working-age population in 2015 who had successfully completed various levels of education. For example, 70.2 per cent of the working-age population had had no education or had only completed basic education, while 19.4 per cent had completed secondary

level education and 10.5 per cent had completed tertiary level education. As a result, a relatively large proportion of the working-age population consists of unskilled workers.

Figure 11 shows the percentage of students graduating from Ghana’s public universities in various disciplines and reveals that, while there are many graduates in the social

Figure 11

Graduate output from public universities disaggregated by main programme of study (per cent)



Source: Baah-Boateng, 2017.

sciences, the number of graduates in applied and health science remains relatively low. In fact, the number of public university graduates in applied science has actually decreased in recent years. The insufficient number of students graduating in ICT, as well as in science, technology, engineering and mathematics (STEM) poses a major challenge for Ghana, and is impeding the growth of the country's manufacturing industry and high-end services sector, which both require a workforce with sophisticated STEM skills.

The extractive sector, in particular, requires a large number of workers with scientific knowledge. Ghana must therefore take action to address the country's skills gap in order to support the mining sector, and, in particular, to encourage more industries to provide goods and services to the mining industry.

Figure 12 shows the areas of study of the skilled workers employed in the mining industry in 2015. It should be noted that only 17 per cent of the workforce in 2015 had

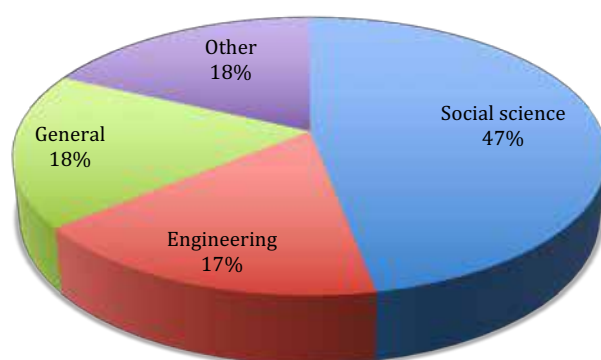
studied engineering, while the other skilled workers had backgrounds in the social sciences or other study areas. As a result, although the mining industry is able to fill administrative and managerial positions with Ghanaian graduates, it is often forced to recruit foreign workers to fill technical positions. To address that challenge, it is critical for Ghana to take action to strengthen STEM competencies, which are of key importance for the mining sector and related industries.

1.2.5 External trade outlook

Ghana's **external trade** relies on a **very limited number of products**. In 2016, Ghana's total exports were valued at \$12.1 billion, with gold, crude oil, and unprocessed cocoa together accounting for more than 70.8 per cent of those exports.⁴⁰ Those commodities account for a constantly changing share of total exports as their value fluctuates on world markets. For example, in 2014, crude petroleum accounted for 26 per cent of total exports, gold accounted for 23 per cent

Figure 12

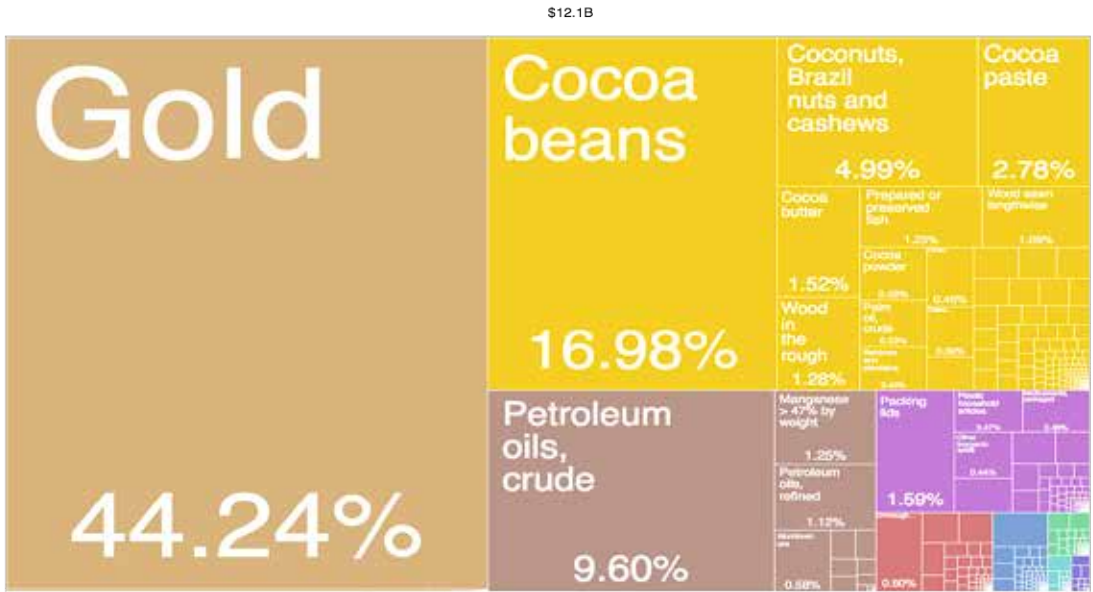
Mining sector workforce with a tertiary level education disaggregated by their area of study (per cent), 2015



Source: Baah-Boateng, 2017.

40 Other important exports include chromium ores and concentrates, aluminum, platinum, refined petroleum fuels and agri-based exports such as logs and timber products, cashew nuts and canned tuna. The country is also a minor exporter of cotton, coffee, essential oils, perfumes and cosmetics (WTO, 2014).

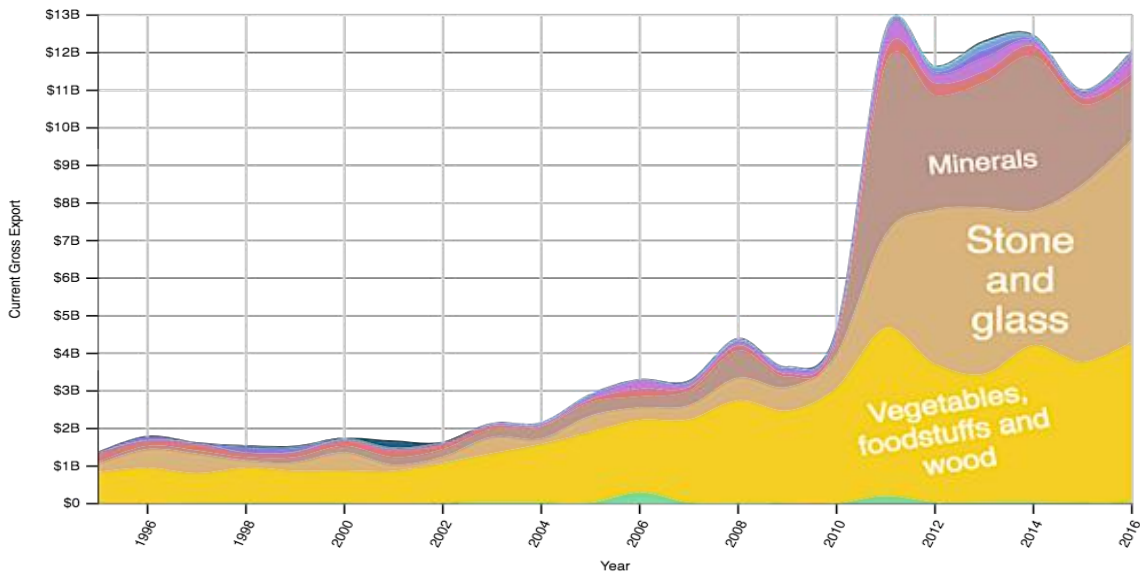
Figure 13a
What did Ghana export in 2016?



Source: Atlas of Economic Complexity, MIT, 2017.

and cocoa beans accounted for 22 per cent. However, in 2016, crude petroleum accounted for only 9.6 per cent of exports, while gold accounted for 44.2 per cent.

Figure 13b
Evolution of exports by product category, 1996–2016



Source: Atlas of Economic Complexity, MIT, 2017.

The remarkable expansion of Ghana's exports in recent years has been due, primarily, to the start of oil exportation and the rise in gold prices. According to WTO, the value of total exports was multiplied by three between 2009 and 2012. Figure 13b shows the evolution of Ghana's exports over the two decades up to 2016 and shows that gold (categorized in "stone and glass" by MIT) accounted for an increasing share of exports over the period in question. The value share of minerals (petroleum products) declined in the final two years under consideration, due to technical difficulties in the Jubilee field and to lower global oil prices. Figure 13b also underscores Ghana's failure to diversify its exports beyond cocoa (accounting for the bulk of vegetables, foodstuffs and wood in Figure 13b), gold and petroleum.

Most of Ghana's exports are delivered to a very limited number of countries. Figure 14 shows the composition and destination of Ghana's exports in 2016 and shows that most of the country's gold was exported to Switzerland, the United Arab Emirates and India. Cocoa was primarily exported to the EU. Interestingly, with the start of oil production,

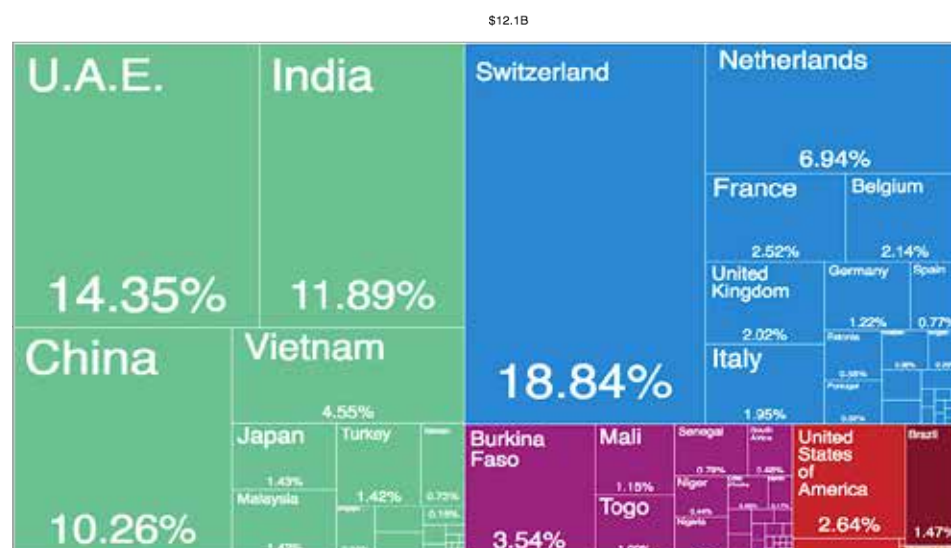
China has emerged as an important export market for Ghana.

By contrast, recorded regional trade volumes remain very low and only a small proportion of Ghanaian exports are delivered to ECOWAS countries. However, given the pervasiveness of cross-border informal trade and challenges related to the collection of accurate data, it is likely that the real volume of exports to ECOWAS countries is higher than official estimates.

On the import side (Figure 15a), the main structural change that took place in the decade to 2016 was the significant increase in imports from China and the United States of America. As a result, although the EU remains the main source of imports to Ghana, its share of imports has decreased. Similarly, the share of imports from other African countries has declined over the years.

In terms of the composition of imports (Figure 15b), capital equipment, machinery and intermediate goods accounted for some 80 per cent of total imports in 2016. Ghana is a net food importer and imports most of its consumables.

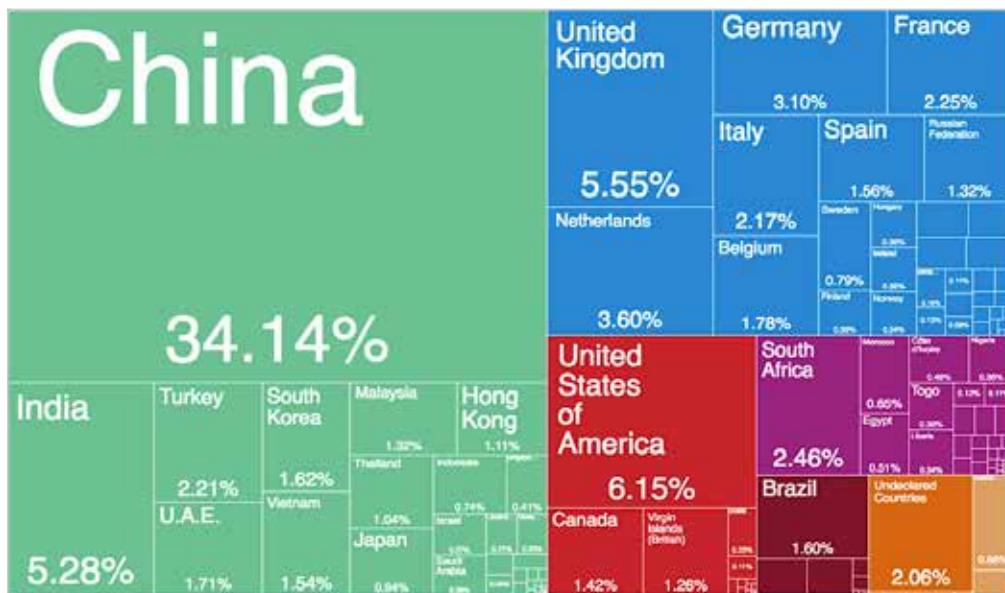
Figure 14
Where did Ghana export in 2016?



Source: Atlas of Economic Complexity, MIT, 2017.

Figure 15a
From where did Ghana import in 2016?

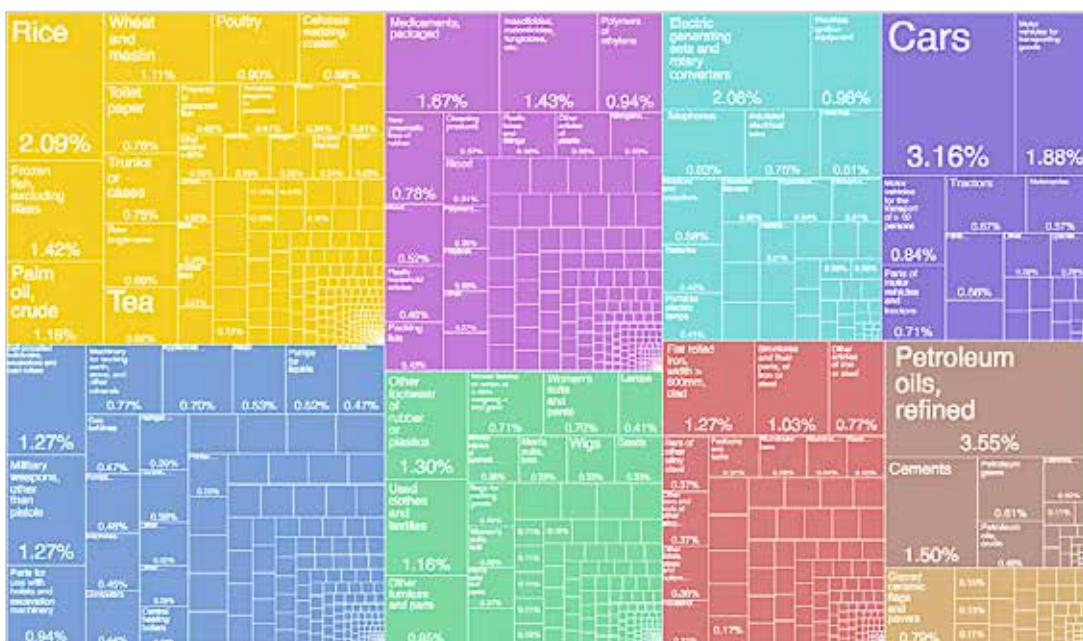
\$13.5B



Source: Atlas of Economic Complexity, MIT, 2017.

Figure 15b
What did Ghana import in 2016?

\$13.4B



Source: Atlas of Economic Complexity, MIT, 2017.

Ghana's trade basket is a mirror of the country's production structure and highlights the need to diversify away from raw materials by adding more value to existing raw materials and by producing new and different products. Table 9 shows that 90 per cent of Ghana's exports are raw or lightly transformed products, while about two thirds of the country's imports comprise consumables and capital equipment.

Table 9
Ghana's imports and exports by stage of processing, 2016

	Imports (%)	Exports (%)
Raw materials	6.8	40.7
Intermediate goods	25.4	49.5
Consumer goods	35.4	8.8
Capital goods	32.4	0.98

Source: World Bank WITS data, 2017.

Given the above, it is therefore not surprising that Ghana has a negative trade balance with the rest of the world, which was estimated at 7.12 per cent of GDP in 2016 (WITS data, 2017).

1.2.6 Regional Trade Outlook

Ghana was a founding member of the Economic Community of West Africa States

(**ECOWAS**), established in May 1975,⁴¹ and made a commitment to pursue the:

- (a) Elimination of all tariff and non-tariff barriers on intra-ECOWAS trade;
- (b) Establishment of a common external tariff (CET) for international trade;
- (c) Removal of all obstacles to the movement of all factors of production; and
- (d) Harmonization of domestic policies across ECOWAS member States.

To liberalize its internal market and hence create a customs union, ECOWAS designed the ECOWAS Trade Liberalization Scheme (ETLS). Implementation was scheduled to start in 1979, but was postponed several times before finally starting in 1990.

Internal market liberalization under ETLS was to be implemented progressively,⁴² in the following stages (see NANTS, 2013⁴³):

- (a) An immediate and full liberalization of trade in unprocessed goods⁴⁴ and traditional handicrafts.⁴⁵
- (b) The staged liberalization of trade in industrial products in three phases: The most advanced ECOWAS member States were expected to liberalize their trade in industrial products within six years, countries that were less developed were

41 The other members of ECOWAS are: Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, the Gambia, Guinea, Guinea-Bissau, Liberia, Mali, the Niger, Nigeria, Senegal, Sierra Leone, and Togo.

42 The initial ECOWAS treaty aimed for the trade liberalization of agricultural and livestock products, traditional handicrafts and unprocessed goods. Initially, processed goods were not covered by ETLS. In 1990, however, it was agreed that industrial goods would be eligible for coverage provided they received countries' approval. The rules of origin (RoO) that defined whether or not a manufactured good originated in the region were finally agreed in January 2003. Industrial goods that satisfy RoO criteria are eligible to benefit from ETLS and may benefit from duty-free market access after a verification process.

43 Source: The ECOWAS Trade Liberalization Scheme: Genesis, Conditions and Appraisal. NANTS Regional Trade Advocacy Series. Volume 2, Issue 3, January 2013.

44 Unprocessed goods include livestock, fish, plant or mineral products that have not been subjected to any form of industrial transformation.

45 These articles made by hand with or without the help of tools, instruments or devices that are activated directly by the craftsman. Such articles include wooden cooking utensils, fancy goods, small cabinet work, mats, carpets, bed linen, footwear, headgear and prepared feathers.

expected to complete liberalization within eight years and the least developed ECOWAS States were allowed up to 10 years to do so. **Goods produced in Free Zones or special economic zones are not eligible for duty free market access under ETLS.**

To be eligible for duty free market access, an industrial product must meet the following rules of origin criteria:

- (a) It must be produced from materials of community origin whose value is equal to or higher than 40 per cent of the total cost of raw materials employed;
- (b) It must not be produced from materials of foreign or indeterminate origin whose CIF value does not exceed 60 per cent of foreign or indeterminate origin whose CIF value DOES NOT exceed 60 per cent of the total cost of materials employed or whose quantity is equal to or more than 40 per cent of all raw materials employed in its manufacture;
- (c) It must have received in the process of production a value added or at least 35 per cent of the ex-factory price before tax.⁴⁶

The establishment of a CET, adopted in October 2013, which came into effect in Ghana on

1 February 2016, to harmonize and strengthen the common market.

The CET, which is expected to foster intra-regional trade, establishes the following five custom tariff bands:

- (i) Zero per cent for essential social goods;
- (ii) Five per cent for goods of primary necessity, raw materials and specific inputs;
- (iii) Ten per cent for intermediate goods;
- (iv) Twenty per cent for final consumption goods; and
- (v) Thirty-five per cent for specific goods that promote economic development.

Ghana currently maintains 190 exceptions to the CET. The tariff lines were amended on 1 February 2016 as follows:

ETLS was not completed as scheduled by the end of 1999. To move things forward, the region was declared a free trade area in 2000 and a schedule for the establishment of a customs union was adopted on 1 January 2001. However, not all ECOWAS States have taken the steps necessary for the establishment of that free trade area, including implementation of the CET.

Table 10
Changes in import duties by number of tariff lines

	0%	5%	10%	20%	35%	Total
Prior to 1st Feb. 2016 (No. of tariff lines)	725	375	2333	2624	0	6057
Under the CET ⁴⁶	85	2146	1373	2165	130	5899

Source: <http://www.ghanasinglewindow.com/news- events- and- system- updates/news/introduction-of-common-external-tariff/>.

46 With the implementation of the CET, 41 New HS Codes were created, 39 HS Codes were reactivated, 262 HS Codes were deactivated and 5819 HS Codes were unaffected.

Table 11

Intra-ECOWAS trade as a share of total exports (per cent)

Year	1970	1980	1990	2000	2010	2014	2015	2016
Exports	3.0	10.7	8.7	8.3	9.3	9.1	12.3	10.8
Imports	2.8	12.8	12.0	11.7	9.5	10.7	11.4	7.0

Source: ITC, 2017.⁴⁷

Table 11 highlights the persistence of low and fluctuating intra-ECOWAS trade, despite the initial increase in intraregional trade that followed the creation of ECOWAS in 1970. Both imports and exports remain relatively low. In 2016, 10.8 per cent of exports from ECOWAS economies went to other ECOWAS countries. That figure was slightly lower than in 2015. There are however important variations in the share of individual country exports that were delivered to other ECOWAS countries. Similarly, on the import side, trade among ECOWAS countries remains very low, and fell from 11.4 per cent in 2015 to 7 per cent in 2016.

A number of factors contribute to the weak volume of intraregional trade, including limited production capacities, inadequate infrastructure, lack of information/knowledge sharing across borders, burdensome export rules and procedures, and a business environment that is not conducive to cross-border trade.

In addition, informal cross border trade is pervasive in West Africa, in part due to porous borders, leading to understated official trade statistics. According to the African Development Bank, informal trade in the region ranges from 20 per cent of GDP in Nigeria to 75 per cent of GDP in Benin. Political economy dynamics and governance issues exacerbate the challenge posed by informal trade,

and corrupt law enforcement authorities and trade gangs impede formal trade. As a result, while official estimates of intraregional trade are often very low, a significant amount of trade between ECOWAS countries remains unaccounted for in the data (USAID, 2015).⁴⁸ Furthermore, countries' production baskets are such that they produce more for exports outside Africa than for regional consumption, and it should be noted that more than half of intraregional exports comprise mineral fuels from resource-rich countries⁴⁹ such as Nigeria and Côte d'Ivoire to resource-consuming countries such as Burkina Faso, Ghana, Senegal, Sierra Leone and Mali.

Despite Ghana's relatively small share of trade to other ECOWAS countries, it is interesting to note its main regional trading partners and the composition of its import and export basket for the ECOWAS region. Côte d'Ivoire is Ghana's main West African importing partner. Ghana primarily imported energy products, equipment and palm oil from that country in 2016. This was a very different basket from 2015, when it mainly imported plastic products, cosmetics, cocoa beans and rubber footwear. In 2015, Nigeria was Ghana's second largest West African trading partner, from which it imported, first and foremost, crude oil and soybean residues. Figures A1 to A7 in Annex 2 provide a detailed overview of

47 Source: Facilitating trade integration in ECOWAS. Insights from the ITC business surveys on non-tariff measures. Discussion paper for the high-level regional round table on non-tariff measures, held in Abidjan, Côte d'Ivoire, on 14 and 15 June 2016.

48 Source: USAID, 2015. Economic Analysis and Data Services Analytical Brief on Trade in West Africa. August 2015.

49 In fact, exports of mineral fuels, unwrought gold and other minerals account for 60 percent of intraregional trade in ECOWAS.

Table 12

Ghana's participation in intra-African trade in 2016

Imports (2016)		Exports (2016)	
% of total trade with selected African countries	Top 5 imports (% of total imports from that country)	% of total trade with selected African countries	Top 5 exports (% of total exports from that country)
1. South Africa: 40.3%	1. Motor vehicles: 16.2% 2. Fruits: 3% 3. Structures and their parts; other articles of iron and steel: 8% 4. Polymers and propylene: 3.2% 5. Monitor & projectors: 3.1%	1. Burkina Faso: 39.8%	1. Packing lids: 44.1% 2. Plastic household articles: 12.6% 3. Beauty/make-up preparations: 5.9% 4. Petroleum oils: 4.4% 5. Plastic tubes & fittings: 3.5%
2. Morocco: 10.6%	1. Prepared, preserved or frozen fish: 30.3% 2. Fertilizers: 23.1% 3. Petroleum oils, refined: 14.8% 4. Sugar (raw; confectionary): 12.7% 5. Cement: 4.3%	2. Mali: 13%	1. Petroleum oil, refined: 48% 2. Self-propelled bulldozers, excavators: 24.3% 3. Hydrogen peroxide: 3.8% 4. Slag, ash and residues containing metals: 3.4% 5. Other bars and iron: 2.8%
3. Egypt: 8.4%	1. Gas, liquid or electricity meters: 22.6% 2. Mixtures of odiferous substances: 13.2% 3. Razors: 5.5% 4. Motor vehicles for transport (>10 persons): 4.8% 5. Carbonates: 4.2%	3. Togo: 11.3%	1. Other inorganic & acids: 41.5% 2. Petroleum oils, refined: 12% 3. Wheat or meslin flour: 6% 4. Other bars & iron: 3.5% 5. Petroleum gases: 3.5%
ECOWAS		4. Senegal: 8.8%	1. Medicaments: 57.5% 2. Palm oil, crude: 30.9% 3. Milk, concentrated: 2.8% 4. Malt extract: 1.3% 5. Bananas: 1.2%
4. Côte d'Ivoire: 8%	1. Electrical energy: 65.1% 2. Petroleum coke: 13.2% 3. Parts for use with hoist and excavation machinery: 1.3% 4. Palm oil, crude: 1.1% 5. Beauty/ make-up preparations: 1%	5. South Africa: 5.4%	1. Gold: 95.5%
5. Nigeria: 5.8%	1. Petroleum oils, crude: 41.4% 2. Solid soybean residues: 10.6% 3. Tractors, parts of motor vehicles: 4% 4. Insecticides: 2% 5. Parts for use with hoist and excavation machinery: 2%		
6. Togo: 5.8%	1. Cements: 32.3% 2. Wigs: 6.5% 3. Motor vehicles: 4.2% 4. Whey: 4% 5. Limestone: 3.6%		

Source: Atlas of economic complexity, MIT, 2017.

Ghana's main imports from its key West African partners.

In terms of exports, Ghana's main West African partners were Burkina Faso, Mali, Senegal and Togo. Key exports included packing lids, petroleum products, medicaments and gold. Figures B1 to B5 in Annex 2 provide a detailed overview of Ghana's main exports to its key West African partners.

1.2.7 Ghana's international trade and investment regime

Ghana was a founding member of WTO and extends at least the most favoured nation treatment to all its trading partners. Ghana has signed the Fourth and Fifth GATS Protocols but is not party to the Information Technology Agreement or any of the plurilateral agreements concluded under the auspices of the WTO. On 4 January 2017, it became the 104th WTO member State to ratify the Trade Facilitation Agreement.⁵⁰

Negotiated under the aegis of ECOWAS, Ghana concluded an EPA with the EU in 2016. The EPA is set to provide duty free and quota free market access to the EU for all Ghanaian (and ECOWAS) products, in return for a 75 per cent liberalization of the ECOWAS market for EU products. The EPA has been negotiated on the basis of the ECOWAS CET to ensure that there are no incompatible regional integration policies and ambitions.

However, despite the conclusion of the EPA in 2014, after more than a decade of protracted negotiations, disagreements remain among

certain ECOWAS members, including, in particular, Nigeria, regarding the potential impact of the EPA on their national economies.⁵¹ For this reason, the EPA is yet to be signed by all ECOWAS members.⁵²

The EU set a deadline of 1 January 2016 for the signature and entry into force of the EPA. If an EPA was not signed by that date, developing countries stood to lose preferential market access, and hence would be required to pay duties on certain key products upon their entry into the EU market. Ghana estimated the potential losses at approximately €400 million a year, and warned that large companies could move their operations to other States to avoid paying duties.

On 3 August 2016, Ghana therefore ratified a version of the EPA – dubbed an Interim EPA⁵³. However, the ratification of that version of the EPA by Ghana (and Ivory Coast) outside the ECOWAS framework) poses a number of serious challenges.

In fact, with the creation of a customs union following implementation of the CET, no ECOWAS country is permitted to enter into bilateral trade agreements with third parties alone without putting at risk the implementation of the CET, or its membership of the customs union. The decision by Ghana and Ivory Coast to implement the EPA outside the ECOWAS framework weakens the ECOWAS regional integration agenda and could potentially result in their exclusion from the ECOWAS common market and from all or most of the benefits of ECOWAS membership, including the benefits they enjoy under ECOWAP.

50 The Trade Facilitation Agreement was concluded at the WTO 2013 Bali Ministerial Conference. It contains provisions for expediting the movement, release and clearance of goods, including goods in transit. It also sets out measures for effective cooperation between customs and other appropriate authorities on trade facilitation and customs compliance issues. It further contains provisions for technical assistance and capacity building in this area.

51 Of the 16 members of the ECOWAS-EU EPA, three countries have yet to sign the concluded deal, namely the Gambia, Mauritania and Nigeria. The agreement can only be sent to ratification once all members have signed.

52 By March 2016, all ECOWAS member States with the exception of the Gambia, Mauritania and Nigeria had signed the EPA.

53 In December 2007, Ghana initiated an 'interim EPA' to avoid trade disruption in the EU market following the expiry on 1 January 2008 of a 40-year unilateral trade regime that governed trade between the EU and African, Caribbean and Pacific countries.

Ghana is an AGOA beneficiary country, and therefore benefits from preferential market access to the US market for a wide range of products, including selected agricultural and textile products. Since 2002, Ghana has, moreover, benefited from special provisions for third-country fabrics used in apparel, handmade products and articles made from ethnic fabrics. Ghanaian exports to the US market remain modest, however, and comprise, primarily, exports of cocoa beans.

According to UNCTAD databases, Ghana has signed 26 bilateral investment treaties, eight of which have entered into force. These agreements aim, primarily, to promote foreign investment and to protect investors from policy reversals, and set forth rules to prevent countries from adopting measures such as performance or local content requirements. Most of those treaties contain investor-State dispute settlement provisions.

Chapter 2: Structural weaknesses of the Ghanaian economy and policy options

2. Structural weaknesses of the Ghanaian economy and policy options

The overview of the Ghanaian economy provided in Chapter 1 highlighted the fundamental weaknesses impeding the country's ambitious economic transformation programme. This chapter provides an in-depth analysis of the structural weaknesses affecting Ghana's economy.

2.1 Identifying structural challenges

Some of those structural weaknesses can be summarized as follows:

- (a) The contribution of the *industrial sector* to national output has been eroded over the years, at the expense of a growing services sector. While this may not appear problematic,⁵⁴ the main challenge is in the “quality” of sectoral growth. The **gradual de-industrialization** of the economy at the expense of services is not a consequence of the “servicification”⁵⁵ of the Ghanaian economy. It is rather the outcome of a weak industrial environment, unproductive sectors, insufficient business opportunities and a hostile business climate. As a result, industrial activities have been replaced, primarily, by low-value added and low productive services sectors, which are failing to ⁵⁶ drive economic growth sufficiently.
- (b) The *production basket* is over-concentrated in a limited number of commodities. As a result, the economy is extremely vulnerable to commodity price fluctuations. The contraction of the Ghanaian economy in the last three years has mainly been due to external shocks linked to commodity price and demand collapse.
- (c) The *informal economy* predominates over the formal economy: recent data indicate that the informal sector employs some 90 per cent of the labour force and accounts for between 20 to 40 per cent of GNP. This is an indication that the economy is failing to create sustainable employment opportunities. As a result, most of the population is forced to seek vulnerable employment opportunities that offer no

54 The services sector can be an effective driver of economic development, in particular in countries that successfully develop efficient and competitive high-tech and high value service enterprises, notably through input linkages as part of firms' sourcing strategies. In effect, many services are used as intermediate inputs in global value chains and the *efficient* delivery of services can enhance the performance of industries.

55 The term “servicification” is currently used to in international trade circles to highlight the increasing role of services as inputs in manufacturing production. This phenomenon is increasingly observed in developed and emerging economies, as a result of their increasing participation in global value chains. In 2015, WTO estimated that services accounted for more than 70 per cent of global GDP.

56 Ghana's services sector still largely provides “traditional services”, such as trade, hotels, restaurants and public administration. “Modern services”, such as software development, call centres and outsourced business processes require a sufficient number of skilled workers and good infrastructure, both of which are currently unavailable in Ghana.

protection and little scope for training or career advancement.

- (d) The Ghanaian economy relies on a disproportionate number of **MSMEs**, many of which are characterized by low-productivity.
- (e) The low **quality of labour** and the limited availability of certain skills impede the growth of higher value added sectors and the creation of productive employment opportunities.

2.1.1 Business and investment climate

Pursuant to the GIPC Act of 2013, foreign firms must meet minimum capital requirements, based on the nature of their investment. These requirements may discourage investments in certain sectors that are less capital intensive, and are particularly constraining for SMEs, which may require access to foreign capital and need to establish joint ventures in order to acquire the technology and know-how that they need to grow.

Ghana's Free Zones, which require a minimum export requirement of 70 per cent, were established with a view to encouraging export-oriented industrial activities. They provide a number of incentives for businesses, such as good infrastructure and favourable fiscal and customs regimes. While the Zones help to diversify Ghana's export base, they may however, limit the ability of the firms operating there to create linkages with other domestic industries, such as mining companies. In that regard, Free Zone firms can only make up to 30 per cent of their sales to domestic industries, and are therefore unable to exploit

all potential opportunities to supply mining industries in Ghana.

2.1.2 Competitiveness challenges

Despite its persistently high economic growth rates over the past decade, Ghana's competitiveness has remained low by global standards. Although, Ghana was reclassified as a lower middle-income country in 2010, it lacks certain critical prerequisites for deeper economic transformation and must therefore take action to improve the competitiveness of its economy.

The Global Competitiveness Index (GCI)⁵⁷ identifies the key drivers of productivity that countries must strengthen in order to pursue growth-driven sustainable development. Box 1 explains how the GCI classifies each country as belonging to one of three stages of development on the basis of a number of indices.

Ghana is classified as a *factor-driven economy*, meaning that the country's competitiveness is primarily due to its natural resources, namely its agricultural outputs and extractives resources. Ghana was ranked 111th out of 137 countries by the WEF in terms of its competitiveness for the period 2017 – 2018, improving slightly from its rank in the previous survey, for the period 2016 – 2017, in which it was ranked 114th out of 138 countries. It is currently ranked 15th out of the 36 African countries surveyed by the WEF. In West Africa, it ranks third after Senegal and Cabo Verde respectively (see Table 13 for Ghana's ranking compared to other countries in Africa).

Ghana's weak performance, both globally and regionally, underscores the country's weak

57 The GCI defines competitiveness as the set of institutions, policies, and factors that determine the level of productivity of a country. To address this complexity, the idea that many different factors matter for competitiveness is reflected by the 12 distinct pillars of the Index: (1) institutions (public and private), (2) infrastructure, (3) the macroeconomic environment, (4) health and primary education, (5) higher education and training, (6) goods market efficiency, (7) labour market efficiency, (8) financial market development, (9) technological readiness, (10) market size, (11) business sophistication, and (12) innovation.

Box 1

Taxonomy of countries based on the GCI

The GCI distinguishes three stages of development (see Annex 10 for countries' classification per stage). In their **first stage**, countries are considered to be **factor-driven**. Their competitiveness is based on their factor endowments, which consist, primarily, of unskilled labour and natural resources. Maintaining competitiveness in this stage depends relatively more on well-functioning public and private institutions (pillar 1), well-developed infrastructure (pillar 2), a stable macroeconomic environment (pillar 3), and a healthy and literate workforce (pillar 4). The majority of African countries, including Ghana, fall into this category.

As wages rise with advancing development, countries move into the **second, efficiency-driven** stage of development, when they must begin to develop more efficient production processes and increase product quality. At this stage, competitiveness is governed by better indices relating to higher education and training (pillar 5), an efficient goods and services market (pillar 6), stable labour markets (pillar 7), developed financial markets (pillar 8), the ability to make use of latest technological developments (pillar 9), and the size of the domestic and foreign markets available to the country's companies (pillar 10).

Finally, as countries move into the **third, innovation-driven** stage, they are able to sustain higher wages and the associated level of productivity only if their businesses are able to compete with new and unique products. At this stage, companies must compete by producing new and different goods or services using the most sophisticated management methods (pillar 11) and innovation (pillar 12). No African countries are yet in this category, which is mainly composed of advanced economies, although Mauritius and Seychelles are considered to be transitioning towards this stage.

Source: Africa Competitiveness Index 2014–2015.

Table 13

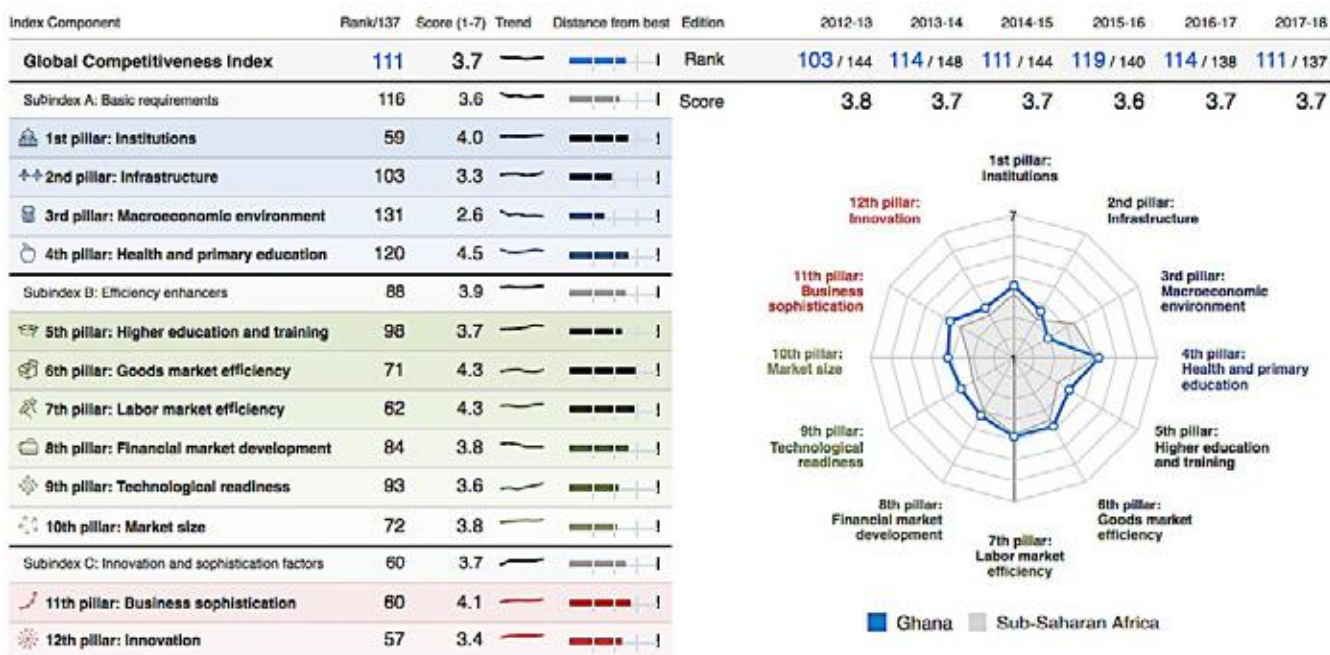
How Ghana performs on the Global Competitiveness Index compared to other African countries

Country	Ranking	Country	Ranking	Country	Ranking
1. Mauritius	45	13. Ethiopia	108	25. Mali	123
2. Rwanda	58	14. Cabo Verde	110	26. Zimbabwe	124
3. South Africa	61	15. Ghana	111	27. Nigeria	125
4. Botswana	63	16. Tanzania	113	28. DR Congo	126
5. Morocco	71	17. Uganda	114	29. Burundi	129
6. Algeria	86	18. Cameroon	116	30. Sierra Leone	130
7. Namibia	90	19. Gambia	117	31. Lesotho	131
8. Kenya	91	20. Zambia	118	32. Malawi	132
9. Tunisia	95	21. Guinea	119	33. Mauritania	133
10. Egypt	100	22. Benin	120	34. Liberia	134
11. Senegal	106	23. Madagascar	121	35. Chad	135
12. Seychelles	107	24. Swaziland	122	36. Mozambique	136

Source: WEF (2017), World Competitiveness Index: 2017-2018 (137 countries surveyed).

Figure 16

Ghana's performance on the Global Competitiveness Index, 2017–2018



Source: WEF, 2017.

productive efficiency, including its weak innovative capacity.

Figure 16 illustrates that Ghana currently underperforms with regard to almost all pillars considered key to competitiveness. Numerous gaps, supply-side constraints and policy areas must therefore be addressed as a matter of priority in order to unlock Ghana's full economic potential.

Similar trends are observed with regard to industry. The UNIDO industrial competitiveness⁵⁸ index⁵⁹ ranks Ghana's performance regionally and globally, and highlights areas where policy changes are required to improve the competitiveness of industries within the country, across the region and beyond.

58 Industrial competitiveness is defined as the capacity of countries to increase their presence in international and domestic markets whilst simultaneously developing industrial sectors and activities with higher value added and technological content (UNIDO, 2014).

59 The CIP index consists of eight subindicators grouped along three dimensions of industrial competitiveness. The first dimension relates to a country's capacity to produce and export manufactured goods. It is captured by their manufacturing value added per capita and their Manufactured Exports per capita. The second dimension covers a country's levels of technological deepening and upgrading. To proxy for this complex dimension, two composite subindicators—industrialization intensity and export quality—have been constructed. The degree of industrialization intensity is computed as a linear aggregation of Medium- and High-tech manufacturing value added share of total manufacturing value added, and manufacturing value added share of total GDP. Country export quality is obtained as a linear aggregation of Medium- and High-tech Manufactured Exports share of total manufactured exports and Manufactured Exports share of total exports. Finally, the third dimension of competitiveness regards a country's impact on world manufacturing, both in terms of the value added share of world manufacturing value added and of World Manufacturing Trade.

Table 14

Ghana's Competitive Industrial Performance (CIP), 2015

	Germany	South Africa	Nigeria	Côte d'Ivoire	Senegal	Ghana
CIP rank (out of 148)	1	47	82	104	111	121
CIP value	0.54	0.07	0.03	0.01	0.01	0.01
CIP quintile	Top	Upper Middle	Middle	Lower Middle	Lower Middle	Bottom
Per capita indicators						
Manufacturing Value Added (MVA) per capita	9,428.74	952.18	254.39	152.58	120.78	90.57
Manufactured Exports per capita	14,625.46	876.52	91.08	93.24	104.52	79.01
World share indicators						
Impact of country on World MVA	0.06	0.00	0.00	0.00	0.00	0.00
Impact of country on World Manufactured Goods Trade	0.10	0.00	0.00	0.00	0.00	0.00
Share of medium- and high-tech activities						
Med- and High-tech MVA share of total MVA	0.61	0.24	0.33	0.15	0.22	0.01
Med- and High-tech Manufactured Exports (ME) share of total ME	0.74	0.49	0.19	0.22	0.15	0.33
Share of national aggregates						
MVA share of total GDP	0.21	0.12	0.10	0.10	0.12	0.05
ME share of total exports	0.89	0.69	0.16	0.20	0.61	0.16
Manufacturing export indexes						
ME per capita index	0.47	0.03	0.00	0.00	0.00	0.00
Share of ME in total exports index	0.91	0.70	0.16	0.20	0.62	0.16
Share in world ME index	0.54	0.02	0.01	0.00	0.00	0.00
Share of Med and High-tech Activities in ME Index	0.79	0.52	0.20	0.23	0.16	0.35
Industrial export quality index	0.85	0.61	0.18	0.22	0.39	0.26
MVA indexes						
MVA per capita index	0.65	0.06	0.02	0.01	0.01	0.00
Share of world MVA index	0.27	0.02	0.02	0.00	0.00	0.00
Share of MVA in GDP index	0.56	0.33	0.26	0.27	0.30	0.13
Share of Med and High-tech Activities in Total MVA Index	0.76	0.30	0.41	0.18	0.27	0.01
Industrialization intensity index	0.65	0.32	0.34	0.23	0.29	0.07

Source: UNIDO, 2017.

Table 14 underscores that Ghana must significantly improve the value added contribution of its manufacturing sector. To give an order of scale, the Manufacturing Value Added (MVA) per capita of Germany, the global top performer, is almost **one hundred times higher** than the MVA of Ghana. This illustrates the magnitude of the gaps that must be addressed.

Similarly, Ghana's medium- to high-tech industry accounts for only 1 per cent of total MVA, while Germany's accounts for 61 per cent. Within Africa, South Africa's medium- to high-tech industry accounts for 24 per cent of total MVA, while, for Senegal and Côte d'Ivoire, the figure stands at 22 per cent and 15 per cent, respectively.

As measured by the industrialization intensity index, which assesses the depth of countries' industrial base, Ghana again has a very low score (0.07), compared to global players such as Germany (0.65), and key African economies such as South Africa (0.32), Côte d'Ivoire (0.23) and Senegal (0.29).

For Ghana to promote industrial development and establish itself as a leading manufacturing and business hub in the region, it must thus address the following:

- (a) *Macroeconomic challenges:* Ghana's public finances are placed under considerable stress when commodity prices are low. This causes macroeconomic imbalances and undermines the country's competitiveness. Steps must therefore be taken to address exchange rate volatility and inflation.
- (b) *The availability and quality of infrastructure:* This includes the provision of reliable and cost-efficient energy logistics support and adequate and efficient national and intraregional transport networks; these are essential prerequisites for the development of cost-effective supply chains.

- (c) *The depth of industries:* Steps must be taken to foster domestic medium-to-high tech value addition wherever this is feasible, inter alia, by removing impediments to industrial development and adopting targeted policies to encourage the use of new technologies, and promote innovation and knowledge transfer.
- (d) *Work force efficiency:* This includes the quality of workers' health, education and training at all levels. Ghana needs to address its human resources challenges in order to raise productivity across all sectors and develop high value added goods and services. A highly educated workforce is an essential prerequisite for effective technology transfer and knowledge spillover and will prove critical if Ghana is to reduce its high levels of labour market informality. Education and skills should be looked at in terms of both the skills needed to empower the current work force, but also in terms of the skills that future workers will need if they are to adapt to changing industrial and technological needs.
- (e) *Financial market development:* Access to finance remains limited. This was compounded by slower than expected growth and falling commodity prices, which have further reduced liquidity and tightened credit conditions. As a result, although the banking system remains relatively strong, it has become more difficult for businesses, and particularly for SMEs, to access the banking services they need. Indeed, medium to long-term credit facilities are practically unavailable for most manufacturers. This is because the country's financial institutions prefer to lend to the Government rather than to businesses in order to minimize risk, Ghana currently has one of the world's highest interest rates, and commercial banks were charging almost 29 per cent

interest in 2017. Microfinance institutions can charge more than 70 per cent. Ghana must explore ways to support the development of entrepreneurs, start-ups and gazelles in order to retain, nurture and develop talent and ideas within the country. For example, financial institutions could explore ways in which they could offer venture capital and new/innovative financing solutions for smaller or riskier projects, as well as ways in which ICT platforms could be leveraged to finance smart projects.

- (f) *Technological readiness*: The fourth industrial revolution has its foundations in technological breakthroughs. Such breakthroughs are extremely likely to change the way business is done in the future in a radical fashion. In particular, innovative technologies, such as automation, digitization, artificial intelligence, robotics, 3D printing, the Internet of Things, big data and biotechnology, will have a significant impact on the mining industry, on industrial productivity, and on the country's competitiveness and entire production system (WEF, 2016). Improving Ghana's technological readiness must be placed at the core of a national suppliers' development programme. Domestic firms must be able to access emerging technologies, incorporate them into their innovation and operational processes, and participate meaningfully in both new and transformative value chains.
- (g) *Innovation and business sophistication*: Ghana must acquire the necessary skills and institutional infrastructure to promote innovation and support business sophistication. Indeed, revolutionary technological breakthroughs make it even more imperative that businesses remain ahead of the innovation curve (WEF, 2016). This

not only requires the provision of support for science, technology and R&D, but also, and perhaps more importantly, the provision of support to foster the emergence of a networked, connected environment that promotes creativity and entrepreneurship, fosters collaboration, and rewards forward-looking and innovative individuals. Particular attention must be given to the design of policy and institutional frameworks and the coordination of partnerships with the business community with a view to achieving those goals.

2.1.3 Productivity challenges

Besides the challenges affecting the competitiveness of Ghana in the region and beyond, it is critical to consider other factors that have a direct impact on industrial productivity.⁶⁰

This section focuses on two broad dimensions that are relevant to suppliers and to the mining sector in general. Firstly it looks at, factors affecting **labour productivity** in Ghana, in particular relating to the workforce skills set, the structure of the labour market and the capital intensity of the workforce. Secondly, it considers factors relating to the **firm's productivity**. These include the prerequisites for (new) growth sectors, the performance of supply chain operations and the extent to which the trade environment is conducive to the development of regional value chains and market penetration.

Factors affecting labour productivity in Ghana

Ghana needs to *develop new sets of capabilities* so that it can compete globally in terms of ideas, innovation and high-tech products. It must therefore improve its competitive advantage, which depends, primarily, on its human capital. This, in turn, depends fundamentally

60 Productivity is commonly defined as a ratio of a volume measure of output to a volume measure of input use.

on the quality of the country's education system and the resources allocated to initiatives that promote skills development. Today, Ghana faces challenges in both these areas as well as in its capacity to innovate. As underscored in Chapter 1, a number of key challenges must be addressed in order to improve the quality of the country's workforce and increase productivity. These include the following:

- (a) The high and growing rate of informality, which is often associated with poor compliance with labour standards, low salaries, the absence of formal contracts and long-term precarious employment situations for workers;
- (b) The high proportion of small business enterprises; 90 per cent of companies in Ghana are micro-enterprises. Some 75 per cent of the country's labour force is employed in MSMEs;
- (c) The high proportion of the labour force engaged in low-skilled jobs (70 per cent of the population), which is correlated with low productive outputs.
- (d) The high proportion of the labour force employed in low-productivity service sector jobs;
- (e) The significant drop in education attainments at the secondary and tertiary levels. In 2015, it was estimated that 51 per cent of the working population had only a basic education, only 19.4 per cent had obtained a secondary education, and only 10.5 per cent had obtained a tertiary education. The resulting lack of suitably skilled workers significantly impedes highly productive economic activity in Ghana;

- (f) The allocation of most of Government financial resources to support education infrastructure projects rather than to support curriculum development and appropriate training at various technical and professional levels;
- (g) Skills mismatches; this undermines labour productivity as there are insufficient numbers of workers with educational backgrounds in science, technology, engineering or mathematics;
- (h) Insufficient and/or inadequate policies and instruments to provide alternative training to individuals who have dropped out of school. TVET enrolment has been declining for several years, probably because of the lack of job opportunities available to individuals who graduate from TVET programmes and the mismatch between the training they receive and the skills needed by companies. Steps must be taken to ensure that training courses provide workers with the technical skills needed by the Ghanaian labour market.

Factors affecting Ghanaian firms' productivity

- (a) The regulatory environment

One of the determinants of success for the development of supply chains is the business climate within which the private sector operates. In particular, it is important to create *the conditions for (new) growth sectors*.

The indicators provided in the World Bank Doing Business 2018 report⁶¹ are used as a proxy to measure how Ghana is faring in that regard compared to international best

61 The report provides an aggregate ranking on the ease of doing business based on indicator sets that measure and benchmark regulations applying to domestic small to medium-size businesses through their life cycle. Economies are ranked from 1 to 190 by their ease of doing business ranking. The 10 factors considered in the ranking in 2017 were the following: starting a business, dealing with construction permits, obtaining access to electricity, registering property, obtaining credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency.

practices and to peer countries in West Africa. *Annex 11 gives a detailed overview of the business climate in Ghana compared to other countries and groups of countries.*

In 2017, Ghana was ranked 120th out of 190 countries in terms of ease of doing business in the country, down from 108th position in 2016. This was far behind the best performer in Africa, Mauritius, which was ranked 25th in 2017. However, Ghana topped the West African region, and was ranked above Côte d'Ivoire and Mali, the next best African performers, which were ranked 139th and 141st respectively.

Ghana's overall performance by global standards must be significantly improved, if the country wants to attract domestic and foreign investment and position itself as a key African economy. The following issues are particularly important as they have a direct impact on investment decisions and business productivity:

(i) *Starting a business:* In Ghana, in 2017, the process of starting a business required eight administrative steps, took 14 days, and cost 17.5 per cent of income per capita. A requirement of paid-in minimum capital of 1.7 per cent of income per capita was also mandatory. In comparison, it took half a day, one administrative step and cost 0.5 per cent of income per capita in New Zealand, the top global performer and 3 procedures and 8.3 per cent of income per capita in the Niger, the best African performer in 2017. High costs and delays can significantly impede entrepreneurship and job creation and discourage investors from investing in Ghana. Global analysis reveals that countries with lower costs of business incorporation tend to have higher numbers of newly registered companies and higher revenue from income, profit and capital gains taxes. They also tend to have a higher labour force participation rate

among young people. Conversely, economies with a higher costs associated with starting a formal business tend to have higher levels of self-employment. In Ghana, there is strong evidence that onerous administrative procedures have facilitated the emergence of the country's very large informal sector, which accounts for between 20 and 40 per cent of GNI, and 90 per cent of employment.

(ii) *Access to electricity:* access to reliable and affordable electricity is a critical condition for successful business operations. According to the Ghanaian **Energy Commission**, electricity tariffs in Ghana in 2016 ranged from 8.7 US cents per kilowatt-hour for customers using 50 kilowatt-hours or less per month to as high as 25 US cents per kilowatt-hour for usage above 600 kilowatt-hours in a given month. The average tariff in West Africa is approximately 4 US cents per kilowatt-hour (ACEP, 2015). These high energy costs have a significant negative impact on commercial and industrial consumers, undermine their productivity, and hence their capacity to create high value employment and foster economic development. Furthermore, obtaining access to electricity is often expensive and problematic. Doing Business 2018 underscores that obtaining access to electricity in Ghana required 6 administrative procedures, took 78 days and cost 1,080.5 per cent of income per capita. In the United Arab Emirates, the top global performer in that regard, there was no cost per capita. The cost per capita in Ghana is also significantly higher than in the top African performer, Mauritius, where connection to the grid costs 229.5 per cent of income per capita.

(iii) *Property registration:* mechanisms to establish formal property rights as well as mechanisms for effective land

administration, the registration of companies and title transfer are critical for business operations. Mechanisms that are too expensive or overly cumbersome discourage businesses from joining the formal economy. Businesses that continue to operate in the informal economy find it extremely difficult to access credit lines as proper titles are usually required as collateral for loans. In 2017, Ghana was ranked 119th out of 190 economies in terms of the ease of registering property. This is in net regression compared to 2016, when it was ranked 77th. Ghana was ranked above Côte d'Ivoire (113th) and Nigeria (179th) but below the best African performer, Rwanda, which was ranked 2nd globally. Registering a property in Ghana required the completion of five administrative procedures, took 47 days, and cost approximately 6.2 per cent of the property value, whereas registering a property in Rwanda required the completion of only two administrative procedures, took approximately seven days, and cost only 0.1 per cent of the property value. Effective land administration is a particularly challenging issue in Ghana, and it takes considerable time to process a title transfer and issue a title certificate.

(iv) *Access to credit:* Access to financing is crucial for both aspiring entrepreneurs and firms seeking to expand. For this reason, several areas of regulation, notably those affecting access to credit for SMEs must be made less cumbersome. To facilitate access to credit Ghana must develop effective credit information systems that can be used by lenders to assess the credit worthiness of potential borrowers and sound bankruptcy laws. Sound collateral laws are also needed so that businesses can leverage their assets to raise capital. Ghana was ranked 55th out of 190 economies in 2017 terms of

the ease with which borrowers can obtain credit. It performed well compared to Côte d'Ivoire (ranked 142nd) but lags behind Nigeria (ranked sixth) and Rwanda (ranked second) out of the 190 economies surveyed. This implies that Ghana has adopted relatively robust regulations, in particular with regard to the rights of borrowers (where it scored as well as the United Kingdom) and has relatively strong institutions to support lending and borrowing. The depth of credit information is also strong, and the country has successfully widened access to credit, inter alia, by setting up a centralized collateral registry and by granting an operating licence to a private-sector credit bureau in 2010.

(v) *Paying taxes:* In 2017, Ghana was ranked 116th out of 190 economies in terms of the ease with which taxpayers can pay their taxes. It lagged behind Mauritius (ranked 10th) but has less cumbersome procedures than other West African countries, such as Côte d'Ivoire (175th) or Nigeria (171st). The factors increasing the cost of doing businesses in Ghana include the multiplicity of taxes to be paid, the large number of administrative procedures that must be completed in order to file and pay taxes, and the excessive time that must be spent on those procedures.

(vi) *Trading across borders:* Over the past two decades, globalization has accelerated the volume and speed of international trade. Efficient logistics, technology and trade preferences have also boosted cross-border trade. Many Governments have introduced tools to facilitate such trade, such as single windows, risk-based inspections and electronic data interchange systems. Despite being part of the ECOWAS customs union, Ghana's external trade tariffs remain relatively

high by global standards and the country was ranked only 158th out of 190 economies in 2017 in terms of border openness. Swaziland, the African country with the most open borders, was ranked 32nd. Furthermore, because of the Ghana's inefficient trade logistics, the costs associated with the shipment of goods for export were estimated to be approximately \$490. This compared to no cost at all for the top global performers and \$134 for Swaziland

(b) Logistics and supply chain constraints

Driving lean and efficient supply chain management and enjoying access to world-class logistics are critically important for firms wishing to gain and maintain a competitive edge in the global economy. Although developed economies are now able to focus on promoting the use of advanced technology, big data, robotics, process integration and near shoring,⁶² developing countries must, at the present time, continue to focus on addressing a number of more "traditional" issues. This section highlights the main challenges to be tackled in Ghana in two areas critical for suppliers' development, namely logistics and supply chain management:

(i) Logistics

Logistics is defined as the management of the flow of goods and services from the producer to the consumer. These can include physical items, such as transport infrastructure, (including land, port and air transport infrastructure) or storage and handling capacity as well as abstract items, such as time, quality, availability and speed of information technology connectivity, the ability to move goods and services across borders, and distribution, packaging and processing activities. Physical logistics involves the integration of information flows,

material handling, production, packaging, inventory, transportation, warehousing, and frequently, security services.

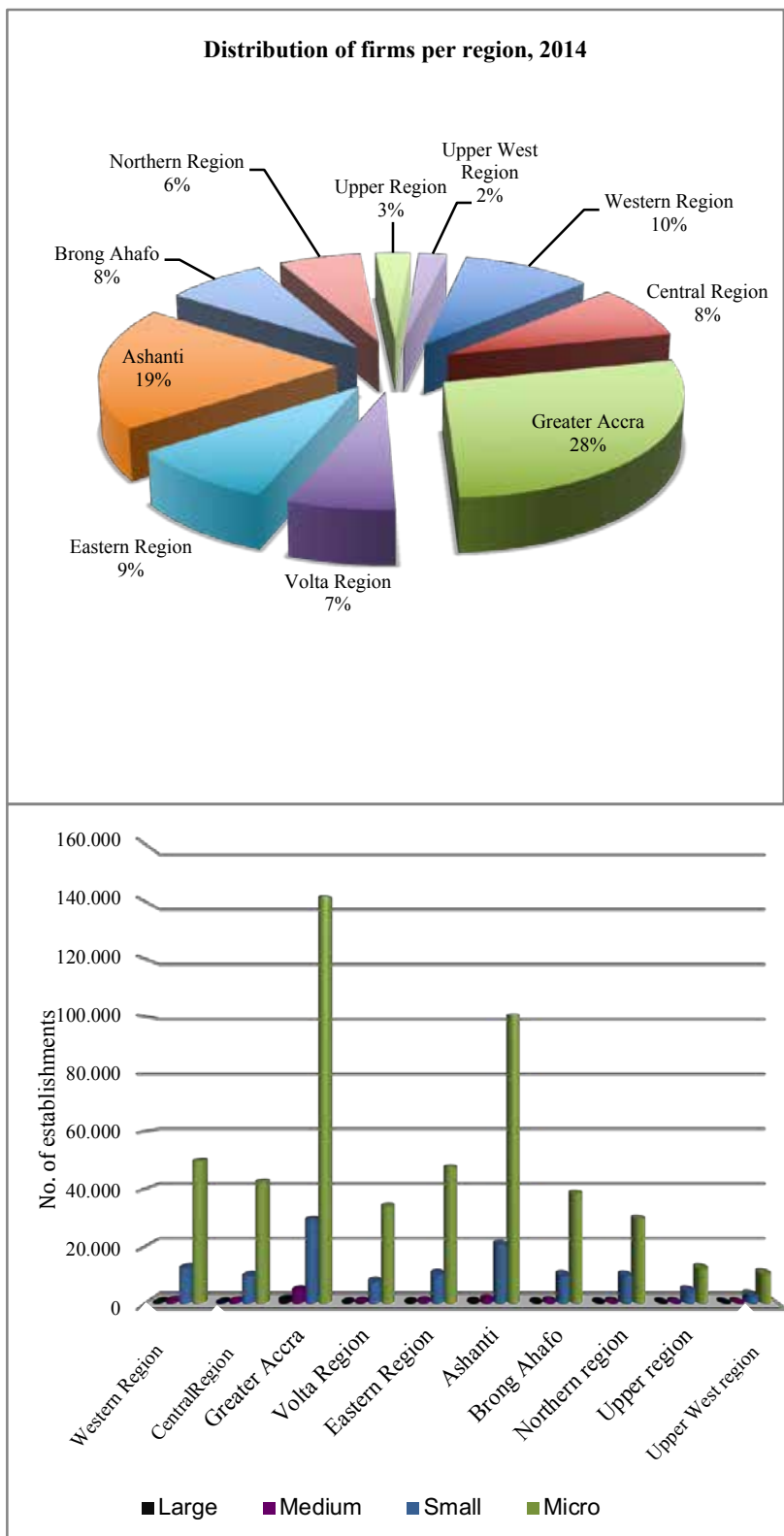
The current network and distribution of **physical infrastructure** is unable to support the ambitions of Ghana's *One District One Cluster* policy. Furthermore, Ghana's National Spatial Development Framework (2015-2035) identifies the following socio-economic challenges that the country will need to address in the coming two decades:

- » Ghana will need to upgrade its physical infrastructure in order to deepen its trade ties with its neighbours and position itself as a gateway to the larger West African market. However, there is a *lack of coordination* among relevant stakeholders at sub-regional, national and local levels in both the public and private sectors of the economy. For instance, travel and cargo transport times across countries in West Africa are far too high; it is therefore imperative to strengthen cooperation across countries with a view to coordinating effective regional infrastructure policies.
- » *Increasing urbanization* will necessitate the upgrading of transport networks in cities, while new transport networks will be needed to connect new or growing cities with their surrounding rural area. This will help reduce economic disparities between rural and urban areas: a matter of particular concern given that inequality between regions and between localities has increased dramatically in recent years. Indeed, it is estimated that, between 1992 and 2006, the incomes of the wealthiest 10 per cent of people in Ghana increased while those of the poorest 10 per cent decreased.

62 Near shoring refers to the transfer of businesses to nearby countries.

Figure 17

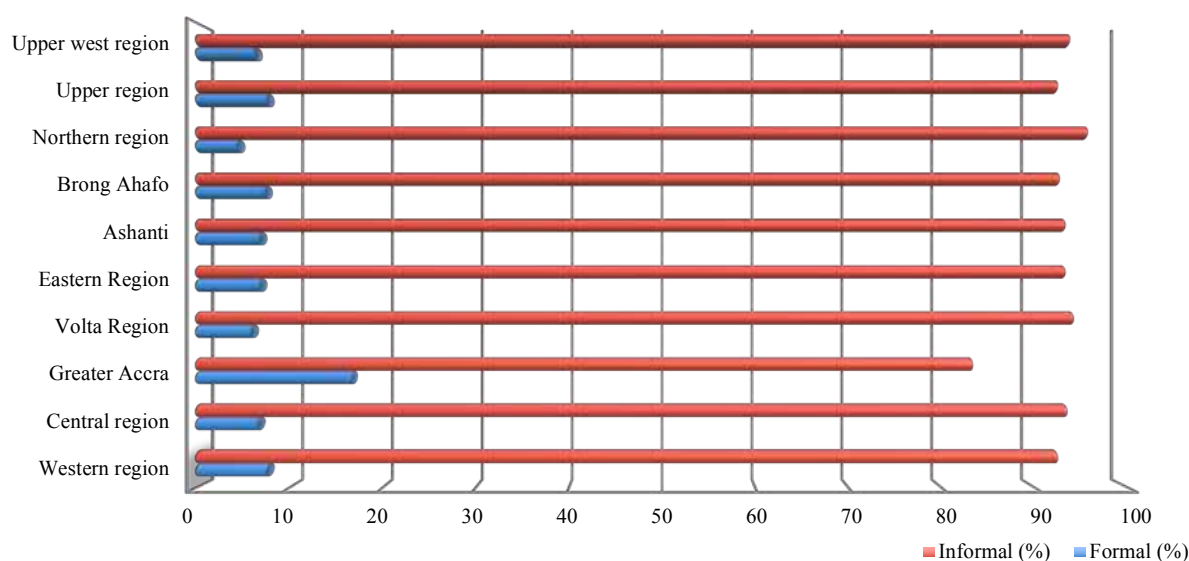
Distribution and location of firms by region and by size, 2014



Source: GSS, 2015.

Figure 18

Distribution of formal and informal business establishments per region, 2014



Source: GSS, 2015.

The creation of a *reliable and efficient transport network*, which will promote more balanced and more dispersed economic activity across Ghana's regions, will encourage investment in business enterprises in smaller urban settlements, and will promote the development of growth corridors. (Annex 12 provides details on the state of infrastructure networks in Ghana). As shown in Figures 17 and 18, the size and type of economic activities, as well as the economic opportunities offered by those activities, show significant variation across regions. Promoting access to markets and reducing transport times will undoubtedly help address that issue. Ghana's road network is similar to road networks found in middle income countries,⁶³ although substantial

investments are needed to maintain and expand that network and improve geographical connectivity across the country. Freight volumes have increased significantly over the years (see Figure C in Annex 12), particularly between Accra and the ports at Tema and Takoradi,⁶⁴ Some regions in Ghana, such as Western Region, have weaker road connections; improving road networks in those regions will stimulate industrial development and facilitate the flow of goods and services to and from other regions. Similarly, interregional links remain underdeveloped: for instance, as shown in Figures 19a and 19b, there are few direct road links between regional capitals in the northern regions.

63 World Bank, 2010: See WBGUR/GoG/NDPC 2010.

64 General cargo accounts for 31 per cent of all freight. It comprises imports and local products manufactured in Accra and Kumasi and then distributed to the most populated areas of the country or exported, mainly to Burkina Faso. Agricultural products (23 per cent of freight) are imported via Tema and Takoradi ports and processed in Accra and Kumasi. From these locations, they are distributed to the most populated areas, or exported abroad, including, primarily, to the Niger. Cocoa accounts for another 2 per cent of freight. It originates in Western, Brong-Ahafo and Ashanti regions, and is transported to the two ports for export overseas. Timber (32 per cent) comes from Tarkwa, Brong-Ahafo and Ashanti regions and is exported through the ports of Tema and Takoradi. Bauxite and manganese (6 per cent) originates in Tarkwa and is transported to Takoradi port. Cement (6 per cent) originates in local production plants in Tema, Takoradi and Kumasi and is distributed to Greater Accra, Eastern and Ashanti regions (NSDF, 2015).

Figure 19a
Lack of road links

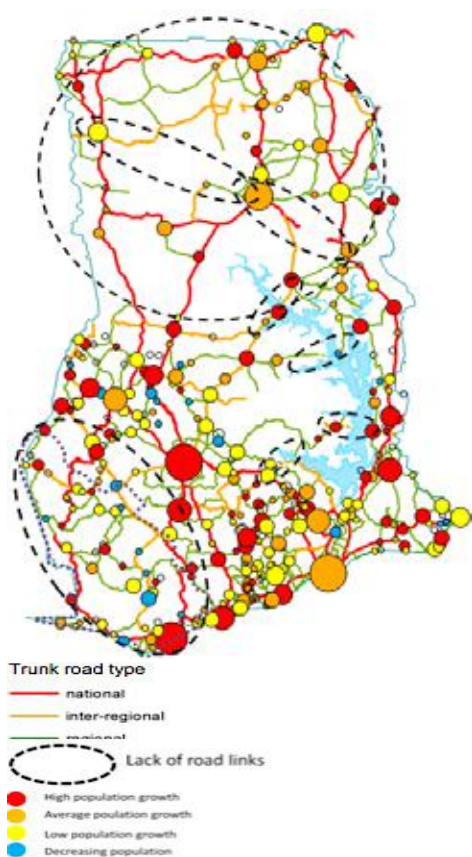
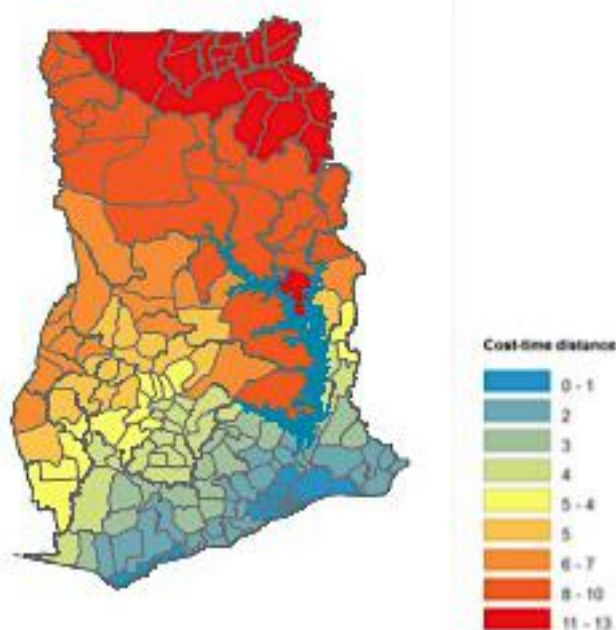


Figure 19b
Cost of freight transport to ports



Source: NSDF, 2014 (based on data from Road and Highway Authority, 2012 and GSS, 2010).

- » *Strengthening transport centres and hubs* across the country: Transport centres can improve connectivity, the handling of cargoes and coordination across various modes of transport and complement ports and storage capacity. As shown in Figure 19b, due to the country's inefficient transport corridors, transport costs rise significantly as the distance that goods must travel to reach ports increases, thereby impeding business and industrial activities in certain districts.
- » Ghana's *railway network*, which currently comprises 947 km of track,⁶⁵ must be upgraded (see Figure D in Annex 12). The system is mostly single-track, except for the 30 km stretch from Takoradi to Manso, which is used to transport Manganese to Takoradi port. Key challenges include obsolete track and trains,⁶⁶ encroachment on railway lands and a declining customer base as a result of the network's failure to provide reliable services.

65 The network consists of three main lines: (i) Western Line (red), from Takoradi to Kumasi with branches from Tarkwa to Prestea and from Dunkwa to Awaso; (ii) Eastern Line (green), from Accra to Kumasi with a branch to Tema and (iii) Central Line (blue), from Huni Valley to Kotoku with a branch to Kade.

66 Most of the network was built in the early 1900s. Only around 10 per cent has been upgraded to support passenger transport and the new oil and gas industry with a view to reducing road congestion.

- » *Seaports:* The two major seaports at Tema⁶⁷ and Takoradi⁶⁸ handle most cargo and container freight in the country. They also provide for transit trade with three landlocked countries, namely Burkina Faso, Mali and the Niger. Both ports suffer from traffic congestion and challenges related to access because they are located in close proximity to urban areas. Those ports have reached their berthing capacity limits and cannot accommodate larger vessels. Furthermore, the container terminals and warehousing facilities need to be expanded, if Ghana is to realize its aspirations of becoming a regional trade hub. Port charges are particularly high for importers and, as a result, increase the cost of manufacturing inputs for domestic industries.
 - » *Air transport:* Ghana captures only 10 per cent of West Africa's aviation traffic.⁶⁹ By comparison, Nigeria captures some 57 per cent. According to Ghana's Civil Aviation Authority, while the number of flights to and from Ghana increased between 2007 and 2013, air freight has decreased. Key challenges include the failure of Kotoka International Airport to obtain category 1 airport certificate status⁷⁰ and inadequate facilities and infrastructure at Kotoka airport, including runways, aircraft parking space, and warehousing and cold-storage cargo facilities.
 - » Ghana must also address a number of challenges related to *information technology connectivity*. Efficient management and information technology solutions in both the private and public sectors are vital logistics tools. In 2016, Ghana was ranked 112th out of 175 countries on the ICT Development Index. Access to and usage of ICT must therefore be significantly improved. A 2016 report noted that only approximately 43.5 per cent of households enjoyed access to a computer; and only 34.1 per cent of households had access to the Internet. The report also noted a lack of computer skills among the Ghanaian population. A major challenge for Ghanaian businesses is the uneven geographical distribution of information technology services, and the slow pace at which information technology has been adopted with a view to addressing administrative red tape, developing paperless information systems and organizing data.
- (ii) Supply chain management
- Supply chain management is understood as the *"systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole"* (Mentzer

67 Tema port is the bigger of Ghana's two seaports and handles 70 percent of the country's port trade as well as the transit of cargo to and from Burkina Faso, Mali and the Niger. Tema port handles most container transport. Different types of vessels use the port and its associated land facilities, including inland clearance depots, warehouses, transport and haulage companies, freight forwarders and related service centres. The port has undergone continuous modernization and expansion since its inauguration in the 1960s. Today it covers an area of 3.9 km² and is well-connected to Tema's industrial areas. Ongoing work is being undertaken to extend the port's terminal facilities and berth capacity and prepare for deep-water container vessels.

68 Takoradi port is located 225 km west of Tema port and 300 km east of Abidjan port. Its convenient location supports mining activities and the cocoa production in the western part of Ghana and it is well-connected with the centre and northern parts of Ghana and neighbouring landlocked countries. In 2012, the port handled 30 percent of Ghana's seaborne traffic, 66 percent of national exports and 19 percent of national imports. Exports include manganese, bauxite, forest products and cocoa beans. Since 2008, Takoradi port has supported exploration and production activities in off-shore oil and gas fields. Takoradi port is being upgraded with the extension of the breakwater and quay, dredging for 14m draft, the construction of a bulk cargo jetty, and land reclamation to create additional areas to support the oil and gas industries.

69 By number of passengers, Kotoka airport (KIA) was ranked 15th in Africa and 3rd in West Africa in 2013 after Lagos and Abuja airports in Nigeria.

70 An international certification given by the Federal Aviation Administration, which recognizes compliance with international safety standards set by the International Civil Aviation Organization (ICAO).

and others, 2001).⁷¹ It differs from logistics in that it is specific to firms' operations. Key challenges affecting logistics and supply chain management in Ghana include:

- » *Supply chain reliability and predictability.* This is particularly relevant if Ghana is to establish networks of suppliers to support the mining sector and its other industries. In effect, disruptions at one point in the supply chain can have amplifying ripple effects that negatively affect the entire chain. It is therefore critical to address all factors that can undermine the reliability and predictability of supply chains. In particular, steps must be taken to accelerate border clearance and reduce delays in transit, import and export operations, including by strengthening mechanisms for the detection of counterfeit products.
- » *Efficient domestic and international trade logistics* enhance the performance of the entire supply chain and therefore have a significant impact on firms' competitiveness. Indeed, successful industrial development is conditional on supply chain reliability, which in turn, necessitates the provision of robust and reliable infrastructure and a high degree of certainty regarding timely and speedy delivery of goods. *Table A in Annex 13 give a detailed overview of Ghana's domestic logistics performance in 2016.* In particular, it highlights the costs of delays, due to import and export lead times, for port, airport and land supply chains.

- » The World Bank measures the logistics performance of countries according to a number of criteria⁷² that can all boost or undermine a country's competitiveness. Ghana ranked 88th out of 160 countries in that regard in 2016, but was ranked less competitive than other countries in Africa (*See Figures A and B in Annex 13 for a comparison between Ghana and other countries*). It is clear that a number of challenges still need to be addressed, such as particularly onerous bureaucratic red tape. This may require procedure simplification, the creation of single windows for imports and exports and the adoption of electronic data systems to reduce paper work.
- » *Enabling the creation of a cross-border trade environment*, including a policy priority to address the problem of fragmented markets across West Africa and foster the development of regional value chains. This is a critical step that must be taken if Ghana is to become a successful and competitive industrial hub in the region. Table 15 highlights a number of factors impeding trade among West African States. These factors include: (i) the non-implementation of ECOWAS trade commitments and the application of complex tariff regimes despite the adoption of the CET, and more importantly, the proliferation of non-tariff restrictions across frontiers; (ii) poor regional infrastructure and weak logistics, which drives up the cost of cross-border trade; and (iii) limited financial and macroeconomic integration across the region.

71 J. T. Mentzer, W. DeWitt, J. S. Keebler and others. "Defining supply chain management," *Journal of Business Logistics*, vol. 22, no. 2, pp. 1–25, 2001.

72 The World Bank Logistics Performance index considers the following six criteria: (i) the efficiency of customs and border management clearance; (ii) the quality of trade and transport infrastructure; (iii) the ease of arranging competitively priced shipments; (iv) the competence and quality of logistics services; (v) the ability to track and trace consignments; and (vi) the frequency with which shipments reach consignees within scheduled or expected delivery times.

Table 15

Regional integration index by country

	Overall index	Trade integration	Regional infrastructure	Productive integration	Free movement of people	Financial and macroeconomic integration
Economic Community of West African States (ECOWAS)						
Côte d'Ivoire	0.675	0.986	0.370	0.280	0.800	0.941
Togo	0.671	0.466	0.646	0.494	0.800	0.947
Senegal	0.628	0.648	0.338	0.383	0.800	0.968
Benin	0.548	0.358	0.383	0.279	0.800	0.920
Niger	0.556	0.447	0.352	0.182	0.800	1.000
Ghana	0.546	0.604	0.603	0.470	0.800	0.253
Burkina Faso	0.537	0.425	0.404	0.083	0.800	0.971
Mali	0.525	0.485	0.271	0.119	0.800	0.950
Nigeria	0.501	1.000	0.385	0.168	0.800	0.153
Guinea-Bissau	0.500	0.413	0.339	0.000	0.800	0.950
Gambia	0.447	0.005	0.550	0.517	0.800	0.362
Sierra Leone	0.404	0.519	0.315	0.353	0.800	0.033
Liberia	0.357	0.000	0.331	0.376	0.800	0.277
Guinea	0.301	0.110	0.430	0.167	0.800	0.000

 High performing country ^a

 Average performing country ^b

 Poor performing country ^c

Source: OECD, 2017.

Figure C in Annex 13 shows that, in 2016, Ghana was ranked 100th out of 136 countries according to the WEF Enabling Trade Index, which takes into consideration the factors, policies and services affecting a country's trade. The ranking is a useful proxy for measuring the competitiveness of imported inputs for industrial development. Many factors continue to impede trade in Ghana, including the quality of the country's transport infrastructure and domestic market access to imported inputs.

2.1.4 Shrinking policy space

Integration into the global economy brings substantial benefits for companies, provided that countries support those companies and facilitate their integration into global supply chains. However, integration also has costs. For instance, as a result of its various trade and investment commitments, Ghana may have limited scope to diversify its economy away from mineral dependency. Indeed, in the context of its regional commitments to create a broad regional market, among ECOWAS economies, Ghana has liberalized its trade in a number of products, including

those where potential for value addition can be substantial. Competition from imports may pose challenges, in particular for nascent industries. Although regional trade frameworks sanction the adoption of trade measures to protect infant-industries, such measures can only be adopted once a country can demonstrate that its nascent industries have already been negatively affected.

Similarly, Ghana has signed an EPA with the EU that guarantees market access to Ghana for up to 75 per cent of European products. Although a number of sensitive, mostly agricultural, products have been excluded from liberalization, Ghanaian industries will be forced to compete with European industries. Furthermore, the EPA proscribes the use of policy tools such as export taxes and restrictions and, as such, may hinder future development, even if the EPA allows countries to temporarily raise tariffs in order to promote development provided that those tariff increases are approved by the EU.

Moreover, WTO provides clear rules on what local content policies are and are not permitted. In particular, it prohibits the use of performance requirements in the form of quantitative local content targets, and regulates other forms of industrial policy (see Ramdoo, 2016).

Finally, BITs may have further constrained Ghana's capacity to use certain types of policy instruments to foster local development and to entice local companies to add value to raw proceeds at the domestic level. BITs contain at least four types of provisions and measures that can limit the scope of supply chains through local content provisions (see Ramdoo, 2016). These are:

(a) *Non-discrimination provisions*: Ghana may no longer be able to provide incentives/subsidies or impose any preferences that would apply only to local investors.

State-owned enterprises are covered by these provisions as well as pre-establishment rights, hence limiting the capacity of the country to develop indigenization policies. More importantly, they limit the country's space to impose ownership requirements on foreign investors.

(b) *Fair and equitable treatment provisions* (FET), aimed at protecting investors against serious instances of arbitrary, discriminatory or abusive conduct by host States. These provisions provide an "*absolute standard of protection*" and apply to investments in a given situation without reference to how other investments or entities are treated by the host State.

(c) *Measures to restrict performance requirements*, in particular with regard to: the establishment of joint ventures and minimum domestic participation; employment conditions, including the conditions applicable to foreign labour; location of headquarters in a specific location; procurement of goods and services; and export conditions and transfer of technology, production processes, propriety knowledge and research and development.

(d) *Specific measures relating to the nationality of board members and senior management* that facilitate the appointment of foreign nationals to senior management positions.

Although the scope of BITs varies significantly, they have become very popular among investors as they provide them with a high level of security, including in terms of financial compensation in case of dispute. Of the 600 known dispute cases under BITs, it is estimated that 25 per cent relate to the extractive sector.

2.2 Policy options for addressing structural weaknesses

To address structural weaknesses, the following measures are proposed:

2.2.1 Policy coherence and coordination

To ensure that policies are coherent and consistent, relevant Ministries and governmental agencies must coordinate policies effectively, set shared priorities and adopt strategic plans for action at the national and regional levels.

At the **national level**, Ghana must adopt industrial policies that foster linkages with the mining industry while taking into account the interests of all economic sectors. The roles and responsibilities of relevant stakeholders must be well defined so as to avoid the creation of ineffective projects, which may create new and counter-productive “enclaves” instead of the creation of cross-sectoral linkages.

The potential benefits for the broader economy of strengthening upstream production linkages with the mining sector must be clearly identified in relevant development policies and plans. Planning must be done in the early stages of every project conception, to ensure sufficient time to make connections with other projects, such as infrastructure development initiatives. For example, when spatial development programmes are being planned, the Government should ensure that links are also developed with high-density economic nodes and key economic sectors and ensure that the special development programmes in question allow for the construction of necessary infrastructure, including feeder roads and power networks, that can help promote development in rural or remote areas.

At the regional level, it is equally important to adopt coherent and coordinated approaches to mineral-related industrial development and other related programmes, including corridor

development. For example, to promote regional sourcing of inputs from national industries, regional economic communities (RECs) should develop integrated regional investment compacts that promote the development of efficient regional value chains while also promoting market access. Furthermore, to ensure the successful implementation of regional trade commitments, it is critical that those commitments are aligned with ECOWAS countries’ national industrial priorities.

2.2.2 Creating preconditions for business development

(a) Improving the overall business and investment climate

Steps must be taken to create an enabling business environment that facilitates enterprise development. In that regard, it is critical to improve access to credit, facilitate cross-border trade, ensure that inputs remain cost-efficient and facilitate access to markets abroad for Ghanaian products. Attention must, in particular, be given to the following:

- (a) *Streamlining procedures* for business creation, by reducing the number of administrative procedures that must be completed to open a business and establishing a one-stop shop where all administrative procedures can be completed within a short time frame. Ghana must, moreover, set up information systems to expedite business applications and procedures and should consider removing minimum capital requirements, which discourage the formal registration with the authorities of SMEs, as that may help reduce the number of informal businesses in the country.
- (b) *Facilitating property registration*: this has a direct impact on access to credit for domestic firms as property titles are often required as collateral for loans. In

particular, Ghana should take steps to reduce the number of procedures and time required for the delivery of property titles.

(c) *Improving tax administration:* Ghana was ranked only 116th out of 190 countries in 2017 in terms of ease of paying taxes. Ghana must simplify the country's tax regime, computerize the tax administration system and create online tax portals.

(d) *Reducing the cost of cross-border trade* with a view to boosting exports and facilitating the integration of Ghanaian supply chains into regional and global value chains. In particular, Ghana should:

(i) Simplify customs procedures to avoid duplication of inspections, improve efficiency of border clearance procedures and reduce times that goods are held at port;

(ii) Bring ECOWAS procedures and documentation into line with international standards;

(iii) Create a single window for customs administration;

(iv) Strengthen its customs tax cooperation with partner countries;

(v) Establish effective one-stop border posts with neighbouring countries; and

(vi) Improve shipping procedures, including goods tracking and tracing mechanisms.

(e) *Helping local suppliers* to develop products or services that are not necessarily available in the market place (niche products and tailor-made products), inter alia, by:

(i) Providing incentives and technical support to help businesses meet technical specifications, comply with regulations and standards (including safety requirements), improve product quality, and ensure delivery within agreed timeframes;

(ii) Providing administrative support to help businesses apply for tenders and enhance their employees' business management skills;

(iii) Reducing the cost of:

» Doing business for local suppliers;

» Local sourcing. Incentives to foreign companies often include tariff exemptions on inputs, while other domestic industries do not benefit from similar preferential treatment. It is important to ensure policy consistency in this regard; and

» Domestic and international logistics.

(b) Addressing competitiveness challenges

Despite its high and persistent growth rates over the past decade, Ghana continues to lag behind many countries in terms of its competitiveness. To address that issue, Ghana should:

(a) *Address macroeconomic challenges*, particularly those affecting the competitiveness of industries. Of particular importance are (a) exchange rate volatility and (b) inflation. Although weak currencies can boost exports, they pose a major challenge for local producers that rely on imported inputs. Furthermore, exchange rate volatility can significantly increase

transaction costs and the cost of production and thus negatively affect firms' cash flow and competitive edge. In general, small firms are more severely affected by volatility. Similarly, high inflation rates can significantly increase the cost of production. To prevent exogenous shocks from affecting domestic firms, a prudent monetary policy is therefore critical.

(b) *Improve the depth of industries* by removing obstacles to industrial development. In that regard, Ghana must adopt specific policies to:

(i) Foster technology absorption;⁷³

(ii) Encourage technology transfer;

(iii) Encourage innovation, in particular by: helping local firms access patents and industrial designs; putting in place the necessary institutional infrastructure to protect the property rights of domestic innovators; providing financial incentives to encourage R&D; facilitating the creation of innovation hubs and incubators for young entrepreneurs, in partnership with larger firms; and encouraging knowledge transfer, in particular from foreign firms.

Box 2

Instruments to support business development

	Firms' development stage			
	Seed phase	Start-up phase	Emerging growth	Expansion phase
Instruments	First business programmes, ⁷³ aimed at providing specific incentives for young entrepreneurs and new industries			
	Interest-free loans to support enterprise creation			
	Grants			
	Public loans and guarantee schemes (offered through development banks)			
			Participatory development contracts	
			Business angels	
			Bank loans	
			Access to equity through venture capital funds	
			Initial public offerings (IPOs)	
	Temporary tax breaks and exemptions			
Levels of risk	Very high	High	Low	Low

Source: Author.

73 These can include loans at discounted interest rates or grants for business creation, preparing the workplace, buying equipment, tools and materials and investing in office space.

- (c) *Enhance access to finance* by developing financial mechanisms that foster the growth of businesses. Box 2 provides some examples of instruments that could be developed, including in partnership with larger companies and financial institutions, to support business development in Ghana.
 - (ii) Developing financial incentives that would make of Ghana an attractive place to do business. The role of GIPC in promoting and facilitating investment in industry is crucial;
 - (iii) Developing other incentives, such as: access to credit at preferential rates, particularly for SMEs; investment policies that encourage technological catch-up; specific support mechanisms for start-ups, young entrepreneurs and business incubators; subsidies to support technological acquisition, upgrading and absorption as well as the development of new technologies through R&D and innovation; and specific instruments to support infant industries;
 - (iv) Facilitating B2B matchmaking to allow companies to benefit from technological and knowledge transfer. This may directly target firms that can generate the necessary investment or that can partner with local firms.
- (d) *Boost companies' technological readiness and improve their access to innovative technologies* to ensure that domestic firms have the tools they need to boost their operational capacity and participate meaningfully in value chains.
- (e) *Promote business innovation and sophistication.* This is the “software side” of technological readiness and includes the provision of support to R&D and science and technology development, as well as the creation of a networked, connected environment that promotes creativity and entrepreneurship, fosters collaboration, and rewards forward-looking and innovative individuals. To achieve that objective, particular focus must be placed on the design of policy and institutional frameworks and the coordination of initiatives with the business community.

(c) Developing targeted strategies to promote, attract and facilitate investment

Targeted policies are necessary to promote, attract and facilitate investment, in particular in local SMEs, as well as to stimulate possible joint ventures with SMEs.

- (a) Ghana must put together an **attractive investment package** for its industries. Possible measures include:
 - (i) Addressing the bottlenecks perceived by investors as acting as a

- (b) For sectors where local firms are already present, Ghana must provide additional **financial and technical support** to improve their productivity and enhance their competitiveness.
- (c) Together with the investment package, Ghana must provide and **secure market access** opportunities for domestic suppliers to mining industries in Ghana and abroad, and with other industries outside the mining sector. To that end, a series of mechanisms must be established, including:
 - deterrent to investment or business expansion;

- (i) An online database where procurement/tender opportunities are published for the benefit of local suppliers. In that regard, the Ghana Chamber of Mines has recently launched an online portal to provide information to industry players regarding procurement opportunities in the mining industry. Procurement/tender notices should provide guidelines, stipulate deadlines for applications and provide answers to frequently asked questions to help local suppliers submit strong applications;
- (ii) Networks of suppliers, per category of products/services offered, to increase the awareness of mining companies of local business capabilities;
- (iii) An online platform for information exchange regarding standards, requirements and tender procedures. The platform could also provide guidance on the steps companies should take to ensure compliance;
- (iv) A dedicated unit (potentially within the Ghana Minerals Commission) to support suppliers with market access information/opportunities (i) in the mining sector and other industries (ii) in Ghana and abroad. A special dedicated window should be established for SMEs.
- (e) Ghana must **take steps to attract additional domestic and foreign investment**: GIPC already acts as a “one-stop shop” providing information to investors about business opportunities. The GIPC one-stop-shop facility needs to be strengthened so that it can provide additional guidance to businesses to help them deal with administrative matters.

At present, however, GIPC is perceived as an organization working to attract foreign investment. While such investment is crucial, there is also a need for a dedicated window to facilitate, promote and support domestic investment in order to facilitate the development of national suppliers.

2.2.3 Developing supply chain capabilities

(a) Obtaining a detailed understanding of upstream supply chains

Before rolling out targeted strategies to promote, attract and facilitate investment, it is important to understand the nature of upstream mining supply chains and to obtain a **comprehensive understanding of how linkages can be developed**. In particular, stakeholders must understand:

- (a) The linkages that are and will remain critical to the mining industry, and the ways in which Ghana can position itself strategically and competitively by developing those linkages;
- (b) The extent to which those linkages can be scaled up to support other economic activities in Ghana and the wider region so that Ghana can capture regional value chains;
- (c) The sequencing of linkages development. In other words, the steps that should be taken in the short as well as in the medium to long term to capture additional value;
- (d) The steps that must be taken to broaden and deepen supply chain development and the potential for product, process, functions and chain upgrading;

- (e) The policy interventions that can help upgrade value chains;
- (f) The market failures that will need to be addressed to improve the competitiveness of industry.

In addition, policy makers must have a deep **understanding of the market dynamics** of potential products and services including, in particular, the following:

- (a) The **growth potential** of the mining sector in Ghana and West Africa, which will determine whether the development of mining-related supply chains is sustainable. In that regard, where relevant, it is important to consider all mining sectors, including bauxite and manganese as well as the hydrocarbon sector in order to provide the widest market possible to domestic suppliers;
- (b) The **production capacity** of domestic suppliers, and, in particular, the ability of smaller firms to provide high-quality supply inputs within necessary time frames;
- (c) **Market size:** While the mining industry is, potentially, the biggest anchor client, a broader portfolio of clients will be needed to ensure the sustainability of supply chain development initiatives. Any policy to support supply chains must look at opportunities in other economic sectors, so that suppliers can benefit from economies of scale and focus on other sectors if mining sector activity declines or if their services are no longer needed because of technological change.

The **regional market** is particularly important. Ghana is the main gold producing country in West Africa. However, countries such as Burkina Faso, Côte d'Ivoire and Mali have

substantial potential as gold producers, and are likely to see significant growth in their gold mining industries in the future. Gold mining suppliers can also provide inputs to other mining sectors, such as bauxite or manganese. Furthermore, industrial development in West Africa will unlock supply opportunities for a variety of manufacturing products, which could be produced in Ghana. The country is therefore well placed to position itself as a regional supply hub for certain types of goods and services. Promoting regional supply chains to capture higher value and rents is therefore a critical success factor in sustainable supply chain development. **Chapter 6 of this report provides an in-depth analysis of regional market potential, and looks at a number of high potential products.**

(b) Boosting productivity

Many Ghanaian firms are confronted with challenges of low productivity, in part due to domestic constraints on production. Targeted policies and mechanisms are therefore needed to boost productivity, including the productivity of the Ghanaian workforce.

With regard to **labour productivity**, specific policies should be adopted with a view to:

- (a) *Improving work force efficiency*, including the quality of health, education and training of workers at all levels. A highly educated workforce is an essential prerequisite for effective technology transfer and knowledge spillovers. Education and skills should be looked at in terms of both the skills needed to empower the current work force but also in terms of the skills that future workers will need if they are to adapt to changing industrial needs.

- (b) *Providing an effective and flexible*⁷⁴ *labour market* that takes on board the current high level of informality in the country, maintains a balance between job protection and firms' productivity, and ensures decent job conditions. Specific policies to improve the labour market include:
- (i) *Ensuring mobility of labour, including, in particular: occupational mobility/employability* – i.e., the ability to move from one job to another; *geographic mobility* – i.e., moving from one region or location to another; and *industrial mobility* – i.e., the ability to move across industries.
 - (ii) *Providing continuous training and skills development*: Trained workers are better able to adjust their working patterns or workloads to suit changing demand conditions. Providing regular training courses and training subsidies can also improve labour mobility.
 - (iii) *Offering access to information about job vacancies*: It is important to create an online database that alerts the labour force to job vacancies and relevant qualification requirements so that workers can respond more effectively to changes in the needs of firms.
- (c) *Improving secondary and tertiary education enrolment ratios*. While Ghana performs relatively well at the primary level, an increasing number of children drop out of school as the years pass. As a result, the number of students obtaining a tertiary education remains very low. In 2014, the gross enrolment ratios at the secondary and tertiary levels were only 67 per cent and 15.6 per cent, respectively. The very
- low proportion of young people obtaining a secondary or tertiary education severely undermines the capacity of the labour force to perform highly skilled and sophisticated industrial tasks. The Government must therefore raise the number of years of compulsory education at secondary level and widen access to tertiary education, by:
- (i) Opening more universities and academic and technical and vocational training institutions across the country;
 - (ii) Encouraging more world-class international training institutions to open facilities in Ghana;
 - (iii) Improving the affordability of education and training by providing support/financial incentives to study, including scholarships, bursaries, subsidized fees and apprenticeship schemes. The Government could also encourage the private sector to offer more scholarships and internships to students, particularly in areas where there are insufficient skills available locally.
- (d) *Improving the quality of TVET institutes*, which provide an alternative to secondary school education and prepare graduates for technical positions in the industrial sector.
- (e) *Strengthening tertiary education* and promoting the acquisition of the specialized skills needed in the economy. To that end, Ghana must *develop knowledge clusters and innovation hubs* to encourage collaboration among industries and academic institutions, with a view to promoting innovation and technological process.

74 Labour market flexibility refers to the willingness and ability of labour to respond to changes in market conditions, including changes in the demand for labour and the wage rate.

Countries like Malaysia and Singapore have successfully developed regional centres of excellence to promote higher learning and spillovers in their economies. To start with, existing infrastructures, such as those in Ashanti region, which hosts the University of Science and Technology, or in Western Region, home to the Tarkwa School of Mines and related mining industries, could be strengthened and expanded. Collaboration among universities and local industries can improve the productivity of the latter, notably through the development of more sophisticated industrial processes, and through the sharing of knowledge and ideas among entrepreneurs.

- (f) *Increasing Government expenditure on education.* More resources should be invested in improving educational curriculums, providing schools and training centres with well-supplied laboratories, scientific and technological equipment and software. It is, moreover, critical to invest in teacher training, increase teacher salaries, and incentivize teachers to improve educational outcomes.
- (g) *Upgrading curriculums in line with the needs of the job market* with a view to reducing graduate unemployment. This is particularly important as the country rolls out a new industrial strategy that focuses on higher value added production, which, in turn, requires certain skill sets. More efforts should be done to increase the number of graduated in science, technology engineering and mathematics.
- (h) The Government could also provide *work incentives to improve labour productivity,*

including by encouraging companies to pay overtime and providing tax incentives to workers who take on overtime work.

To enhance **company productivity**, the Government should consider the following:

- (a) *Establishing and coordinating national innovation systems.*⁷⁵ Networks of public and private sector institutions could facilitate the diffusion of knowledge and technology across economic sectors. Such networks could help address market and systemic failures, and promote coordinated action by their members on horizontal issues such as education, training, access to finance, as well as on vertical issues related to specific sectors or technologies. In that regard, the Government must provide incentives to encourage collaboration among firms, universities and research centres. Figure 20 provides a schematic diagram of a national innovation system.

To that end, the Government must:

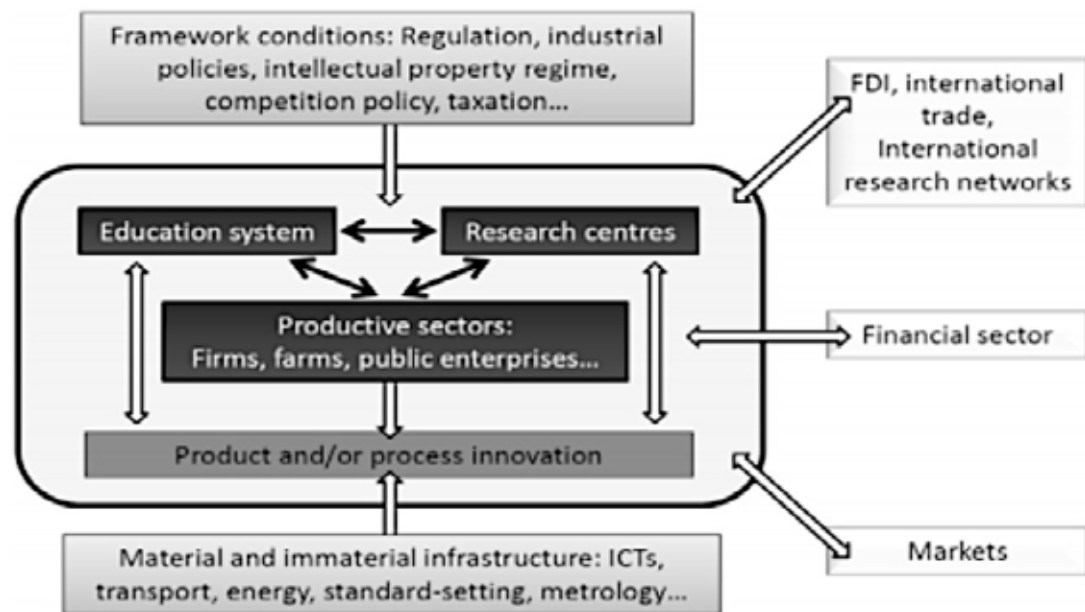
- (i) *Strengthen the innovation climate,* inter alia by establishing a robust IPR regime and strong institutions that help companies protect their intellectual property. According to the WIPO, no patents,⁷⁶ trademarks or industrial designs were filed by Ghana between 2007 and 2016, although a number of trademarks were registered by non-residents. Weak IPR regimes, including weak regulatory frameworks and enforcement mechanisms facilitate intellectual piracy and discourage the development of ideas. They also deter international companies

75 The national innovation systems approach stresses that the flows of technology and information among people, enterprises and institutions are key to the innovative process (OECD, 1997).

76 The limitations of patents as an indicator are well known: not all inventions are patentable and not all patentable inventions are patented. Of the inventions that are patented, the vast majority do not find their way into commercial utilization, so the distribution of the economic and technological significance of patents is highly skewed.

Figure 20

Schematic diagram of a national innovation system



Source: UNCTAD, 2011.

from sharing their know-how or investing in local innovation hubs, as there is a risk that any innovative solution that they support may be copied by competitors. It is, moreover, estimated that thousands of patents and industrial designs in the public domain could be used by SMEs and local industries to boost their productivity. So far, there is very little knowledge of technologies or industrial techniques that could be accessed free of charge;

- (ii) *Establish institutions to support firms' productivity and competitiveness.* The Government should, inter alia, set up a *national competitiveness and productivity council* with the aim of boosting productivity and quality throughout the economy. That institution would help firms comply with global standards and benchmarks, and could develop specific toolkits to

help firms address challenges related to business management, quality and ISO certifications, and just-in-time delivery. It would also monitor firms' productivity and competitiveness, and assess the effectiveness of Government initiatives to promote firms' development. The council could also seek to coordinate R&D, broader research programmes and activities undertaken by training institutions;

- (iii) *Address under-investment in R&D:* There is a need to increase public and private spending and collaboration to provide optimal conditions and incentives for researchers. According to the World Bank, Ghana's R&D expenditure in 2010 as a percentage of GDP was only 0.37 per cent, compared to 0.7 per cent in South Africa, 3.5 per cent in the Republic of Korea,⁷⁷ and 2.7 per cent in Germany.⁷⁸ In addition to public spending, it is

77 In 2014, R&D expenditure as a percentage of GDP in the Republic of Korea was 4.3 per cent.

78 In 2014, R&D expenditure as a percentage of GDP in Germany was 2.9 per cent.

important to provide fiscal incentives to companies to invest in R&D, and particularly in frontier technologies that could offer a competitive advantage to domestic suppliers;

(iv) *Partner with the business community*, particularly in strategic sectors and priority areas for industrial development and supply chain development. Public research institutes and universities need to collaborate with the private sector to facilitate knowledge flows and support innovation. This will help the diffusion of technologies to domestic industries and especially to SMEs in particular, and hence improve firms' performance.

(b) *Support the creation of cost-effective logistics*, inter alia by supporting infrastructure development and storage and handling capacity, as well as initiatives to enhance time management, product quality, and information technology. In particular, it is important to:

(i) *Scale up the availability and quality of infrastructure*. In recent years, the cost of energy and insufficient national and intraregional transport networks and logistics have increased costs across supply chains in Ghana and undermined their productivity. To address energy challenges, Ghana must:

- » Upgrade the current energy network;
- » Explore new sources of energy, including renewable sources;
- » Establish tariff regimes that do not penalize electricity-intensive industries (as is the case today);
- » Address inefficiencies in transport infrastructure by improving the current network, inter alia by constructing more

railway lines and high-speed roads for heavy vehicles and by facilitating goods transport from remote areas to industrial zones, ports and airports;

(ii) Establish dedicated administrative support mechanisms to enhance the country's logistics and related infrastructure. These include:

- » Mechanisms to help suppliers meet quality standards, particularly in the mining sector;
- » Mechanisms to support training and quality, health and safety certification;
- » Technical support to companies to help them address quality challenges and acquire technology and equipment.

(c) *Improve supply chain reliability*: effective Government support is needed to help domestic suppliers to sustain their business activities. In particular, the Government must address all bottlenecks that affect supply chain operations.

(c) Promoting industrialization

If industry is to contribute a larger share of the national economy, it is critical that Ghana takes action to strengthen its industrial policy and establish incentives with the aim of:

- (a) Diversifying the country's production basket and intensifying value creation. Given the importance of the mining sector, upstream and downstream linkages with that sector must, wherever possible, be fully exploited;
- (b) Reducing the role played by the informal economy, inter alia, by facilitating business creation, market access and access to finance;

- (c) Addressing the systemic factors impeding the growth of small firms, which is seriously hindering Ghana's industrial development, and creating incentives and mechanisms to help small businesses to expand.

(d) Coordinating national initiatives

Initiatives to promote local value chains must be consistent with other national policies. For instance, the Ghana National Procurement Agency Limited endeavours to draw attention to products that are made in Ghana, including edible oils, local fabrics, local wax prints, electric meters, computers and fragrant rice. Ghana should also seek to establish local upstream linkages to support value chains centred on foreign imports, including by supporting workshops that can provide product servicing and produce spare parts. It should be noted, however, that the country's large capital requirements for foreign investors discourage foreign SMEs from operating in Ghana. In that regard, the need for foreign inputs should be balanced against the need to shield domestic firms from foreign competition.

To develop its value chains, it is essential that Ghana provides effective support to local suppliers involved in the production of goods that are considered to be of strategic national importance. Suppliers must be empowered to respond to local demand, particularly in terms of quality and scale. Interventions must be short-term in nature and aim to help suppliers build resilience so that, in the medium term, they will be able to operate without State-sponsored support.

In that regard, institutions such as the Ghana Standards Authority should not only review the role they play in establishing industry standards, but also their role in raising the production standards of local firms. The Authority can help improve businesses through, "improved product quality, enhanced customer

satisfaction, cost savings, access to new markets, increased market share and decreased negative environmental impacts". The Authority should also facilitate the dissemination of information, promote capacity-building, and provide technical training, and it should, in particular, provide appropriate technical support to the mining industry on the basis of best practices and in coordination with foreign stakeholders. However, while providing such support, the Authority must take steps to prevent all conflicts of interest arising from the preferential treatment of domestic goods.

A special fund should also be created to support cluster development in mineral-rich regions. Sovereign wealth funds (SWFs) based on natural resource rents have often been touted as a means to accumulate savings and potential funds for investment during commodity-boom periods, and to lock policy makers into more long-term strategic thinking. In that regard, many African countries have endeavoured to emulate Norway's SWF model but with only limited success. However, countries seeking to promote natural resource-based clustering could harness those assets not for abstract future investment but for immediate practical use. Indeed, total SWF assets grew from \$114.27 billion in 2009 to \$159 billion in 2014, primarily as a result of high commodity prices (QGRL, 2016). Many of these funds are ambiguous in their purpose, and can be used for economic stabilization, investment purposes or other uses. At a regional level, the AfDB Africa50 Infrastructure Fund provides an example of how funds mobilized from both domestic and external sources can be used to promote economic transformation. While earmarking portions of SWFs may be frowned upon, the idea of setting some mineral rents aside for re-investment in the mineral value chain – for the benefit of mining activities themselves, as well as for related economic activities – could help to strengthen mineral-sector linkages in Ghana.

Furthermore, the country should use the “One District, One Factory” and “Strategic Anchor” initiatives as a basis for developing linkages between the mineral sector and industry and establishing mineral supply clusters, as those two complementary initiatives could provide a strong framework for the establishment of mineral supply clusters and facilitate the use of mineral endowments as “anchors” for industrial development. Furthermore, the “Agenda for Jobs – creating prosperity and equal opportunity for all” initiative could also help spur industrialization, including, in particular, industries to support mining activities.

It is also important to take into account experiences learned from Ghana’s previous industrialization efforts, including with regard to the business environment and available human capital. Naturally, continued evidence-based analysis to identify the types of economic activity appropriate for each region.

The Government should adopt policies to link mineral supply clusters to the country’s Free Zones, and should follow through with its plans for the creation of a large industrial park in each region. The Government should provide infrastructure investment and other support, in a more direct manner than is currently the case with the Free Zones. Efforts by the Government to create jobs and generate incomes in the mineral sector will lessen the appeal of illicit mining activities, while the creation of mineral supply clusters will facilitate efforts to exploit Ghana’s endowments and economic potential to create sustainable jobs and incomes, harness a greater share of procurement activities, and cement the country’s role as a hub for regional value chains.

2.2.4 Fostering capabilities

To compete effectively in the global market, mining companies must enjoy access to a network of competent suppliers. It is therefore critical to conduct an in-depth capabilities

assessment to identify skills gaps and solutions to address *immediate* shortages and mismatches of skills required by supplier value chains.

Globalization, rapid innovation and technological breakthroughs lead to constantly changing production techniques and rapid skills obsolescence (OECD, 2009). In particular technological progress and robotics are likely to change the types of skill sets that will be needed in the future. Although those innovations may reduce companies’ labour requirements, it is likely that those companies will need to hire even more workers with specialized skills. Unless it takes action now to prepare for such a scenario, Ghana is unlikely to create enough job opportunities for its workforce. The capabilities assessment should allow the Government and companies to monitor which skills are needed by industry as technological progress is made, and forecast future skills needs. Such information may, however, be difficult to gather and analyse effectively.

It is essential to ensure that suppliers have the requisite capabilities and skills to support NSDP ambitions; the NSDP must, moreover, remain flexible and seek to address skills gaps and must serve as a tool that policymakers can use in the design of educational curriculums and training programmes with a view to ensuring labour force readiness and worker employability as the industry evolves.

To deepen understanding of the labour market, Ghana should consider the following:

- (a) Developing a national skills strategy;
- (b) Establishing a labour market observatory;
- (c) Compiling a catalogue of skills development programmes;

- (d) Conducting regular analysis of vacancies and job advertisements with a view to keeping abreast of market needs;
- (e) Conducting regular surveys of the skills of unemployed and under-employed individuals;
- (f) Conducting labour market analysis with a view to assessing the skill sets that each category of workers must have, as well as the skills needed by workers in each area of economic activity;
- (g) Creating a forecasting tool to predict the future job requirements of the labour market.

Critical factors to enhance supply chain development include:

- (i) Capacity development to address skills gaps and mismatches and prepare for future needs, notably by improving the quality of the education system, providing training to suppliers and their employees, encouraging entrepreneurship and supporting R&D. Such actions will facilitate the growth of SMEs and boost their productive capacity.
- (ii) Scaling up capabilities when these are weak or where technological challenges create the need to adapt to more knowledge intensive forms of production.

Key steps to address employment weaknesses and challenges include the following:

(a) Adapting educational curriculums and teaching styles: moving towards more scientific educational training and flexible thinking

In coordination with the private sector, Ghana must update its educational curriculums and programmes so that more emphasis is

given to science, technology, engineering and mathematics (STEM) and the use of ICT. At present some 70 per cent of university graduates in Africa graduate in the social sciences and humanities. In Asia that figure is 53 per cent (OECD, 2012). To prepare young people for work in industry, including the extractive sector, Ghana must ensure that its technical schools, universities and secondary schools teach the skills needed by industry and encourage students to study engineering and science. At the tertiary level, more specialized extractives-related programmes that provide hands-on laboratory experience are urgently needed.

TVET programmes must prepare students for work in a complex, digitally-based environment, and must empower them to process complex information, be creative and communicate effectively. Educational frameworks must, moreover, be rethought to encourage life-long learning opportunities, critical thinking among students and trainees, and promote knowledge sharing across educational fields.

(b) Scaling up institutional capabilities

The Ministry of Education must develop tools for mapping existing skill sets and forecasting future skills needs. This will enable the country to invest in human capacity development ahead of time in order to meet the needs of industry as technology and automation evolve. Education and training in Ghana is often delivered in a piecemeal fashion, and does not reflect the needs of employers. In Ghana, the small proportion of the labour force with a secondary or tertiary education (17.4 and 2.5 per cent in 2010 respectively) is partly explained by this mismatch. Creating “career clusters” may partly help address this issue (OECD, 2009).

Ghana should also take action to *strengthen its academic and training institutions* (a) by facilitating their acquisition of the materials and

Box 3

Career clusters

A career cluster is a grouping of occupations and broad industries based on commonalities. In many parts of the US, these types of initiatives have been customized to expose learners to an entire industry so that they can perceive how different careers interact and rely on one another. Within each career cluster, there are different career pathways with different educational requirements which, in turn, encourage lower-skilled workers to aspire to achieve future goals; career clusters can thus provide workers with the motivation to improve their skills sets and enrol in training courses.

Source: OECD, 2009..

scientific equipment they need to train students and workers effectively; and (b) by ensuring that they can hire well-qualified trainers to teach students the advanced skills and competencies they will need in the workplace. In that regard, it should be noted that certain rural parts of the country have yet to establish high-quality tertiary education institutions or other training facilities.

Furthermore, in order to maximize the use of technology and foster innovation, the Government should facilitate the creation of business incubators, innovation hubs and technological labs, either by providing premises for those activities, by providing financial support for the acquisition of high quality materials and equipment, or by incentivizing private sector operators to host such facilities (in which case, the Government would then provide bursaries to workers to use those facilities). Successful cases in Chile, Finland and Sweden have shown that such facilities are conducive to the development of new ideas and innovative solutions that can be used in the mining sector.

Patents and industrial designs are important tools for the development of technical solutions for the mining sector. Businesses in Ghana do not take full advantage of such tools, particularly those that are already in the public domain. Through sometimes considered “outdated”, those tools can still prove useful, especially for SMEs. Ghana should therefore consider the development of an online portal

for the dissemination of information regarding patents, industrial designs and copyrights.

Ghana should also consider establishing a regional centre of excellence that could provide training to workers from other countries in the ECOWAS region.

(c) Training and skills development

Human resources and skills development lie at the heart of a knowledge-based economy for a number of reasons: firstly, labour productivity is critical to firms’ productivity and hence the quality of the work force matters; secondly, while in developing countries, such as Ghana, a number of industrial activities are still relatively labour intensive, in advanced economies, low-skilled jobs are becoming increasingly automated or off-shored to countries where wages are lower. Consequently, as a country moves up the development ladder, it will inevitably have to absorb job losses in certain sectors. Low-skilled workers tend to be disproportionately affected by economic progress and hence efforts must be made to provide workers with skills that will ensure their transferability to other economic sectors. To achieve that objective, Ghana must:

- (a) Regularly update and review skills strategies in response to changes in the job market.
- (b) Customize training programmes, based on an understanding of current and

- future needs, to reduce skills gaps that impede the recruitment of local workers.
- (c) Provide continuous and on-the-job training to ensure the employability and mobility of workers.
 - (d) As is the case in other countries, skills levels in Ghana show significant geographical variations. These disparities need to be addressed as part of the One District One Cluster policy. Particular attention must be given to rural areas, where sufficient facilities may not always exist and where the demand for skills may be low due to the absence of industries. Simultaneous efforts must therefore be made to provide training and job opportunities.
 - (e) Work with the business community to provide targeted funding to joint educational programmes and research projects. These could be located in dedicated clusters to promote tacit knowledge sharing with the business community.
 - (f) Strengthen partnerships with the business community. The Government should ensure that input from companies about their long-term skills needs is integrated into educational and training programmes.
 - (g) Attract and retain talent in the country. Limited job opportunities, in particular for highly skilled workers, have forced a significant number of those workers to seek employment abroad. To retain such workers, every effort must be made to offer them well-remunerated employment and pleasant working conditions. Career clusters should be exploited to offer such employment opportunities to workers, and recruitment initiatives should focus, inter alia, on the high quality of life provided by those clusters.
 - (h) Reduce informality by encouraging as many workers as possible to enter the formal economy.
 - (i) Provide training to the unemployed and under-employed with a view to reducing high unemployment rates, particularly in rural and remote areas.
 - (j) Ensure that as many individuals as possible who enrol in training programmes complete their programmes of study. To achieve that objective, Ghana could offer flexible vocational training programmes in regions with low retention rates. Such an approach has been successfully adopted in Germany, for example. This would allow those who fail to complete a training programme to re-join that programme within a period of up to five years and to obtain a recognized certificate for competencies gained successfully during the course of their training (OECD, 2009).
- (d) Movement of talent, skills and competencies within Ghana and in West Africa**
- In addition to the above, it is critical to complement actions with measures to address the “software” of value chain upgrading in Ghana, in particular by removing institutional and trade barriers that impede the movement of professionals and the participation of skilled and semi-skilled labour in regional cross-border value chains in West Africa and beyond. In particular, the Government must focus on:
- (a) The movement of skills and talent within the country and the region. Dedicated programmes must be put in place to create well-functioning and up-to-date regional networks of professionals, by profession and by sector (such as the oil and gas, mining and construction sectors) in Ghana and in West Africa so that Ghana can become a hub of excellence.

- (b) The fact that no single regional authority in West Africa has the power to endorse professional qualifications issued in one State so that they are deemed valid in other States. National professional councils must therefore enhance their cooperation in order to facilitate the cross-border movement of professionals.
- (c) Taking steps to ensure that national Ghana's qualifications are recognized abroad. For example, in the field of engineering, the Washington Accord recognizes equivalence in the accreditation of national qualifications. Similarly, signatories to the Sydney Accord confer mutual recognition to holders of engineering technology qualifications while Dublin Accord signatories mutually recognize engineering technician qualifications. With the exception of South Africa, no other countries in Africa are members of these international agreements (Fessehaie and others, 2016). Ghana should therefore consider joining these Accords, and should encourage other West African countries to do so. This will facilitate the recognition of qualifications across the region and the cross-border movement of professionals.

2.2.5 Developing a regional approach to value chains

As highlighted by a gold sector procurement mapping exercise conducted by BGR, there are vast regional content sourcing opportunities in West Africa, and Ghana is well poised within ECOWAS, a region of 15 countries with a combined GDP of \$735 billion (ECOWAS, 2016) to act as a hub for mineral supply chain development. To ensure their successful development, Ghana's suppliers must adopt a structured regional approach as that will offer them economies of scale that cannot be met by Ghana's domestic market alone.

Furthermore, there are numerous opportunities for joint ventures with other firms based in West Africa and beyond (Sutton and Kpente, 2012). Indeed, investors in steel production have noted the potential role of Ghana as a hub for the region (Oxford Business Group, 2013). To achieve that objective, every effort must be made to promote regional cooperation. This requires a clear understanding of how rules of origin and other tenets of trade and industrial policy should be integrated into the current economic landscape (Ramdoe, 2016).

While minerals comprise the bulk of ECOWAS exports, the region's imports are dominated by industrial goods, including, in particular, manufactured goods. The West Africa Common Industrial Policy aims to accelerate industrialization through local processing, an enhanced manufacturing sector and greater intraregional trade, particularly in manufactured goods (Traore, 2016). Ghana is already well poised for trade and accounts for the second highest proportion of the region's trade after Nigeria (Traore, 2016). There is therefore a need for domestic manufacturers to insert themselves into intraregional trade by capitalizing on ECOWAS protocols on trade (News Ghana, 2016). This would involve capitalizing on benefits afforded through the ECOWAS CET and liberalization schedule. However, as countries are increasingly stepping up efforts to support their domestic industries, ECOWAS trade policies may require some review to allow countries to implement their domestic policies, without putting regional integration efforts at risk.

Analysis of opportunities throughout ECOWAS must also examine the mining inputs that would be produced by the proposed mineral supply cluster, and the cumulative demand for outputs of milling and smelting procedures. Indeed, for products such as aluminium and steel, a critical volume must be produced in order to make investing in the milling and

smelting process viable and cost effective and Ghana alone would not be able to achieve efficient economies of scale. Furthermore, the current business environment in the region is far from ideal; this is especially evident when the potential value additions that could be obtained in transformation processes are set against the costs that businesses must incur because of the region's very high energy prices.

Similarly, although there is a legitimate desire to develop downstream processing in mineral producing countries, it is important to bear in mind the significant opportunity costs involved in developing a large number of small regional projects, as opposed to pooling resources together, through regional consensus, to establish only one or two large facilities that can supply the entire region. In that regard, Ghana could harness its mature mining sector, capitalize on its experience in that sector to promote industrial development, and, through its mineral supply clusters, establish itself as a key regional supplier. Port-based free zones could, moreover, be used to facilitate the export of goods produced by regional value chains, and a structured suppliers' development programme would provide local industries with the necessary tools, incentives and frameworks to supply the region.

There is no time for complacency. Indeed, it is vital that action is taken now, especially as Ghana's regional partners, including, in particular Côte d'Ivoire and Nigeria are also seeking to strengthen their positions in the region by capitalizing on their mineral endowments, expanding their mining activities and developing regional supply chains. Ghana must therefore clearly define its goals and identify its comparative advantages so that it can develop its own niche markets. Solid cooperation

with its regional partners will be essential if countries are to avoid a race to the bottom and unhealthy competition among partners. Those States need to develop complementarities and bolster their cooperation, as there is considerable scope for the development of regional suppliers and no country will be able to develop them alone.

2.2.6 State-business relations and collaborative partnerships

Successful practices in Chile and elsewhere have demonstrated the importance of establishing strong collaborative partnerships among all relevant mining sector stakeholders, including firms, Governments, and research institutions, in efforts to strengthen the competitiveness and productivity of local mining-related business enterprises.

Effective State-business relations are particularly important, and Governments that have succeeded in implementing ambitious reform programmes have often established structured dialogues with the private sector. Indeed, in order to advance their reform agendas, Governments should regularly seek input from the business community so as to achieve consensus on industrial development initiatives and policies, as well as on practical measures to support business development. Governments may be able to provide greater support to national businesses, including, in particular, SMEs, and may have greater success in establishing mechanisms to promote business development, including business clusters, if they ensure that other sectors of the economy are not neglected. At the industry level, it is equally important to promote structured engagement across industries with a view to defining common positions and adopting coherent policies.

Chapter 3: Value contribution of the mineral sector in Ghana

3. Value contribution of the mineral sector in Ghana

Mineral resources have the potential to create considerable socioeconomic value and spillovers, provided that linkages with the mineral sector are fully exploited. The achievement of that objective remains a significant challenge for many resource-rich countries, whose economic trajectories have shown that, while it is possible to use the resource sector as a springboard for broader economic development, the way to do so is paved with complications. *The AMV outlines seven core dimensions of linkages, which are explained in detail in Annex 3.* These seven dimensions are all interconnected and complementary, and the effectiveness of one is dependent on the realization of the others.

3.1 Assessing mineral production capacity and reserves

Ghana is endowed with vast reserves of mineral resources. The main ones exploited on a commercial basis are gold, petroleum, diamond, bauxite and manganese. It also has proven reserves of iron ore, lithium, limestone, brown clays, kaolin, mica, columbite-tantalite, feldspar, chrome, silica sand, quartz or salt, while minor deposits of ilmenite, magnetite and rutile have been found (Republic of Ghana, 2014).

The *mining sector* in Ghana includes 16 large-scale mining companies, of which 14 produce gold,⁷⁹ one produces bauxite and one manganese. There are over 300 registered small-scale mining groups and 90 mine support service companies⁸⁰ (GIPC, 2016). The Minerals Commission regulates and oversees the sector, but is not involved in production activities.

The *petroleum industry* is divided into upstream, midstream and downstream sectors. Upstream sector activities include exploration and production activities. Currently, Ghana has three major oil fields, namely the Golden Jubilee field; the Tweneboa-Enyira-Ntomme (TEN) field, operated by Tullow, and the Offshore Cape Three Points (OCTP) field in production, and one field identified but yet to be developed. Activities are supervised and regulated by the Petroleum Commission. Ghana also runs a State-owned oil company, GNPC,⁸¹ which is a partner to all petroleum agreements and is involved in petroleum production activities on behalf of the nation. Major oil and gas operators, such as Tullow Ghana, Anardarko, Kosmos Energy, ENI and Hess Ghana, are active in Ghana. The midstream sector involves all activities between the oil well head and the refinery. It includes

79 These are (i) Newmont Mining Ahafo (ii) Newmont Mining Akyem; (iii) AngloGold Ashanti Iduapriem; (iv) AngloGold Ashanti Obuasi; (v) Gold Fields Tarkwa; (vi) Gold Fields Damang; (vii) Golden Star Resources; (viii) Asanko Gold; (ix) Endeavour Mining; (x) Perseus Mining (xi) Kinross Gold; (xii) Asante Gold; (xiii) Castle Minerals and (xiv) Xtrada Gold Resources.

80 <http://www.gipcghana.com/invest-in-ghana/sectors/78-mineral-processing.html>, accessed on 19 February 2018.

81 The GNPC was established in 1983 by PNDC Law No. 64, to support the Government's objective of providing an adequate and reliable supply of petroleum products and reducing the country's dependence on crude oil imports, through the development of the country's own petroleum resources. The 1984 Petroleum [Exploration and Production] Law (PNDC Law 84 of 1984) was subsequently enacted to provide a regulatory framework for the exploitation of the country's hydrocarbon resources. PNDC Law No. 84, establishes the contractual relationship among the State, GNPC and prospective investors in upstream petroleum operations. This law also grants GNPC the right of entry into any open acreage to undertake exploration activities. The GNPC started operations in 1985.

the transportation of oil and gas from oil fields to refineries onshore and the storage of petroleum. The downstream sector comprises onshore operations that revolve around refining, distribution, and marketing of petroleum products. That sector is managed by the National Petroleum Authority. There is currently only one petroleum refinery, namely the Tema Oil Refinery, which has not operated at full capacity for several decades.

It is estimated, however, that only between 10 and 20 per cent of Ghana's mineral resources are currently being exploited (Minerals Commission, 2016).⁸² This figure underscores the scale of Ghana's untapped mineral potential, which could potentially foster sustainable development. However, as the history of economic development in Ghana has shown, the use of the country's resources to promote development is not an automatic process but must be supported with a set of enabling policies and frameworks.

The main mineral resources currently exploited in Ghana are:

- (a) **Gold**, which represents 90 per cent of Ghana's mining production. Ghana is a significant gold producer, and is the second largest gold producing country in Africa after South Africa. Globally, Ghana

accounted for 2.9 per cent of total global production in 2016 and 3.1 per cent of proven global gold reserves. According to the Chamber of Mines, the country was the world's 10th largest gold producer in 2016.⁸³ Gold production in value terms increased by a record 486 per cent in 2016. This was the result of both the price and volume increases, in particular due to the following circumstances:

- (i) An average realized price increase of 10.0 per cent, to \$1,280 per ounce;
- (ii) A new production stream by Asanko Gold Ghana Ltd.;
- (iii) Increased output by AngloGold Ashanti and Newmont; and
- (iv) A substantial increase in the purchase of gold by the Precious Minerals Marketing Company (PMMC). In an attempt to counter illegal mining activities in Ghana, a 2016 Government directive required all licensed precious minerals buying companies (including those operating in the gold sector), to channel their exports through PMMC. As a result, PMMC purchases of gold increased from 267,662 ounces in 2015 to 1,570,029 ounces in 2016.

Table 16
Ghana's gold production

	2012	2013	2014	2015	2016
Total gold production ('000 ounces)	3.166	3.193	3.168	2.849	4.130
Average gold prices (\$ per ounce)	1.669	1.411.2	1.266.4	1.161.1	1.280
Contribution of gold to export revenues	41.6	36.1	33.2	31.1	44.2
Ghana's share of global gold production	3.3	3.5	3.4	3	2.9

Source: Ghana Chamber of Mines, 2017.

82 Source: <https://www.newsghana.com.gh/ghana-seeks-investors-for-iron-ore-and-bauxite-mining-official/>, accessed on 19 February 2018.

83 The World Gold Council ranked Ghana as the world's 11th largest producer in 2016.

Table 17

Ghana's diamond production

	2012	2013	2014	2015	2016
Production ('000 carat)	232.9	169	242.3	174.2	141.5
Production prices (\$ per carat)	43.65	39.86	41.87	36.88	30.42
Export prices (\$ per carat)	52.91	46.27	44.65	37.25	34.48
Total exports of diamonds, F.O.B. (\$ million)	10.5	5.8	9.1	4	2.1
Share of total exports (%)	0.08	0.04	0.07	0.04	0.02
Ghana's share of global diamond production (%)	0.18	0.13	0.19	0.14	0.11

Source: Kimberley Process Statistics; 2017; Bank of Ghana, 2017; Ghana Chamber of Mines, 2017.

In 2016, it was estimated that large-scale mining industries account for 62 per cent of total gold production in Ghana, while artisanal small-scale miners produced the remaining 38 per cent (Ghana Chamber of Mines, 2017).⁸⁴

(b) **Diamonds.** Ghana's diamond output has declined in recent years.⁸⁵ Indeed, production fell from 894,783 carats in 2007 to only 141,530.1 carats in 2016, largely on account of falling production of diamonds by small-scale miners.

Two-thirds of diamonds extracted are gemstone quality, while the remaining third are used in industry. Diamond mining in the country is concentrated in the Birim Valley, near Akwatia. Most diamonds are mined by small-scale miners from alluvial as well as in-situ deposits. Ghana is a small producer within Africa and a small player by global standards, with a share of only 0.1 per cent of world production in 2016, when its diamond exports totalled \$2.1 billion – a 47.5 per cent decline from 2015, reflecting both a fall in production

(from 174,200 carats in 2015, to 141,500 carats in 2016) and a fall in the export price of diamonds (from \$37.25 in 2015 to \$34.48 in 2016).

(c) **Bauxite, manganese and iron ore.** As shown in Figure 21a, bauxite production in Ghana has fluctuated since 2000 despite significant reserves. The country's only bauxite mine produced 1,101,605 metric tons in 2016. Manganese reserves at the country's only manganese mine, located at Nsuta in Western Region, were estimated at 24.4 million tons as of June 2011. It is estimated that only 3 per cent of the deposit has been mined. In 2016, Ghana produced 1,562,769 metric tons of manganese, a 57 per cent increase in production compared to the previous year, on account of a resurgence in global demand for iron and steel. There is still substantial potential for future manganese exploitation. Figure 21b details manganese production between 2000 and 2016.

84 See performance of the Mining industry in 2016: <http://ghanachamberofmines.org/wp-content/uploads/2016/11/Performance-of-the-Mining-Industry-in-2016.pdf>.

85 Inter alia, because of a United Nations-sponsored ban on the export of diamonds from Ghana, imposed in 2006 due to suspicions regarding conflict minerals trading. To address this, the country launched the Kimberley Process Certification Scheme in 2007.

Figure 21a
Bauxite production in Ghana

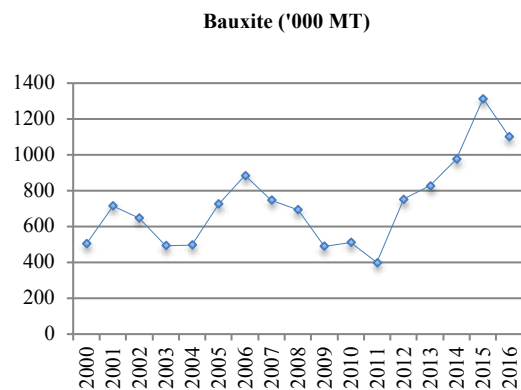
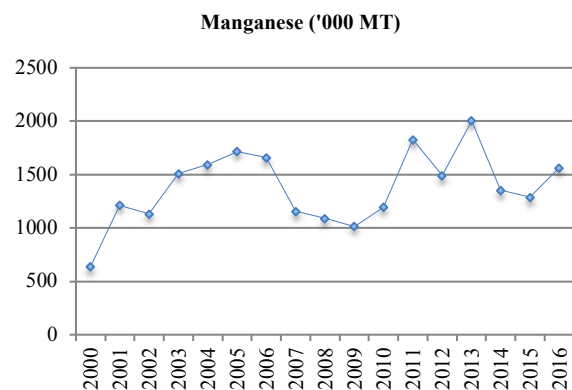


Figure 21b
Manganese production in Ghana



Source: Ghana Chamber of Mines, 2017.

Ghana has proven commercially exploitable iron ore reserves in three major iron deposits, namely the Opon-Mansi lateritic iron deposit, the Shieni sedimentary iron deposit and the Pudo titaniferous-magnetite deposit. Other smaller iron deposits include the Adum Bansa deposit in Western Region and the Akpafu deposit in Volta Region. To date, the economic contribution of iron ore has been minimal due to insufficient infrastructure (poor railway links) and soaring energy prices, which have made downstream activities uncompetitive.

(d) **Other industrial minerals**⁸⁶ These can be broadly defined as including all non-metallic non-fuel minerals extracted and processed for industry end-users, consumed in non-metallurgical applications and/or manufactured products (World Bank, 1987). They can be classified in three economic groups: (i) low price, large volume commodities, such as sand, gravel and construction materials; (ii) medium-to high price large volume commodities such as chemicals and

fertilisers (phosphates, salts, sulphur and potash) and (iii) high price, small volume commodities such as feldspar, talc, barite or industrial diamonds.⁸⁷

The value and utilization of these industrial minerals vary substantially: for example, low price, large volume commodities are in high demand locally, in particular when countries are industrializing and are building infrastructure, cities and houses, as is the case today in Ghana. Demand for those commodities tends to decrease as countries industrialize (as is now happening in China). By contrast, high price low volume commodities are in high demand in industrialized countries, and are therefore easily traded on global markets.

Ghana has vast reserves of various industrial minerals, including feldspar, granite, kaolin, limestone/dolomite, marble, gravels, salts, silica sand and brown clays.

The exploitation of industrial minerals and adding value to them could promote effective

86 Industrial minerals are geological materials that are mined for their commercial value. They are neither fuel (fuel minerals or mineral fuels) nor sources of metals (metallic minerals). They are used in their natural state or after beneficiation either as raw materials or as additives in a wide range of applications (Source: GIPC).

87 Source: The Mining Journal, 1998.

linkages with other economic sectors and could help reduce Ghana's reliance on imported substitutes.

Future demand for these minerals is likely to exceed current projections. Indeed, in the light of the Government's plans for the development of new cities and industrial clusters, and the upgrading of the country's infrastructure, the construction industry alone could achieve significant value addition to Ghana's abundant yet under-utilized low price, large volume commodities.

(e) **Oil and gas production.** Ghana discovered oil in commercially exploitable quantities in 2007, making it a new frontier producer of hydrocarbons in West Africa. The country's petroleum reserves are currently estimated at 2 billion barrels (KPMG, 2013). Ghana is also estimated to have between 1.5 and 1.7 trillion cubic feet of gas reserves (Ghana Export Promotion Council, 2017).

Commercial production, which began in December 2010, has fundamentally reshaped the country's economic outlook. Indeed, thanks to oil and gas exports, real GDP growth in Ghana increased from an average of 6.5 per cent in the 2000s to reach 15 per cent in 2011, (ICMM, 2015) before declining again as global oil prices fell. Furthermore, in 2016, the sector contracted by some 13.5 per cent as a result of a significant technical problem in the Jubilee field.

3.2 Policy and regulatory frameworks relevant to the mining sector

To more effectively leverage its mineral resources with a view to spurring development, the Government of Ghana adopted

the **Minerals and Mining Policy Framework** in 2014. The Framework aims to consolidate various policies relating to the mining sector into one main guiding document, in line with the 1992 Constitution, the Ghana Growth and Poverty Reduction Strategy II, the Better Ghana Agenda and the Natural Resource and Environmental Governance Programme.

The Framework aims, inter alia, to promote economic diversification, reduce the country's dependence on the mining sector, promote economic linkages to maximize domestic value creation and capture, boost investment, increase tax revenues, promote infrastructure development and create better employment opportunities for those working in artisanal and small scale mining.

The 2006 Minerals and Mining Act superseded the 1986 Minerals and Mining Act. It was adopted following extensive consultations with customary landowners and it includes notification, consultation and compensation provisions (International Mining for Development Centre, 2015).

A number of supporting regulations complement the 2006 Act. Of particular interest are the Minerals and Mining (General) Regulations L.I. 2173 of 2012, which establish requirements regarding local content for goods to be sourced in Ghana by mining companies and their contractors, and Regulation L.I. 2174 of 2012, which also establishes conditions for the provision of such services, including local sourcing requirements.

3.2.1 Overview of other relevant policy frameworks

Following the 1980s debt crisis, Ghana, like many other African countries, adopted a series of economic reforms in line with the commitments it had made under a World

Table 19

Legal and regulatory frameworks applicable to the mining and petroleum sectors

Governing mining policy frameworks	
1992 Constitution of Ghana	
Overarching framework	2006 Minerals and Mining Act (Act No. 703) 2016 Minerals and Mining Act (Act No. 900) 2014 Minerals and Mining Policy Framework
Supporting legislation	
Regulation and management of resources	1993 Minerals Commission Act (Act No. 450)
Revenue Management	2000 Internal Revenue Act (Act No. 592) as amended, and its associated regulations 2010 Minerals (Royalties) and Mining Act (Act No. 794) as amended 1998 Value Added Tax Act (Act No. 546) as amended, and its associated regulations 1996 Customs and Excise (Duties and Other Taxes) Act (Act No. 512) 2012 Transfer Pricing Regulations, (L.I. 2188) 2015 Income Tax Act (Act No. 896)
Investment policy	2013 Ghana Investment Promotion Centre Act (Act No. 865)
Local content policy	2012 Minerals and Mining (General) Regulations (L.I. 2173)
Support Services	2012 Minerals and Mining (Support Services) Regulations (L.I. 2174)
Compensation and Settlement	2012, Minerals and Mining (Compensation and Settlement) Regulations (L.I. 2175)
Licensing	2012 Minerals and Mining (Licensing) Regulations (L.I. 2176)
Health and safety	2012 Minerals and Mining (Explosives) Regulations (L.I. 2177) 2012 Minerals and Mining (Health, Safety and Technical) Regulations (L.I. 2182)
Environmental Protection	Environmental Policy of Ghana 1994 Environmental Protection Agency Act (Act No. 490) 1999 Environmental Assessment Regulations (L.I. 1652)
Water management	1996 Water Resources Commission Act, (Act No. 522)
Forestry	1999 Forestry Commissions Act (Act No. 571)
Land	Land Policy of Ghana
Other specific legislation applicable to the artisanal and small scale mining sector	
Registration and licensing	Small-scale Gold Mining Law (PNDC Law No. 218)
Health and safety	1989 Mercury Act (Act No. 217)
Authorisation to buy and sell gold to ASM	Precious Minerals Marketing Corporation Law (PNDC Law No. 219)
Relevant Codes of Practice	Code of Practice for Small-scale Gold-mining Operations

Source: Authors' compilation.

Bank structural adjustment programme.⁸⁸ The 1983 Economic Recovery Programme⁸⁹ provided for significantly less direct and indirect Government involvement in the mining sector⁹⁰ and other productive activities. Instead, the Government was encouraged to:

- (a) Improve the business climate to enhance the competitiveness and efficiency of the mining sector;
- (b) Attract foreign investment with a view to reducing its daunting fiscal deficit;
- (c) Use fiscal revenues from the mining sector to reduce the country's public debt; and
- (d) Generate new cash flows through investments and tax revenues.

As a result, between 1984 and 1995, there were significant institutional developments⁹¹ and policy changes, including incentives to boost foreign capital investments in the

mining sector. Additionally, the Government took steps to privatize the country's State-owned mines,⁹² thereby reversing the nationalization trend that had prevailed in the country prior to the 1980s.

Ghana passed its first Minerals and Mining Act in 1986 to provide additional support to the mining sector. The Act provided for a number of tax incentives⁹³ and diminished the participation of the State in mining activities by restricting the State's stake in mining investment initiatives to 10 per cent⁹⁴ (Akabzaa, 2009).

Following those reforms, Ghana has witnessed a significant boom in foreign investment inflows and subsequent increase in production, in particular in the gold sector, making the mining sector the single most important export sector, foreign exchange earner and fiscal contributor (Akabzaa and Darimani, 2001). However, despite the key role that the sector has played in the economy, much of its potential remains untapped.

88 The broad objectives of the structural adjustment programme were to establish an incentive framework to stimulate growth, encourage savings and investment and strengthen the balance of payments, improve resource use, particularly in the public sector, and ensure fiscal monetary stability. According to the World Bank, the primary objective of mining-rich countries should be the maximization of tax revenue, and this objective could only be achieved by a new division of labour whereby governments would focus on industry regulation and promotion while private companies would take the lead in operating, managing and owning mineral enterprises (Source: The World Bank, 1992. Strategy for African Mining, World Bank Technical Paper No.181, African Technical Department series).

89 The major components of the Programme included: (i) a flexible exchange rate policy; (ii) intensive policies for the export sector, especially cocoa and mining; (iii) the gradual removal of price and distribution controls; (iv) prompt adjustment of administered prices to reflect changes in the exchange rates and other costs, including energy prices; (v) reducing or eliminating budget subsidies; (vi) initiation of sector specific rehabilitation and infrastructure programmes to improve management and restore the potential for growth.

90 The period between 1965 and 1980 was characterized by the declaration of permanent sovereignty over natural resources by many developing countries, primarily through large-scale nationalization of mineral extractive facilities, the renegotiation of existing arrangements and the creation of State enterprises and numerous commodity producer associations. Ghana's mining industry was State controlled from 1957 to 1986. The Government's main objectives in the acquisition of mines were the protection of employment and access to the foreign currency generated by the mines (Akabzaa and Darimani, 2001).

91 A Minerals Commission was established in 1986, the Geological Survey Department was strengthened and created the Minerals Commission. The first Minerals and Mining Law was the PNDC Law No. 153.

92 According to Akabzaa and Darimani, 2001, the privatization of mines was carried in a variety of ways including: i) the systematic disengagement of the State, through the sales of shares to the private sector. In the case of Ashanti Goldfields Corporation, the Government progressively reduced its stake to 19 per cent in 1998, from its original 55 per cent stake; in the case of Ghana Bauxite Company, the Government reduced its shareholding from 55 per cent to 20 per cent in 1998; ii) complete transfer of State-owned mines to the private sector while maintaining a statutory 10 per cent free equity stake in those mines.

93 For example, corporate tax rates for mining companies in Ghana decreased from between 50 and 55 per cent in 1975 to 45 per cent in 1986 and 35 per cent in 1994 (Campbell, 2003; Akabzaa and Darimani, 2001). Companies received tax breaks on import duties on equipment and accessories necessary for mining production. Furthermore, mining companies were allowed to keep a minimum of 25 per cent of foreign exchange in an external account for various purposes including meeting capital requirements necessary for production and dividend payments as well as expatriate labour costs.

94 Initially with the option of increasing its participation to 20 per cent, but this was abolished in 2014.

A revised Minerals and Mining Act (Act No. 703) was passed in 2006. One of the objectives of this new Act was to promote a “*localization*” policy with a view to facilitating production linkages, an element that was largely missing in the earlier rounds of reforms, given their focus on revenue and the hands-off policies of the State in productive activities. In particular, section 50(3) of Act No. 703 of 2006 sought to increase the participation of local labour in the industry.

Regrettably, however, there were no specific instruments for implementing the Government policy and enforcing compliance. To address that shortcoming and in order to increase the level of participation of Ghanaians in the mining sector, the Minerals and Mining (General) Regulations L.I. 2173 was passed in 2012.

The Minerals Commission is responsible for monitoring and enforcing compliance with Government policy. Severe penalties may be imposed in cases of non-compliance.

The Ghana Investment Promotion Centre Act (Act No. 865 of 2013) stipulates the conditions under which domestic and foreign investors must operate. While certain economic sectors are the exclusive purview of Ghanaians,⁹⁵ the Act facilitates investment in all other sectors.

A number of incentives for investors and conditions are stipulated in the 2013 GIPC Act. These include the following:

- (a) Free repatriation of dividends and profits;
- (b) Duty exemptions on plants, equipment and machinery;

- (c) Specific incentive packages for strategic or major investments;
- (d) Minimum capital requirements for foreign investments as follows:
 - (i) In the case of a **joint venture with a Ghanaian company**, non-Ghanaian firms must invest foreign capital of at least \$200,000 or its equivalent worth of capital goods by way of equity participation, with no less than 10 per cent Ghanaian ownership.
 - (ii) Where the enterprise is to be **wholly owned by a foreigner**, there must be an investment of foreign capital of at least \$500,000 or its equivalent worth in capital goods by way of equity capital.
 - (iii) In the case of a **trading enterprise involved only in purchasing and selling of goods** owned either wholly or partly by a non-Ghanaian, there must be investment of foreign capital of at least \$1,000,000 by way of equity capital and the enterprise must additionally employ at least 20 skilled Ghanaians.
 - (iv) The minimum capital requirements as stated above do not apply to portfolio investments or enterprises established exclusively for export trading.

In addition, **automatic expatriate quotas** exist for all foreign firms as follows:

- (a) Firms with a paid up capital of between \$50,000 and \$250,000 have a quota of one person.

⁹⁵ These are the sale of anything in a market, petty trading, hawking or selling from a kiosk, operation of taxi services and car hire services, all aspects of pool betting business and lotteries, except football pools, and the operation of beauty salons and barber shops.

- (b) Firms with a paid up capital of between \$250,000 and \$500,000 have a quota of two persons.
- (c) Firms with a paid up capital of between \$500,000 and \$700,000 are entitled to a quota of up to three persons.
- (d) Firms with a paid up capital of more than \$700,000 are entitled to a quota of up to four persons.

In order to encourage exports, Ghana established the Free Zones in 1995⁹⁶ to promote the processing and manufacturing of goods that are, primarily, destined for foreign markets and to encourage the development of commercial and service activities at seaport and airport areas. These Zones offer infrastructure, fiscal incentives and customs rebates for export-oriented industrial activities. To qualify for incentives under the Free Zone Act, firms have a **minimum export requirement of 70 per cent** of their total production.

3.2.2 Summary of fiscal regimes applicable to the mining sector

Table 20 illustrates the recent evolution of the fiscal regime applicable to the mining industry. Over the years, various tax reforms that have been carried out with a view to modernizing the sector, facilitating investment, improving the competitiveness of the industry and increasing mineral outputs and exports.

96 The Free Zone Act was adopted in 1995. Free Zones are managed by the Ghana Free Zone Board.

Table 20

Fiscal regimes applicable to large-scale mining operations

Item	Act No. 703, 2006	2012	2014 ⁹⁷	Applicable legal framework/ remarks
Taxes				
Surface rentals				
Mineral Rights (Mining Leases)	One-time payment	Annual payment	20%; straight line	Minerals & Mining Licences Regulations 2012; L.I. 2176; effective September 2013
Annual ground rent			GHC15/ acre	Prescribed
Corporate income tax rate, applied at federal level	25%	35%	35%	
Mineral royalty	3 - 6%	5%	5%	On gross market value of mineral sales
Government equity participation ⁹⁸	10% free carried interest	10% free carried interest	10% free carried interest	Any further participation to be agreed
Withholding taxes			Interest: 8%. Dividends: 8%. Royalties: 10% Management & Technical Services fees: 20%	
Income tax rates			Goods & Services (Residents): 5%. Goods & Services (Foreigners): 15% Non-Resident Individual: 20%	
Transfer Pricing Regulations, L.I. 2188, 2012			Regulations require taxpayers to demonstrate that all transactions between them and their related entities are carried out at arm's length	Effective Date: July 27, 2012
Incentives				
Initial capital allowance ⁹⁹	80%	20% straight line	20% straight line	Act NO. 839; Third schedule to IRA, Act No. 592, amended
Carried forward losses for purpose of taxation	5 years	5 years	5 years	
Off-shore retention of sales	25 - 80%	25 - 80%	25 - 80%	25 - 80%
Mineral duty	Exempt	Exempt	Exempt	Exempt
Import duty	Exempt		Mining list exempt	Applicable for plants, machinery and equipment exclusively for mining
VAT			Mining list exempt	Applicable for machinery apparatus and appliances designed for mining
Import licence tax or import levy	Exempt	Exempt	Exempt	
Other fees	A 0.5% assay fee will be introduced once the assay laboratory is operational			
Stability agreements	All companies have stability agreements for a period of up to 15 years			
Development Agreement	For investments of more than \$500 million, plus more favourable terms than under existing legislation			

Source: GHEITI, 2014.

97 A (failed) attempt was made in 2014 to introduce a 10 per cent windfall tax, but following a fall in the price of gold and ensuing concerns raised by mining companies, the bill was not passed by parliament. The objective of this proposal, put forward when gold prices were particularly high, was for the Government to increase its tax revenues.

98 Does not apply to Newmont Development Agreement.

99 Capital allowances are granted, in lieu of depreciation, for each year of assessment in respect of depreciable assets owned by a company and used in carrying out its business activities.

Table 21

Corporate income tax and mining royalty rates: a cross-country comparison

Country	Corporate tax rate (%)	Method	Gold (%)
Australia	30	Royalty basis	2.5 – 5
Brazil	25	Royalty basis	1
Canada	25 – 31	Profit or net basis	2 – 16
Chile	20	Profit or net basis	0 – 14
China	25	Royalty basis	0.5 – 4
Ghana	25	Royalty basis	5
Peru	30	Profit or net basis	6 – 21.5
South Africa	28	Royalty basis	0.5 – 7

Source: KPMG, 2015.

Table 21 shows that Ghana's fiscal regime for the mining industry is competitive by global standards. Its regime has remained relatively stable over the years, despite the increase in corporate tax rates and the standardization of royalty rates introduced pursuant to the 2014 Mining Code.

Royalties, at a rate of 5 per cent, are paid to the State and redistributed as follows:

- (a) Eighty per cent is retained by the Government and paid into the Consolidated Fund
- (b) Ten per cent is paid into the Minerals Development Fund
- (c) Ten per cent is paid to the Office of the Administrator of Stool Lands (OASL), which retains 10 per cent of that amount to cover administrative expenses. The remaining 90 per cent is apportioned as follows:
 - (i) Fifty-five per cent to District Assemblies
 - (ii) Twenty-five per cent to Stools

- (iii) Twenty per cent to Traditional Councils

The country's mining legislation provides for stabilization clauses in mining contracts and development agreements between companies and the Government. Stabilization clauses shield mining companies from legislation that could negatively affect their operations for up to 15 years. Companies that invest more than \$500 million can negotiate development agreements, which provide for favourable tax and royalty rates, licence fees and payment schedules or allow them to hire additional expatriate workers.

The fiscal regime applicable to ASM, summarized in Table 22, is simpler than the regime applicable to large-scale mining operations. ASM operators are not entitled to negotiate more favourable fiscal terms with the Government.

3.2.3 Local content policy in the mining sector: the legal framework

Prior to the adoption of the 2006 Minerals and Mining Law Act (Act No. 703), which set

Table 22

Fiscal regime applicable to ASM

	Provision
1. Application Fees	As prescribed in relevant regulations
2. Royalty Rate	Currently 5% on gross market value
3. Ground rent	Payable to the landowner
4. Annual Mineral Rights Fees	Payable the Minerals Commission as prescribed
5. Income tax	35%
6. Capital allowance	Same as large-scale mining operations
7. Import duty	Plant, machinery, equipment exclusively used for mining operations are exempt
8. Assay fee	0.5 %

Source: Minerals Commission.

forth Ghana's first "localization policy" with a view to stimulating production linkages in the country, there had been relatively little local sourcing.

Article 50(3) of Act No. 703 calls for eventual "localization"¹⁰⁰ of mining staff, while Article 103(2) calls for holders of mineral rights to, "give preference in employment to citizens to the maximum extent possible and consistent with safety, efficiency and economy."

With regard to the **sourcing of goods and services**, Article 103(1) of Act No. 703 calls on the holder of a mineral right "...in the conduct of mineral operations, an in the purchase, construction and installation of facilities, (to) give preference to:

- (a) Materials and products made in Ghana;
- (b) Service agencies located in the country and owned by:
 - (i) Citizens;

- (ii) Companies or partnerships registered under the Companies Code 1963 (Act No. 179) or the 1962 Incorporated Private Partnerships Act (Act No. 152), and
- (iii) Public corporations to the maximum extent possible and consistent with safety, efficiency and economy."

Act No. 703 of 2006 proved insufficient to achieve that objective because it did not explicitly call on companies to take action to boost local procurement and employment and did not provide for effective enforcement mechanisms.

To address that gap, the Government passed the **Minerals and Mining (General) Regulations L.I. 2173** in 2012 (the local content regulation), which specified that Act No. 703 was applicable to:

- (a) Holders of reconnaissance and prospective licences (i.e., exploration companies);

100 The Act defines "localization" as a training programme designed with the aim of eventually replacing expatriate personnel with Ghanaian personnel.

- (b) Holders of mineral licences (i.e., mining companies involved in extraction activities); and
- (c) Mine support service providers.

L.I. 2173 clarified the interpretation of Act No. 703, particularly with regard to the following four key areas:

- (a) The employment, promotion and training of local workers, limitations on the number of expatriates that can work for a company, the need to set aside certain positions for local staff, and timeframes for implementation of the provisions of Act No. 703;
- (b) The procurement of locally produced goods and services;
- (c) Compulsory reporting requirements; and
- (d) Strict penalties for non-compliance.

L.I. 2173 underscored the intention expressed in article 103(1) of Act 703 of 2006, by re-stating that companies must provide *preferential procurement* to Ghanaian suppliers to the, “*maximum extent possible and consistent with safety, efficiency and economy.*” Mining companies (i.e., holders of mineral rights and their partners registered in Ghana) as well as service agencies located in Ghana and/or owned by Ghanaians are obliged to comply with that requirement.

Furthermore, in assessing procurement bids for goods or services, tenders with the highest level of Ghanaian participation in terms of ownership and management by Ghanaians and employment of Ghanaians must be selected in cases in which those procurements bids are within 2 per cent of each other on price (CCSI, 2014).

With respect to **local procurement**, L.I. 2173 requires companies to submit their **procurement plans** for a 5-year period. As such, no target is set by the Regulation. Instead, it is the mining companies themselves that decide

Table 23

Mining procurement requirements pursuant to the Minerals and Mining (General) Regulations (L.I. 2173)

Regulations	Specific requirements
5-year procurement plan	Mining lease operators and their subcontractors must submit long-term and annual procurement plans outlining (i) targets for local procurement covering at least items in the local content list and (ii) specific support to providers or suppliers; (iii) other measures to develop the supply of local goods and services, including broadening access to opportunities and technical and financial assistance.
Preference to local suppliers	Preference must be given to materials and products made in Ghana and service agencies located in Ghana and owned by Ghanaians or companies registered in Ghana, “to the maximum extent possible and consistent with safety, efficiency and economy”.
Tender adjudication	Bids with the highest level of Ghanaian participation must be selected, where bids are within 2% of each other on price.
Numerical requirements	The Minerals Commission is required to establish and maintain a local procurement list, updated annually, which outlines a list of specific goods and services that must be procured in Ghana.

Source: Regulations L.I. 2173; CCSI, 2014.

which targets they will set, by declaring how much they are willing to procure from local suppliers on an annual basis. The Minerals Commission assesses their performance on the basis of these plans every year. The plans must also contain measures to support the development of local suppliers.

With respect to **preference** to local suppliers, while L.I. 2173 does not expressly define the terms "**local**" and "**content**", it nonetheless qualifies the term "**preference**" to mean:

- (e) Materials and products *made in* Ghana, although there are no specific rules of origin to define how much value must be added in Ghana for a product to qualify as locally manufactured; and
- (f) Service agencies *located* in Ghana and owned by *citizens*, firms or partnerships registered under Ghanaian law. Here the key requirements are location and registration, although ownership of capital or local equity is not a prerequisite.

Box 4 provides further clarification as to the meaning of "local" and "content" pursuant to Ghanaian legislation.

3.3 Weaknesses and challenges of existing policy frameworks

The list of products stipulated in the Minerals and Mining (General) Regulations L.I. 2173 includes both critical supplies and non-core items, reflecting what can feasibly be sourced in Ghana at reasonable cost given current supply capacities. Some items, such as plastic bags, calico bags and bullion boxes, are relatively easy to produce locally because barriers to entry are low for producers and because fabrication poses few technical challenges. Other items, such as grinding media, explosives and reagents, require a considerable investment of capital and must comply with precise technical specifications in order to meet rigorous health and safety standards and the critical demands of the mining industry.

Box 4

Some definitions of "local" in Ghana

"Citizens" are defined as:

- a. Individuals who are citizens of Ghana;
- b. Partnerships or associations composed exclusively of individuals who are citizens of Ghana;
- c. Bodies incorporated under the Companies Code, 1963, certified by the Minister to be controlled by the Republic, or whose memberships are composed exclusively of citizens; and whose directors are exclusively citizens;
- d. Public corporations established by or under an enactment (Minerals and Mining Act 2006, Art. 111).

The 2006 Minerals and Mining Act defines "localization" as "*a training programme designed towards the eventual replacement of expatriate personnel by Ghanaian personnel*". The Minerals and Mining (General) Regulations L.I. 2173 stipulate the need for a procurement plan for the employment and training of Ghanaians with the aim of eventually replacing expatriate personnel with Ghanaian personnel and the need to give preference to local products, to the extent that this is practicable

Certain mining industries have adopted their own definitions of the term "local". For example, Newmont classifies suppliers as "local" when they are based in local host communities; in contrast, the term "national" is applied to all Ghanaian-based suppliers, regardless of their location within the country

Source: CCSI, 2014.

Most of these products were included in the list because facilities for their manufacture were already in existence in Ghana. For some products, such as lime, there was initially little local competition among producers, which drove up prices. For other products, including grinding media, quality was sometimes an issue, thereby threatening the sustainability of companies that relied solely on domestic suppliers.

In 2016, the Minerals Commission noted that, despite efforts to address supply-side challenges, certain companies were finding it increasingly difficult to procure certain products locally on a sustained basis despite joint efforts to address some supply side challenges. . Companies must give their suppliers clear technical specifications to ensure that their products meet required quality standards.

While the legal framework clearly states that items on the local content list must be

“manufactured in Ghana”, it does not provide details regarding the share of value that must be added locally to obtain Ghana-origin status. Such ambiguity means that certain locally registered companies are able to gain access to the procurement market by performing only light processing of foreign inputs, such as mixing or packaging. This is the case, for instance, with lime and explosives. Indeed, many Ghana-based facilities perform minimal local manufacturing activity, and merely package imported products for re-distribution on the domestic market.

It should be emphasized, however, that, while such practices are legal in Ghana, in countries with clearer rules of origin regarding the value added content of a manufactured product, such practices are considered a form of “fronting”, undertaken in order to circumvent trade regulations, and are not permitted.

Box 5

The challenge of fronting

Fronting occurs because of weaknesses in the way in which regulations or laws are framed. This happens in particular where “local” or “content” are not clearly defined or when the rules are not clear on how companies should report on local content targets. Under pressure to comply, particularly when there are severe penalties for non-compliance, local procurement targets and employment targets may be inflated or mis-reported. This results in inaccurate estimates of the actual capacity of local suppliers or of the number of local employment jobs provided by an industry, especially at senior level.

There are several ways in which fronting may occur. These include situations where:

- (i) Nationals are listed as shareholders, executives or management, but in reality, do not participate in the strategic decision-making process. They may even be unaware of their stated role in the company;
- (ii) Nationals are listed as shareholders, executives or management, but have roles and responsibilities that differ significantly from those of their expatriate peers;
- (iii) Nationals serve in executive or management positions but with significantly lower salaries than those of their expatriate peers;
- (iv) With respect to local procurement, companies purchase their goods and services from firms, either owned by nationals or locally registered, which, in turn, import the products without conducting any value addition in the country.
- (v) Fronting can also be deliberately undertaken with a view to inflating the preferential procurement exclusion for imports.

The issue of fronting has been raised as a concern in the petroleum sector, where there are suspicions¹⁰¹ that foreign companies are “fronting” as indigenous Ghanaian companies in order to take advantage of Government benefits in the upstream petroleum sector. Fronting is defined¹⁰² in the local content regulation for the petroleum sector, and sanctions¹⁰³ are prescribed for non-compliance. Although no cases of fronting have been reported in the mining sector, relevant legislation is ambiguous and therefore it is difficult to impose penalties on companies that are suspected of fronting.

Given the lack of specific rules of origin for manufacturing in Ghana and, as a consequence, the relatively wide interpretation of the term ‘content’, it may appear that fronting is not a significant issue in Ghana’s mining sector, as is the case in many other countries. It is important, however, to clarify the country’s rules of origin and to establish systematic monitoring systems to prevent fronting practices from weakening the intent of policies adopted with a view to fostering local production and local employment.

The Minerals and Mining (General) Regulations L.I. 2173 makes mining companies responsible for procuring local content. They do not, however, provide for any mechanisms to address supply side challenges that can occur if local suppliers are unable to honour their production contracts. Indeed, the Regulations calls on companies to “develop the supply of local goods and services” but fails to provide any technical support to help achieve that objective. A number of mining companies interviewed highlighted a major challenge with the

issue of quality, in particular regarding critical supplies, such as grinding media. The policy framework in Ghana does not provide adequate solutions to help local suppliers to meet those quality requirements. Instead companies are expected to provide the necessary support to their local suppliers.

Furthermore, L.I. 2173 provides no guidance regarding what types of products could be supplied locally in the future. L.I 2173 is a national mineral policy, and therefore fails to measure the potential market opportunities in other economic sectors in Ghana and abroad. The economic model developed by BGR however gives some insights regarding products that could potentially be manufactured in Ghana and for which the country could build a competitive advantage to serve as a hub for the region.

The fact that many companies find it difficult to source certain listed products locally underscores the weaknesses of the country’s manufacturing sector, which stem, inter alia, from the following:

- (a) **Limited industrial capacity** to meet unplanned or ad hoc demand from mining companies with short lead times. This is a critical success factor because mining companies need to secure reliable suppliers in order to sustain their operations;
- (b) **Geological differences** in Ghana, which translate into mine-specific demands for certain products. Local suppliers may not be sufficiently diversified or equipped to meet the quantity and specific product requirements of mining companies;

101 The Petroleum Commission has observed a pattern of companies making false representations to the Commission in order to take advantage of Government benefits.

102 Specifically, as per article 46(2) and (3) of L.I. 2204 (the Petroleum (Local Content and Local Participation) Regulations), “a person [whether a Ghanaian or non-Ghanaian national] who acts as a front or connives to deceive the Commission as representing an indigenous Ghanaian company to achieve the local content requirement commits an offence”.

103 Executives for companies in the upstream petroleum sector that are found culpable of fronting face up to two years’ imprisonment and fines of up to 3 million Ghanaian cedi (approximately \$757,000). Companies found culpable will be declared non-compliant with Ghanaian law and may have serious difficulty operating in the upstream petroleum sector.

- (c) Because Ghana has a relatively thin industrial base, **some products needed by the mining industry are produced by very few companies**. This quasi-monopolistic situation poses significant supply-side risks for the mining industry, which often has no choice but to procure its supplies from those companies. Indeed, there is a risk that suppliers may abuse their position, which, in turn, could undermine the competitiveness of the mining industry;
- (d) **Information asymmetry** between mining companies and suppliers is a major hindrance to the development of local sourcing. This challenge is equally relevant for both groups of stakeholders; for example, local manufacturers complain that mining procurement needs and standard requirements are not clear, preventing them from planning production effectively. On the other hand, mining companies argue that suppliers fail to market their products proactively and so they often underestimate the country's capacity to produce the goods and services they need;
- (e) A number of **market restrictions** in Ghana, such as high import duties on inputs, undermine the competitiveness of local manufacturers. These trade barriers increase the cost of production, and this is reflected in the high prices of locally manufactured outputs, which make local products less attractive for mining companies;
- (f) Ongoing **power supply shortages and the country's high energy tariffs** continue to undermine both the manufacturing sector and the mining industry. This is a major constraint to industrial productivity in general and affects all policies to develop local industrial capabilities;
- (g) As is the case in other countries, numerous obstacles impede the development of the manufacturing sector, and particularly the development of SMEs. The **business environment** must be made more "SME-friendly". Key challenges impeding the growth of SMEs include the high cost of doing business (see Annex 11), insufficient financial capacity coupled with high borrowing costs, the high cost of manufacturing inputs, limited institutional architecture to support SMEs in developing their production capabilities, and a lack of technological expertise;
- (h) Furthermore, **administrative requirements** remain lengthy and cumbersome and SMEs in particular do not have adequate support from Government agencies and institutions to help them obtain relevant documentation, including documentation related to business registration, tax clearance and environmental, health and safety standards;
- (i) Ghana's industrial sector is not sufficiently linked to **regional value chains** and other mining industries in the West African region. This is important because Ghana has a relatively small economy and the absorption capacity of local mining industries may not be sufficient to sustain the development of local manufacturing in certain areas;
- (j) Finally, **broader macroeconomic** challenges, including high inflation rates and exchange rate fluctuations can significantly hinder industrial development. These challenges are compounded by logistics constraints and infrastructure bottlenecks.

Chapter 4: Economic Contribution of the Mineral Sector through Linkages

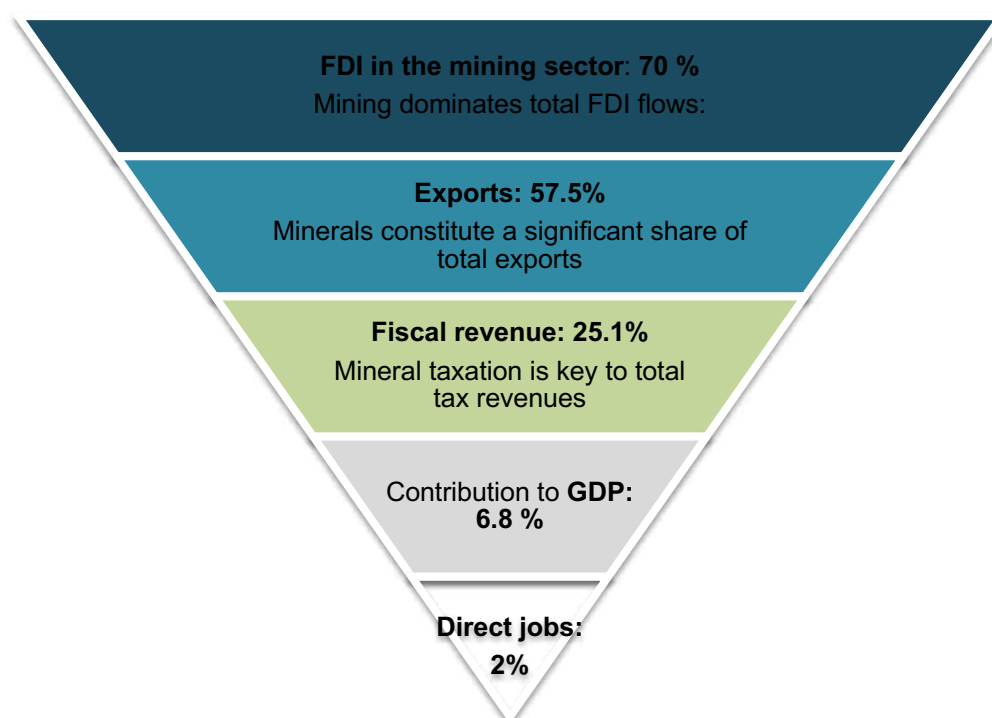
4. Economic contribution of the mineral sector through linkages

The mineral sector is a cornerstone of Ghana's economy and, as oil production expands, its contribution to the economy is likely to increase. Indeed, the country's high growth rates in the past decade were largely driven by FDI and project expansions in the hydrocarbons sector and related infrastructure developments. Furthermore, Ghana's increasing oil exports and tax receipts from new hydrocarbon sector projects have significantly boosted the country's foreign currency reserves.

The capital-intensive nature of the mineral sector could limit job creation opportunities and the development of upstream industrial linkages if the sector is treated as an enclave and if there are no deliberate policies to foster such linkages with the rest of the economy. In that regard, Figure 22 details the economic importance of Ghana's mineral sector in 2016.

Figure 22

National contribution of the mineral sector* (per cent), 2016



* The Mineral sector includes gold, bauxite, manganese and diamonds as well as oil and gas production.

Source: Ghana Chamber of Mines, 2017; GSS, 2016; MoF, 2017, Public Interest and Accountability Committee, 2016.

As it currently stands, the mining and quarrying sector accounts for a significant proportion of FDI, export earnings and revenue generation. However, its contribution to value addition and employment remains small as a consequence of previous policies that failed to strengthen linkages among the mining sector, upstream suppliers and downstream supply chains.

As evidenced by the economic trajectory of many emerging and industrialized economies that have successfully pursued growth by exploiting their mineral resources, including Australia, Brazil, Canada, Chile, Finland, Norway and the United States of America, the mining sector can be a powerful springboard to broad-based economic development. However, given the finite nature of a country's mineral assets, that sector must be fully integrated into the national economy and a holistic approach must be adopted for that objective to be realized.

The contribution of the mining sector can be direct, indirect and induced: The “*direct*” impact relates to the actual levels of expenditure and employment that can be captured and measured at the national level. These include fiscal and revenue contributions, jobs created at the mine site and direct operational and capital spending in the country. The “*indirect*” impact relates to economic activities triggered in other sectors as a result of purchases made from the initial round of mining expenditure or from the use of mining-related revenues, technology or infrastructure. The “*induced*” impact relates to household and consumer spending arising from both direct mine expenditure and the resulting indirect expenditure. While the direct impact is easily measured, indirect and induced impacts are more difficult to measure. A 2017 report published jointly by Steward Redqueen and IFC included an assessment of the indirect and induced impact of the mining sector on the Ghanaian economy and estimated that the

sector supported between 15 to 21 indirect jobs for every direct job created (Redqueen and IFC, 2017).

It appears that, overall, **fiscal linkages** have improved in Ghana. Redistribution remains weak, however, and the benefits of those linkages have yet to trickle down effectively to the general population.

The breadth and depth of **production linkages** have also been relatively limited, although a number of policies to stimulate local sourcing both in the mining and oil sectors are currently being implemented. However, those policies affect only a few products and jobs categories. **Downstream** linkages in the mining sector, including ASM, remain very weak and there is considerable scope for further gold-to-jewellery value addition in the small-scale gold mining sector, which is estimated to produce 34 per cent of gold in Ghana (GHEITI, 2015). Similarly, the extraction of bauxite, manganese and other minerals remains poorly connected to the rest of the economy, both upstream and downstream. There is, moreover, significant potential for industrial minerals to play a greater role in the economy, but their potential remains largely untapped and, although this is starting to change, this sector has not been given priority attention by policy makers in recent years. In the oil sector, the Government has developed local content requirements in the upstream part of the value chain and midstream linkages are expected to pick up as projects for domestic gas production materialize. Downstream linkages, notably through the use of by-products of the petroleum sector have substantial potential, but policies in that area need to be strengthened. Potential upstream production linkages with the mining sector are considered in greater detail in the following section of this report.

Although infrastructure projects have boosted growth figures, they have not led to significant **spatial linkages**. This is because most of

those projects only targeted the mineral sector and did not seek to create growth in other economic sectors.

Mining sector local content requirements also aim to leverage **knowledge linkages**, as they call for training requirements, transfer of know-how and technology and the employment of greater numbers of Ghanaians in strategic positions. These efforts are essential if Ghana is to move up the value creation ladder, and emulate certain advanced economies such as Finland¹⁰⁴ and Sweden, which gave priority to capacity building, R&D and innovation in the early stages of the development of their mining industries.

To date, Ghana's **trade and market linkages** have been characterized, primarily, by the export of untransformed commodities to traditional markets outside Africa. However, to foster industrial development through mineral production linkages, Ghana must also develop and secure access to regional and African markets and connect to global value chains. This is important at least for two reasons: (i) as Ghana has a small economy, its development of strong industries is conditional upon gaining access to larger markets; and (ii) as other regional partners develop their local content strategies, the scope of input sourcing is certain to increase. Soft and hard barriers to trade must therefore be addressed at the regional

and continental levels. Furthermore, regional trade policy coordination and coherence is essential in order to prevent any "race to the bottom" or incompatible commitments with the region. It should also be borne in mind that Ghana's access to mining sector value chains can be optimized only if the country takes full advantage of its trade agreements with key partners.

4.1 Brief assessment of revenue linkages

Ghana, like many other African resource-rich countries, has embraced an approach that has focused, primarily, on maximizing of revenues from mineral rents. In theory, the revenue derived from the mining sector is expected to be channelled into welfare benefits for the population and productive investments to support broader economic development.

Mineral revenues mainly support the Government budget.¹⁰⁵ For the **mining sector**, 80 per cent of the revenue is paid into the Treasury Consolidated Fund,¹⁰⁶ while the remaining 20 per cent is allocated to the administrative authorities of regions hosting mining operations.

In contrast, revenues from the **petroleum sector** are specifically earmarked: 70 per cent is used to support the Government budget

104 When it started developing its mining industry, Finland set the development of capabilities as a top priority. Acquiring crucial knowledge and know-how were achieved by: (i) hiring relevant experts from Norway, Sweden and Germany, (ii) sending Finnish engineers for training abroad; and (iii) learning by doing, notably through reverse engineering, e.g. copying innovations adopted in imported machinery/technology. In addition, academic institutions, which were often located close to mines, were closely involved in capacity building activities.

105 Article 176 of the 1992 Ghanaian Constitution states that "(a) all revenues or other moneys raised or received for the purposes of, or on behalf of, the Government; and (b) any other moneys raised or received in trust for, or on behalf of, the Government shall be deposited in the Consolidated Fund (Treasury). Revenues directed to the Consolidated Fund are available for general public expenditures through the budget".

106 The 2006 Mining and Minerals Act specifies the royalties, rents, and fees that are to be collected from mining sector operators and channelled into the Consolidated Fund. Revenues are then disbursed through the central budget. Besides royalties, other flows that are paid into the Consolidated Fund are: (1) an annual mineral right fee, payable to the Minerals Commission, (2) corporate tax, (3) withholding taxes, (4) capital gain taxes as well as dividends and various licensing fees for reconnaissance, prospecting, and mining leases, (5) an application fee, and (6) an annual ground rent paid to the landowner. Dividends are a non-tax source of Government revenue, paid by mining leaseholders and collected by the Ministry of Finance and Economic Planning. The Government retains a 10 per cent non-contributing share in every mining lease-holding, which can be increased up to 30 per cent. Government revenue may also take the form of voluntary, non-statutory contributions that are largely tax deductible.

Table 24

Mineral revenues as a share of domestic revenue

	2009	2010	2011	2012	2013	2014	2015	2016*
Mining revenue as a share of domestic revenue, (%)	19.8	23.7	28.4	27	18.7	15.4	14.6	15.8
Petroleum revenue as a share of domestic revenue, (%)	n/a	n/	n/a	6.6	9.5	13.5	12.8	9.3
Total mineral receipts as a share of domestic revenue, (%)	19.8	23.7	28.4	33.6	28.2	28.9	27.4	25.1

Source: Ghana Chamber of Mines, 2017. GHEITI, 2015 *Revised figures.

(and are earmarked as the Annual Budget Funding Amount); the remaining 30 per cent is paid into the Ghana Petroleum Funds, and is then split between two funds: (i) the Ghana Stabilization Fund, which receives 70 per cent of the allocation and is focused on smoothing price volatility; and (ii) the Ghana Heritage Fund, or Savings Fund, which receives the remaining 30 per cent, which is saved for future generations¹⁰⁷ (Oxfam, 2016). (Annex 4 gives an overview of revenue allocation in the budget from the mining and petroleum sectors).

Fiscal receipts from the mining sector increased substantially from 2005 onwards and reached a peak of more than 28 per cent of total domestic revenue in 2011 (see Table 24). Since then, however, the sector's fiscal contribution has fallen precipitously and comprised only 15.8 per cent of total direct tax receipts in 2016, despite new mining operations by Asanko Gold Ghana Ltd. and increased gold production by AngloGold Ashanti and Newmont.

The decrease is largely explained by two factors:

- (a) Lower commodity prices (shown in Figure 23) have had a significant impact on Government receipts. In Ghana, gold prices (shown in Figure 24) slipped from an average of \$1,571 per ounce in 2011 to an average of \$1,266 per ounce in 2014 before increasing again to \$1,283 in April 2017); Average global oil prices decreased from \$110 a barrel in 2014 to below \$40 in January 2016.
- (b) Decreased production volumes in the petroleum sector, partly because of lower global oil prices, which resulted in the scaling back of a number of petroleum sector projects, and partly because of technical problems experienced in the Jubilee field in early 2016.

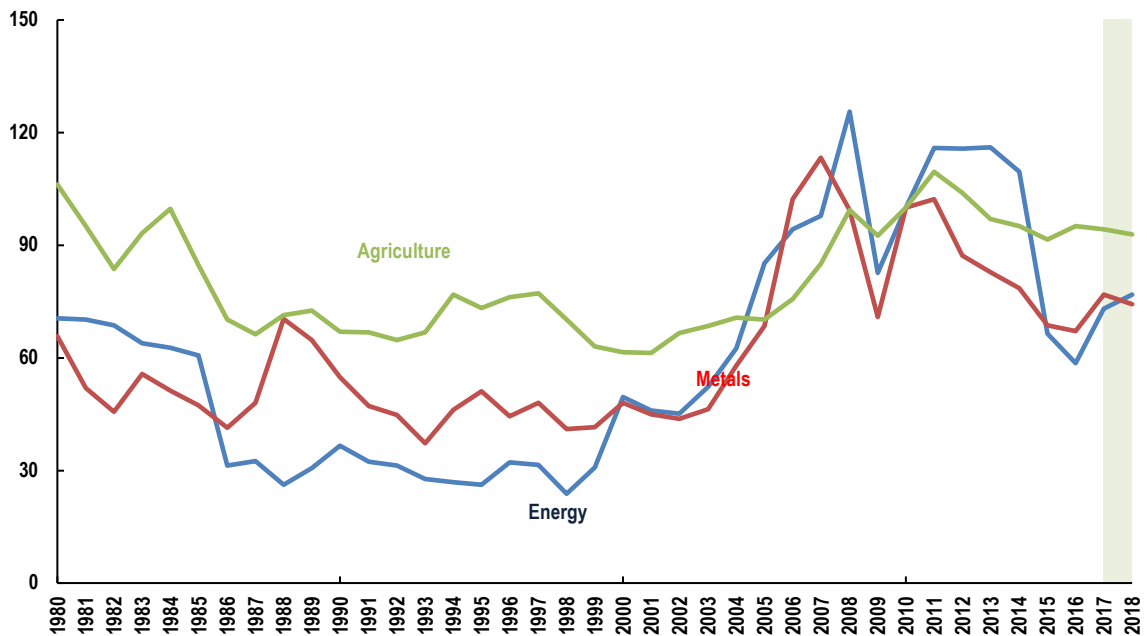
Almost 75 per cent of Government revenue from the gold sector is paid in the form of royalties and corporate taxes. Royalties are more stable and less subject to market forces than corporate taxes, which vary with the financial health of companies. As shown in Figure 25a, mineral royalties accounted for 34 per cent of receipts from the mining sector as a whole

107 In accordance with sections 18 and 23 of the 2011 Petroleum Revenue Management Act (PRMA). The PRMA stipulates that, in the absence of a long-term national development plan, and subject to the absorptive capacity of the economy, the Minister of Finance can select four priority areas for the investment of petroleum revenues. Those sectors remain a priority for a period of 3 years, subject to review. The following four priority areas were identified for the period 2011–2013: (i) Expenditure and Amortization of Loans for Oil and Gas Infrastructure; (ii) Agriculture Modernization; (iii) Roads and Other Infrastructure; and (iv) Capacity Building (including Oil and Gas). In November 2013, it was agreed that those areas would be maintained as priorities at least until the 2016 review process.

Figure 23

Commodity price indices, annual average (January 2010–September 2017)

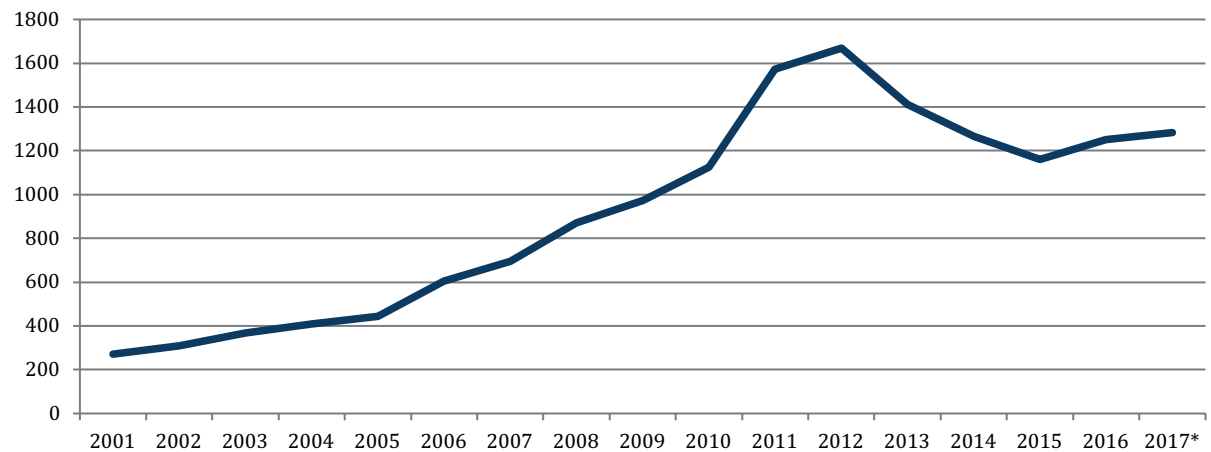
US\$ constant, 2010=100



Source: IMF, October 2017: Commodity Market Outlook. Note: shaded area denotes forecast.

Figure 24

Average realized gold price (\$), 2001–2017*



Source: Ghana Chamber of Mines, 2017. *Data for 2017 is for April 2017.

in 2016, while corporate taxes accounted for 42 per cent (Ghana Chamber of Mines, 2017).

Besides its fiscal contribution, the mineral sector also provides a significant proportion of

foreign exchange earnings. In fact, the mineral sector (i.e. mining and oil exports combined) accounted for 57 per cent of total export revenues in 2016. This figure peaked at 67 per cent in 2014, just before a significant fall in the

Figure 25a
Receipts from the mining sector, 2016

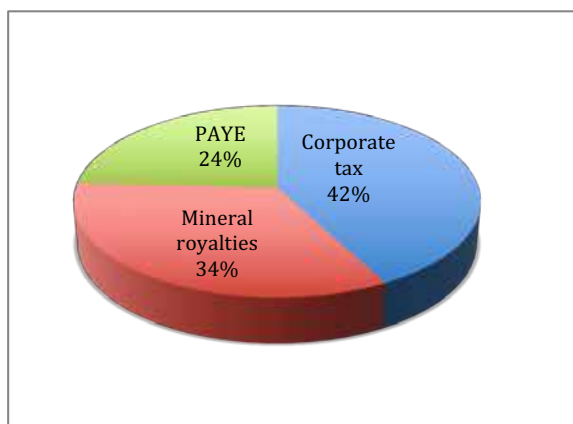
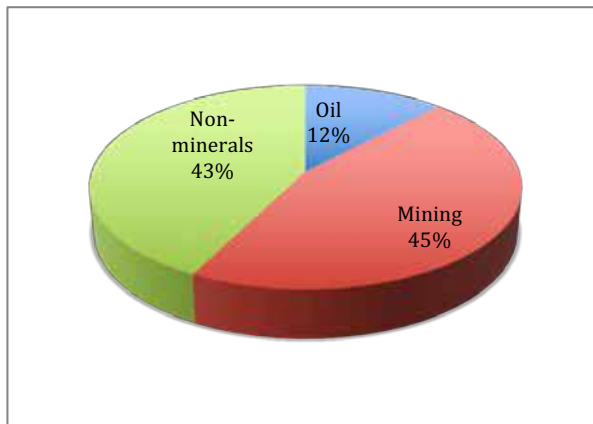


Figure 25b
Exports: sectoral distribution, 2016



Source: MOF, 2017.

price of oil, when the oil sector even surpassed the cocoa sector that year to become Ghana's second largest export sector. Although the share of foreign currency earnings provided by the oil sector then decreased, increasing gold prices meant that the share of foreign currency earnings provided by the mining sector increased by 53 per cent between 2015 and 2016. Gold provided 97.2 per cent of total mining export revenues in 2016. Diamonds, bauxite and manganese, whose production has been on the decline for several years, accounted for the remaining 2.8 per cent.

Although the mining industry has brought in significant foreign currency earnings and improved the trade balance, the country has become even more dependent on the export of raw minerals. However, favourable commodity prices are often short-lived and subject to volatility, which means that the balance of trade can be severely affected, in particular when prices contract. This creates significant risks for the economy.

While it is undeniable that fiscal receipts from the mineral sector have contributed significantly to Government coffers, they have not spurred growth in other economic sectors. Dependence on fiscal revenues from only a few sectors can seriously undermine macroeconomic stability, notably in the case of unexpected budgetary shortfalls as a result of commodity price volatility. It is therefore critical that Ghana uses its various forms of revenues from the mineral sector to support and accelerate the diversification of the broader economy.

4.1.1 Effectiveness of revenue linkages in Ghana

Fiscal receipts from the mining sector play a significant role in Ghana's socioeconomic landscape. There is, however, a growing sentiment that those receipts are not fostering prosperity among the broader population¹⁰⁸ and that the Government has failed to leverage mining sector revenues, particularly in

108 Ghana and the Republic of Korea were both at approximately the same level of development in the 1960s. Today, however, the Republic of Korea is significantly richer than Ghana, which is still classified as a lower-middle income country. Human development indicators also highlight rising income inequality in Ghana, despite the fact that the poverty rate declined sharply from 37 per cent in 1992 to 8.4 per cent in 2014. Ghana has also found it difficult to create decent job opportunities, as evidenced by its high youth unemployment rate.

boom years, to foster the development of other productive sectors.

For fiscal linkages to promote development effectively, the Government must not only raise taxes effectively, but must also be able to redistribute tax revenues and invest productively. Fiscal linkages remain weak because those revenues are invested in unrelated areas of the economy.

The extent to which revenue received by governments from the mineral sector contribute to sustainable development outcomes is a matter of ongoing debate. In particular, stakeholders in Ghana are attempting to ascertain the following:

- (a) Whether the current fiscal regime is “fair”, i.e. how does it balance the interests of the Government against the interests of companies?
- (b) Whether rent capture is “efficient”, i.e. does the current rent capture regime maximize revenue for the Government?
- (c) Does the fiscal regime sufficiently address inter-generational equity?
- (d) Has the allocation of funds and spending been efficient?
- (e) How does the fiscal regime applicable to the mining sector compare to that of the oil sector? What explains the differences between the mining sector and the petroleum sector, where specific priority sectors are financed with financial proceeds? Are these fairer and do they satisfactorily respond to the aspirations of the population?

4.1.2 Limits of the “revenue-first” approach

As explained above, export dependency on few commodities often renders foreign exchange revenue management more difficult and less predictable.

The recent weakening of Ghana’s macroeconomic performance shows that it is highly dependent on volatile commodity prices and is therefore extremely vulnerable to external shocks. The collapse of gold and oil prices, in particular, has placed the country’s finances under considerable stress. Indeed, Ghana’s persistently high fiscal deficit shows the scale of the challenge it faces.

When revenues from the mineral sector fall, the Government’s “fiscal space”¹⁰⁹ can contract rapidly, leaving little revenue available to be spent on other projects to foster socioeconomic development, including higher education, healthcare and infrastructure. When that fiscal space is constrained by unforeseen fiscal shortfalls, the Government must “create” more space, by increasing taxation, reducing expenditure or increasing Government borrowing, even though this may negatively affect the country’s macroeconomic stability.

The importance of the contribution of the mineral sector to fiscal revenues in Ghana is widely acknowledged. Although those revenues can, at least in theory, be leveraged to promote economic transformation, such linkages alone have been largely insufficient to meet the growing needs of the country.

It will be difficult for the economy to continue to depend on fiscal linkages as budgetary provisions are extremely vulnerable to commodity price variations: economic dependency on volatile commodities is clearly unsustainable. It is also clear that there is an upper limit to the revenue that the Government could raise

109 Defined as “room in a government’s budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy” (Heller, 2005).

from the mining sector without placing mining companies under excessive financial pressure.

4.2 Using local content to boost employment

There is a common perception in Ghana that the mineral-led rapid growth rates of recent decades have failed to boost employment as expected. In fact, during the country's boom years (2000 to 2010), Ghana's total employment rate only increased by 3.5 per cent while GDP grew by an average of 6.5 per cent (ICMM, 2015). The number of jobs created has proven insufficient to absorb the increasing numbers of individuals looking for employment, and job creation in the formal economy has failed to change the structure of the labour market, which is characterized by a very large informal sector.

It is, however, important to manage expectations regarding the number of direct jobs that the mining sector can create. Indeed, it is well known that the mining industry is very capital- and knowledge-intensive and requires very few, (but highly skilled) workers. Prospects for employment also vary according to the stage of mining activity, with a significant increase in unskilled labour demand during the mine construction phase, for example. Regrettably, such unskilled jobs tend to be temporary. Nonetheless, by deepening linkages through the procurement of goods and services for mines, or as a result of consumption spending resulting from economic activities around mines, it is possible to create a significant number of indirect jobs.

In 2013, prior to the drop in gold prices, the mining sector accounted for 1.3 per cent of the

labour force in Ghana. This figure included (i) direct jobs, i.e. jobs at mine sites, (ii) indirect jobs, i.e. jobs created by mining suppliers and contractors, and (iii) induced jobs, which are created as a result of the re-spending of salaries (ICMM, 2015). An IFC study conducted in 2016 calculated that for every job directly created on the mine site, 28 other jobs were created along the value chain.¹¹⁰ This is substantial and therefore must be tapped, although in the case of Ghana, as opposed to other mining countries (see Table 25), the multiplier effect is large, due to the presence of a large informal sector essentially dominated by micro- and small enterprises. This underscores the weakness of the current industrial landscape, which must be accorded priority attention with a view to providing decent and productive job opportunities along the entire mining supply chain.

Table 25
Multipliers for indirect and induced jobs

Country	Mining
Ghana	28
South Africa	1.9
Chile	7
US	5
Scotland	2.5

Source: IFC, 2016.

With the significant drop in the price of gold in 2014, the sector lost about 40 per cent of its total workforce, which fell from 21,103 in 2013 to 12,382 in 2015 as companies laid off workers in order to reduce their operational costs.¹¹¹ Many jobs created indirectly, along the mining supply chain, were also cut.

110 Another study conducted by the Ghana Chamber of Mines and ICMM in 2015 give a multiplier figure of 15 on average in Ghana.

111 Following a 28 per cent fall in the price of gold, AngloGold Ashanti laid off a significant portion of the 6,500-strong workforce at its distressed Obuasi mine in 2013 as part of its business restructuring operations. Most job losses came as the mine was temporarily shut down to allow for maintenance. Newmont Ghana also terminated the employment of hundreds of workers in 2014.

Despite the limited capacity of the mining industry to create a large number of direct jobs, there is still a sentiment that capacity has not been fully tapped, in part, because the industry has hired foreign labour, particularly at the senior level, to perform tasks that could, in many cases, be carried out by qualified local staff, and partly because there is a mismatch between the skills of local workers and the specific needs of the mining industry.

A rapid glance at the types of labour required for various tasks at the mine site, as outlined in table 26, shows that, in addition to highly skilled jobs, many jobs can be performed by

workers who are not highly skilled. Workers for such positions are usually sourced locally. Indeed, competition for jobs often takes place between “local local” workers, i.e. between workers from communities that live close to the mines and workers from other regions, rather than between Ghanaian and foreign nationals.

To avoid potential tensions between local communities and labour that might have “migrated” from elsewhere in the country, companies in Ghana have attempted to give priority when hiring workers to members of communities living near mines, particularly for

Table 26
Types of labour required by mining companies

7-10 years	5-10 years	2-20 years	2-10 years
Exploration	Planning & construction	Extraction/exploitation	Mine closure
Types of activity	Types of activity	Types of activity	Types of activity
Care/Specialized Labour			
Geologists			
Mining engineers			
Hydrogeologist			
Engineers (including civil, mechanical, electrical)			
Lab specialists (chemists, geochemists)			
Designers			
Mechanics (geomechanists; rock mechanics, mechanics for maintenance and repairs)			
Geophysicists			
Metallurgists (including geometalurgists)			
Technicians			
Machinery operators			
Statisticians and geostatisticians			
Non-core labour			
Unskilled			
Drivers			
Cooks			
Caterers			
Helpers, cleaners, gardeners			
Semi-Skilled			
Construction workers			
Mechanics			
Lab assistants			
Administrative staff (including secretaries, receptionist, human resource management)			
Security staff			
Highly skilled			
Management, executives			
Accountants, auditors			
Medical staff			

Source: Author's compilation.

less skilled positions. Newmont Mining, for example, has adopted a clear policy regarding what it calls “local local” employment, as required under the terms of its operating licence.

While efforts to hire such workers are highly appreciated, mining companies continue to find it difficult to hire local workers to fill positions with higher salaries.

To respond to the expectation that the mining sector should provide local workers with more employment opportunities, including, in particular, jobs with higher salaries, the Ghanaian Government outlined a number of guidelines and targets in the Minerals and Mining (General) Regulations, 2012 (L.I. 2173) with regard to the following:

- (f) Conditions of employment of *expatriates*;
- (g) Obligations for companies to plan, *recruit and train local staff* at various levels of competencies and during all phases of activities in Ghana; and
- (h) Penalties that may be incurred by companies if they fail to comply with relevant rules and regulations on employment.

L.I. 2173 sets forth **general** employment requirements for the mining sector that apply to all mining activities from exploration to production, as summarized in Table 27. The objective is to provide *more opportunities* to the local labour force, including by requiring companies to provide the necessary training and transfer of knowledge and know-how to a local skilled work force. The Regulations however only deals with *direct employment* opportunities at the mine site, and do not address potential opportunities down the value chain, probably because it is assumed that those jobs will be performed by Ghanaians.

L.I. 2173 stipulates that all unskilled labour should be *exclusively* reserved for Ghanaians and that the share of the local workforce in technical, supervisory and managerial positions must be gradually increased. Furthermore, mining companies are required to provide the necessary training and support to achieve that objective. Five-year plans regarding the training of local staff and the replacement of expatriates must be submitted on an annual basis to the Minerals Commission.

Box 6

Newmont Mining in Ghana, 2013

Newmont Mining has formulated its own local employment targets in consultation with local communities. At the company's two operations, in Ahafo and Akyem, it has set a short-term target of 35 per cent of the total workforce coming from the host communities. The company expects to raise this target to 50 per cent within 10 years of commencing operations. At both sites, 100 per cent of the unskilled workforce is sourced from local communities. At Akyem, which began production in late 2013, more than 40 per cent of the workforce comes from nearby communities and 53 per cent of workers are Ghanaian nationals.

The company provides specialized training for mechanical and electrical operators from the local community. Certificates awarded are validated by the City and Guilds of London Institute and are internationally recognized. Newmont Mining also runs an apprenticeship training programme for students who may then be offered employment in Newmont's mining operations.

Source: Newmont – Beyond the Mine Sustainability Report, 2013.

Table 27

General employment requirements pursuant to the Minerals and Mining (General) Regulations, 2012 (L.I. 2173)

Regulations	Specific requirements
Immigration quota for foreign labour	No quota to be granted by Minerals Commission unless no Ghanaian has the “requisite qualification and experience” to occupy the relevant position. Possible special exemption cases include when: a) Specialized technology is to be used; b) Training of Ghanaians requires a longer period than the transition period; c) Special projects are to be undertaken, such as new mine development or the expansion or rehabilitation of an existing mine, provided that the duration of the project does not exceed three years; or d) Ghanaians are employed to work as expatriates in the firm’s operations in other countries.
Employment of unskilled labour and clerical staff	Exclusively reserved for Ghanaians.
Localization plan	Compulsory submission of five-year local content programme for the recruitment, training and succession of Ghanaians must be submitted.
Training requirements	Applications for mining rights must include a proposal for the training and employment of Ghanaian personnel, including in view of replacement of expatriate staff. Firms must state how they intend to train Ghanaians to replace expatriates within a specified timeframe.
Preference to local labour	Companies are required to give preference in employment to citizens “to the maximum extent possible and consistent with safety, efficiency and economy”.
Penalty for non-compliance	One year expatriate gross salary for every month of illegitimate stay. Delisted from list of companies enjoying duty exemptions.

Source: L.I. 2173; CCSI, 2014.

In addition to the general requirements, L.I. 2173 also provides for **specific targets**, in particular for (i) holders of *reconnaissance or prospecting licences* and *providers of mine support services*; and (ii) holders of mining rights.

Table 28 summarizes the requirements that companies must comply with. These focus, in particular, on the number of expatriate staff allowed and the timeframe for their gradual replacement by local staff.

Table 28

Percentage of expatriate staff to total number of senior staff

Category	Commencement, %	After 2 years, %	After 4 years, %	After 6 years, %
Technical and supervisory	5	5	0	0
Skilled labour	10	0	0	0
Management (no. of expatriates)	Up to 2	Up to 2	Up to 2	Up to 2

Source: Second Schedule, Minerals and Mining (General) Regulations L.I. 2173, 2012.

Table 29

Percentage of expatriate staff to total number of senior staff

Category	In first 3 years, %	After 3rd year, %
Skilled labour (if critically important, companies may substitute with part of their current quotas for expatriate staff).	0	0
Senior staff	Not exceeding 10%	Not exceeding 6%
Total no. of expatriates allowed	Less than 3	Up to 2

Source: L.I. 2173, 2012.

One notable exception from these requirements applies to companies *holding five or more prospecting licences* with corporate offices that are separate from their exploration site offices. Such companies can hire a maximum of two additional expatriate staff to work at their corporate offices.

Similarly, holders of *mining leases* are required to employ a minimum percentage of Ghanaians in various employment categories. The identification of jobs to be filled by Ghanaians is carried out in consultation with the Minerals Commission.

L.I. 2173 specifies that expatriate staff must comprise less than 10 per cent of the total number of senior staff within the first three years of its entry into force or the commencement of mining operations, and should not exceed 6 per cent after those three years.

However, companies holding *two or more mining leases* and having a corporate office separate from offices at the mine site are allowed exceptionally to have a maximum of two additional expatriates, both to be employed in the corporate office.

Furthermore, in *exceptional circumstances* additional expatriates may be employed. These circumstances include the following:

- (a) If specialized technologies require specific skill sets;

- (b) If training of local staff requires a longer period than the transition period outlined above;
- (c) In cases of mine expansion or rehabilitation (provided the project duration does not exceed three years); and
- (d) If Ghanaian staff are employed as expatriates in the companies' global operations.

Penalties for non-compliance are prohibitive:

- (a) Companies must pay a financial penalty equivalent to one year of the gross salary of the expatriate staff member for every additional month of "illegitimate stay"; and
- (b) The company may lose its duty exemptions privileges altogether.
- (c) Penalty fees are to be used for the training of Ghanaian workers. Penalties are high to discourage non-compliance with L.I. 2173 and hence support the objectives set out in legislation.

4.2.1 Effectiveness of labour requirements

The Minerals Commission has not yet evaluated the effectiveness of the measures set forth in L.I. 2173 as companies have been

given two years from the entry into force of those Regulations to report on the number of local technical and senior level staff. The Commission was due to carry out an evaluation in 2017.

A factsheet published by the Ghana Chamber of Mines in 2015¹¹² showed, however, that overall employment in the mining sector fell drastically between 2013 and 2015, from 21,103 to 9,939 workers, primarily as a result of the phased employee rationalization implemented by most mining companies, and particularly at the Obuasi mine, which is run by AngloGold Ashanti. Clearly these job cuts have made it more difficult for Ghana to achieve its objectives vis-à-vis mining sector employment.

4.2.2 Weaknesses and challenges related to labour requirements

The current local content policy on employment and employability, while laudable, is characterized by certain weaknesses and presents a number of challenges. The main weakness seems to be the *limited focus* on (i) replacing foreign labour by local labour; and (ii) promoting direct employment in mining companies as well as indirect employment opportunities.

Beyond the fact that the mining sector provides few direct jobs opportunities to the local population, the analysis conducted for this research suggests a number of **structural weaknesses** inherent to the labour market in Ghana that must be addressed in order to enhance the employability of the country's workforce.

While there is a need to foster local employment, the policy does not address current labour market **supply side constraints**. In fact, a recent study by Baah-Boateng and Baffour-Awuah (2015) observed a critical shortage of highly skilled and semi-skilled workers, including those with technical and vocational skills. The study concluded that the country did not produce sufficient numbers of graduates with scientific backgrounds, which in turn, was reflected in a deficit in the availability of professionals to perform specific engineering or technical tasks in the mining sector. Another study found that, when Ghana began oil production in 2010, the oil industry found it difficult to find certain categories of workers, such as engineers, drillers, and production and operation workers, and therefore had to import labour from Côte d'Ivoire and Nigeria (Aryeetey and Bah-Boateng, 2016).

More generally, it seems that the need to increase the number of local staff in the mining industry has not been accompanied by concerted efforts to enhance the skills of the labour force. Ghana's weak education system means that the country produces a woefully inadequate number of highly skilled workers and many Ghanaians are therefore compelled to seek employment in the informal economy.¹¹³

It is therefore crucial to ensure that local content policies are accompanied by effective education and skills development initiatives that can improve the employability¹¹⁴ and transferability of the labour force. While requirements for mining companies to support on-the-job training at mine site is important, there seems to be **little complementary policy support for skills development programmes** to

112 http://ghanachamberofmines.org/media/publications/Factoid_2015.pdf.

113 In effect, job opportunities in the formal sector often require at least secondary or senior high school certificate qualifications, making access difficult for a significant share of the labour force.

114 Employability is defined as a set of achievements – skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy. It is more than simply getting a job, and involves an ongoing development process, whereby staff members can adapt to the changing nature of tasks and the evolving nature of their jobs.

support the mobility of skilled professionals across industries. Such support could help the labour force respond to changes in the employment environment, such as the recent closure of AngloGold Ashanti mine at Obuasi.

Furthermore, L.I. 2173 **focuses on direct employment**. Given the capital-intensive nature of the mining industry, and the fact that the mining industry value chain has the potential to create many more employment opportunities, Ghana must encourage suppliers who obtain procurement contracts from mining companies to employ as many local staff as possible. It should also be noted that, while L.I. 2173 encourages the training of workers to prepare them for existing job profiles, it does not take into account the **dynamic nature of the industry**, and particularly the impact on employment of rapid technological advances and disruptive technologies, which are likely to eliminate certain types of job in the future. Relevant stakeholders should therefore make every effort to engage with companies today to prepare for the jobs of tomorrow and possible future redundancies, including by developing strategies for workers' retraining.

4.2.3 Overall reporting requirements related to local procurement and employment

Firms have an obligation to draw up a five-year procurement plan specifying, to the extent possible, how they intend to use local products. Their procurement plans must be approved by the Minerals Commission and must be updated each year. In addition, firms must report their levels of compliance on an annual basis.

Similarly, firms have an obligation to submit to the Minerals Commission a local content plan

for the recruitment and training of Ghanaians to replace expatriate employees. Firms cannot obtain a mining lease unless they submit a local content plan. While clear targets are set for employment of local staff, little guidance is offered regarding the training that companies should offer their staff.

4.2.4 Enforcement mechanisms

L.I. 2173 imposes severe penalties for non-compliance. These can be summarized as follows:

- (a) For non-compliance with an approved localization programme (i.e. the replacement of foreign staff by local staff), the firm must pay one year's salary of the expatriate concerned for each month, or part of each month, that the foreign national worked in excess to what was foreseen in the plan. The penalty is expected to be used to train Ghanaians for employment in the mining sector.
- (b) Firms that fail to provide a procurement plan within the prescribed timeframe incur a penalty of \$10,000 per month for the first six months of delay and, after that, a penalty of \$10,000 per day.
- (c) Firms that fail to submit a report on the implementation of the procurement plan incur a penalty of \$10,000 per month for the first two months of delay and, after that, a penalty of \$10,000 per day.
- (d) Firms that fail to procure locally as required under the local procurement list must pay full customs duty on imports of goods as well as a penalty to be determined in accordance with the local procurement list.

Chapter 5: Production linkages

5. Production linkages

Fiscal discipline and currency reserves can, to a certain extent, shield economies from fiscal fluctuations. They cannot, however, fully shield commodity-based economies from the negative impact of commodity price volatility. Countries that depend, primarily, on commodity exports must therefore make every effort to diversify their economies.

This section focuses, primarily, on **upstream** linkages with a view to identifying niches for supply chains and prospects for broader industrial development. The importance of downstream linkages will be the subject of a separate analysis.

5.1 Why do production linkages matter?

Production linkages are understood to include *backward or upstream linkages* (that is, producing inputs that can be utilized in mining activities) and *forward or downstream linkages* (that is, processing and transforming mineral activity outputs into manufacturing products). According to Hirschman (1981), production linkages can foster economic diversification through their direct impact on the output structure of the extractive sector.

Backward or upstream linkages emerge as a consequence of vertical, horizontal and technological demand-supply interactions between mining industries, specialized manufacturers, input providers, agents and distributors, and service suppliers (Ramdoo, 2015c). There is considerable scope for the development of upstream linkages involving goods and service contractors and sub-contractors.

Because **minerals are finite**, upstream linkages are particularly important, as they can serve as a springboard for broader industrialization. Often characterized as an “*enclave*”, the mining industry can nonetheless provide local industries with a valuable opportunity to upgrade their production baskets by supplying mining industries with more sophisticated products. The exigencies of the mining sector, in terms of standards, quality, technology and time constraints, can help industries develop by transitioning from the production of lower to higher value added products.

Upstream linkages can present **location-specific** advantages for local suppliers over non-local suppliers and, if they are competitive, domestic goods and service providers can carve out niche markets in “critical” areas and provide tailor-made inputs and solutions to fit the requirements of industry. In certain countries, including Australia, Canada, South Africa and Sweden, upstream linkages have played a significant role in industrial development. In South Africa, in particular, the clustering of firms involved in metal products, machinery and equipment, electrical equipment and construction activities in Ekurhuleni, Gauteng, is the most tangible manifestation of this effect (Walker, 2005).

5.2 Developing linkages through local content policies

The mining industry is capital, technology and knowledge intensive. This affects the types of goods, services and labour required. In resource-rich developing countries, a large proportion of the equipment and consumables needed by the mining sector is imported.

To tilt the balance towards the use of more local factors of production and hence to foster the development of local industries, resource-rich countries are increasingly designing *local content policies (LCPs)*. These may take the form of mandatory regulatory requirements with specific numerical targets for the procurement of goods and services or less restrictive forms, whereby companies are incentivized to favour local suppliers over non-local ones.¹¹⁵

Although LCPs are very popular, there is no standard definition of what “local” is and what “content” should be. For this reason, *instruments* attached to LCPs often take various forms, ranging from market restrictions to measures aimed at facilitating investment in the domestic economy.

There is nevertheless a general understanding that LCPs aim to securing direct and indirect opportunities for the local workforce and an obligation for the mining industry to source goods and services from domestic suppliers. LCPs can also be drawn up to support the development of local capabilities, skills and know-how and to foster the transfer of technology from foreign companies (ACET, 2015).

Prior to the introduction of the Minerals and Mining (General) Regulations L.I. 2173 in 2012, industrial linkages between the mining sector and the manufacturing sector were very weak in Ghana. A study conducted by ICMM in 2007 underscored, inter alia, the very weak procurement linkages between the industry and national/local producers and stressed that low levels of local sourcing were due to the structural weaknesses of the industry and the limited number of potential suppliers. Other impediments to local sourcing included the fact that mining companies do not always provide information about their

procurement needs to local producers and a lack of communication between the mining industry and other industrial sectors.

As shown in Annex 5, the most important input procured by one mining company in 2004 was electricity, which was sourced from the national grid, followed by banking services and transport. Although those inputs comprised a significant share of that company's recurrent expenditures, they provided limited opportunities for Ghanaian businesses, in part, because the electricity company was owned by the State and because banking services were provided mainly by local branches of foreign banks. The company also inflated the value of locally sourced products, and over-estimated the business opportunities for local firms. Furthermore, the data did not indicate, what proportion of those procured items were actually *manufactured in Ghana*, and what proportion of services was *provided by Ghanaian service suppliers*, as opposed to local branches of foreign suppliers, such as banking or mining contractors.

The Minerals and Mining (General) Regulations L.I. 2173, adopted in 2012, seeks to address gaps in the legislative framework and stimulate production linkages. Although L.I. 2173 does not provide a clear definition of local content, it focuses on three areas considered critical for the country's economic development, namely:

- (a) The purchase of goods and services locally;
- (b) An increased participation of local businesses; and
- (c) Employment of local labour at various professional levels.

115 For a thorough overview of local content policies, see Korinek and Ramdoo, 2017; Ramdoo, 2016.

In 2014, the Minerals Commission¹¹⁶ conducted an in depth analysis of the overall supplier capacity of the mining sector and assessed local capabilities (including for SMEs) to address the needs of the mining industry (World Bank, 2015). This process led to the establishment of a list of 29 products¹¹⁷ that had significant local procurement potential. The list was established after assessing the capacities of local firms and the availability of materials to meet the demand of the mining firms. Assessments were based on three criteria:

- (a) *Technical considerations*, i.e. the technological complexity of the products as well as existing manufacturing capacity in Ghana. In this first phase, it was decided that the list should include products that were not too capital intensive or technologically complex;
- (b) *Economic considerations* i.e. market size and growth potential in Ghana. Here, it was agreed that the list should include products with high growth potential and a large potential market with a view to ensuring business profitability and sustainability;
- (c) *Development considerations*, i.e. the potential of products to stimulate job creation and economic diversification.

It was estimated that such products accounted between 54 and 60 per cent of all items purchased by mining firms.

A **local content list** was subsequently issued by the Minerals Commission, after

consultation with the Chamber of Mines and other stakeholders and in accordance with the provisions of L.I. 2173. A first edition of the list, containing 8 products¹¹⁸ to be procured in Ghana, was published in January 2014. The second edition, augmenting the list to 19 products came into effect on 1 January 2016. A third edition is expected to come into effect in 2018. The product categories on each respective list are detailed in Table 30. The last column shows other potential products that might be added to the list in 2018 (World Bank, 2015).

Inclusion in the list of the potential new products has not yet been confirmed and is conditional on the proven capacity of local suppliers to manufacture those products in sufficient quantities and at appropriate safety and quality standards. Although the new list is provisional, it shows the types of products that might be subject to numerical targets in the future.

5.3 Assessing the effectiveness of linkages development through local content policy

Two years after the enactment of L.I. 2173 in 2012, the Minerals Commission made a first assessment of companies' compliance with local procurement requirements regarding the eight products included in the first edition of the local content list, published in January 2014. A second assessment based on the same list was conducted in 2015. In 2016, a third assessment was carried out on the basis

116 While L.I. 2173 of 2012 specifies employment categories for which companies must meet targets and timeframes for the recruitment of Ghanaian workers, it does not provide a list of goods and services to be procured locally.

117 Initially, a list of 27 products was established, namely: activated carbon; Heavy duty electric cables; ammonium sulphate; metal or PVC core trays; bolts and nuts; mill liners; bullion boxes; motor re-winding and re-furbishing; calico bags; OTR tyre-retreading; cement products/grout; overalls and work clothes; fencing, wire and mesh products; plastic sample bags; chemicals (caustic soda); quick lime and hydrated lime; conveyor rollers/idlers, pulleys; rock-bolts and split-sets cupels and crucibles; steel products (plate, angles, brackets, sprockets); explosive supply-emulsion; ventilation ducting; general and specialty lubricants; wood products; grinding media; Yelomine pipe; HDPE and PVC pipes.

118 Lime, grinding media, HDPE and PVC pipes, cement and cement products, tyre-retreading, general and special lubricants, explosives and caustic soda.

Table 30

Local content lists issued under the Minerals and Mining (General) Regulations L.I. 2173 (2012)

	Goods or services	1st edition of list, (1 Jan 2014)	2nd edition of list, (1 Jan 2016)	3rd edition (expected in 2018)*
1	Grinding media			
2	Explosive (emulsion)			
3	Cement and cement products/grout			
4	Quick and hydrated lime			
5	Electric cables			
6	High Density Polyethylene (HDPE) and PVC pipes			
7	General lubricants			
8	Re-treading tyres			
9	Bolts and nuts			
10	Crucibles			
11	Plastic sample bags			
12	Calico bags			
13	Bullion boxes			
14	Chain link, fencing, wire netting, barbed wire etc.			
15	Conveyor rollers			
16	Metal/PVC core trays			
17	Overalls and work clothes			
18	Haulage services			
19	Catering services			
20	Activated carbon*			
21	Ammonium sulphate*			
22	Chemicals (caustic soda)*			
23	Mill liners*			
24	Motor re-winding and re-furbishing*			
25	Rock bolts and split-sets*			
26	Steel products (plate, angles, brackets, sprockets)*			
27	Ventilation ducting*			
28	Wood products*			
29	Yelomine pipe*			

Source: Minerals Commission (2015); *World Bank (2015).

of the second edition of the local content list, which came into effect on 1 January 2016.

Tables 31a and 31b show the procurement performance of mining companies in 2014, 2015 and 2016. Companies were assessed on the basis of the targets they had set in their respective five-year procurement plans. The Minerals Commission adopted two metrics to assess the value of local procurement, namely:

- (a) **Total local procurement**, which included purchases by mining companies from firms based in Ghana irrespective of whether those firms were engaged in manufacturing activities locally, or whether they were local importers and agents representing foreign firms. Although the latter category of businesses do not manufacture locally, they are nonetheless important economic agents in that they contribute to economic outputs through taxation and employment;
- (b) **True local procurement**, which included purchases of products manufactured in Ghana or sourced from Ghanaian service providers, who perform production-related operations within the country. This metric singles out those product categories where value is added in Ghana, although L.I. 2173 does not specify a threshold regarding value addition for the product to be categorized as “true local”.

In terms of **total local procurement**, Table 31a indicates that, on average, companies sourced 80.6 per cent of the 8 product categories from companies based in Ghana in 2014; they met 100 per cent of their total local procurement requirements for 5 product categories, but found it difficult to find local suppliers for two products, namely grinding media and electrical cables. In 2015, while they managed to slightly improve their procurement

of electrical cables, they continued to find it difficult to source grinding media locally, and, moreover, found it difficult to obtain general lubricants (only some 50 per cent of which could be sourced locally in 2015, down from 97.3 per cent in 2014).

The 2016 assessment of **total local procurement** showed some notable progress compared to previous years, despite the fact that the list of product categories was longer and now contained 19 products. In fact, total local procurement as a proportion of the procurement foreseen in mining companies’ procurement plans amounted to 92.8 per cent. In addition to grinding media, which continued to prove difficult to obtain locally, the most problematic items in terms of local sourcing were newly added products, including chain link fencing (of which only 33.9 per cent could be sourced locally); crucibles (of which only 49.4 per cent were sourced from domestic suppliers), conveyor rollers (only 63.7 per cent) and bullion boxes (only 73.2 per cent).

Table 31b shows that, on average, mining companies’ **“true local procurement”** amounted to 78 per cent of their total planned procurement. Four out of the eight products were fully sourced locally. For two other product categories (namely PVC pipes and general lubricants), local manufacturing firms managed to supply 98.5 per cent and 97.3 per cent, respectively. Certain product categories were difficult to source, however: mining companies were only able to obtain some 7.5 per cent of electrical cables from local producers. Grinding media was another problematic product category. This was due to the fact that mining companies found it difficult to find enough suppliers that could produce those two product categories in sufficient quantities while also meeting stringent quality standards.

The 2015 assessment (still based on 8 products) recorded a drop in the overall *true local procurement* performance by some 10

percentage points to 68.6 per cent, despite improved local electrical cable manufacture. The supply capacity of local manufacturers of grinding media and general lubricants contracted particularly sharply.

Some items introduced in the 2016 list, such as bolts and nuts, crucibles, metal/PVC core trays and chain link fencing, proved particularly difficult to manufacture locally, and mining companies continued to import most of these items. It was not surprising therefore, that the **overall share of true local procurement contracted further** to 52.3 per cent of mining companies' total planned procurement.

Deteriorating true local procurement mirrors the continued downward trend in local manufacturing in Ghana and draws attention to the following challenges:

- (a) The manufacturing sector in Ghana remains weak and is severely hampered by:
 - (i) A challenging business environment in which companies find it difficult to invest in new equipment due to lack of capital, and in which doing business means dealing with considerable administrative red tape and high borrowing costs;
 - (ii) Competition with imports because import duties are not imposed on certain business inputs;
 - (iii) High duties on imported raw materials, which translate into higher output prices, thereby making local purchases less attractive for mining companies and undermining the competitiveness of local businesses;
 - (iv) Power shortages and high energy costs.

(b) On the demand side:

- (i) Insufficient manufacturing capacity, particularly with regard to lubricants and PVC pipes;
- (ii) Geological differences across mines, which sometimes necessitate mine-specific products that local suppliers do not always have the capacity to produce;
- (iii) Insufficient coordination across mining companies regarding purchasing orders (orders are not aggregated, but rather each company purchases items separately); this makes it difficult for companies, and particularly smaller companies to plan their production efficiently.

(c) On the supply side:

- (i) Inability of some local suppliers to meet technical and quality standards or delivery lead times;
- (ii) Lack of technological expertise, particularly for SMEs, which limits companies' capacity to supply sophisticated products or to offer tailor-made products to meet mine-specific specifications;
- (iii) Difficulties to meet ad-hoc or unplanned demand, which often requires short delivery lead times;
- (iv) Monopoly suppliers for some products, creating supply risks for mining companies and potentially, price distortions.

(d) The limitations of local content policies, which focus on compliance with regulations, rather than on providing incentives with a view to improving supply chains and stimulating domestic manufacturing capacities.

Table 31a

Total procurement and total local procurement (\$), and local procurement as a percentage of total procurement, for the years 2014, 2015 and 2016

Item	2014 total procurement	2015 total procurement	2016 total procurement	2014 total local procurement	2015 total local procurement	2016 total local procurement	2014 % local procurement	2015 % local procurement	2016 % local procurement
1 Grinding media	67,947,404.5	62,283,571	60,595,147	33,606,086.6	28,125,101.5	32,903,097.1	49.5	45.2	54.3
2 Electrical cables	2,292,580.5	1,350,579.9	1,451,848.8	1,388,045	949,490.4	1,311,726.8	60.5	70.3	90.35
3 HDPE/PVC pipes	5,010,304.7	11,221,521.5	5,727,456.4	5,010,304.7	9,750,105.8	5,727,456.4	100	86.9	100
4 General lubricants	12,641,802.2	21,812,497.9	13,817,800	12,300,029.2	10,930,109.7	13,814,989.3	97.3	50.1	99.98
5 Quick/hydrated lime	30,236,784.4	21,812,497.9	17,292,271.4	30,236,784.4	21,811,911.9	17,292,271.4	100	99.9	100
6 Tyre-retreading	1,441,519.4	751,666	707,735.5	1,441,519.4	751,666	707,735.5	100	100	100
7 Explosives	60,668,569.9	63,289,945.6	79,960,882.7	60,668,569.9	63,289,945.7	79,960,882.7	100	100	100
8 Cement	3,585,735.1	769,572	437,340.2	3,585,734.7	769,572.2	437,340.2	100	100	100
9 Bolts and nuts			786,676.7			765,612.5			97.32
10 Crucibles			208,571			102,991.7			49.38
11 Plastic sample bags			644,404.9			644,404.9			100
12 Calico bags			216,769.6			216,769.6			100
13 Bullion boxes			7,632.4			5,587.5			73.21
14 Chain link fencing			206,133.8			69,837.8			33.88
15 Conveyor rollers			535,481.6			340,931.4			63.67
16 Metal/PVC core trays			675,687			675,687			100
17 Overalls and work clothes			1,021,486.4			1,018,860.9			99.74
18 Haulage services			188,521,099.8			188,521,099.8			100
19 Catering services			22,026,737.8			22,026,737.8			100
Total (local content list)	183,824,700.7	183,291,852	394,841,162.9	148,237,073.9	136,377,903.2	366,544,020.3	80.64	74.4	92.83
Total local purchases incl. diesel and electricity	1,492,850,654	1,690,971,732						9.13	21.7
Total local purchases excl. diesel and electricity	865,596,473	1,013,810,896						15.8	36.2

Table 31b

Total procurement and true local procurement (\$), and true local procurement as a percentage of total procurement, for the years 2014, 2015 and 2016

	Item	2014 total procurement	2015 total procurement	2016 total procurement	2014 true local procurement	2015 true local procurement	2016 true local procurement	2014 % true local procurement	2015 % true local procurement	2016 % true local procurement
1	Grinding media	67,947,404.5	62,283,571	60,595,147	30,022,809.6	17,892,166.3	25,594,409.8	44.2	28.7	42.24
2	Electrical cables	2,292,580.5	1,350,579.9	1,451,848.8	172,698.2	488,000.7	1,065,442	7.5	36.1	73.39
3	HDPE/PVC pipes	5,010,304.7	11,221,521.5	5,727,456.4	4,935,196	9,726,024.4	5,712,343.5	98.5	86.7	99.74
4	General lubricants	12,641,802.2	21,812,497.9	13,817,800	12,300,029.2	10,930,109.7	13,814,989.3	97.3	50.1	99.98
5	Quick/hydrated lime	30,236,784.4	21,812,497.9	17,292,271.4	30,236,784.4	21,812,497.9	15,186,138.5	100	100	87.82
6	Tyre-retreading	1,441,519.4	751,666	707,735.5	1,441,519.4	751,666	707,735.5	100	100	100
7	Explosives	60,668,569.9	63,289,945.6	79,960,882.7	60,668,569.9	63,289,945.7	79,960,882.8	100	100	100
8	Cement	3,585,735.1	769,572	437,340.2	3,585,734.7	769,572.2	437,340.2	100	100	100
9	Bolts and nuts			786,676.7			55,979.9			7.12
10	Crucibles			208,571			11,796.5			5.66
11	Plastic sample bags			644,404.9			644,404.9			100
12	Calico bags			216,769.6			216,769.6			100
13	Bullion boxes			7,632.4			5,587.5			73.21
14	Chain link fencing			206,133.8			14,085.8			6.83
15	Conveyor rollers			535,481.6			327,958.2			61.25
16	Metal/PVC core trays			675,687			-			-
17	Overalls and work clothes			1,021,486.4			929,798.9			91.02
18	Haulage services			188,521,099.8			48,231,361.2			25.58
19	Catering services			22,026,737.8			13,623,391.9			61.85
	TOTAL	183,824,700.7	183,291,852	394,841,162.9	143,363,341.5	125,659,982.8	206,540,415.8	77.99	68.56	52.31
	Total local purchases incl. diesel and electricity	1,492,850,654	1,690,971,732						8.4	12.2
	Total local purchases excl. diesel and electricity	865,596,473	1,013,810,896						14.5	20.4

Source: Minerals Commission 2017.

Note: True local procurement refers to value of goods sourced from local manufacturers, whilst local procurement includes true local procurement as well as items imported and then supplied by local suppliers.

* The figures do not reflect the total procurement but instead, the commitment made as per local procurement plans submitted by mining companies.

Box 7

Initiatives to address supply side constraints with a view to enhancing local procurement

In November 2016, a dedicated workshop was organized¹¹⁹ to discuss supply-side bottlenecks and identify practical measures that could be taken to strengthen electrical material supply chains. As a result, true local content performance for electrical cables increased from 36.1 per cent to 73.4 per cent.

In the same vein, in an attempt to improve the supply capacity and quality of inputs used in the fabrication of grinding media, Newmont led an initiative to help the local grinding media manufacturer, WAFOR, to improve its quality and safety standards. The partnership between the two companies led to significant improvements in product quality. Based on the improved performance, Newmont entered into a long-term contract agreement with WAFOR, which provided the company sufficient security to acquire a new plant and four new trucks to meet its delivery deadlines.

Given the persistent challenges faced by local suppliers, a number of commendable initiatives have been taken by mining companies working together to help suppliers address their capacity issues, improve standards and accelerate delivery schedules. Two of those are illustrated in Box 7.

The current local content policy, and particularly, the list of product categories to be sourced locally, was designed following consultations with mining companies and companies with in-depth knowledge of markets and manufacturing capacities in Ghana. Many product categories were already being sourced locally, and therefore it was easy to demonstrate results. For some other products, the potential was known but local firms did not necessarily have the full capacity or the technical know-how to immediately meet the needs of the mining industry. However, a number of initiatives, including those mentioned in Box 7, helped to improve local capacity.

To better assess the effectiveness of the current local content policy, it is important to review total procurement by mining companies.

In that connection, annual reports by the Chamber of Mines give detail breakdowns of the mining companies' expenditure on local purchases. For example, in 2015, mining companies spent a total of \$865.6 million on local purchases (excluding diesel fuel and electrical power) and a total of \$1.49 billion, if diesel and electrical power are included. In 2016, local purchases increased to \$1.01 billion (excluding diesel fuel and electrical power) and to \$1.69 billion, if diesel fuel and electrical power are included.

Tables 31a and 31b also show local procurement as a percentage of the total procurement by mining companies in 2015 and 2016 and highlight the following points:

- (e) In 2015, if diesel fuel and power were included¹²⁰, the eight product categories listed accounted for only 9.13 per cent of total local procurement and 8.4 per cent of true local procurement. If diesel and electric power were excluded, local purchases comprised 15.8 per cent of total local procurement and 14.5 per cent of true local procurement.

119 This workshop was organized jointly by the Minerals Commission, the Chamber of Mines, the Ghana Standards Authority and the electric cable dealers.

120 We include diesel and electrical power because the local content list includes general lubricants, which is one item clustered under "fuel and lubricants".

- (f) In 2016, if diesel and power were included¹²¹, the product categories listed accounted for only 31.7 per cent of total local procurement and only 12.2 per cent of true local procurement. If diesel and electric power were excluded, local purchases comprised 36.2 per cent of total local procurement and 20.4 per cent of true local procurement.

Excluding diesel fuel and electric power, true local procurement increased by 40 per cent between 2015 and 2016 while total local procurement increased by 129 per cent. This suggests that importers have benefited more from local content regulations than local manufacturers.

Mining companies were still importing approximately 80 per cent of their inputs three years after the start of L.I. 2173 implementation monitoring. This raises questions about the effectiveness of the mechanisms used to increase local content, and the sustainability of that approach. Current local content regulations are based on a “list” approach, rather than on a strategic approach to stimulate

supply chain development. Progress has been made, and this must be recognized and there is no doubt that mining companies will continue to take steps to help local suppliers to comply with quality standards and expand their supply capacity. But in the longer term, however, it may be necessary to adopt a more strategic approach that not only provides for direct purchases from local manufacturers, but also provides direct assistance to firms to help them boost capacity and improve standards.

Besides sourcing a certain proportion of inputs locally, mining companies are also required to give preference to local suppliers in tendering processes, to the “*extent possible and consistent with safety, efficiency and economy*”. If the best bids for a tender fall within 2 per cent of each other in terms of price, mining companies are required to give preference to the bid with the highest Ghanaian content. The Minerals Commission has not yet assessed whether mining companies have complied with that regulation and, by extension, how many local companies have been awarded tenders on that basis.

121 We include diesel and electrical power because the local content list includes general lubricants, which is one item clustered under “fuel and lubricants”.

Chapter 6: Looking beyond local content: market analysis of procurement in Ghana and the region

6. Looking beyond local content: market analysis of procurement in Ghana and the region

For the purpose of this report, BGR¹²² conducted a demand model analysis of the potential for local value addition by looking at product opportunities that would make sense to develop locally from a business perspective. The analysis looked at the economic potential and market realities for local procurement in Ghana and West Africa. The study looked at the following countries: Burkina Faso, Côte d'Ivoire, Ghana and Mali.

The demand model estimated mining expenditure on procurement per country in 2015 for all mining companies effectively operating that year on the basis of publicly reported figures. The model allocated procurement spending to 32 product and service categories. Allocations of percentage spending to each category were tested against available bottom-up procurement data from the region and refined using expert input.

Mining company profiles were then developed using secondary research and interviews with supply chain officials. The 14 companies profiled accounted for approximately 80 per cent of industrial gold production in 2015 in the four countries covered.

Ten product opportunity case studies were developed on the basis of input from mining companies, the project team's knowledge from previous supplier interactions in the region, and secondary research on supplier capacity and existing support efforts.

A gap analysis was then undertaken to identify major constraints impeding efforts to exploit opportunities identified in the case studies. On that basis support recommendations were formulated.

6.1 The BGR procurement demand model

The procurement demand model was developed based on expert input on procurement, as well as analysis of detailed procurement data. The model allows users to generate spend estimates for 32 demand categories using publicly available financial reporting.

The model currently covers 2015 data for 27 gold mines in the region across 14 companies in four countries (Côte d'Ivoire, Burkina Faso, Ghana and Mali). All of these gold mines were actively producing in 2015. The model could be extended to other companies

122 Kaiser Economic Development Partners assisted BGR with the development of a demand model for West African mining that identified key local procurement opportunities that could reduce cost or bolster efficiency, and also identified related constraints on production.

and commodities where financial reporting is available.

The model offers a new and efficient analytical tool for Governments, the mining industry and suppliers and provides a breakdown of the annual consumption by country, mine category (underground versus open pit, on-versus off-grid), individual mine and operator.

The model can be used to adopt more targeted approaches to local content policy, enhance information sharing, and lower the investment risks of mining suppliers. It can therefore promote industrial diversification and boost investment – both of which are critical for mining supplier development.

Questions that the model can answer:

- » What is the total operational procurement spend of industrial mines in [country]?
- » How much of [one of 32 products/services] is bought by operating mines in the region?
- » What is the annual operational procurement spend of [mining company] in the region?
- » What is spent by all the [open pit/underground/off-grid/on-grid] mines on a category of spend?

Examples of how the model could be used:

- » Cross-checking submissions against targets in local procurement plans.
- » Considering the investment viability of FDI in one country or across the region.
- » Evaluating the viability of investments in supplier development.
- » Assisting investors through consulting services and the provision of information specific to the investor’s product portfolio.

The model calculated that the total procurement spend across the four countries for the top product categories amounted to \$2.66 billion in 2015.

Figure 26
Total procurement spend for the four countries (\$ million)

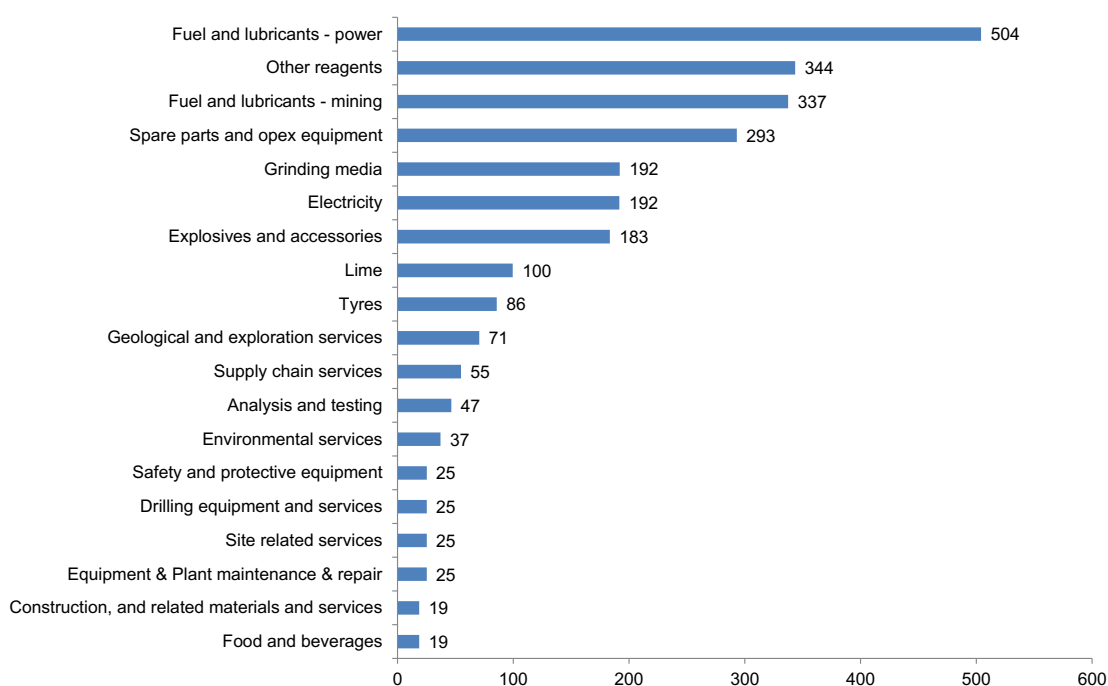


Table 32
Spending overview by country

Country	Mine type	Open pit		Underground		Total
		Off-grid	On-grid	Off-grid	On-grid	
Ghana		369.7	652.8		187.9	1,210.3
Mali		282.1		337.9	8.6	628.6
Burkina Faso		545.7				545.7
Côte d'Ivoire			275.4			275.4
Total		1,197.5	928.1	337.9	196.5	2,660.0

Despite the fact that Ghana is a large gold producing country, procurement spend is low by international standards. BGR conducted a similar study for Southern Africa in 2015, and, by comparison, total procurement spend for South Africa alone was \$26 billion – some 10 times more than the four West African countries combined.

As can be seen from Figure 26, “big ticket” items such as power, reagents and fuel and lubricants make up the bulk of the operational expenditures of mining companies. Fuel and lubricants alone (for power and other uses) accounted for 31 per cent of total operational costs in 2015. Five other products, namely reagents, spare parts, grinding media, explosives and electricity, accounted for another 45.3 per cent of total spending.

Of the four countries assessed, Ghana is by far the largest gold producing country and therefore has the largest market potential in West Africa, putting the country in a comfortable position to develop capacities as a regional hub. For the purpose of the analysis, ten of its large mines in operation were surveyed and altogether, they accounted for a total of \$1.21 billion operational spend in 2015. The country accounted for 45.5 per cent of the total market for the 4 countries.

This implies that there is scope to scale up local procurement for a number of items. Furthermore, there are certainly significant advantages in procuring locally, if the quantity, quality and price are competitive and if the cost advantages offset import duty exemptions and other incentives given to companies for their imported inputs. These include, amongst others:

- (a) Reduced lead time for problematic procurement. An order from China, for instance, may take up to 100 days to be delivered;¹²³
- (b) Reduced stockholding costs;
- (c) Less risk of stoppage in cases of breakdown when replacement materials are unavailable locally;
- (d) Increased price certainty: international suppliers at times do not hold prices between orders with long intervals;
- (e) Reduced administration costs and processing times, including with regard to port clearance, import licencing applications, and compliance with local procurement regulations.

123 This includes three weeks for production, 60 days for shipping, 10 days for port clearing, and one day to transport to site.

6.2 Overview of findings of mining company profiling

Interviews with mining companies were conducted to learn about their procurement processes, existing supplier onboarding procedures and supplier development initiatives, and to understand where those companies see local procurement growth opportunities that could help save them money or create operational efficiencies.

Key insights from this research include:

Global supply chains and quality standards often drive decision-making. This may present challenges for local procurement

In most cases, large and core spend items are centrally procured at a regional or head office level on longer-term contracts. These often include fuel and process consumables. This can create tension when there is a need to promote local procurement. However, in many cases, procurement managers can make exemptions so that goods are procured locally, provided that a local supplier can supply goods with the required specifications cheaper than a non-local supplier and/or to comply with national regulations.

For core items that are critical to operations, mines are often hesitant to try out untested local suppliers (the cost of down time or stoppages makes this too risky); joint ventures with international suppliers can help to ensure that local suppliers can meet technical specifications and production quality and consistency standards. Mines can also address that challenge by involving technical staff in supplier prequalification, testing out a new supplier on smaller trial contracts and gradually extending scale and technical complexity.

It is more difficult for mines to identify realistic local procurement opportunities in Mali and Burkina than in Ghana and Côte d'Ivoire,

inter alia, because the industrial sector is far less developed and there is less competition among suppliers in the former countries. It is, however, possible to identify local procurement opportunities with regard to certain products in those less developed countries, including lime and cement.

Local content regulations have altered mining company behaviour

Interviews with mining officials make it clear that correctly designed local content regulations can increase the attention they pay to local procurement. For example, the local procurement regulatory process in Ghana, including, in particular, the formulation of a local procurement list, and the requirement that mining companies submit annual local procurement plans, has encouraged those companies to more proactively identify potential suppliers to work with, and improve their planning and reporting mechanisms.

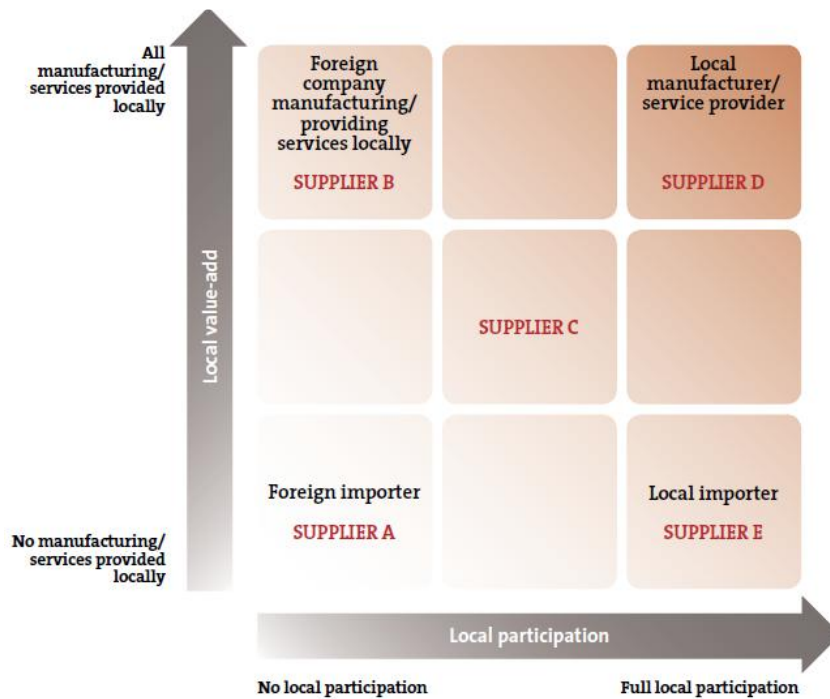
Current suppliers' development initiatives have limited impact

Current suppliers' development programs pay close attention to SMEs in local communities, as a way to promote CSR and ensure that companies will continue to be granted operating licences. However, support programmes related to 'big ticket' items are less structured and focus mainly on information sharing and on meeting technical and quality standards. Some donor programs also focus mainly on SME supplier development.

However, companies have different working definitions of "local". As a result, while many companies seek to work with locally registered companies, suppliers paid in local currency, or suppliers in nearby communities, this does not necessarily mean that they have a clear strategy to promote local value addition. As Figure 27 shows, the "practical guide to increasing mining local procurement in West Africa". Developed by the World Bank provides a framework for categorizing suppliers.

Figure 27

Framework for categorizing suppliers



Source: World Bank, 2013.

Many mining company supplier development programmes are therefore not in line with governments' ambitions to foster broader industrialization and more effective instruments to support the development of a competitive local manufacturing capacity are needed.

In the following pages, this report reviews 10 product categories with scalable procurement potential in Ghana and in the three other gold producing countries. The products can be grouped as follows:

(a) **Larger scale items**, i.e. large volume, bulky consumable items with high capital and technology requirements. Examples include grinding media (steel balls), lime, explosives, other potential reagents and fuel and power.

(b) **Medium scale opportunities**, such as geological and environmental services and lab testing.

(c) **Smaller opportunities**, more suitable for SMEs and localized/local-local supply, but still requiring compliance with quality standards, such as the provision of work uniforms or food.

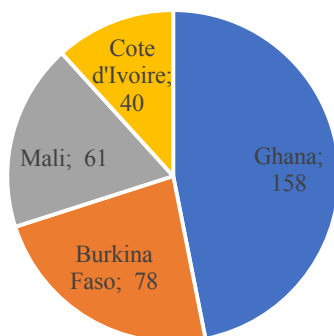
6.2.1 Fuel and Energy

Nature of the product

Fuel is critical for mining operations. It is needed to run mining machinery and vehicles such as heavy equipment, haulage trucks, pickup trucks, and personnel vehicles. It is used to generate power for the plant and facilities where mines are off-grid or as fuel for back-up generators where mines are connected to the grid. Fuel is by far the single

Figure 28a

Expenditure: fuel and lubricants (mining), 2015 (\$ million)



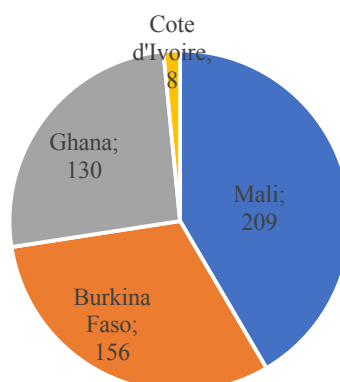
largest operation spend for the mining industry in West Africa.

Diesel engines, and thus diesel fuel, are dominant in mining machinery. Diesel fuel oil is a mixture of hydrocarbons obtained by distillation of crude oil. The important properties used to characterize diesel fuel include cetane number (or cetane index), fuel volatility, density, viscosity, cold behaviour, and sulphur content. Diesel fuel specifications differ for various fuel grades and in different countries. Although different organizations may have different specifications, there are six fuel grades, numbered 1 through 6, with the boiling point, carbon chain length, and the viscosity of the fuel increasing with the number. The price usually decreases as the fuel oil number increases.

Diesel generators (gensets) are also widely used for power generation by off-grid mines and as backup by on-grid mines. However, some mines use heavy fuel oil gensets instead – also known as “residual fuel oil”. This refers to Number 5 or Number 6 fuel oil, which are based on the high viscosity, tar-like mass remaining after the distillation and cracking of crude oil (i.e. the residue after the more valuable cuts of crude oil have boiled off).

Figure 28b

Expenditure: Fuel and lubricants (power), 2015 (\$ million)



Potential scale of opportunities

Mines spent approximately \$842 million on fuel in 2015. This is substantial. Fuel costs of individual mines depend on the type of mine and whether it is on- or off-grid.

According to the BGR model, mining fuel typically accounts for 4 per cent of cash operating costs for underground mines and 10 per cent for open pit operations. Off-grid mines spend between 20 and 25 per cent of cash operating costs on fuel to generate energy, while on-grid mines spend substantially less (about 2 per cent) as gensets are only used sporadically; this varies depending on the reliability of the grid and regularity of use of backup power.

This results in a starkly different situation and cost structure between mines in Ghana and the rest of the region. Ghanaian mines, for the most part, have access to hydro- or gas-generated grid power (for these mines, electricity accounts for 10 to 15 per cent of cash operating costs) and some mines have concluded power purchase agreements to secure consistent power supplies. Mines in Burkina Faso and Mali, however, are often located far from the existing grids and usually generate their own power.

Procurement process and requirements

Tenders are the common process for awarding fuel contracts. The relationship with fuel vendors is generally managed at a group level, as they can negotiate better prices through purchasing large volumes and by building long-term relationships with suppliers. It also reduces administration work.

Some individual mines negotiate their own fuel contracts, due to legacy fuel provider relationships (e.g. after acquisition by a new group, the mine continues to honour an existing supply contract), or due to the mine opting out of contracts negotiated at a group level. This is done to support local procurement, but only where it makes cost sense. Very few mines decide to negotiate their own fuel contracts.

Fuel cost and management has a considerable impact on mine production costs. Hence quality, reliability of supply, responsiveness, and the provision of on-site services are key purchasing criteria, in addition to price. The pricing structure – e.g. variable price, margin, and adjustments – along with key contract terms are agreed with the supplier. Additional services support the mining company's fuel management system, and may include on-site assistance, supply management and optimization, storage and stock management, preventive maintenance, and security and environmental management. In some cases, fuel procurement is structured to include on-site consignment, or as a contract for complete management of the fuel farm.

Contracts cover fuel procurement and local transport. The reliability of supply is therefore a function of sourcing the product and fuel suppliers are required to have a reliable transportation fleet (tanker trucks), especially in the landlocked countries. Transportation is also an important cost element – estimates

for Mali shows that transport (plus retail margin) can add 20 per cent to diesel costs.

While fuel procurement covers the buying and delivery of fuel, some distinction can be made between fuel distribution (local suppliers of large subsidiaries) and the production (refining) of oil. Each of these elements is addressed separately below.

Fuel distribution: current suppliers, supply gaps and potential next steps

Fuel supply to mines is currently handled by local distributors that are subsidiaries of major oil multinationals (e.g. Total) or by locally-owned companies that offer distribution (e.g. Ben & Co Energy in Mali and Zen Petroleum in Ghana) from imported fuel. Although Ghana started oil production in 2010, fuel used by mining companies is currently imported.

One company indicated that it awarded a fuel contract to a “local local” entrepreneur to support economic activity in areas around the mine site. On the basis of a long-term contract and promised technical support, the entrepreneur was able to acquire additional tanker trucks and it seems that the endeavour was successful. Officials at the mining company admitted that this required some risk-taking on their behalf.

Not all local fuel delivery initiatives have been successful. While some companies have delivered a competitive, reliable and responsive service to mines, many locally-owned fuel distributors lack the required logistic assets, financial strength, and planning and monitoring capacities to service the mines. Procurement officials are often concerned about the risk associated with locally-owned suppliers for such a critical input to their operations, and therefore rely on larger, multinational firms.

To support local fuel suppliers, Ghana must:

- (a) Identify and support locally-owned companies to improve technical knowhow, standards, planning and monitoring capacities;
- (b) Evaluate the scope for local companies to provide value-added services, i.e. supply management and optimization, stock management, security, and maintenance;
- (c) Assess the willingness of mines to use local suppliers (which may require moving away from global contracts);
- (d) Assess the possibility of Government support and incentives to support the industry.

Energy production: current suppliers, supply gaps and potential next steps

Despite some local refining in Côte d'Ivoire, Ghana and Senegal, most fuel supplied to mines is currently imported. There is an opportunity to source more fuel from the region with the development of the oil and gas sector in Ghana.

While fuel production and distribution may offer some opportunities for local firms, the reliance on fuel for energy harms the mining industry. Relying on gensets for electricity is costly for mining firms (particularly in land-locked countries) as they can undermine mine competitiveness and deter investment, as well as negatively affecting their carbon footprint. Access to hydro-electricity from Côte d'Ivoire and Ghana could reduce mines' production costs. As an example, a 21km transmission line was built to connect a Burkina Faso mine to the Ghanaian grid to supply 10 MW of electricity. This, coupled with an 8 MW diesel generator on the site, led to a significant reduction of the share of energy in the cost per ounce at the mine.

Exploiting regional energy resources more effectively would require investment in infrastructure, inter-country connections, and appropriate legal frameworks and pricing agreements. It would also open up opportunities for independent power producers and public-private partnerships, some of which already operate in the region. This is already starting to happen in Ghana, and could take place in other countries in the region once a supportive regulatory environment is in place.

Independent energy production, including natural gas, wind and solar power generation, also offers opportunities for mines. In addition, a small portion of energy needs could be met through alternative sources such as biofuels (some pilot projects are already underway). While these projects are likely to remain small, they can help reduce costs and help mines meet their environmental commitments and support local communities.

To bridge the supply gap, it is necessary to:

- (a) Develop mid-stream and downstream oil and gas sectors and explore other renewable energy options;
- (b) Accelerate and incentivize energy infrastructure projects, for example by supporting regional investment and interconnection programmes such as the ECOWAS West African Power Pool;
- (c) Encourage regional collaboration and power pooling and establish robust and open energy market frameworks (both in-country and inter-country);
- (d) Explore the potential of power purchase agreements, international environment-linked funding schemes and the use by mines and remote communities of alternative energy sources.

6.2.2 Other reagents: activated carbon and caustic soda

Nature of the products

Activated carbon and caustic soda are consumables used in ore treatment to recover gold. Hydrometallurgical gold recovery involves a leaching step. Gold ore is dissolved in an aqueous medium (cyanide leach solution) and is separated from residues through absorption onto activated carbon. Caustic soda is then used to remove the gold from the activated carbon in a process known as elution. Caustic soda, also called sodium hydroxide, is also used in the treatment of bauxite ore and in a wide range of other industrial applications such as the manufacture of pulp and paper, soap and detergents, petroleum products and chemicals and in water treatment.

Activated carbon is produced from organic-based materials, such as coconut shells, palm-kernel shells, wood chips, sawdust, corn cobs or seeds. The raw material is first carbonized (requiring temperatures of 600 to 900°C) and is then activated by chemicals or by steam. Ghana produces palm oil but exports most of its palm kernel shells. These could potentially be used in the production of activated carbon.

Most caustic soda is co-produced with chlorine through the electrolysis of a sodium chloride solution (i.e. a solution of salt in water).

Potential scale of opportunities

Activated carbon and caustic soda are classified as “other reagents” in the BGR model, and account for between 7 to 10 per cent of cash operating costs, amounting to an estimated \$344 million in 2015 across the four West African countries (the model does not currently disaggregate spend on activated carbon and caustic soda).

Based on import data, imports of activated carbon (HS 3082) in the four countries was estimated at \$8.4 million in 2015, with most imports going to Ghana (\$4.5 million). Caustic soda (HS 2815) imports were \$17.31 million. These values however include goods for the wider market, such as for water treatment, and are therefore likely to overestimate the mining sector market. The import categories are also likely to contain products unsuitable for mining.

Together, the BGR model and the import data show that, although caustic soda and activated carbon comprise a relatively small proportion of mining procurement, market for these products is still large. These products therefore present an opportunity, particularly as no production of these products currently takes place in the region, despite the availability of the necessary raw materials. However, the scale needed to justify an investment in production means that the manufacturer would probably need to target the entire regional market. The Minerals Commission has placed caustic soda and activated carbon on the local content list scheduled for issue in 2018. At present, however, there is insufficient local supply capacity for those two products.

Procurement process and requirements

Bulk reagents such as caustic soda and activated carbon tend to be procured by corporate headquarters, which negotiate a price across mining operations. Closed tenders are the most common process. Key requirements include conformity to specifications, price, reliability of supply and, in some cases, willingness to work on a consignment basis (with implications for cash flow).

Current suppliers and supply gaps

There is currently no local production of activated carbon or caustic soda in the region. Mines’ needs are met through imports, which

can result in significant logistics costs, delays and delivery uncertainties, thereby compelling mines to maintain significant stocks of those materials.

Studies conducted as far back as 1999 in Ghana have evaluated the potential for local manufacture of activated carbon, including by utilizing the country's abundant agricultural waste, such as coconut shells and palm kernels, as raw materials. Relevant stakeholders have also considered establishing caustic soda production facilities in Ghana and have conducted a number of feasibility studies.

Potential next steps

These products will be included in the local content list scheduled for issue in 2018. It is therefore important to step up efforts to:

- (a) Complete feasibility studies regarding the local production of activated carbon and caustic soda;
- (b) Estimate the size of the regional market for activated soda and caustic soda;
- (c) Facilitate investment in Ghana to ensure sufficient capacity to meet the requirements of the mining industry;
- (d) To achieve economies of scale that are attractive to potential investors, the Government needs to ensure that they will enjoy access to regional markets.

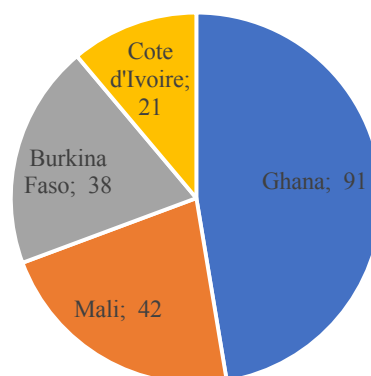
6.2.3 Grinding media (steel balls)

Nature of the product

Grinding media are used within mills to reduce the particle size of crushed ore. In West Africa, most gold mines use steel balls as their grinding media. A range of sizes is used by different mining companies, based on the type of ore and the specific mill technology. Ball

sizes typically range from 50mm to 125mm. Other variations include the hardness (affected by chrome content) and whether the balls are forged or cast (forged is preferred for larger sizes and longer lifespan). The quality of steel balls and the "wear rate" is critical to the economics of processing. Furthermore, any faults can cause stoppages, which have significant negative operational implications. Grinding media are therefore considered a strategic purchase.

Figure 29
Expenditure: grinding media, 2015 (\$ million)



Potential scale of opportunities

Steel balls typically represent around 6 per cent of cash operating costs in West Africa. Using the BGR demand model for the four West African countries, it is estimated that current operational gold mines spent about \$192 million on steel balls in 2015.

In Ghana, grinding media worth approximately \$18 million was procured from local manufacturers in 2015 (down from 30 million in 2014). This represented about 28.7 per cent of total procurement (down from 44 per cent in 2014). The reduction resulted from a lack of local competition and difficulties encountered by local suppliers with regard to meeting the requirements of the industry in terms of price and quality.

In the other countries, it seems that only emergency supplies of grinding media are sourced from within the region – other supplies are imported. Logistics costs for imported steel balls can comprise up to 20 per cent of purchase price. There is therefore a potential market opportunity of approximately \$140 million. In the light of the gold mining projects currently planned in the region (and in East Africa), medium-term opportunities could be significantly greater.

Procurement process and requirements

Because steel balls are strategic and large spend items, mining companies in the region typically procure them at group level, either at the regional or corporate head office level. Contracts typically go to competitive tender, often for a multi-year contract with review periods. There are exceptions in Ghana because steel balls are part of the local content list.

There are some critical prerequisites for local procurement, namely:

- (a) Local companies must be able to meet each mine's specifications and quality requirements in terms of size, strength, and wear rate (which depends on the quality of inputs, design technology and manufacturing method);
- (b) Prices must be competitive and payment terms must respond to companies' procure-to-pay processes (cash on delivery payment terms are not preferred as most mines work on 30 to 60 days term);
- (c) Product supply and delivery must be reliable (delays in delivery could result in mine stoppages or compel mines to stockpile grinding media, which increases costs).

Current suppliers and supply gaps

Currently the main supplier in the region is Ghana-based West African Forgings Ltd. (WA-FOR), formerly Tema Steel, which uses scrap metal as input. Other local companies have struggled to compete and Takoradi-based Western Casting, for example, went out of business. Larger balls are not produced in the region. Other companies with relevant capabilities include Western Steel and Forging Ltd.

In 2013, an announcement was made regarding a \$40 million investment in a steel ball plant in Tema, Ghana by a consortium comprising the Scaw Metals Group and the Guma Group (both South African groups of companies) and the Ghana-based Jospong Group of Companies. The deal would have allowed Scaw Metals Group to use their own rolled steel as input rather than scrap metal. Interviews with procurement officials indicate that the deal fell through due to various issues, including the inability of the Ghanaian Government to guarantee power supplies at a competitive price.

Mining companies in Ghana have been discussing consolidating their demand for grinding media with a view to encouraging international investors to invest in local production.

Potential next steps

To scale up the production of grinding media to meet local content requirements, but also to target regional markets, it is necessary to:

- (a) Assess regional market potential for grinding media (beyond the gold sector) and conduct technical feasibility studies to capture a larger market;
- (b) Determine the availability, cost and quality of steel available in the region (scrap or new steel, and the potential impact of a ban on scrap metal exports) and/or the

potential for a vertically integrated supplier with its own steel feedstock;

- (c) Develop a mechanism to help mining companies consolidate their demand for grinding media;
- (d) Ensure that power supplies are reliable and that power is provided at reasonable cost;
- (e) Promote joint ventures with foreign investors;
- (f) Resolve intraregional logistics challenges.

6.2.4 Explosives

Nature of the product

Good blast design and execution are essential for successful mining operations. In virtually all forms of mining, rock is broken by drilling and blasting. This is done to clear away rock and soil that does not bear ore, or to break up ore-bearing rock for further processing.

Explosive firms offer blasting agents, breaking systems, explosives and detonators along with technical support. Common explosives used are ANFO (ammonium nitrate/fuel oil), slurries and emulsions.

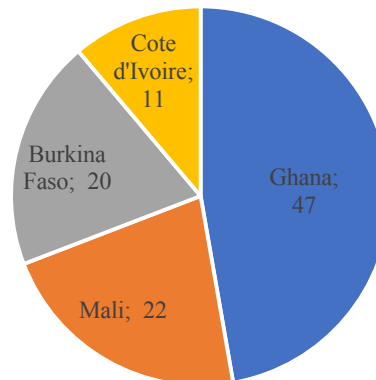
Explosives supply can range from simple delivery of products to mine sites to down-the-hole service contracts to better integrate prime, tie, load and shoot operations. Demand for explosives and accessories is driven by open pit mining overburden removal and ore blasting, and underground mining blasting.

Potential scale of opportunities

Explosives and accessories generally cost between 4 and 6 per cent of cash operation

costs. Using the BGR demand model for the four West African countries, it is estimated that gold mines spent approximately \$183 million on explosives in 2015.

Figure 30
Expenditure: explosives and accessories, 2015 (\$ million)



Procurement process and requirements

Explosives contracts are generally procured at group level and are drawn up as service contracts. Mines look, primarily, for reliability and competitiveness when choosing an explosive supplier. However, mining companies also consider logistics, safety and security, materials handling and storing (including of hazardous and explosive materials) and technical support.

Ghana's local content requirement includes explosive emulsions and companies currently source approximately \$63 million from local producers. All volumes included in mining companies' procurement plans are sourced locally.

Regulations on explosives are often a factor in determining where the final product is mixed. Transport restrictions on explosives means that mixing is often done on-site or near the mine site. Associated services include on-site storage and down-hole services, which are often supplied by explosives companies.

Current suppliers and supply gaps

There are a number of explosives services suppliers operating in West Africa. The main suppliers are:

- (a) Maxam, a Spanish company, which offers blasting services for mining and quarrying operations, as well as infrastructure projects. Maxam has been operating in West Africa for more than 20 years. Its production site for ammonium nitrate is in France. The company does not manufacture locally.
- (b) AEL Mining Services, a South African company, which offers explosives products and services. AEL has offices in Accra, Ghana and Bamako, Mali and is in the process of establishing permanent offices in Burkina Faso. In West Africa, it employs over 350 people throughout the region through in-country entities, namely AECI Burkina Faso, AECI Côte d'Ivoire AECI Guinea, AECI Mali and AECI Senegal. It has two bulk manufacturing facilities and one shock tube assembly plant in Ghana, which meet demand in the region. It also has two distribution sites in Guinea, two in Mali and four in Burkina Faso. However, industrial nitrates are usually manufactured in South Africa.
- (c) BME, a South African company, is a subsidiary of Omnia Holdings Limited: About 18 per cent of BME sales are in West Africa. BME employs 100 to 120 people in the West African region, including in chemistry, mining, engineering, procurement and administration. It offers full blasting service as well as down-the-hole services. The bulk of the company's manufacturing occurs in South Africa (nitric acid, emulsifiers, ammonium nitrate, emulsion, shock tubes, and packaged explosives). However, it also has plants, which mainly produce emulsifiers, in Burkina Faso, Ghana, Guinea, Mali, Mauritania and Sierra Leone.
- (d) EPC Groupe, a French company, operates in Cameroon, Congo, Côte d'Ivoire, Gabon, Guinea and Senegal, and has offices in explosives in Chad, Mali and Mauritania. Operations in Côte d'Ivoire were launched as part of a joint venture with that country's national mining development company, Sodemi. EPC Côte d'Ivoire commissioned its new Oko matrix production unit 80km from the Bonikro mine in early 2015.
- (e) Local importers, including Wileb Mining Supplies Ltd.– an accredited distributor for AEL products.

A shortage of road transport tankers exacerbates what are already high logistics costs for the supply of explosives to mines and other projects in West Africa. Due to the unavailability of road transport tankers and the remoteness of some mines, many mines are forced to establish emulsion facilities on site. The transport of ammonium nitrate is also regulated (it is sometimes classified as an explosive material and sometimes as a hazardous substance) and not all logistics companies are authorized to transport it. Other transport delays also add to costs. It sometimes takes three to four months to get material to its destination and this affects how much stock needs to be stored at the mine. Indeed, mines must often keep six to eight months of buffer stocks to ensure that a mine can continue to operate. Maintaining such large stocks is expensive. These challenges mean that logistics costs in West Africa are considerably higher than equivalent costs in South Africa.

No manufacturers of inputs such as ammonium nitrate were identified in the region. Further investigation would be required to assess relevant chemical manufacture capacities in West Africa.

Potential next steps

Despite local content requirements, no explosives are currently manufactured in Ghana. To scale up local industrial potential, it is important to:

- (a) Review the regulatory framework for explosives production and logistics in all countries in the region;
- (b) Calculate current local spend on explosives, including with regard to mixing on site and using local affiliates;
- (c) Assess the scope for further coordination with local logistics firms, including warehousing opportunities;
- (d) Investigate ways to facilitate the provision of raw materials to West African subsidiaries of large explosive firms with a view to manufacturing explosives in the region;
- (e) Establish mechanisms through which mining companies can consolidate their demand for explosives and related accessories;
- (f) Promote joint ventures between international and local firms to facilitate the provision of explosives services;
- (g) Address intraregional logistics constraints.

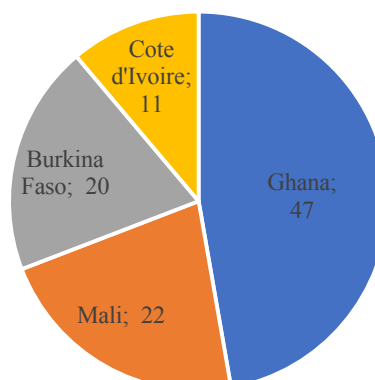
6.2.5 Lime

Nature of the product

The term “lime” is used to cover various aspects of the element calcium, but generally refers to the manufactured forms of lime, namely quicklime and hydrated lime. These are derivatives of limestone, which is the feedstock for lime manufacturing.

Figure 31

Expenditure: lime, 2015 (\$ million)



Quicklime or burnt lime (CaO), is the product of the calcination of limestone and consists of oxides of calcium and magnesium; while hydrated lime (Ca(OH)_2) is a dry powder manufactured by treating quicklime with sufficient water to satisfy its chemical affinity for water, thereby converting the oxides to hydroxides.

Lime is used in gold processing to ensure that the pH of the leaching solution – used to extract gold from ore – remains strongly basic. Lime is always a major input into the processing for gold (although the amount required depends on the type of ore).

Hydrated lime is available only as a fine powder or slurry. Quicklime, however, is commercially available in several forms, namely large lump form, crushed or pebble form, ground lime form, pulverized or pelletized.

Potential scale of opportunities

Lime typically accounts for between 2 and 3 per cent of mines' cash operating costs. Using the BGR demand model for the four West African countries, it is estimated that operational gold mines spent around \$100 million on lime in 2015. Ghana procured \$21.8 million worth of lime in 2015, all from facilities based in the country, although most lime was

manufactured abroad and then imported for packaging and distribution by those facilities.

However, the local production of lime could result in significantly lower transport costs due to the high volume to value ratio of lime. Indeed, one mining company in Mali estimated that logistics expenses accounted for 70 per cent of the cost of hydrated lime. There are potentially suitable limestone deposits in a number of countries in the region, including Burkina Faso, Ghana and Mali.

Furthermore, lime and its derivative products are basic building blocks of the industrial economy and are an essential input in steel, alumina, pulp, paper, uranium and copper production. They are also used in applications such as drinking water treatment, waste water and sewage treatment, agriculture, manure treatment, soil stabilization and remediation, asphalt production, oil and gas processing, power generation and building construction. The local production of lime could therefore have a significant impact on the rest of the economy by reducing input costs for these sectors.

Procurement process and requirements

As an essential process consumable, lime procurement usually takes place through international (closed) tenders. Depending on the company, this is done by the corporate headquarters or at the regional office level. In most cases, the process involves high-level procurement managers and mine managers. Contracts are typically for a year, but sometimes prices can be renegotiated during the contract period.

Key requirements include:

- (a) Technical specifications: the importance of the lime properties means that new lime production will be tested and

facilities will be inspected before a new supplier is used;

- (b) Price: mining companies generally buy from the best offer, and do not hesitate to switch suppliers once a technically-adequate, cheaper, reliable source becomes available;
- (c) Reliability of supply.

Current suppliers and supply gaps

Carmeuse, a Belgium-based family business and a global leader in lime products, is an important supplier in the region. It has a large facility in Takoradi, Ghana, with a processing capacity of about 100,000 tons. However, it is essentially a packaging facility as the product is entirely imported. From its facility in Takoradi, the company supplies Ghanaian, Malian and Burkinabe mines. Carmeuse opened a hydration plant in Mauritania in 2015.

Competition with Carmeuse is primarily in the form of imported lime from outside the region (often from Europe, by local or international dealers). Recently a new local supplier, Bartex, has emerged and has gained some market share by offering more competitive pricing for its products. Other competitors have responded by also lowering their prices.

Mining companies in Burkina Faso and Mali must pay very high transportation costs to import lime. However, limestone resources in those two countries could potentially be used to manufacture hydrated lime. Existing small-scale lime units in both countries are not yet capable of producing the volumes of high quality product required by the mining sector at competitive prices.

Two industrial-scale projects have recently been launched in Mali. One of these projects, which aims to supply the mining sector, is still working to improve its product quality.

However, at least one mine is negotiating a contract for the supply of lime. The second project aims to produce lime for other markets, including the agricultural sector.

Potential next steps

The hydrated lime production process is simple and production facility start-up costs are relatively low. There is therefore considerable scope for local production. However, unreliable electricity supplies and high energy and transportation costs are the most significant constraints on production. To enhance local lime production, it is necessary to:

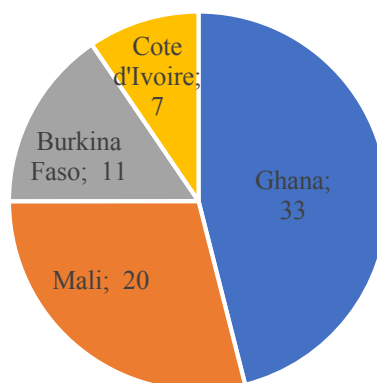
- (a) Assess current access to lime deposits in Ghana and elsewhere in the region and determine the potential scope of Government incentives and support for the creation of lime units;
- (b) Support collaboration among mining companies with a view to determining if the production of locally produced mining-grade lime is feasible;
- (c) Address supply-side constraints, such as inadequate access to reliable and affordable electricity and high transportation costs;
- (d) Confirm the extent to which hydration of lime is already carried out at each mine site.

6.2.6 Geological and Exploration Services

Nature of the product

Geological services are essential in mining. In addition to geological assessments during initial exploration, geological services are also used in operations to further investigate the location, quantity and quality of mineral deposits.

Figure 32
Expenditure: geological and exploration services, 2015 (\$ million)



Geological and exploration services encompass a wide range of activities, including geological mapping, core logging, deposit estimations, pit design and optimizations, and the submission of technical reports compliant with international reporting codes. While some geological and exploration firms offer a wide range of services, others choose to specialize. Likewise, some mining firms develop exploration services in-house, while others have only limited capabilities in that area and engage the services of geological service providers as the need arises.

Potential scale of opportunities

Geological services typically represent between 1.4 and 3.2 per cent of operating mines' cash costs. Using the BGR demand model, that amounted to approximately \$71 million in 2015 for all operational gold mines in the four countries. This figure does not include the value of geological services required during the exploration phase. There is therefore considerable scope for providing additional geological services to the mining industry. Indeed, mining sector growth remains a key aspect of the economic strategy of West African countries, and the growth of the sector will create further demand for geological

services. Existing mines, particularly those where production is declining, are also looking for further deposits to exploit.

Procurement process and requirements

Geological and exploration services are part of the core business of mining firms and they rely heavily on the skills and capabilities of geological and exploration service providers.

Key requirements of service providers include:

- (a) Technical expertise as reflected in the education, experience and track-record of the team/consultant;
- (b) Certified staff with the necessary professional skills, and a good company reputation among customers;
- (c) Appropriate equipment, software, and related knowhow;
- (d) Culturally sensitive staff with good local knowledge and competent language skills.

Overall, the barriers to entry are high because of capital costs, and the need to employ highly skilled workers as well as staff with good management and business development skills.

Current suppliers and supply gaps

There is considerable geological and exploration knowhow in the region, and a number of regional university programmes and international bursaries provide training for geological and exploration specialists. There are also a number of senior geologists in the region who have previously worked with large mining companies. Several geological and exploration service providers work throughout the region rather than in one specific country; one such provider is SEMS Exploration, which is headquartered in Ghana and has offices in

Burkina Faso, Côte d'Ivoire, the Democratic Republic of Congo, Liberia and Mauritania. Such providers offer geological, geophysical, geographic information systems data and surveying services. They also offer training courses.

The Minerals Commission in Ghana and the Burkina Faso Department of Mines and Geology (BUMIGEB) offer a number of services in that regard, including mapping, soil geochemistry and geographic information systems analysis. These are both State-related entities. Constraints on governmental and other local entities include insufficient staffing, the lack of sustainable financing, and a lack of reliable equipment.

Foreign service providers generally benefit from established relationships with mining companies. They have access to highly specialized staff and can provide reliable reports and certifications – something of great importance to investors. However, they often lack local knowledge. To address that issue, foreign service providers often recruit local staff or partner or subcontract with local actors.

Potential next steps

As mentioned above, the potential for further development of geological and exploration services in the region is substantial, particularly as West African countries have not yet fully explored their subsoil assets. It is also a matter of strategy, because good and accurate knowledge of a country's resources is critical for balanced and fair subsequent contract negotiations with companies. For that reason, it is important to:

- (a) Develop state-of-the-art geological and exploration services by developing technical and managerial expertise through training and partnerships within the region and with large international firms;

- (b) Engage with mining companies to discuss the incorporation of local content provisions into geological services contracts;
- (c) Develop financing models for local firms to enable them to buy better equipment and scale up their competencies;
- (d) Improve education and training in the geosciences, including with funding support from development partners, and work with mining companies to ensure that trainees receive hands on training;
- (e) Encourage entrepreneurship and research by experienced geologists;
- (f) Strengthen regional trade associations, scientific groups and societies.

6.2.7 Local buying houses and supply chain services

Nature of the product

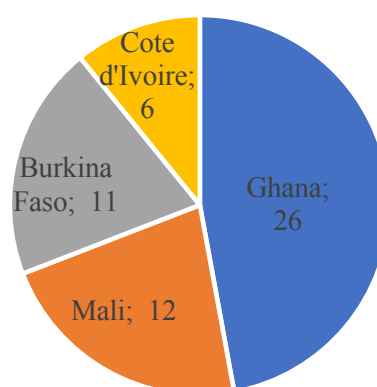
Buying houses and supply chain services include:

- (a) Stock holding and materials management (e.g. vendor selection, quality control, standard setting and performance evaluation);
- (b) Warehousing and inventory management (e.g. stock holding, inventory control, consolidation/deconsolidation, internal distribution of goods, and just-in-time supply). This function can potentially be performed by local buying offices which then hold stock and manage inventory;
- (c) Purchasing and procurement functions;
- (d) Logistics (e.g. transport, receiving and verification, documentation, and customs processing).

In addition, specialized transport and logistics suppliers may provide services for abnormal or hazardous loads, such as cyanide or fuel. Services can also potentially extend into contract management, strategic sourcing, returns/after care, and information systems.

Potential scale of opportunities

Figure 33
Expenditure: supply chain services, 2015
(\$ million)



“Core” supply chain services usually only comprise a very small proportion of mines’ overall procurement (1.2 to 1.6 per cent). The market for those services is estimated to be worth some \$55 million. While supply chain services may not form a major cost item for mines, they are nonetheless critical to their operation. Spare parts account for an additional \$293 million market.

Long delivery times are a constant constraint for mines. Orders can take time to fulfil and shipping can sometimes be slow. Even if an order is immediately shipped from a nearby region, delays often occur at the port. Once the port is cleared, it can still take several weeks of inland transport for goods to reach their destination (see the chart below, which was provided by Bolloré, a major logistics firm). Even mines that are close to a port struggle with lead times; one mine described that ordering

an item from China requires 3 weeks for production, 60 days for shipping, 10 days to clear the port, and one day to transport to site. This creates an opportunity for local warehousing and stockholding, which can eliminate some of the delays.

Procurement process and requirements

Many supply chain services are done in-house, either at a group or local level. However, the extent to which this is done varies by company and the location of the mine. Some mines also have their own warehouses in major urban centres.

In general, local procurement offices draw up contracts for the provision of specific inputs, and support the management and fulfilment of orders. Local offices also sometimes deal with smaller or urgent deliveries.

Mines occasionally offer local logistics firms smaller orders to assess their reliability and to better understand those firms' delivery capacity.

Key considerations for mining companies include:

- (a) Reliability;

Table 33

Logistics: average time and loop duration along key corridors

Cooridors		Distance	Average Transit time	Total loop duration (calendar days)
Tema	Ouagadougou	930 km	22 days	40 days
Tema	Bamako	1 480 km	35 days	46 days
Tema	Niamey	1 125 km	36 days	45 days
Lome	Niamey	1 070 km	23 days	35 days
Lome	Bamako	1 785 km	33 days	42 days
Lome	Ouagadougou	950 km	25 days	40 days
Cotonou	Niamey	1 040 km	23 days	30 days
Cotonou	Ouagadougou	1 025 km	24 days	37 days
Dakar	Bamako (road)	1 342 km	15 days	23 days
Dakar	Bamako (rail/road)	1 228 km	19 days	35 days
Conakry	Bamako	911 km	24 days	35 days
Abidjan	Bamako	1 111 km	23 days	35 days
Abidjan	Ouagadougou (rail)	1 115 km	16 days	35 days
Abidjan	Ouagadougou (road)	1 115 km	22 days	35 days
Cameroon	Chad (rail/road)	1 834 km	53 days	75 days
Cameroon	Chad (road)	1 800 km	48 days	75 days
Cameroon	CAR	1 550 km	53 days	65 days
Pointe-Noir	Brazzaville	561 km	27 days	45 days

- (b) Cost; Africa-specific supply chain solutions. It is part of CSTT-AO group of companies, which has been involved in logistics in West Africa for almost 60 years;
- (c) Response time, particularly during emergency procurement;
- (d) Professionalism;
- (e) Adequate stock holding;
- (f) Capacity (including their response to parts shortages and truck breakdowns).
- (e) DAMCO, based in the Netherlands, has 50 offices in 33 African countries and 300 offices worldwide. It offers services that range from simple freight forwarding to highly sophisticated and integrated end-to-end logistics solutions.

Current suppliers and supply gaps

Several local logistics suppliers operate in the Ghanaian market while others operate at a regional or global level. Global firms often offer additional supply chain services beyond basic transport, including integrated supply chain management, warehousing and distribution. Some examples are:

- (a) Bernabé is a buying house that operates in Cameroon, Congo, Côte d'Ivoire, Gabon and Senegal. It imports professional and industrial equipment, metallurgical products, and building materials;
- (b) Bolloré, headquartered in France is one of the top 10 transport and logistics companies in the world and operates the largest integrated logistics network in Africa. Many of the companies interviewed indicated that they use Bolloré;
- (c) OMA is a group of affiliated locally-owned companies based in Benin, Côte d'Ivoire, Ghana, Senegal and Togo that is supported by a European sales and marketing office. The group offers cross-border support, deconsolidation/consolidation with dedicated warehouses, customs clearance and warehousing solutions;
- (d) Afrilog has offices in nine African countries. It designs, executes and manages

Many of the mining executives interviewed have used local logistics firms for transport, warehousing, and inventory management. Given its low barriers to entry, transport is often seen as a particularly strong local procurement opportunity, but mines have had mixed success in using local firms. Indeed, although there are several local logistics firms operating in each country, they have sometimes proved unable to offer mines a reliable service, thereby increasing delays and costs for mining companies.

Many purchasing and procurement functions are currently performed in-house by mining companies. These processes are unlikely to be outsourced and do not present significant opportunities for local firms. However, there is an opportunity to source more supply chain services from local buying houses if:

- (a) It reduces stock holding costs for the mine (note that this passes the costs of holding stock onto the warehousing firm);
- (b) It does not increase the risk of stoppages (ensuring that critical supplies are delivered on time);
- (c) It increases price certainty (due to long lead times, international suppliers will not hold prices), however this means that local firms must manage exchange rate fluctuations;

- (d) It reduces administrative costs (particularly in connection with port clearances and import regulations).

Potential next steps

To maximize the use of these services by local suppliers, it is necessary to:

- (a) Assess the use of longer term contracts to encourage local firms to hold greater stock;
- (b) Introduce regional norms and standards for supply chain services to reduce risks for local companies (training and funding is likely to be necessary to support firms' efforts to meet these targets);
- (c) Calculate current administrative costs of using internal procurement to allow for better cost comparison with outsourcing;
- (d) Support consolidation among local service providers (although attention must be given to competition issues and the complexity of regional logistics);
- (e) Investigate whether joint ventures can be established with international suppliers with a view to creating "authorized" local distributors or providing financial assistance to local suppliers to facilitate stock holding.

6.2.8 Laboratory Testing

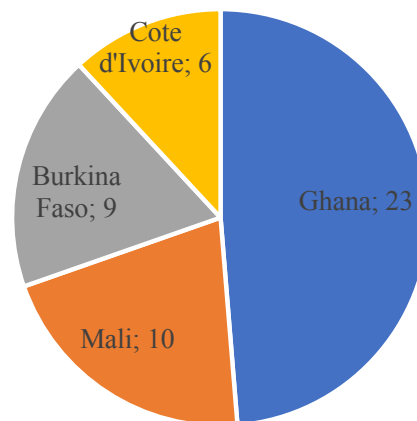
Nature of the product

Testing and analysis is important throughout the mining cycle. Accurate and objective analysis of the soil is needed during exploration to determine the characteristics and viability of the mine site. This requires geochemistry analysis, drill core services, sample preparation and analysis, and other tests. Ultimately the analysis should result in a bankable

metallurgical report. Testing and analysis of samples is needed while the mine is in operation to maximise extraction and processing operations. Sampling of metals and minerals is also one of the most important steps in the verification of the quality of cargoes. Buyers, sellers, and shippers require accurate and representative sampling and data. Laboratory services also extend to the rest of the mine site, for example testing water, dust, and oil.

Potential scale of opportunities

Figure 34
Expenditure: analysis and testing, 2015
(\$ million)



Analysis and testing typically account for between 1.0 and 1.4 per cent of cash operating costs. Using the BGR demand model for the four West African countries, it is estimated that current operational gold mines spend \$46.6 million annually on testing.

However, it is possible that the market is somewhat larger than this estimate. Some laboratory testing may fall under other expenditure categories, particularly geological and exploration services (\$71 million), environmental services (\$37 million), and drilling and equipment services (\$25 million). Furthermore, other mining activities (beyond gold) also require similar services and therefore represent potential markets for local suppliers.

Procurement process and requirements

Quality and reliability are important considerations for sample analysis. This is particularly important for core drilling samples during exploration, as these results are used to determine whether a mine site is viable. Analysis during the running of the mine, including quality and reliability of grade control sampling, is often carried out by local laboratories, which cross check their results with laboratories elsewhere.

Key considerations for mining companies include:

- (a) Internationally recognized/certified testing;
- (b) Accuracy;
- (c) Delivery times;
- (d) Price.

Current suppliers and the supply gap

Sample analysis services tend to be driven by the scale of required analyses. It may be difficult and costly to transport samples, and investment in local or regional capacity may therefore be justified. However, this depends on how often these services are required; it may still be cheaper to ship samples to international certified labs if tests are infrequent.

Several multinational firms have local offices for laboratory services, these include:

- (a) SGS (Switzerland), which has commercial geochemical analytical laboratories in Ghana (Tarkwa), Burkina Faso (Ouagadougou) and Mali (Bamako). They offer analytical services for exploration, mine development and commercial trade.

- (b) Bureau Veritas (France), which provides a full suite of analytical and inspection services to the mining industry, from ultra-trace level geochemistry for exploration, through resource development assays, metallurgical testing and final inspection and testing of the shipped product. The company has offices in more than 30 African countries, including Burkina Faso, Ghana, Guinea and Mali. Not all these offices may offer the services miners need. For example, the Ghana office does not appear to offer sample testing but focuses, primarily, on quality, health, safety and environmental issues. The Burkina Faso office has worked with mines, but only on technical control issues related to construction projects and service inspections. That office does, however, have experience of manganese sampling and analysis.

- (c) ALS laboratories, which has laboratories in Burkina Faso, Ghana and Mali. These laboratories provide geochemical sample preparation, analytical procedures and data management for exploration geologists, miners, mineral processing engineers and metallurgists.

- (d) Senelabo (Senegal) is a local firm that has recently branched out into mining, drilling and prospecting.

There are also national laboratories (although of varying capabilities and with different focus areas). For example, BUMIGEB, a State-entity in Burkina Faso, offers certain drilling and analysis services. However, due to delays and certification problems, BUMIGEB has failed to gain a significant market share. Better training, management and equipment could support the local laboratories operated by BUMIGEB to meet mining expectations and help it win a larger share of the market.

Despite the local presence of so many laboratories, certain mining firms still send samples outside the region for testing. Often this is because of technical or capacity limitations at local laboratories whereas certain laboratories abroad are well-known for providing high quality services. Furthermore even though a mining company may have concluded a contract with a local laboratory of a multinational firm, the testing is sometimes carried out at a better-equipped laboratory outside the country that is also run by that firm.

There is some potential to expand the range of testing services provided, including, in particular, water and ore analysis, as exploration activity increases in the region. There are also opportunities for laboratory supplies to be purchased locally, including bins, boxes, plastic bags, cups and ceramic crucibles, and other consumables. Other laboratory supplies, such as nitric acid and some specialized equipment, are usually imported.

Potential next steps

Ghana would benefit greatly from well-equipped laboratory testing facilities and could potentially exploit the increasing market opportunities in the region. To achieve that objective, Ghana should:

- (e) Further investigate the capacity of local testing laboratories, as well as testing gaps and mine certification requirements. Measures should then be taken to address these gaps and ensure that local laboratories have the tools and equipment they need to provide world-class services;
- (f) Facilitate the necessary certification and accreditation of local laboratory service companies so that they are ready to respond to the needs of the market;

- (g) Work with mines to include local content/investment considerations in lab services tenders whenever possible;
- (h) Foster collaboration with universities and national laboratories, including those run by the State, with a view to enhancing their testing capacities and providing cutting-edge training for testers;
- (i) Step up the training of local personnel to enhance the provision of high-quality services at the local level.

6.2.9 Uniforms

Nature of the product

Mining company uniforms cover a range of products, including shirts, safety vests and overalls. They include apparel with safety features such as arc rated/flame resistant and high-visibility garments. The role of these uniforms is to protect employees from the environment and the hazards of the job, serve as visual identification of members of personnel, and communicate brand.

The primary purpose of Flame-Resistant (FR) clothing is to resist ignition, as tested under the recognized industry standard developed by ASTM International. Since it does not continue to burn after the initial hazard is over, FR clothing limits burn injury to the body surface area directly impacted by the hazard. As a second goal, FR clothing insulates the wearer from the thermal hazard, thus preventing or reducing the severity of any second or third degree burns.

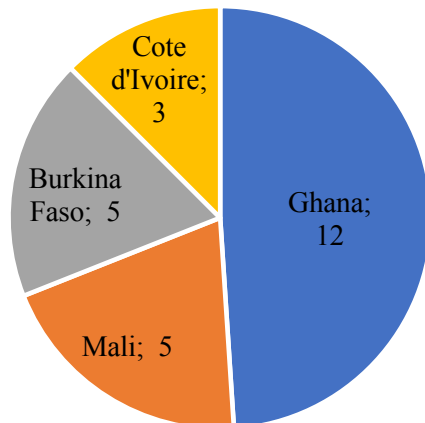
Enhanced-visibility and high-visibility uniforms are designed to be worn by workers who work in low-light or hazardous environments. High-visibility uniforms are ANSI-compliant – an international standard. Enhanced-visibility garments include reflective uniforms with added retro-reflective trim, but there are no

minimum reflective-material requirements and testing is not required.

Potential scale of opportunities

Figure 35

Expenditure: safety and protective equipment, 2015 (\$ million)



Uniforms are included in the personal protective equipment (PPE) category, which also includes shoes, safety glasses, gloves and other protective gear. This category accounts for between 0.5 and 0.8 per cent of mines' cash operating costs. In the BGR demand model for the four West African countries, this amounted to approximately \$25 million being spent by the mines considered in the study.

Uniform needs are directly driven by the size of the workforce at mining sites (including subcontractors' workforces) and the average rate of uniform replacement. This averages every 6 months at some mines.

While the market size is small compared to some other procurement categories, the industry has relatively low barriers to entry. Low technical skills and low investment levels are required for basic cut make and trim (CMT) and assembly of uniforms. This means that mines sometimes identify uniforms as a potentially "local local" activity. There is also a wider

market for uniforms in each country for members of the armed forces and the police, as well as for those working in construction, health-care and other industries. This can, potentially, provide increased market scale and sustainability for uniform producers. The second edition of the local content list, issued in 2016, included 'overall and work clothes' in the mandatory requirements for companies. An assessment of the effectiveness of that local procurement requirement has not yet been made.

Procurement process and requirements

Uniforms are a recurrent and required non-core supply item. Depending on the mining company, purchases are made from buyers at different levels and through various processes, including solicitation of competitive offers, direct buying from pre-qualified or usual suppliers, or consignment contracts. Mines will tend to have a few official or regular suppliers, and will generally have long-term established relationships rather than frequently calling for bids in open competition.

Key considerations for mining companies include:

- (a) Quality of material and its compliance with standards;
- (b) Quality of workmanship;
- (c) Turnaround time;
- (d) Price.

Current suppliers and supply gaps

Low- to medium-scale cut make and trim operations exist in each country in the region, and some supply basic protective uniforms to the mining sector. The raw material used in uniform manufacture is usually imported, although it is sometimes bought on the local market.

However these local companies usually supply only a fraction of mines' needs and a significant proportion of uniforms is often sourced from outside the country. As such, local companies have scope to grow in volume as well as by expanding the range of products they offer. Wider uniform and PPE markets further improve the scope of opportunities.

Uniforms are frequently cited as a top opportunity for developing local procurement due to the relatively low technical and financial requirements for market entry, and the ability of local companies to customize their products more easily and deliver goods in shorter time frames.

Certain mining companies have proactively organized groups at the "local local" level to become part of the uniforms production chain. However, the work of those groups often consists of little more than adding the finishing touches to garments, such as embroidering employees' names on their uniforms.

Upstream in the value chain: the existence of a large cotton sector in Burkina Faso and Mali means that there is considerable potential for the development of local manufacturing to produce fabrics and materials for uniforms. However, textile businesses operating in the region have not yet attempted to penetrate that market. Meeting international standards may be one constraint, and the limited size of the PPE market means that it may be difficult to achieve economies of scale and produce uniforms at competitive prices. This may deter upstream investment.

Potential next steps

The potential of developing a strong regional value chain around uniforms and clothing is considerable. Given the size of the mining and hydrocarbons sectors in Ghana, the country could well position itself as a supply hub for these products. There are few technical

difficulties in this field and skills can be easily transferred to other textile sector industries, as the country industrializes. However, for this to materialise, it is important to:

- (a) Facilitate access to high quality raw materials for current local manufacturers. Security of employees remains the core driver of any possible contract;
- (b) Upgrade the quality of materials and ensure that they conform to technical specifications;
- (c) Develop the supervisory and quality management capacity of producers;
- (d) Provide support for standards certification;
- (e) Support information sharing/active collaboration among mining companies and suppliers, to enable the latter to meet mines' quality standards and ensure reliability of supply;
- (f) Facilitate equipment purchases;
- (g) Grant long term contracts to provide stability and facilitate access to finance and reduce costs and facilitate large consignment stockholding on site;
- (h) Investigate the potential impact of investments in cotton processing on the PPE market, the potential gains that could be realized by integrating the market for uniforms and the broader textile market, and whether financial incentives could be used to facilitate production.

6.2.10 Food items

Nature of the product

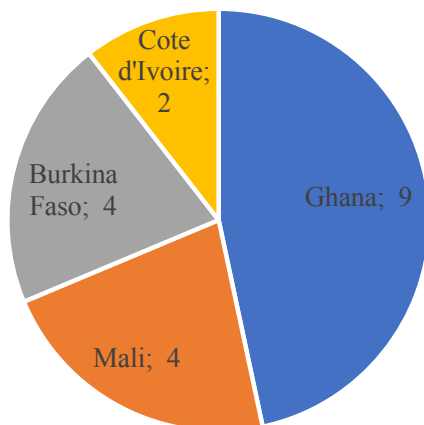
Mining camp management is important to the functioning of a mine. It is particularly

important for remote sites, where employees also live and eat on the mine. This means that all the services normally offered by businesses and the government needs to be provided by the camp managers. This includes health services, accommodation, food, security, laundry, and waste management.

Some mining companies employ the services of specialist camp managers to run the mine, while a few choose to run operations in-house. The provision of food is only one of the responsibilities camp managers, and it can also be subcontracted to another service specialist provider.

Potential scale of opportunities

Figure 36
Expenditure: food and beverages, 2015
 (\$ million)



Food and beverages are estimated to account for roughly 0.5 per cent of cash operating costs. This means that, according to the BGR demand model, approximately \$18.8 million worth of food and beverages were purchased in 2015. This includes soft drinks, bottled water, meat, fruit and vegetables. Camp and site supplies account for another \$3.9 million or 0.1 per cent of cash operating costs.

Investment and support by mines could act as important catalysts for agricultural and agro-processing businesses, which could then access wider and more lucrative markets.

Procurement process and requirements

When camp management is outsourced, contracts are awarded to firms with the capacity to deliver services and manage a complex site with little to no support, particularly if the site is situated in a remote area. This requires strong supply chain and planning capabilities from the provider; for example there must always be enough food available to feed the entire camp. Camp management is therefore mostly procured at group level. These contracts do not always include local procurement clauses, but in practice the camp manager may choose to buy locally for items that make sense – items that are cheaper locally or cater to local tastes. In practice, however, much food is still imported and, according to a recent estimate, mines in Burkina Faso imported as much as 70 per cent of their food.

The use of camp managers makes it difficult to measure the extent to which local and regional foods are used. Although these are international companies, most employees are local. This is also the case when the mines use a specialist catering firm. This option is sometimes used by mines in less remote areas – meaning that camp management can be broken down into separate functions – or where certain camp management functions are performed in-house.

Mines that manage camps in-house have more control over the level of local procurement and food is often seen as an easy and sensible product to buy locally: this reduces the length and complexity of the supply chain, can be cheaper to source, and can cater to local tastes.

However, there are many cases where sourcing local food has been problematic. Meat and vegetables may not meet health and safety standards, and local producers may not always be able to provide the volumes necessary to feed the mine site, especially for larger employer mines. Therefore, mines may still buy food, either locally produced or imported, from larger cities.

Many mines may view food as an opportunity to support communities near the mine (“local local”). Giving local communities the opportunity to supply certain products, such as vegetables or eggs, helps the mines meet their social commitments and establishes goodwill with the community. However, local communities are likely to find it difficult to produce the volumes required to support mines in the rest of the country or the region. Supporting agro-processing firms through investment and procurement may have a larger impact in the long run. Ghana’s 2016 local content list included catering services. However, it does not specify whether the food itself should come from the country or whether service providers can source their inputs from outside the country.

Key considerations for mining companies include:

- (a) Health and safety standards;
- (b) Quality;
- (c) Reliability;
- (d) Price;
- (e) Integration into catering management processes and order fulfilment.

Current suppliers and supply gaps

ATS is one of the major camp managers in the region. The company began operations in

Ghana in 1996 and currently manages camps for more than 70 per cent of the major mining companies in Ghana. It also has a strong presence in Burkina Faso, Guinea, and Mali. ATS offers remote camp management, including catering and accommodation across the life-cycle of an operation. It also offers logistics and supply chain management, cleaning, security, grounds keeping, maintenance, and facilities design. Other companies operating in the region include West Africa Catering (which operates, primarily, in Nigeria and on off-shore oil rigs) and Catering International and Services.

Local food suppliers include small-scale community projects, local importers and larger city-based wholesalers and retailers.

Local food producers face several constraints, including inadequate water sources and irrigation, a lack of fertilisers, low technical capabilities and a lack of technical and veterinary support, which can all result in low yields. Bottlenecks in other parts of the food value chain, such as a lack of certified butchers, can also limit production.

Potential next steps

The supply of food items to mine sites presents immediate opportunities, particularly for local communities. However, local communities have yet to exploit those opportunities effectively to create economies of scale. As a result, mining companies are reluctant to grant local producers large contracts. To address this, it is necessary to:

- (a) Work with mining companies to assess whether minimum local procurement standards should be incorporated into catering or camp management contracts. The current list includes catering services, but does not specify particular food items. Experience in other countries, including Canada and Kirghizstan,

suggests that the provision of targeted assistance to farmers can facilitate the development of thriving local agricultural businesses;

- (b) Work with catering and camp management contractors to identify key opportunities for local food procurement;
- (c) Assess whether joint projects involving several local food producers can help scale up production and facilitate their penetration of regional food markets.

6.2.11 Further potential

Besides these specific items, there are several other procurement opportunities. Annex 6 gives a comprehensive taxonomy of the various procurement opportunities available during the life cycle of the mine.

Some items that are core to the mining sector are potentially relevant to other industries because they have other industrial or household applications. As shown in Table B in Annex 6, these include electrical cables, pipes, cement, steel and steel products, and nuts and bolts. Given their wide-scale applications, these products have the greatest potential to create broader industrial linkages beyond the mining sector.

The current local content regulation in Ghana targets a number of items in this category. A number of challenges have been highlighted in the latest evaluation conducted by the Minerals Commission, including with regard to the capacity of local companies to deliver the quality that is needed in the mining sector on a regular basis and within established timeframes.

Table C in Annex 5 highlights a number of non-core items that are used across industries but that are particularly important to the mining sector. These items could provide

significant business opportunities for local suppliers, including in particular, SMEs, due to low barriers to entry and the low levels of industrial sophistication required to manufacture those items. Examples include office supplies, boxes, bags and clothing. Even greater growth opportunities may be possible if local suppliers are able to provide goods for other economic sectors. For example, suppliers of boxes to the mining sector could also supply boxes to the agro-processing industry.

The same applies for general services needed by the mining sector. These range from services that require minimal labour skills, such as security and cleaning services, which are generally reserved for Ghanaians under local content regulations, to higher skilled services, including human resources, financial and legal services. There is no compelling reason why those services could not also be provided locally. Ghana should, moreover, investigate how the mining sector's need for professional services could be leveraged to provide services to other economic sectors.

A study conducted by IFC in 2012 in Ghana showed that products with a range of industries but of importance to the mining sector were more in demand than products with more limited applications. Efforts must therefore be made to foster the production of such products and enhance their competitiveness. Furthermore, a more targeted approach is needed to facilitate efforts by local industries to gain market share in critical areas, particularly when the barriers to entry are low, thereby paving the way for them to move up the supply chain as industries mature.

6.3 Overall gaps and support recommendations

Given the small market size of the West African mining sector and aspirations for a world-class and export-oriented supplier industry in

Ghana, it may be necessary to focus policy support on a few “big ticket” items that can provide sufficient leverage for the development of a locally hosted competitive supplier industry. That, of course, should not prevent initiatives at the local level to help SMEs to supply mining operations. Support should also be given to producers of items with multiple applications across industries.

To boost demand for these “big ticket” items in the four countries in the region, relevant stakeholders should aim to:

- (a) Strengthen the technical coordination and oversight capacity of regulators and Chambers of mines, with particular emphasis placed on improving their analysis and research, monitoring and reporting, communications and opportunity assessment capabilities;
- (b) Help mining companies to consolidate demand and negotiate collective contracts with local suppliers, inter alia, by collating data on relevant suppliers and making that information available through a common portal;
- (c) Leverage FDI with a view to enhancing manufacturing capacities, technology transfer, product standards and training;
- (d) Promote coordination across departments and agencies with a view to improving the investment and business environment. In Ghana, for example, enhanced coordination is needed among the Minerals Commission, the Chamber of Mines, the Ministries of Energy and Trade and Industry, GIPC, AGI and the Ghana Standards Authority;
- (e) Support regional efforts to reduce the costs of intraregional trade and logistics.

Chapter 7: **Supporting domestic suppliers: establishing a national suppliers' development programme**

7. Supporting domestic suppliers

To compete effectively in the global market, mining companies in Ghana must be able to count on a solid network of competent suppliers that are able to produce quality products at a reasonable cost and in a timely manner. In recent years, with rising pressures to improve their efficiency on the one hand, and to compete internationally due to the globalization and fragmentation of supply chains on the other, mining companies have had to implement strategies to lower their costs, including by reducing the number of domestic suppliers, often in favour of global sourcing.

International experience of upstream linkages development and clustering suggests that Ghana has the capacity to establish solid supply chains. The country is blessed with significant mineral reserves: it is the world's tenth largest gold producer and has proven reserves of other minerals including hydrocarbons, bauxite, manganese, lithium and limestone, to name but a few. The gold mining industry is a dependable local "anchor" client that can provide a strong foundation for supply chain development. If developed in a strategic manner, supply chains can create the momentum for broader economic diversification into manufacturing and services. The country is also well placed to play a strong role as a regional hub as more gold producers emerge in West Africa.

However, the process of developing supply chains is not automatic and success is not

always guaranteed. To be sustainable in the longer term, the development of local supply chains must be driven by coherent and clear policy objectives and guided by an effective oversight framework that provides for long-term monitoring, follow-up and strategic re-engineering. Furthermore, supply chain development must be complemented by efforts to create a favourable business environment so that competent suppliers can establish business relationships with mining firms and other economic sectors. Local supply chains must be adequately supported in order to expand the supplier base and contribute meaningfully to value and employment creation.

At present, however, the country's supplier base remains weak, in part because it is dominated by vulnerable SMEs, but also because the country's suppliers have so far enjoyed limited institutional and political support. Unless steps are taken to address that challenge, Ghanaian suppliers will have limited scope to foster prosperity and create jobs within the mining industry and other sectors of the economy.

7.1 Scaling up the "3Cs": capacities, capabilities and competitiveness

Multinational mining companies are often constrained by their internal corporate global procurement strategies and OEM contracts,

in particular with regard to large capital expenditures. Local suppliers are rarely awarded large contracts, in part because their productive capacities are usually insufficient to meet demand unless they act as agents, local branches or subsidiaries of larger companies.

Operational mining procurement markets offer significant opportunities to local suppliers. However, in many cases, global procurement companies can offer more competitive prices to mining companies because they have the resources and capacity to buy inputs in bulk.

On the supply side, local industries face a number of bottlenecks, which must be addressed if they are to compete on price, delivery timeframes, quality, design and performance. Furthermore, business relationships often fail to develop as a result of local suppliers' weak managerial and technological skills as well as their inability to deliver required volumes of high quality mining inputs within short timeframes. Furthermore, due to industrial and information sensitivities, there is a lack of trust among mining companies themselves and between mining companies and suppliers. Indeed, mining companies rarely work together to pool their procurement needs with a view to enabling suppliers to realize economies of scale in production because of concerns that sensitive information may be leaked to competitors.

The development of strong and competitive local supply chains is therefore conditional upon:

- (a) The availability of a pool of **efficient and productive suppliers with a skilled workforce**. It is therefore critical to strengthen suppliers' capacities, including through technological and managerial training, skills upgrading and measures to support entrepreneurship and nurture talent;
- (b) Efforts to **scale up the capabilities of local businesses**. It is critical to strengthen Ghana's industrial base with a view to boosting production, enhancing efficiency and fostering innovation. To achieve that goal, the following complementary strategies must be adopted:
 - (i) *Mid-sized and large local suppliers* must be given greater access to procurement markets. At the same time, they must be supported to move up the value chain, so they can provide innovative and technological solutions to the mining industry and other economic sectors.
 - (ii) *SMEs* must enjoy access to a special window of support to help them scale up their operations with a view to meeting the requirements and standards of mining companies. A particular focus on SMEs is crucial because factors that impede productivity and regulatory constraints can often have a greater negative impact on small businesses than on larger firms. Moreover, SMEs in Ghana are more likely than larger firms to face certain challenges, such as access to credit, and they find it difficult to take advantage of incentives offered to large scale enterprises, such as the right to operate in the country's Free Zones. Furthermore, SMEs are not always particularly well integrated into the national and international value chains.
- (c) National efforts to improve the **competitiveness** of local suppliers. In that context, it is important to: establish a robust and sustainable **national suppliers' development programme** in order to increase the number and depth of indigenous supply industries; (b) promote the

development of business **clusters** with a view to improving linkages among suppliers, other business support providers, research institutions, training institutions and centres of excellence; and (c) attract and retain inward investments so as to generate knowledge and technology transfer and promote collaboration. This is particularly important, because competing with international suppliers also entails being competitive with regard to cutting-edge innovation and technology.

7.2 Previous attempts to develop mining supply chains in Ghana

Although Ghana has adopted a national policy to stimulate local content, a number of mining companies in Ghana have launched their own suppliers' development¹²⁴ initiatives, and many of these predate the regulatory requirements established by the Minerals and Mining Act (Act No. 703) of 2006 and the Minerals and Mining (General) Regulations L.I. 2173 of 2012. Initiatives led by mining companies

Box 8

How mining companies in Ghana stimulate local supply chains

Newmont Mining has adopted its own classification system for local suppliers. It distinguishes among the “local-local” suppliers (i.e. suppliers from host communities), national and international suppliers with whom it has established particular relationships on the basis of its needs and suppliers' capacity to respond. In 2007, in partnership with IFC, Newmont established a three-year linkages programme for its operations at the Ahafo mine. The programme had three components:

- a. Local supply development to support local businesses to become suppliers and providers of goods and services to its mine. Priority sectors included maintenance services (sewage, waste collection, tree felling), construction services (building renovations, basic civil works) and small industry (carpentry works, concrete slabs, uniforms);
- b. Local economic development to support non-mining activities and promote diversification. Sectors supported included brick making, pottery, egg production, hospitality services, and vendors to the company's catering provider; and
- c. Institutional capacity building to provide training and mentoring for local entrepreneurs.

It is estimated that over 500 businesses from the host community were supported by the Ahafo Linkage and other programmes. The programme ended in 2010.

Furthermore, as part of its commitment to meet local content requirements, Newmont has signed a regional agreement with WAFOR, a “local-local” grinding media supplier based in Accra, to supply at least 50 per cent of the grinding media requirements for its two mines, located at Ahafo and Akyem.

Golden Star Resources has launched several initiatives to support economic development around its mines. For example, since 2006, \$1 per ounce of gold produced by the company is allocated to the Golden Star Oil Palm Plantation Project (GSOPP), which aims to reduce poverty through employment generation and to promote wealth creation through sustainable agri-business. The project was developed in partnership with traditional community authorities, affected farmers and the agro-forestry industry. At the end of 2015, GSOPP engaged 305 smallholder farmers and 325 contract workers in over 973 Ha of plantation. Fruit production in 2015 increased by 46 per cent compared to production in 2014 and provided additional income to the smallholder farmers.

124 Suppliers' development can be defined in different ways. For some, it is the *'process of working with certain suppliers on a one-to-one basis to improve their performance and/or capabilities for the benefit of the buying organization'* (Chartered Institute of Procurement and Supply). For others, it is defined as *"any activity that a buyer undertakes to improve a supplier's performance and/or capabilities to meet the buyer's short-term or long-term supply needs"* (Handfield and others, 2000). With the increasing race towards lowering prices and reducing overtime, suppliers development has been relegated to minor functions.

are guided by CSR considerations and seek to provide economic opportunities to **“local local”** suppliers, that is, to the communities living around their mine sites.

As Box 4 shows, such initiatives focus on a wide range of activities, some of which are related to mining companies’ procurement needs, while others seek to support non-mining activities with a view to developing a diversified local economy outside the mining sector. There is no coordinated approach across companies; CSR initiatives therefore focus on communities around each individual mine site but do not provide opportunities for “local local” suppliers to explore greater market access opportunities. CSR engagements also generally reflect host communities’ interests, and rarely respond to the critical needs of mining companies, thereby providing little scope for broader supply chain development.

While these are very useful initiatives for local communities and have undeniably created opportunities for few small local suppliers, they however suffer from two limitations:

- (a) They operate at the **micro level**, are community-centric and their sustainability is often short-lived. Projects are time-bound – the Newmont Ahafo Linkage Programme was a three-year programme and ended in 2010. This raises questions regarding the long-term sustainability of these initiatives. Furthermore, while these initiatives help companies’ maintain their social licences to operate, they are not designed to be scaled up and rarely help small producers to access larger markets outside the mining sector. They also exclude any potential suppliers that do not work with the mining company.
- (b) Some of these initiatives tend to focus on **general businesses**, such as cleaning or security services, or the provision

of food, rather than support the development of specific supply chain needs. These initiatives cannot forge strong linkages with the industry and be used to help SMEs to scale up their capacities to capture higher valued-added procurement markets.

To be truly effective, **such suppliers’ development programmes must be scaled up and implemented** as part of a coherent national programme. Indeed, collaborative partnerships at the national level have been successful in several other countries. Some examples of best practices are outlined in Boxes 8 and 9.

Experiences from the non-extractive sectors in various countries are also instructive as they provide insights into innovative measures and instruments that can be used to stimulate the use of local factors of production. Box 10 illustrates successful examples of efforts to promote business linkages between local SMEs and large firms.

The experience of Malaysia and Mexico shows that well-designed suppliers’ development programmes, initially targeted at few priority sectors, can be extended as part of wider-ranging industrial development strategies. SDPs, led by coherent and consistent government policies can provide support to SMEs throughout their learning processes, and well-structured partnerships with the private sector can strengthen the productive capacities of SMEs and help them integrate into global value chains.

7.3 Establishing a national suppliers’ development programme (NSDP) in Ghana

As highlighted by the examples above, a number of countries have collaborated with their mining industries to establish national

Box 9

International best practices in suppliers' development programmes

Brazil: Support for local suppliers in the region of Pará

In the state of Pará in Brazil, the Government has established a broad supplier development programme named REDES, in response to the potential economic opportunities associated with large investments in the state and to increase the competitiveness of local companies (particularly SMEs) in supplying large investors. A local business association, FIEPA, facilitates collaboration between large companies and local manufacturing and service providers and provides a number of services, including market intelligence, training and information sharing between suppliers and buyers. The programme engages directly in local supply chain initiatives, including by promoting access by local firms to contracts with the company Vale, including by encouraging Vale to agree to framework contracts with construction service providers.

The REDES supplier development initiative has succeeded in developing the industrial capacity of SMEs to supply large firms in Pará. Membership has grown rapidly, and increased from 216 suppliers in 2004 to 1,640 in 2010. The volume procurement from within Pará increased substantially from 379 million Brazilian reais (R\$) in 2001 to R\$4.161 million in 2010 and the proportion of total procurement from firms with their principal business operations in Pará also rose, from 41 per cent in 2001 to 49 per cent in 2010 (ICMM, 2013).

Another example in Brazil is the INOVE development programme, which was launched by Vale in 2008. The programme aims to facilitate the integration of local suppliers into the company's supply chain, by addressing a number of constraints, in particular regarding access to finance, technical and managerial skills and infrastructure. The programme involves several stakeholders, including Government authorities, SEBRAE (the Brazilian Service to Support Micro and Small Businesses), trade association networks, national education institutes and banks. Key activities include improving access to capital, information dissemination and preferential procurement and training.

Suppliers' Development Programmes, Chile

Chile is often referred as the best example when it comes to suppliers' development programmes. In 1998, the Chilean Government, through CORFO, its Economic Development Agency, created an institutionalized national suppliers' development programme to encourage SMEs to formally associate with large firms. The programme aimed to improve the competitiveness of SMEs and to stabilize commercial linkages with large buyers. Inter alia, the programme offered support to improve management practices, and provide professional advice, training, technical assistance and technological transfer to SMEs. Participating large firms acted as "sponsors" to support SMEs in delivering quality goods and services.

Another Chilean example was a world-class programme launched by BHP Billiton's to provide practical support to local suppliers to help them compete at a global level. The project involved a number of stakeholders, including BHP business and community relations departments and Fundación Chile. Local suppliers were encouraged to develop innovative solutions to particular challenges facing the mining industry, including challenges relating to water, energy, human capital, maintenance, air quality, acid mist control and leaching. The programme aimed to help create at least 250 Chilean world-class suppliers by 2020 with the capacity to export their services worldwide. In December 2012, the programme, which by that point had worked with 36 suppliers employing over 5,000 people and generating \$400 million of combined sales, was estimated to have saved \$121 million worth of inputs, goods, and services.

Antamina's Suppliers of Excellence Programme, Peru

In 2012, Antamina, the largest producer of copper and zinc in Peru, launched a programme called "*Developing Suppliers of Excellence for the Mining Industry of Peru*". The objectives were (i) to improve the productivity of the company and (ii) to develop the capacity of suppliers to provide increasingly complex services for the industry. The programme, which was inspired by the Chilean experience, asked local suppliers to formulate innovative solutions to resolve high value challenges, namely existing operational problems, inefficiencies or anomalies faced by mining operations. The company offered suppliers the opportunity to co-design these solutions, leading to the development of cooperative relationships and changing the nature of Antamina's engagement with suppliers from a purely transactional one. Following a process of strategic selection, suppliers were offered the opportunity to test their solutions before being awarded contracts. Among the most representative solutions generated through the programme was a solution offered by the company RENOVA, which, in 2013, successfully extended the life of OTR tires by 40 per cent.

Source: Brazil Mining Association (IBRAM) and ICMM, 2013; Arraiz and others, 2011; Molina and others, 2016.

Box 10

Suppliers development programmes in non-mining activities

Malaysia: Vendor Development Programmes (VDPs)

In the 1980s, Malaysia launched a number of initiatives to foster the development of the country's manufacturing sector and integrate SMEs into the value chains of multinationals based in the country. In that context, a VDP was launched in 1988 to stimulate the capabilities of SMEs to supply larger enterprises. Initially, priority sectors covered by that programme included automotives, rubber, electronics, plastics and light engineering. The car project PROTON was one of the "anchor" firms under this initiative. Sharp, Philips and Sony were among the companies involved in the electronics sector.

SMEs benefited from fiscal incentives, and anchor firms were required to work in partnership with local SMEs and provide them with access to manufacturing processes in order to enhance their technical knowledge and skills. In the 1990s, the programme was extended to cover other economic activities. PETRONAS, the national oil company launched a VDP in 1994 to create competitive local companies in oil- and gas-related manufacturing and medium to high technology services. In general, VDPs have been successful in supporting the growth of SMEs in Malaysia. VDPs continue to be used to support SME development.

Mexico: National Supplier Development Programme

The Mexican SDP programme helps SMEs in various sectors to work with large companies, but more importantly to access international markets. In particular, the programme helps SMEs to upgrade their competencies and works with large "anchor" firms that are willing to build strong relationships with SMEs and support their development. The programme also identifies SMEs with the capacity to supply anchor firms. A financial, technical and operative diagnosis is then conducted to assess challenges faced by SMEs with a view to defining areas for improvement and tools and mechanisms needed to upgrade their production processes and improve their capabilities.

To date, SDPs have been rolled out in more than 20 cities. In 2010, 80 large companies developed supply chain relationships with more than 5600 SME suppliers. Through dedicated support, the latter were able to increase their efficiency, access markets and improve their standards, quality and skills set.

Source: OECD 2016; OECD 2013.

programmes to support the integration of local businesses into large firms' supply chains. These programmes involve large firms, SMEs, centres of excellence, incubators, and research and academic institutions.

It is critical that Ghana launches a national suppliers' development programme (NSDP). That programme would not replace vital community-level initiatives or corporate sponsored programmes, but would rather complement existing initiatives by focusing on the broader policy objective of economic diversification, identifying broader and scalable opportunities, and strengthening potential economic clusters.

The establishment of an NSDP is necessary for several reasons:

First, it will offer a **coherent and consistent approach to supply chain and industrial development**, by streamlining Government initiatives across various policy areas and by aligning mining companies' priorities and programmes with Government objectives. In that regard, it **avoids the duplication of multiple small programmes** to address the specific and short-term needs of individual companies, which may not be sustainable in the long term. It also allows stakeholders to identify institutional and other policy gaps and to design instruments to help local suppliers. These could be financial, such as fiscal incentives or access to credit at concessionary rates, or non-financial,

such as the provision of technical support and training.

Second, it can **provide a framework for longer-term planning and policy design** that can help suppliers respond effectively to changing industry needs and adapt to technological change.

Third, it will **allow for the development of robust horizontal linkages**, in particular between local suppliers, including SMEs, and tertiary institutions, such as innovation hubs and R&D centres established to foster product and process development. The development of those linkages is critical if local suppliers are to move up the value chain. Successful SDPs around the world have all placed a strong emphasis on developing tailor-made innovative solutions that can exploit suppliers' geographical comparative advantage and counter international competition. In Malaysia for example, the Penang Skills Development Centre provides dedicated enterprise support through private-public partnerships to enhance the core competencies, technologies and management of local SMEs. That support takes the form of training, mentoring and efforts to establish business clusters around large companies (OECD, 2016a).

Fourth, it will not only serve the interests of the mining industry and related industrial activities in Ghana, but **will also serve as springboard for Ghana to become a regional manufacturing hub and service provider for West Africa** and the African continent as a whole. Access to the regional market and to industrial buyers in the region is essential if Ghana is to ensure the scalability of its suppliers and hence the sustainability of their economic activities.

Finally, it will enable companies to reduce their expenditure and enhance their productivity as strengthened domestic supply chains reduce logistics costs, sourcing cycle times,

time-to-market constraints and the size of required inventories.

International experience suggests however that a number of critical steps must be taken to ensure the success of an NSDP. In particular, it is critical to strengthen the skills set of the workforce, increase the presence of research institutions as catalysts and incubators for research and innovation, ensure that there is an effective governmental presence in mining areas, improve relevant infrastructure, manage social conflict and provide the necessary fiscal stability and incentives to support both local suppliers the mining industry alike. To achieve those goals, Ghana should:

- (a) Establish an **effective multi-stakeholder** process involving Government authorities, private sector actors, including mining companies, contractors, suppliers and other industrial actors, and academic/research institutions. There must be a clear division of labour and attribution of roles and responsibilities, with a reporting and monitoring mechanism to re-engineer strategies if required and to monitor progress as the programme rolls out.
- (b) **Address policy (in) consistencies and incoherence** across ministries and economic sectors by ensuring the compatibility of the country's trade, mining, fiscal and industrial policies.
- (c) Ensure that the NSDP is anchored in **strong institutions** and create an **enabling environment** conducive to investment and enterprise development, in particular by addressing challenges related to energy and red tape.
- (d) Facilitate **access to credit and other financial products**, such as insurance and venture capital and support the emergence of a robust capital market and financial

institutions that can support business development, including, in particular, SMEs.

- (e) Facilitate access to **information and business matchmaking services**. In that regard, there is a need to establish solid networks of suppliers, industries and institutions so that they can capitalize on business synergies and so that local companies can better understand the procurement needs of mining companies. The role of GIPC should be strengthened so that it can offer high quality market research, identify linkage opportunities, and provide business matchmaking services for local suppliers and mining industries. International initiatives such as the UNIDO Subcontracting and Partnership Exchange Programme¹²⁵ can also provide support to link local firms with international OEMs and major global contractors.
- (f) Provide local firms with **access to knowledge, technology and facilities to foster innovation**. The NSDP must foster innovation and create knowledge hubs that can provide skills training to local suppliers. Dedicated centres of excellence, aimed at providing sophisticated skills and access to state-of-the art technology and cutting-edge knowledge are essential if Ghana is to develop a comparative advantage in the provision of critical goods and services needed by the mining industry.

- (g) Improve local firms' **productivity**. Given the sheer size of the informal sector and the large number of micro-firms in Ghana, taking action to improve the productivity of Ghanaian firms is particularly important. A NSDP will only succeed if there is a sufficient critical mass of SMEs ready to exploit supply chain opportunities. Ghana must provide support to suppliers to help them upgrade their technical capabilities, enhance their delivery capacities and expand their production capacities to scalable levels.

7.4 Designing a successful NSDP

In Ghana, one of the underlying objectives of the current local content policy is to increase the participation of local suppliers in mining procurement, where domestic capacity is available. However, as is the case in other resource-rich countries, obligations to meet local content requirements have been addressed through the need to comply with the regulations. In most cases, mining firms are not necessarily committed to engaging with local suppliers through their core/critical business operations but seek only to comply with the requirements set forth in local content regulations.

It is therefore not surprising that the local content framework, as it currently stands, remains a box-ticking exercise that has so far failed to offer real opportunities for the development of supply chains in Ghana. While it is fair to underscore that L.I. 2173 was adopted only recently, there are few signs that

125 The UNIDO Subcontracting and Partnership Exchange Programme helps local enterprises to address the challenges posed by globalization and to take advantage of emerging opportunities from industrial subcontracting, outsourcing and supply chain development. The original Programme provided an information portal for matchmaking suppliers and buyers, and was effective in dealing with short-term buying contracts on the basis of 'requests for quotations'. In response to the changing dynamics of international business operations, UNIDO updated the Programme with a view to enhancing its engagement with the procurement and local sourcing departments of large companies, identifying and mapping requirements and generating needs analyses on the basis of companies' procurement strategies and plans. Potential local suppliers, in turn, benefit from rigorous profiling and benchmarking assessments, both carried out using specific UNIDO tools. Those benchmarking assessments help local firms to assess their own competitive position, understand their weaknesses and gaps with respect to buyer expectations, and take action to enhance their competitiveness. For more details see <http://www.unido.org/spx.html>.

those regulations, on their own, will have a significant impact on local manufacturing and service provision. It is also not clear if the procurement list will be expanded in the future.

Furthermore, the framework is not structured to stimulate the development of more sophisticated products, innovative industries and technologically-driven supply chains with a view to triggering broader economic diversification.

Given the limits of the current framework, Ghana should consider adopting a new, more coherent approach to the development of strong supply chains, not only to support the mining industry, but perhaps more importantly to support the country's economic diversification and transformation. That new approach would provide for the implementation of an innovative NSDP comprising six core pillars:

As illustrated in Figure 37, the six core pillars of a meaningful NSDP are as follows:

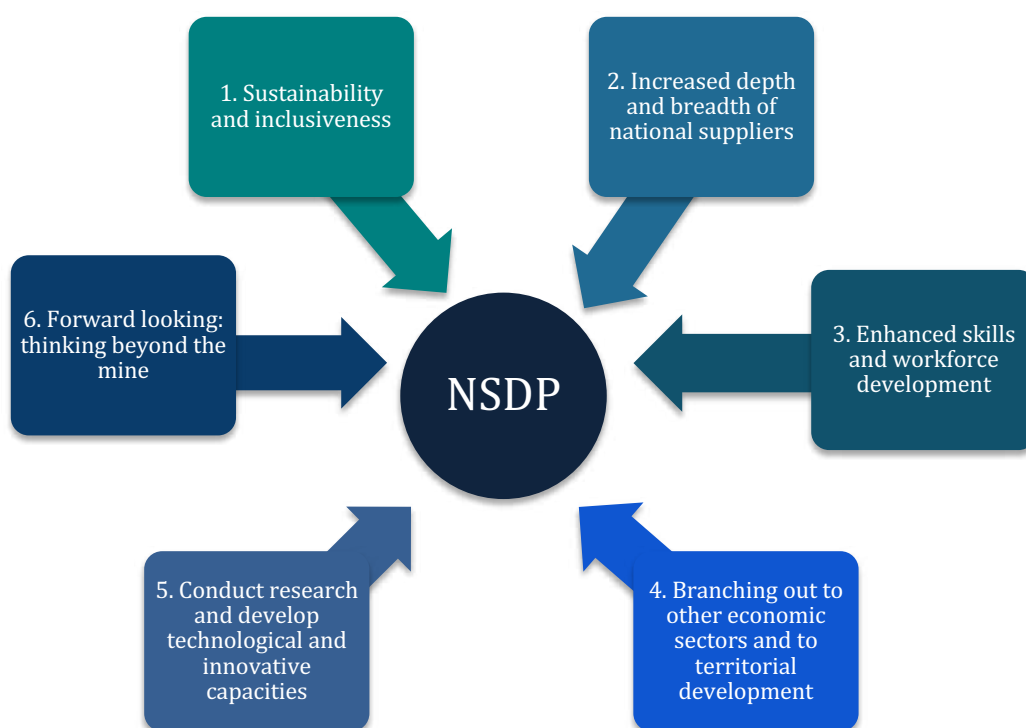
(a) Sustainability and inclusiveness

As is the case in other countries, the mining industry in Ghana is facing mounting public pressure to take action to promote environmental sustainability and social inclusion. It is also becoming increasingly important to build trust among Government agencies, the mining industry, environmentalists and local communities. Furthermore, it is becoming increasingly difficult for mining companies to obtain, and to retain, their social licences to operate, particularly as very little territorial development and few benefits for local communities are apparent in many mining regions, even after decades of mining activity.

A consistent approach towards sustainability and inclusiveness is therefore needed. In particular, it is important to:

Figure 37

The six core pillars of a national supply chain development programme



- (i) Ensure **early stakeholder engagement**. This can help companies lower management and reputational risk. Mining companies should seek to engage with stakeholders throughout the entire life cycle of the mine. Such engagement should include the involvement of local communities in project supply chains, the enhancement of local living standards and efforts to prepare local communities for life after the mine. The NSDP must be a truly public-private initiative in which commitments are made by all stakeholders.
- (ii) **Reconcile the interests of mining companies with those of other stakeholders** with a view to developing a shared vision. A focus must be maintained on improving and safeguarding the environmental and socioeconomic wellbeing of local communities.
- (iii) Do more to **address the needs of "local local" communities** by maximizing their

involvement in business activities. Although mining companies have very specific and structured processes for contracting and procurement, greater flexibility is needed so that smaller businesses can take up meaningful supply chain opportunities with mining companies. Similarly, supporting skills development and training programmes that empower members of local communities to obtain high quality jobs is essential if mining operations are to promote lasting and meaningful development.

(b) Increased depth and breadth of national suppliers

Intensive support must be provided to existing, new and potential/future suppliers, in line with their needs, capacities and the particular challenges they face.

Established suppliers, including SMEs, often need to improve their productivity, cost competitiveness, and product quality, as well as

Figure 38
Types of suppliers and the support they require



their access to markets and larger procurement contracts. The NSDP must therefore design specific tools, instruments and programmes to support efforts by these potential “champions” to penetrate global markets as globally-competitive companies.

Given their greater vulnerability, **new suppliers** generally need more systematic support, including facilitated access to information and markets. Temporary protection measures or incentives are also often needed, as these can give new suppliers the time they need to consolidate their operations, as well as tailor-made technical support to help them meet mine-specific requirements.

It is also important to develop specific programmes to identify and support **future suppliers**, either because companies may decide to source more products from the local economy or because new challenges may be addressed most effectively through innovative solutions developed by new local companies. A number of countries, including Australia, Chile and Peru have designed supply-driven NSDPs whereby mining companies can identify potential future suppliers by asking local firms to come up with innovative solutions to the specific challenges they face. For this to be successful, the NSDP must foster knowledge-intensive collaboration, nurture entrepreneurship, and support business incubators and start-ups.

To support Ghana’s NSDP, mining companies must:

(i) Provide *access to market intelligence and procurement information*, including through the publication of guidelines, technical specifications and deadlines. The online portal on local content launched by the Chamber of Mines in November 2017 is an important step in that direction. Such a platform could also advertise supply opportunities for

their mines outside Ghana and be linked to other economic sectors. The platform must also include job vacancies.

- (ii) *Establish a database of qualified domestic suppliers*, with information on products and suppliers’ performance, ideally organized by product category. This database is necessary to reduce the cost of searching for domestic suppliers’ and to identify areas where support is needed to improve suppliers’ performance. The networks will then have to be maintained and updated on a regular basis, preferably through an association of industries and chambers of commerce.
- (iii) Work with training institutions to *assess how best to upgrade the performance of SMEs*, including with regard to their oversight mechanisms, production techniques, capacity to innovate and staff training programmes.
- (iv) Provide specific *technical support to local suppliers* facing difficulties in meeting required quality standards, taking note of successful efforts to improve the production of electrical cables and grinding media by local suppliers.
- (v) Work with financial institutions to provide *co-financing or direct financial support to SMEs*, possibly using long-term procurement contracts as guarantees to obtain access to credit at concessionary rates. Governments could provide tax incentives for costs incurred under such initiatives.
- (vi) Organize forums to facilitate *business matchmaking and speed-dating* to connect mining companies, contractors and local suppliers. This may encourage suppliers’ growth and joint ventures (including with foreign investors) and foster the transfer of technology, and expertise.

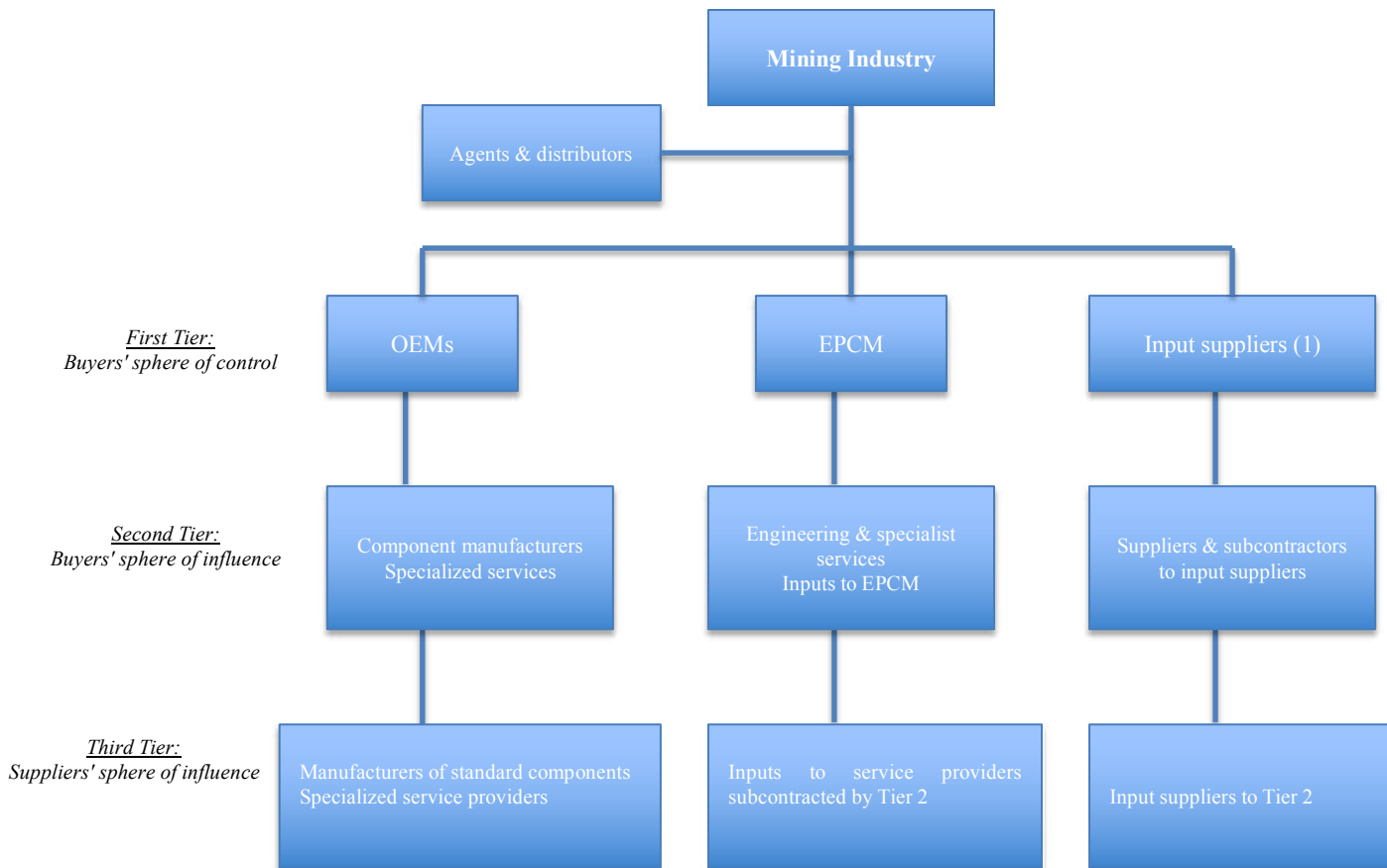
Figure 39 shows the various tiers of suppliers, as well as the spheres of control and influence of buyers and suppliers. As different tiers of suppliers may have very different power relationships with mining companies, the latter's ability to influence local sourcing decisions may vary considerably¹²⁶. It is therefore critical to understand the relationship between suppliers and mining companies in order to design targeted strategies that can help suppliers successfully bid for procurement contracts.

Most first-tier suppliers, i.e. those that can bid directly for mining companies' contracts, perform relatively well, in terms of compliance, certification, product quality, innovation and access to new production technologies. To access those prime markets, they need to be highly competitive. At the local level, they are often represented by local branches of international companies and rarely produce anything locally. Prospects however exist for certain new input suppliers, including suppliers of reagents, chemicals and fuels, to make inroads in this area.

(1) E.g. explosives and chemicals

Figure 39

Tiers of suppliers and spheres of control and influence



126 For example, OEMs have long-term contracts, associated with guarantee and after sales services. For those items, it is difficult to change the sourcing decision.

Other parts of the supply chain comprise second and third-tier suppliers. These are usually subcontractors: they do not work directly with mining companies and are therefore less likely to benefit from partnership programmes established by those companies. However, these suppliers have much greater scope for development and growth. An NSDP must therefore encourage mining companies to offer support to those suppliers, with a view to helping them improve product quality and upgrade the skills of their workers. Such support could be in the form of financial assistance or in the form of guidance provided by the mining company to help indirect suppliers address specific challenges.

(c) Enhanced skills and workforce development

Empowering the workforce, not only by improving the quality of the education system, but also by addressing skills mismatches and gaps in the current labour force, is an imperative in Ghana. An NSDP must therefore focus on enhanced capabilities so as to ensure that suppliers can rely on a well-qualified labour force. This will require an accurate assessment of their human resources requirements. Efforts must also be taken to improve the productivity of Ghana's labour force, inter alia, by:

- (i) Improving the population's general skills to meet the requirements of a rapidly industrializing country;
- (ii) Addressing skills mismatches in the mining industry so that mines can find local employees with the required skills at all levels;
- (iii) Improving suppliers' skills development to improve their labour productivity and boost their competitiveness. In that regard, there is a need to:

- » Scale up existing R&D institutions and training centres;
- » Establish entirely private business incubators, which are particularly conducive to creativity and entrepreneurship and can provide support to existing suppliers, recent start-ups and gazelle companies;
- » Encourage joint public-private initiatives to foster capacity building.

To promote workforce development, the NSDP should, therefore:

- (i) (On a macro-level) collaborate with the competent authorities to promote the integration of workers and businesses into the formal economy;
- (ii) (Under the leadership of the competent Ministry, and in partnership with mining companies and suppliers) design appropriate school curriculums that focus on science, technology, engineering and mathematics (STEM); promote technical and vocational training courses that address the needs of industry; and promote teaching of soft skills, such as creativity and critical thinking;
- (iii) (Through coordinated efforts with the competent authorities, mining industries and suppliers) design professional training schemes to improve labour productivity and encourage companies to conduct regular on-the-job training to continuously upgrade the capabilities of their workers;
- (iv) Encourage mining industries and foreign companies to share their know-how and knowledge so as to allow local workers to gradually replace expatriates;

- (v) Support skills development initiatives for local suppliers to strengthen their capacity to support the mining industry and to improve the productivity of their workers;
- (vi) Encourage the movement of talent, skills and competencies across the region;
- (vii) Develop mechanisms for retaining knowledge within the region and improving skilled worker retention rates;
- (viii) Adopt strategic approaches in order to stay ahead of skills trends and anticipate future needs, particularly in the light of ongoing advances in technology that may significantly change the nature of tasks and the skill mix required by the mining industry in the future.

(d) Branching out to other economic sectors and to territorial development

One of the key purposes of establishing a national programme is to connect mining suppliers with other economic sectors. Although the mining industry may offer a secure market for suppliers, suppliers must use the capabilities they have acquired with the mining sector to branch out to other economic sectors. In doing so, they will be able to promote broader territorial development.

The NSDP must coordinate the provision of high-quality services in various policy areas, such as industry and agriculture as well as in other tertiary areas. For example, the policy to develop clusters and economic zones needs to be linked to that of developing local capabilities to supply the mining and oil and gas industries. Steps taken to upgrade supplier capabilities can thus have a multiplier effect across sectors and foster inter-industry cooperation.

(e) Conduct research and develop technological and innovative capacities

This is a strategic pillar for the NSDP as innovation is the path to greater supplier productivity and the long-term sustainability of mines, particularly when technological advances are giving rise to disruptive technologies.

Training programmes and initiatives by R&D and academic institutions can play a key role in that regard and the country's institutional gaps must be addressed, either by expanding the mandate of existing centres of excellence or by creating new ones.

In that regard, Ghana should facilitate the following:

- (i) The development of **a network of solid and competitive suppliers**. Ghana must develop mechanisms to foster R&D and innovation, provide incentives to stimulate technology transfer, and convince mining companies to foster partnerships that can develop tailor-made innovative solutions to mining industry challenges. Such partnerships will allow Ghanaian local suppliers to develop their capabilities so as to be ready to compete at a global level.
- (ii) The **introduction by mining companies of innovative technologies at all stages of the mining process** in order to develop cost-effective solutions and maintain a competitive edge, even when mine sites mature and ore grades decline. The key here is not to pursue innovation for its own sake, but rather to do so in order to maintain operational excellence, minimize costs and remain competitive. This is already happening in a number of developed countries, including Australia, Canada and Chile, where more and more mining companies are encouraging

innovation and adopting new technologies to increase mine productivity and returns to all stakeholders. New technologies will require new industries and new types of suppliers. Ghana must therefore prepare itself for future types of operations, inter alia, by strengthening the capacity of mining sector suppliers.

To that end, the NSDP must establish R&D and innovation platforms to create an environment in which:

- » Suppliers are encouraged to develop expertise and technology that can, potentially, be scaled-up, commercialized, and exported. Those platforms should encourage suppliers to find innovative solutions to specific needs and challenges faced by the industry; and
- » Mining companies are fully involved in the search for innovative solutions to existing and future challenges, inter alia, through their strategic partnerships with local firms. This will help improve Ghana's technological readiness and enable local firms to access emerging technologies, incorporate them into their innovation and operational processes and participate meaningfully in both new and transforming value chains.

Given the uncertain outcomes of such research activities, incentives will need to be offered to both mining companies and suppliers with a view to encouraging their participation in the NSDP.

(f) Forward looking: thinking beyond the mine

Another strategic dimension of the NSDP is to ensure that Ghana adopts a forward-looking agenda with regard its finite mineral resources. To that end, the following considerations should be borne in mind:

- (i) Firstly, mining resources are non-renewable and therefore, although Ghana still has significant reserves, it is important to **reflect on what will happen once resources are depleted** or when production falls due to declining prices. Strategic options are needed to prepare the country for a time when mining has ceased. This should be linked to the diversification pillar (branching out into other activities) and the R&D, technological and innovation pillar, as solutions may be found by using new technologies to improve productivity and cost-efficiency.
- (ii) Secondly, critics of the mining sector point to **a lack of horizontal and spatial linkages** in Ghana, in particular with regard to the sharing of energy or infrastructure that could help connect local communities to markets. It is critical to establish strong partnerships with the mining industry under which local communities can use key mining-related infrastructure to achieve their economic independence and reduce their dependency on mining activity.
- (iii) Thirdly, **the quality of life in any mine towns** in Ghana remains low. Indeed, towns like Obuasi appear to have reaped few benefits from mining when they are compared to other cities with important mining or extractive sectors, such as Johannesburg, Dubai and Abu Dhabi. Ghana's mining sector must be used to spur territorial development and ensure that nearby cities can realize their full potential. To accomplish this, it is necessary to exploit these regions' natural advantages, improve their physical attractiveness, support growth in other productive sectors (including through clusters) and ensure better urban policy outcomes in areas such as transport, waste management, housing and environmental protection.

- (iv) Fourthly, Ghana must develop a strategy for **mine closure and rehabilitation**. A growing focus on economic sustainability means that, apart from merely ensuring compliance with relevant regulations, the country must also identify the most beneficial use of mine sites once extraction activities have ceased.
- (v) Finally, the mining industry shares **common challenges with other economic sectors**, which need to be addressed in a coherent and coordinated manner. These include issues of national interest such as rising power costs and the need for reliable energy supplies, as well as what are often transnational issues, such as incompatible demands for water resources and threats to environmental sustainability. Sustainable (or green) mining is increasingly seen as a “good business case” and Ghana could position itself as a pioneer in Africa in this domain. Making

Box 11 highlights some examples of the creative and successful re-use of decommissioned mines around the world, in which mine sites and infrastructure have been repurposed to promote local development.

Box 11 Examples of re-use of decommissioned mines

Former mine sites have been used as:

Museums or education centres

Britannia Mine Museum, Squamish, British Columbia, Canada.

Bellevue Underground Coal Mine, Crowsnest Pass, Alberta, Canada.

Visitor attractions

Wieliczka Salt Mine, Cracow, Poland has 300km of galleries with works of arts carved in the salt, and has been designated a UNESCO World Heritage Site

The Eden Project at a disused clay mine in Cornwall, United Kingdom, is an ecosystem biome project, educational centre, and concert venue.

Scientific centres

The Sudbury Neutrino Observatory was built in INCO's Creighton Mine near Sudbury, Ontario, Canada.

Recreational areas

Gotland Ring, Sweden, is a world-class car racing track situated in an old limestone quarry.

Kőbánya, Budapest, Hungary, is a limestone quarry which has been flooded, and is now a popular scuba diving destination.

Gardens or parks

Butchard Gardens, Victoria, British Columbia, Canada, used to be a limestone quarry mined for making concrete.

Wheal Jane tin mine, Cornwall, United Kingdom, features wetlands and recreational trails.

Agriculture

The Big Hole at the Kimberley Mine, South Africa, used to grow oyster mushrooms

Tatum Lignite Mine, Texas, United States of America was reclaimed and converted into productive farmland and wetland areas.

Source: <http://www.miningfacts.org/environment/what-happens-to-mine-sites-after-a-mine-is-closed/>

sustainable mining a key element of the NSDP could encourage debate on how Ghana can best develop national solutions to mining challenges that would not only benefit the mining industry but would promote growth across all sectors of the economy.

7.5 Improving the institutional architecture to support the NSDP

To be successful, the six core pillars need to be anchored in a strong institutional architecture, which must be based on trusted partnerships involving all stakeholders that are likely to play a key role in the NSDP process. The NSDP will also require high-level political oversight and must be designed so as to ensure consistency through electoral cycles and changes of government. Steps must therefore be taken to address institutional weaknesses that may negatively affect the consistency and sustainability of the NSDP.

Figure 40 provides an overview of a possible institutional architecture. This would include the establishment of an independent **National Advisory Council (NAC)**, which would strive to promote excellence, political neutrality and oversight with a view to achieving the country's long-term goals.

Although the NAC would be independent, it would be managed by a board of directors comprising representatives of (i) public authorities in their professional capacity (non-appointed); (ii) private sector organizations; and (iii) chairs of subcommittees overseen by the NAC. The CEO of the Minerals Commission could serve as chair of the board of directors. The NAC would be the main coordinating body for the 6 pillars of the NSDP.

To give political direction to the work of the NSDP, an **Inter-Ministerial Committee (IMC)** should be established to coordinate

policies and actions across various ministries. Indeed, the Ministry of Lands and Natural Resources, which oversees the mining sector, must work with other key ministries, including those responsible for trade and industry, finance, planning, infrastructure, labour; education and science and technology to ensure policy coherence. The IMC would need to be advised by a technical committee, which should include representatives of the private sector, to ensure that policies are informed by the needs of the industry. The IMC could fall under the purview of the country's Economic Management Team.

Policy coordination and coherence is also needed from the private sector. In that regard, a private sector-led dedicated body, in the form of an **Enterprise Centre** should be established with a view to: disseminating information on mining procurement, tenders and on other industries' technical requirements to local suppliers; maintaining and updating an online suppliers' database; providing specific support to local firms to meet the technical requirements of the industry; coordinating strategic positions across mining industries to inform national policies; facilitating joint ventures with international firms to bring technical know-how and expertise to local firms; providing advice on the types of training needed by the industry for various categories of jobs; and supporting SMEs upgrading through business mentoring. The chairperson of that body would sit on the NAC and the other sub-committees expected to be set up in that connection.

Given the importance of human resource development, a **Training and Skills Development Council** should also be established to monitor labour market needs and skills requirements. This Council would play a key role in the country at large, and would not confine its activities to the mining sector. The Council would identify skills gaps and mismatches, with particular focus on core

economic sectors (including mining), develop a skills strategy accordingly, advise the Government and the private sector on various tools and instruments to improve workforce capabilities, advise the government on school and training curriculums and provide suppliers with specific support, including specialized training, to improve their productivity. The Council would include main public sector stakeholders, as well as representatives of universities, research institutions, and training centres (including those in the private sector) as well as representatives of mining companies and suppliers. The chairperson of the Council would sit on the NAC and the other sub-committees expected to be set up in that connection.

Last but not least, a **National Productivity and Innovation Council** should be established to advise the Government on proposed programmes and initiatives to promote both public and private sector innovation and productivity relating to the mining and mining-related activities.

This Council would provide wide ranging guidance, including with regard to academic programmes and research, economics and finance, industry, science and ICT, and seek to support efforts by the Government to foster innovation, including, in particular, in mining-related activities. The Council would also coordinate and develop projects and programmes in response to specific challenges identified by the industry, foster R&D efforts, entrepreneurship and creativity and facilitate knowledge sharing among industrial stakeholders. Like the Training and Skills Council, the National Productivity and Innovation Council would be a multi-stakeholder initiative and would include representatives of Government, industry, academia, and regulatory bodies relating to health and safety and standards. The chairperson of that body would sit on the NAC and other sub-committees expected to be set up in that context.

7.6 Key steps to implement the NSDP

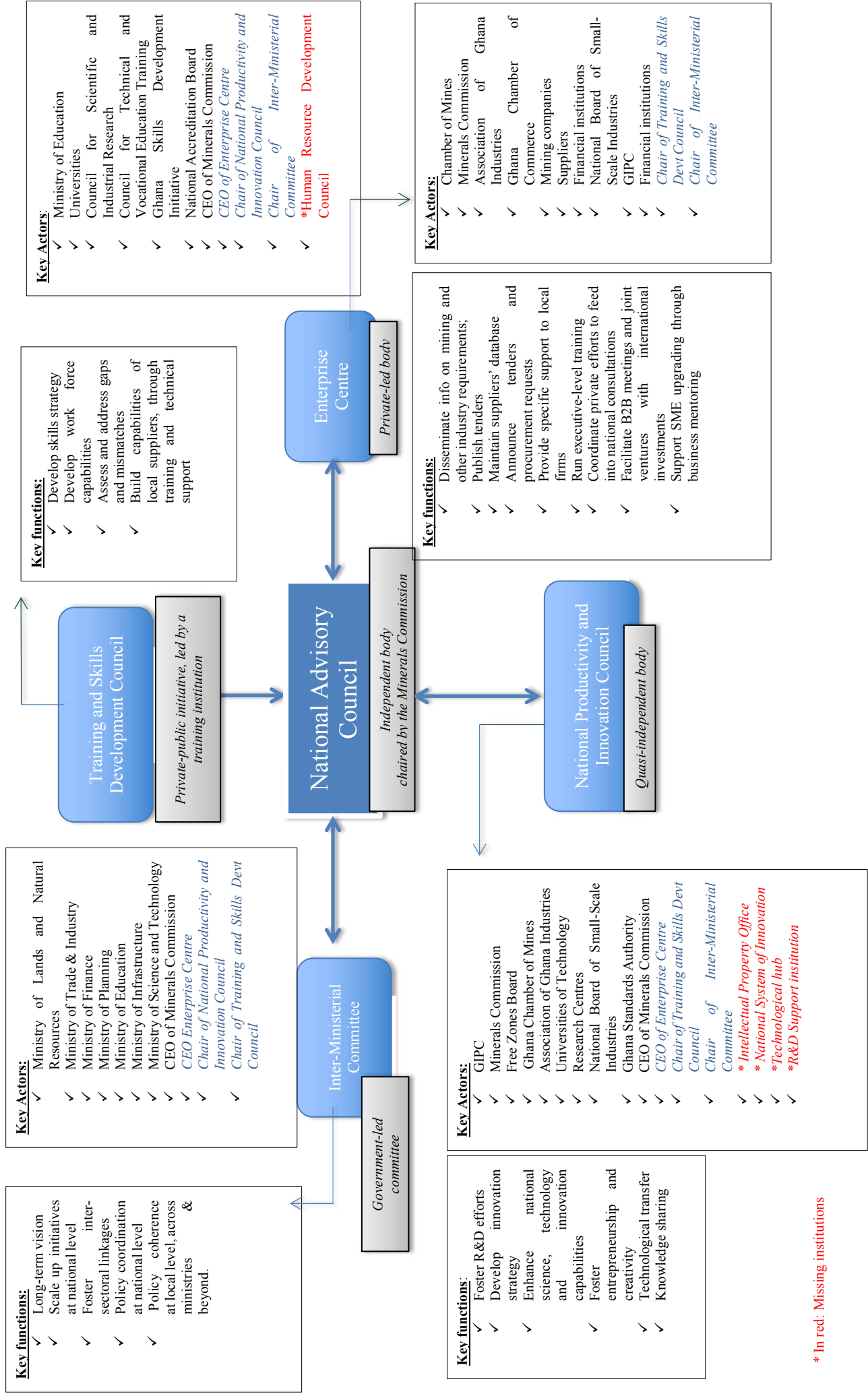
The goals of the NSDP are as follows:

- (a) To create a coherent framework for measuring supply chain development. Metrics can include: the increase in the number of Ghanaian firms connected to the mining industry; higher labour and industrial productivity; an improved business climate; reduced business costs; improved energy efficiency and lower energy costs; increased local value addition; and an increase in number of people employed per professional category;
- (b) To provide upstream opportunities for Ghanaian and locally-based industries to participate in mining supply chains and increase the in-country contribution to those supply chains;
- (c) To identify opportunities for business process upgrading through the application of best practices, innovations in production and investment in R&D and science and technology;
- (d) To improve workforce knowledge through training in technical issues, management systems and sustainable business practices; promote technological and knowledge transfer; and strengthen intellectual property rights climate to stimulate entrepreneurship innovation;
- (e) To strengthen suppliers' business performance and competitiveness by reducing supply chain business risks and improving their relationships with mining and other industries.

The NSDP should be implemented through a multi-step and multi stakeholder process that stresses leadership commitments from all relevant actors. An efficient strategy consists

Figure 40

Proposed institutional architecture for the mineral cluster and supply chain initiative



* In red: Missing institutions

therefore of the prioritization of objectives and outputs that can be achieved within a reasonable timeframe.

To ensure the successful implementation of the NSDP, Ghana should:

1. Establish a steering committee

The first step is to create a steering committee that brings together all relevant stakeholders to provide leadership. As highlighted in Figure 4 below, the steering committee would coordinate all activities, including the formulation of the NSDP and would monitor its implementation.

2. Set priorities by establishing key strategic objectives to be attained in order of priority

It is critical to identify the types of support that local suppliers will need in order to meet the requirements of industry, and to develop a strategy to support local industry and service providers in line with Ghana's national industrial development objectives. A critical assessment of suppliers' institution capacities, staff competencies and the country's education system must also be conducted.

3. Identify appropriate business solutions to be implemented through structured partnerships

The mining industry, suppliers, technical institutions and public authorities must work together to identify potential roles and responsibilities within the Programme. Key institutions and agencies should be designated to take the lead on specific support actions. This was the course of action adopted in Chile, for example, where dedicated institutions were given responsibility for various dimensions of the country's successful supplier development programme. In Ghana, new institutions, such as the National Productivity

and Innovation Council should be established to perform oversight roles in that regard.

4. Provide adequate financing to support the Programme

Sufficient financial resources are critical for the implementation of the NSDP. The steering committee should consider different options, models and mechanisms from internal and external sources, to ensure the sustainability of Programme activities. To ensure ownership, the Government will have to decide to what extent it is willing to fund key activities or provide sufficient financial incentives such as tax rebates or loans at favourable interest rates.

The Programme could be funded through the budgets of various ministries. For example, the Labour and Education Ministries could provide funding to support training, and the Ministry of Trade and Industry could fund initiatives to promote competitiveness and productivity. The Government could also decide to create a special window, to be financed from mineral taxation. The modalities and sustainability of resources must be rolled out over several years to ensure predictability.

The private sector should also provide financial support to the NSDP. A number of mining companies already fund initiatives to support their supply chains; private sector actors should endeavour to coordinate their actions and pool resources in order to provide effective support in priority areas.

Ghana's development partners could also provide financial support. Ghana is not a least developed country, however, and official development assistance has therefore decreased substantially over the years. However, development partners are now providing more business-oriented support, including by encouraging their firms to invest in developing countries. Ghana should ensure that any

such instrument is aligned to its own development priorities.

5. Monitor results and learn from experience

A monitoring and evaluation system should be put in place to assess the readiness of suppliers and to identify areas where specific support is needed. That system should focus, in particular, on:

(a) Improving the technical and quality capabilities of suppliers;

(b) Enhancing delivery capacities and expanding production capabilities in line with mining industry requirements; and

(c) Improving productivity by providing expert guidance and technological support and encouraging the implementation of cost-cutting measures.

The last step is particularly important if suppliers are to adopt best practices and learn from unsuccessful experiences, and will ensure that the NSDP is efficient and produces meaningful results. It can also help build trust with Ghana's partners by ensuring that scarce financial resources are not wasted on unproductive activities.

Chapter 8: Developing a mineral supply cluster in Ghana

8. Developing a mineral supply cluster in Ghana

Minerals in general and gold in particular continue to be central to Ghana's total economic output. This underlines the importance of establishing stronger linkages between mineral activities and the broader economy in order to foster industrial development and lay the foundations for the country's economic transformation.

The importance of such a transformation and the underlying institutional and policy environment needed to achieve it is a central tenet of the African Mining Vision (AMV). Linkages from mineral extraction to the greater economy can take many forms. Upstream supply chains provide opportunities for local manufactured supply and business services firms to expand and gain new clients. Downstream beneficiation can bolster industry. Sidestream linkages can draw on simultaneous investments in infrastructure and education. All of these can have knock-on benefits for employment, income and revenue generation.

Given the current economic environment in Ghana, establishing domestic upstream linkages will help ease growing pressures on the country's balance of payments and foreign exchange reserves. With the drying up of development assistance and the high value of the dollar, identifying viable domestic alternatives to the large import portfolio for the mineral supply chain is critical. This has been acknowledged by Ghana's new Government, which is determined to promote industrialization with a view to creating opportunities for inclusive and sustainable growth for communities throughout the country.

Searching for domestic input sources is not a new idea, either in Ghana or across Africa's mineral-exporting economies. This chapter looks at current opportunities for local content development in a variety of sectors, including construction, metal work, services and agriculture, as well as in upstream activities that already service other sectors. In particular, the section will look at Ghana's spatial mineral and industrial distribution and its Free Zones, which provide an environment conducive to the development and growth of manufacturing and business service enterprises. Together, the Zones and the country's growing domestic manufacturing sector provide significant opportunities for the creation of linkages to the gold mining sector in Ghana. A new Ghanaian mineral supply cluster could accelerate coherent mineral-based industrialization and help create enterprises that are able to compete in regional and global markets.

8.1 Industrial policy and the mineral sector in Ghana

8.1.1 Industrial policy and the Industrial Sector Support Programme (ISSP)

Ghana's 2011 industrial policy, approved in 2010, was developed amidst the push to achieve middle-income status by 2020. This built on the shift in the early 2000s to focus on the role of agro-industries and export opportunities to boost industrialization (Ackah and others, 2014). As detailed in Chapter 1, industry value added growth has varied greatly due

to the impact of mineral price fluctuations on mining activities. Manufacturing value added growth followed a similar trend.

As agriculture and then commodity prices began to rise through the 2000s, industrial policy focus shifted to the role that resource-based beneficiation and linkages between manufacturing industries and commodities could play across Africa (ECA, 2014). Developing countries have started to review their industrial policies in light of the changing global trade environment and are formulating innovative industrial policies that focus, primarily, on promoting investment and competitiveness rather than on placing restrictions on certain actions (Ramdoo, 2016).

Previously, “the Government of Ghana did not have a comprehensive document that articulated its vision for the industrial sector” (Boadi, 2011). However, the new industrial vision considers, *inter alia*, natural resource-based value-addition as a means to promote industrialization (Ackah and others, 2014).

Ghana’s new industrial policy was developed inclusively with other stakeholders,¹²⁷ through a six stage process, including: (i) identification of key thematic areas of policy; (ii) review of reports on industrial development, trade and competitiveness in Ghana; (iii) examination of a full range of policy options as per original thematic areas identified; (iv) development, in consultation with experts stakeholders, CSOs, private firms and other actors in each area based on Ghana’s experience, costs, best practices and other factors; (v) consultations and review with stakeholders to select appropriate policy options; and (vi) Ministry review of recommendations and final determination.

Annex 8 provides a list of the key players in Ghana’s industrial sector, which illustrates the environment in which the policy was devised.

Those key stakeholders are, moreover, tasked with carrying the country’s industrial agenda forward.

The country’s industrial policy should be aligned with the trade policies of Ghana and the region, including the ECOWAS Trade Liberalization Scheme and the EPA signed by ECOWAS and the EU, and with other growth and development strategies. In practice, however, there appear to be inconsistencies between the objectives of Ghana’s industrial policy and certain trade measures. At the core of the policy is the underlying principle that the private sector can be an engine of growth in a dynamic and competitive economy. But this can only be realized if national policies are aligned and coherent with regional and international commitments made by Ghana in various forums.

The key objectives of Ghana’s current industrial policy can be summarized as follows:

- (a) To expand productive employment in the manufacturing sector;
- (b) To expand technological capacity in the manufacturing sector;
- (c) To promote agro-based industrial development;
- (d) To promote the spatial distribution of industries with a view to combating poverty and reducing income inequalities.

It further includes 21 policy thematic areas, divided in four main components, namely (a) production and distribution; (b) technology and innovation; (c) incentives and regulatory regime; and (d) cross-cutting issues.

It is difficult to assess implementation of the policy between 2011 and 2015, as no report

127 Including the Ministry of Lands and Natural Resources and other ministries, Government agencies, including the GFZB, private sector actors and civil society organizations. The President chaired the policy drafting process.

in that regard has been made publicly available. However, critics have underscored that it has been difficult to implement the policy, in particular when it comes to supporting productivity of local industries, including of SMEs.¹²⁸

A subsequent Industrial Sector Support Programme (ISSP) was developed to facilitate implementation of the policy. The Programme set forth a number of actions to be taken between 2011 to 2015 on the basis of gaps identified in key areas, including: institutional orientation, sector policies, investment promotion, access to finance for SMEs, financial policy, inputs to production, subcontracting, productivity improvement, management and training, agro-processing and ICT (UNIDO, 2013).

The ISSP was to be implemented mainly by MoTI but coordinated through an inter-ministerial coordinating committee, in recognition of its cross-cutting nature (Ministry of Trade and Industry 2011). It was structured along the lines of the four main axes of the country's industrial policy, and outlined 19 specific projects under each axis.

Each project had outputs and targets to be delivered within the five-year period specified. The Programme also specified indicators by which the performance of ISSP could be measured, including:

- (a) Increased contribution of manufacturing to industrial sector growth and overall GDP growth;
- (b) Increased value-addition to local primary products;

- (c) Increased volume and value of manufactured exports;
- (d) Increased flows of domestic and foreign direct investment into the manufacturing sector;
- (e) Increased employment in the manufacturing sector;
- (f) Improved spatial distribution of manufacturing;
- (g) Increased international competitiveness of the manufacturing sector; and
- (h) Improved performance of domestic firms and SMEs in the manufacturing sector.

Again, there is no detailed assessment of the impact of the ISSP on industrial activities. The sector has not made significant progress, and there is therefore a need to step up efforts to remove major bottlenecks impacting business development in Ghana. In that regard, the 2016 budget underscored the need to develop a national infrastructure plan and a new approach for PPPs for infrastructure. It also indicated that development projects¹²⁹ in the power sector were on track.

With regard to investment and tax policy, there are a variety of tax rates, exemptions, incentives and investment requirements, which may or may not be applicable. The GIPC seeks to attract investment to Ghana and facilitates the establishment of investment-based partnerships.

128 See <http://thebftonline.com/business/economy/17062/industrialists-express-worry-as-industrial-policy-gathers-dust.html>.

129 These projects are notably very broad, including "industrial manpower development and training", which has sub-elements such as "improved entrepreneurial management and skills", and general outputs such as "existing training institutions strengthened to deliver entrepreneurship and management training programmes that meet the current and future needs of the manufacturing sector". Indeed, while the ISSP is the more specific and implementable plan for the country's industrial policy, in wording it is rather general. The elements that are specific are the estimated costs and planned time frames.

8.1.2 Linkages to the mineral sector

As stipulated in the 2011 industrial policy, the policy objective for non-agricultural-based local raw materials is “to harness and fully utilize the mineral deposits available in the country in support of rapid industrial development ... the Government will encourage extensive exploitation of mineral deposits such as limestone, kaolin, iron ore, clay, salt, aluminium sulphate, oil and natural gas” (The Republic of Ghana, 2010). The policy identifies these subsectors and important areas for industry, as well as agendas that the Government will support or encourage in that regard.

ISSP provides for non-agricultural raw materials and inputs. Here, the objective is to harness and fully utilize the mineral deposits available in the country in support of rapid industrial development. Main outputs expected include: (i) extensive exploitation and processing of mineral deposits encouraged and (ii) incentives to attract investments into the local production and processing of selected mineral deposits instituted. Resource exploitation is to be backed by measures to encourage increased investment in their local production and processing and is expected to expand local content in the industrial sector. In that regard, Ackah and others (2014) note that potential or planned “sector-specific policies” under this framework do address linkages and do so mainly in viable pursuits, including petrochemicals, limestone for cement, and iron and steel.

What is interesting to highlight here is the implication that this policy views minerals essentially as potential domestic low-cost inputs to industrialization. It does not sufficiently stress the greater potential that the mineral sector has, in particular in contributing to significant industrial development through upstream and downstream linkages with other economic sectors. Indeed, as experience has shown in Latin America and even elsewhere in Africa, the mining sector can act as an anchor to leverage broad-based

structural transformation, notably through resource-based industrialization.

UNIDO (2013) confirmed that the only body coordinating industrial policy and minerals issues is the Ministry of Lands and Natural Resources. However, the Ministry’s role is confined to issues and policies relating to the land tenure system, land acquisition and land administration at national, regional and local levels. While the Ministry is a key regulator, it does not have the mandate over economic policies related to the mining sector, although the 2006 Minerals and Mining Act (Act. No. 703) did place local content regulations under its oversight. Any meaningful policy that aims to be transformative must be conducted in collaboration with the Ministry of Trade and Industry and with private sector stakeholders, the main drivers of growth.

8.2 Industrial clusters – potential linkages with the mining sector

Based on the above analysis, the following section considers the potential role that industrial clusters could play in addressing identified gaps and strengthening the country’s industrial base.

8.2.1 Role of industrial clusters

An economic or industrial cluster involves the regional and/or sectoral development of a set of economic activities. This can take the form of nationally supporting suppliers and encouraging linkages to a specific activity or sector, with that sector at the centre of the policy. Alternatively, but not necessarily, it can involve designating a geographical area in which those cluster activities are to be concentrated.

A Special Economic Zone (SEZ) focuses on the geographical element, and ensures that businesses operating within proximity of each other

enjoy certain advantages, including well-developed infrastructure and knowledge spillover effects. This can develop a critical mass of suppliers and a market for these suppliers. Related industrial clusters may also emerge nearby.

SEZs can take the form of Export Processing Zones (EPZs), tax free zones and industrial parks, and are typically outward-oriented to encourage exports. Indeed, while each of these terms may refer to a different aspect of the zone in question, in analysis they are often used interchangeably. Clusters create a dynamic that generates employment and higher-income opportunities for their surrounding communities.

EPZs have become a popular and widespread instrument for economic policy, and can be pursued for a number of purposes, including the generation of foreign exchange earnings, attracting FDI and creating employment (Madani, 1999). Indeed, policy makers in developing countries in particular are seeking to emulate the success of SEZs in China, which capitalized on agglomeration and spillover effects, featured significant initiatives, and spurred local and national development. Zones can be instituted in pursuit of these objectives individually, or can be part of broader industrial policy (Cling and Letilly, 2001).

Successful and well-developed EPZs have led to an agglomeration of firms and expertise, leading to knock-on employment and income effects with linkages to other sectors. In some cases, EPZs have become global centres for production and trade. Economic and industrial clustering can be particularly useful for small and informal firms as it reduces their isolation and allows them to benefit from positive externalities and spillovers (AfDB 2013). Successful clusters across Africa cover a variety of sectors, from the cut flower cluster in Lake Naivasha in Kenya, to the garment cluster in Aba, Nigeria, to wine producers' networks in South Africa.

However, some researchers (Cling and Letilly, 2001) have questioned whether EPZs can, in fact, succeed in less developed countries, and have noted that they have been most successful in emerging markets in Asia and to some extent in Latin America, where other endogenous facilitating factors for success exist.

Whereas clusters promote linkages and benefits such as technology transfer and knowledge spillovers, the mining sector often has limited linkages with other sectors and is often dominated by multinational corporations (Arias and others, 2012). This may compromise industrial linkages and sustainability. Indeed, as shown by a study on the region of Antofagasta in northern Chile, the dominant position of multinational corporations in mining has resulted in the isolation of the sector and limited linkages with complementary economic activities in the region.

Thus the surrounding conditions, the goals of economic zones, and the ways in which the those zones operate are critical if they are to have a significant socioeconomic impact, and the writing of legislation for EPZs, provision of land or ad-hoc introduction of incentives will not, in themselves, create a fully conducive environment for growth. Indeed, upstream linkages require strengthening industrial and workforce capabilities, and the creation of EPZs is just one of many interventions that can foster links with these capabilities (Madani, 1999). Sufficient analysis and knowledge of the economic mechanisms involved in EPZs, their interaction with trade regulations and the potential and viability of industry development are all vital to their success (Cling and Letilly, 2001).

8.2.2 Background on clustering and economic zones in Ghana

In Ghana, clustering is formally undertaken through a set of Free Zones, which are

overseen by the GFZB in accordance with the provisions of the 1995 Free Zones Act.

The GFZB grants licences, assists applicants, monitors activities of FZ firms, ensures compliance with regulations, keeps records, and performs other related tasks. The Board has identified a number of priority areas for investment, and those of particular relevance to the mineral sector include light industry/ assembling plants, plastic products manufacturing, metal fabrication, ceramic tile manufacturing and ICT.

Ghana's Free Zones are meant to draw initial investment and foreign activities to the country, create jobs, and foster private sector growth (Angko, 2014) with a view to boosting exports. They are also designed to support the country's efforts to become a regional hub.

Ghana is striving to establish clusters in the Free Zones to support outward-oriented industrial sector development, and to particularly support the country's SMEs by helping them to pool their capabilities. Cluster initiatives also identify areas where enhanced cooperation is needed, such as infrastructure and networking.

According to relevant legislation, enterprises located in the Free Zones may "*engage in any processing, assembly, manufacture of any domestic or foreign raw, intermediate, semi-finished or finished goods for export or re-export.*" FZ firms enjoy a number of benefits: for example, they are exempt from income tax on profits for 10 years, then face an 8 per cent maximum and are exempt from customs duties on their imported inputs. Foreign investors may own up to 100 per cent of an FZ firm. FZ firms are allowed to hold foreign currency accounts in Ghana, but work and residence permits are still needed for foreigners working in FZs. Of goods produced in the FZs, at least 70 per cent must be exported. Goods sold locally are treated as imports. Sales from

domestic firms to FZs are considered exports, although the goods are considered tax-free "non-traditional products" and sellers do not have to obtain export licences.

As currently framed, it appears that firms operating in the FZs do not facilitate linkages with the rest of the economy. The 30 per cent cap on domestic sales hinders the ability of FZ firms to supply domestic industries, including mining companies. Furthermore, the current local content regulations do not allow firms operating in the FZs to exploit opportunities created by procurement spend in Ghana.

Furthermore, FZ firms have limited scope to conduct extractive sector export processing activities. To accelerate its industrial transformation, Ghana should consider what steps could be taken to allow FZs to support domestic industrial policies more effectively while also maintaining their export orientation.

8.2.3 Policy environment for clustering

Ghana's industrial policy on clustering only focuses on the provision of land for the establishment of those clusters. It does not address enabling factors that can facilitate sectoral and geographical cluster development. Key factors in Ghana's industrial policy that are relevant to the establishment of clusters include:

- (a) Land for industrial development. The 2011 policy prescribes that the Government will "establish industrial estates for selected manufacturing clusters, in partnership with the private sector";
- (b) The informal nature of small and micro-enterprises. The policy "encourage[s] cluster development of micro- and small enterprises";
- (c) Spatial distribution: The policy provides that the "Government will collaborate

with the private sector to develop cluster initiatives for SMEs”.

The industrial policy does, however, include provisions on areas related to clusters, such as infrastructure and education, and underscores the “desirability of fostering clusters of related industries building on “leverage points” of national advantage” (UNIDO, 2013).

ISSP focus areas relevant to clustering:

At least three areas (projects) under the 2011 ISSP are relevant to clustering. These are:

- (a) **Improved land and infrastructure for industrial development (Land for industrial development)** (Project 4). This project aims to develop effective land administration at national, regional and district levels to facilitate the acquisition of land for industrial development and establish industrial estates for selected manufacturing clusters, in partnership with the private sector. In that regard, the MoTI will collaborate with industry associations to advocate for the improvement of infrastructure and utilities for industries, industrial zones and clusters.
- (b) **Business registration and licensing procedures** (Project 14). This project aims to formalize small scale businesses to facilitate their access to business support services and incentives. Main outputs include: providing incentives to encourage the formalization of informal sector enterprises; encouraging the cluster development of micro- and small enterprises, strengthening their institutional capacity; and developing industry clusters and taking other measures that reduce

transaction costs and risks for service providers.

- (c) **Spatial distribution of industrial development** (Project 12): This project aims to facilitate the even special distribution of industries so as to stimulate economic development countrywide. Key outputs include: increasing investment in spatially distributed industrial development; integrating industrial policy objectives into national, regional and district economic development plans; helping metropolitan, municipal and district assemblies to draw up action plans to integrate industrial development into their medium-term sectoral development programmes and budgets; and supporting the development of SEZs, including industrial estates, logistic parks and business incubators, in partnership with the private sector.

In its 2012-2014 budget, the MoTI allocated funds to help upgrade the country’s domestic industrial base and promote capacity building and infrastructure development. Expenditure on activities to achieve those goals primarily took the form of “use of goods and services” rather than subsidies, grants and other financial incentives. Output indicators for industrial zones include land acquired, feasibility studies prepared, access roads constructed, utility services extended and trade fairs organized, with projections made for the years 2013 and 2014.

The 2016 budget data on the Free Zones only refers to the revenue side of the Zones’ activities,¹³⁰ and does not explicitly state what expenditures have been made in terms of incentives and other policy actions in the Zones.¹³¹

130 This includes actual and projections for non-tax revenue for the Ghana Free Zones Board, as well as IGF (Internally Generated Fund) Retention.

131 Given the lack of information on specific Free Zone expenditures, it will be important to discern if other expenditures (infrastructure outlays, training costs, tax exemptions etc.) involve expenditures in the Free Zones. No such expenditure information is available either in the budget or from the Board.

The 2016 budget also states that Ghana will strengthen its mechanisms for monitoring FZ enterprises by rolling out an integrated FZ unit in line with the second Ghana Revenue Authority strategic plan for the years 2015 to 2017. According to the 2016 budget statement, the Ghana Revenue Authority was to conduct an extensive review of FZ activities in 2016. The Free Zones Act is, in fact currently under review, thereby providing an opportunity for Ghana to assess FZ successes, and adjust policies and supporting mechanisms accordingly. No specific information has been made available regarding the scope of that review or the policy options for future FZ development.

Despite Ghana's firm commitment to improve clusters through actions that address the three aforementioned ISSP project areas, it remains unclear what specific role the FZs should play in the country's industrial policy or the extent to which FZs can help add value and create linkages, including with the mineral sector. It is therefore difficult to assess the extent to which the Free Zones have really contributed to improving Ghana's industrial base, and how FZs should be developed in order to support the country's national industrial development strategies.

8.2.4 Existing Free Zones in Ghana

Four Free Zones have been established in Ghana:

The **Tema Export Processing Zone** is located in Tema, Ghana's major residential and industrial city. Tema has the largest seaport in Ghana and is located about 24 kilometres from the international airport in Accra. Tema is also one of Ghana's fastest growing cities and boasts well-developed infrastructure. There are many industries and a concentration of skilled labour in Tema, with well-planned

and managed residential communities. The Tema EPZ, with a total area of 1,200 acres (480 hectares), offers investors a favourable and conducive environment for manufacturing, service and commercial export activities. Business processing is facilitated by the deliberate convergence of all front line export/investment promotion institutions, including the Customs, Excise and Preventative Service, Police, Immigration Service, Environmental Protection Agency and Internal Revenue Service, into a one-stop-shop. A range of property options, including factory shells, office space and land parcels serviced with good quality roads, drains, water and electricity connections and a dependable sewerage system are readily available for use by prospective investors and new business start-ups. The Tema EPZ has been relatively successful compared with other zones because of its proximity to Accra and to established industries in the capital and the country's ports. With the assistance from the World Bank, the Tema EPZ was expanded beyond export processing in 2005 and redesigned as a "hybrid" multi-purpose industrial park, with stronger linkages with the local economy.¹³²

The **Ashanti Technology Park** is located at Ejisu in the Ashanti Region in the very centre of Ghana. The Ashanti Region has abundant resources, and provides most of Ghana's cocoa beans, gold, timber and wood products and leather goods. Many tourist sites are also located in the region. The Ashanti Technology Park occupies an area of 1099 acres. The GFZB is positioned for partnerships with investors, which can be through joint ventures and sector-specific infrastructure development. The Park is evolving into a multi-purpose R&D hub where opportunities also abound for investment in water production and distribution, electrical power generated at thermal and bio-mass plants,

132 <https://www.oecd.org/aidfortrade/47811415.pdf>.

telecommunications infrastructure, accessories manufacturing, data processing and call centre operations.

The **Sekondi Export Processing Zone** is a 2,200 acre industrial enclave in Western Region. The proximity of the Sekondi EPZ to the country's second largest seaport, with which it has a direct road link, is ideal for heavy industrial activities. The Sekondi EPZ is to be developed into an integrated industrial mineral processing zone.

The **Shama Export Processing Zone** is located in the Shama Ahanta East Metropolitan area in the Western Region. The Shama EPZ is GFZB's dedicated industrial park for the petroleum and petrochemical sector. The Shama enclave is in a strategic location and covers some 3,200 acres of land adjacent to the sea. The GFZB provides investment support in downstream refining, distribution, transit and supply chain business services, including to key chemical production companies as well as to companies manufacturing plastics and jellies, provided these are intended for export. The GFZB also provides capacity building services for employers and employees in the petroleum sector and can provide land for tank farms, storage yards for logistics and haulage contractors, as well as land for the manufacture of chemical inputs and accessories for the petroleum industry at very competitive prices.

As noted by Ackah and others (2014), some 300 business enterprises operate in the Free Zones in areas such as food processing, wood and veneer processing, consumer goods, shea nuts/oil seeds processing, lubricants and bio-fuels, garment processing, food processing machines and spare parts, plastic waste recycling, data processing, telecommunications, software development, jewellery and furniture making.

As shown in Table 34, mining and quarrying activities are more dispersed across Ghana than industry in general, and much more dispersed than manufacturing. Indeed, heavy industry is concentrated in Ashanti and Greater Accra, as well as around other major cities (Ackah and others, 2014). This reflects where the centres of economic activity are located, and the fact that most Free Zones are located near major cities and ports.

It is interesting to note that the Sekondi heavy industrial EPZ is the only cluster focusing on mineral processing (Table 35), even though mining operations take place in various other regions (Table 34). There is therefore considerable scope for the further development of clusters around mining operations or for mining outputs to be processed in existing clusters.

As FZs are export-oriented, they cannot at present meet the needs of the mining and petroleum sector, which must find competitive local suppliers in order to meet the objectives of local content policies. To address this challenge, the way in which these clusters operate must be updated so that they can also support the mining and petroleum industry. By doing so, they may also unlock industrial spillovers, as many inputs required by the mining and petroleum industries are also needed by other economic sectors, which is highlighted by the BGR procurement demand model.

Apart from clusters and Free Zones which have arisen due to direct Government or public intervention, the Suame Magazine and furniture cluster, located in Kumasi, reflects the unprompted gathering and clustering of related small enterprises and entrepreneurs over time. This has had a significant effect over the decades, as Suame Magazine *"is possibly the largest light manufacturing cluster in Africa, comprising over 10,000 micro- and small enterprises and workshops engaged mainly in automobile repair services (i.e. garages),*

Table 34

**Spatial distribution of business establishments in selected industrial sectors, 2003
(per cent)**

Region	Industrial sector			
	Manufacturing	Mining and quarrying	Electricity and power	All three sectors
Greater Accra	25.7	23.5	7.1	25.5
Western	7.4	13.3	13.4	7.5
Central	9.6	23.5	10.5	9.7
Volta	5.0	12.7	15.5	5.2
Eastern	5.0	9.6	14.6	11.4
Ashanti	24.7	14.5	9.6	24.5
Brong-Ahafo	6.7	2.4	13.8	6.8
Northern	4.7	--	5.4	4.7
Upper East	3.2	0.6	3.8	3.2
Upper West	1.6	--	6.3	1.6
Total	100.0	100.0	100.0	100.0

Source: GSS, 2006.

Table 35

Selected clusters in Ghana

Location	Group	Range of firm sizes	Industrial sector
Kumasi-Ashanti	Furniture cluster	Micro, small	Furniture
	Suame Magazine	Micro, small	Metalwork and machinery
Tema: Greater Accra	Tema Industrial Area/ Free Zones enclave	Small, medium, large	All subsectors
	Spintex Industrial Area/ Free Zones enclave	Small, medium, large	All subsectors
Accra: Greater Accra	North Industrial Area	Small, medium	Manufacturing
	South Industrial Area	Small, medium	Manufacturing and garages
Sekondi/Takoradi Western	Light industrial area	Small, medium, large	Manufacturing (mainly food processing and wood exporters)
	Light industrial area	Micro, small	Garages, metalwork, machinery
	Heavy industrial EPZ	Small, medium, large	Mineral processing for exports
Shama-Western	Shama EPZ	Small, medium, large	Petroleum, petrochemical

Source: Ackah and others, 2014.

automobile parts production and retail, and metalworking (Ackah and others, 2014). The cluster employs over 100,000 people and covers an area of roughly 900,000 square meters.

The development of the Suame cluster involved and was based on micro- and small enterprises (Adeya, 2006). It is located in the western part of country but not on the coast, and thus may be geographically relevant for mining industries. It is mostly involved in manufacturing and vehicle-related maintenance, sales, some communications and business services. It developed over time, setting up shop in old abandoned factories. Local technology centres have helped increase capacities and know-how (Adeya, 2006). The cluster has fostered the development of numerous links between small firms.

One of the challenges impeding linkages between the Suame cluster and the broader domestic and regional economy is the very small size of the companies in the cluster. Unless micro- and small scale industries receive support, they usually find it difficult to grow, diversify and become sustainable suppliers. It should be recalled that the local content requirement means that the mining industry needs to work with reliable suppliers that can provide high quality and competitive goods and services in sufficient volumes. While the Suame Magazine cluster has much potential, it currently lacks the institutional, organizational and financial capacity to be able to respond to the demands of the mining sector. These are critical obstacles to be addressed, particularly as they are not subject to domestic supply caps under the FZ Act.

8.2.5 How Free Zones have fared so far and the way forward

Angko (2014) examined the export performance of 100 out of 176 Free Zone companies between 2003 and 2008 and found that FZ companies have been relatively successful,

but that they still account for less than 10 per cent of the country's total exports. Nonetheless, imports to FZ companies have been growing and employment has been rising, even though an increasing percentage of workers in the Zones are foreign nationals. Surveys indicate, moreover, that FZs can rely on better infrastructure than other parts of Ghana.

One of the reasons for the limited impact of Ghana's FZs on domestic industry is that few efforts have been made to encourage domestic investment in the FZs and to support linkages with local firms outside the Zones. This has led to a situation in which FZs have become isolated enclaves with few connections to domestic value chains (Newman and Page, 2017). This is despite the fact that investors in FZs enjoy a number of benefits, including tax exemptions, exemptions from licences and ownership requirements.

In 2014, a report in the Ghanaian Herald newspaper discussed the performance of the Free Zones near ports in which the GFZB underscored a number of successes, including:

- (a) Total capital investment of \$35 billion;
- (b) Total exports of \$37 billion;
- (c) Employment of over 31,000 workers;
- (d) Tax and duties on local sales of \$140 million;
- (e) A total of 1 per cent of the FZ annual wage bill of \$20 million spent on training;
- (f) Many Ghanaian nationals employed in FZ companies;
- (g) Social security contributions of \$123.6 million;
- (h) A total of \$125.6 million paid in income tax;

- (i) Some 47 per cent of FZ companies are Ghanaian owned.

The Herald article further implied that many local and artisanal companies have successfully established themselves in the Free Zones.

Ghana's FZ Programme has the same goals as EPZs elsewhere, namely to expand exports, increase foreign exchange earnings, create employment, and link in with investment flows. The country was in fact already judged to have a good business environment prior to the establishment of the Zones, but it is imperative to ascertain why FZs may not have boosted exports significantly, to identify existing bottlenecks and constraints in that regard, and to ascertain whether stronger linkages between the FZs and the broader Ghanaian economy could spur export growth.

Ghana needs to find innovative ways to improve the performance of its Free Zones. This should involve the formulation of new objectives, exploring how FZs can serve as springboards for local/domestic supply and local industries and finding ways to bolster goods processing and value addition in FZs, not only for export, but also to support local industries.

With regard to new potential Free Zone developments, a memorandum of understanding for a new technology park in Accra was signed by Mauritius and Ghana in June 2015. It is widely acknowledged that Mauritius has established one of the most successful SEZs in Africa (allAfrica 2015). In 2016, however, Ghana business news sources indicated that the park was unlikely to open because Mauritius had reallocated the resources needed for its establishment to fund other projects (Dogbevi, 2015). Furthermore, COCI, in collaboration with the Ankara Chamber of Industry, Turkey, is establishing a \$300 million Organized Industrial Zone in Ghana to serve as a hub for both foreign and local entrepreneurs.

More information is needed on the planned implementation of these projects.

In interviews conducted for a GFZB publicity video in 2011, a number of companies (primarily active in agro-industries and construction) underscored the advantages offered by Free Zones, including with regard to infrastructure, duty-free imports, and the provision of business and information services but also stressed that the Free Zones were not designed to foster linkages with other domestic firms or the broader economy.

A firm does not have to be physically located in a Free Zone to benefit from the Zone's advantages, but can choose a more economically viable location. Such firms must still adhere to the export-oriented nature of FZs despite their location and potential local linkages. This flexibility can potentially provide an opportunity for firms in mining locations that are not headquartered in an FZ to draw on business services and manufactured imports from the FZ and from other firms located elsewhere. They can also establish relationships with enterprises nationwide under the "One District One Factory" initiative.

8.3 Harnessing clusters to support linkage development

There are clearly many opportunities to expand and strengthen domestic linkages between mineral production, recently upgraded industries in a variety of sectors, and untapped areas that hold much potential for enhanced production and provision to domestic firms. A more coordinated Ghanaian mineral supply cluster would certainly help foster such linkages, particularly given the current lack of coordination between the country's strategic vision and policies on minerals, industrialization and regional integration.

This section will look at a variety of potential linkages, including: upstream manufacturing and services that can be integrated into the domestic mineral value chain; extended Free Zone business operations that can support mining firms; and current programmes and support to domestic firms that can be upgraded. There is, at present, no policy on mineral linkage development, despite the fact that, according to the Minerals Commission, one of the objectives of the Ministry of Lands and Natural Resources is the “promotion of effective inter-agency and cross-sectoral linkages”.

8.3.1 Opportunities for enhancing linkages between Free Zones and the mining sector

In the light of description of the Free Zones provided above and to ensure relevance to the mineral sector, including, in particular, gold mining, this analysis focuses on opportunities for a Ghanaian mineral supply cluster provided by Shama EPZ, the Ashanti Technology Park, and the Suame Magazine.

The **Shama EPZ** is located in Western Region and a dedicated industrial park for the petroleum and petrochemical sector. The capacity building services provided in the Zone for employers and employees in the petroleum sector could also be useful for those working in the mineral sector, given that many skills are transferable across mineral industries. Policy makers should therefore examine how to expand those training courses. The focus of the EPZ tends to be on downstream linkages and support services. There is therefore considerable potential for support to be given to upstream activities as well.

The **Ashanti Technology Park** is located in the centre of Ghana in a region with abundant natural resources. Currently, its resource-based activities include cocoa processing, and thermally generated electricity. There is considerable scope for greater indirect and direct

linkages with the mining sector through technology research and support. An example of a technology cluster creating jobs and linking well with the national and regional economy is the Otigba ICT Cluster in Nigeria, which developed organically into a successful IT hub and whose customer base is located primarily, in West Africa (AfDB 2013). The Ashanti Region is a centre for jewellery making, and linkages with the jewellery making industry could help foster mineral-based value addition.

The **Suame manufacturing cluster** – the agglomeration of similar producers, including SMEs, entrepreneurs and even larger firms, has had benefits for competitiveness and economies of scale in Suame. The Suame cluster is a prime example of a naturally developing industrial cluster and should be supported through facilitated access to finance, apprenticeships and training, technology and other inputs, so that enterprises in the cluster can help drive growth, exports and regional integration (AfDB 2013).

Suame could establish two separate linkages with the minerals sector. Firstly, manufacturing, metalworking and automotive service enterprises in Suame could provide very specific inputs to the mining industry and it is thus crucial to address all obstacles currently preventing Suame’s outputs from being directed to Ghana’s mining industry. Technical know-how should, moreover, be scaled up so as to generate the quality outputs needed by the mining sector. Secondly, similar types of industrial agglomeration around other inputs should be promoted around mining areas. Such agglomeration, particularly of workers and supplemented through subcontracting and the sharing of employees, helps provide a more skilled and flexible workforce, which can increase competitiveness vis-à-vis imports (Adeya, 2006).

Non-formal apprenticeships could be even more beneficial for the workforce in the

Suame cluster Indeed, more than two thirds of the workforce there has only completed primary education, and most of the remaining third has only completed secondary school. A mere 2 per cent has taken a vocational education course and no workers have completed tertiary education (Adeya, 2006). Thus formal education is not necessarily a prerequisite for advancement in technical fields in Ghana's zones and clusters.

Because of agglomeration, workers can be highly adaptive, and this holds lessons for new suppliers wishing to provide material inputs to the mining industry. The Government has, moreover, established associations, councils and training centres to support the cluster (Adeya, 2006). Thus another lesson learned from Suame is that there is room for policy interventions in clusters, and that more and better training provision can be used to help suppliers' realize their potential, adapt to new business opportunities and establish linkages with activities elsewhere.

In general, Free Zones tend to promote downstream activities, and only limited business support services are fostered upstream. The FZs are dominated by manufacturing and can provide a conducive environment for emerging Ghanaian input producers (Angko, 2014).

Given the 70 per cent export minimum for Free Zones under current legislation, initiatives to support upstream mineral sector suppliers must maximize the full potential of the remaining 30 per cent if they are to be successful. In fact, 88.58 per cent of products from surveyed FZ companies were exported between 2003 and 2008 (Angko, 2014). It should be underscored that fostering domestic upstream activities would, to a certain extent, counter the export-orientation of the Zones. However, linking the domestic mineral sector with FZs would create benefits that were in line with the Zones' orientation, such as an increase in the volume and quality of

mineral exports through the enhanced provision of domestic inputs. It should, moreover, be noted that certain mining companies already operate in FZs in Ghana; indeed, several gold-exporting firms maintain a presence there and are among the best performing FZ firms.

In order for FZ activities to be conducive to linkage development and local industrialization, the 30 per cent cap on the provision and supply to local firms would need to be interpreted in a flexible manner, in accordance with the local impact of the firm and its potential to foster transformation. In an example provided by GFZB, production of pre-fabricated housing in the FZs mainly for export also serves the mining sector by providing housing for mine workers. However, the 30 per cent cap prevents greater sales and mining sector involvement. Indeed, the cap is a disincentive to establishing significant local links, as more local sales would require greater exports as well to balance this out. Thus flexibility towards firms that display promise is strongly advisable.

It is also important to address the issue of institutional coordination of initiatives to promote economic linkages and transformation. In a nutshell, policies supporting Free Zones or industrial clusters should also support national industrial development goals. In particular, Zones should be used to generate added value for the economy and facilitate export activities, instead of just being used as safe places for light industrial production (Angko, 2014).

One additional constraint on FZ progress is that the provision of infrastructure and land development relies on private investment. Indeed, there is no direct Government provision of such services, and even with the FZB marketing opportunities to investors, raising financing to properly develop such land and make it appealing for relocation is difficult.

An analysis by Chuhan-Pole and others (2015) looked at the effect of mining operations in Ghana on the development of related sectors. Using a difference-in-difference analysis for large mines vis-à-vis non-mining areas, the study found that when a mine opens, the local service sector expands from 19 to 25 per cent of the workforce. Women in particular move into services and sales (away from agriculture) in mining regions. Thus for potential clusters and linkages with mining in Ghana, natural opportunities for services and other upstream activities are evident.

In addition to scaling-up the connection between mining enterprises and Free Zones, multi-purpose industrial parks could be established. Such parks could adapt to the needs of the country's evolving industrial base and focus on supplying the domestic market. Multi-purpose industrial parks would not only provide support to export-oriented industries, but would also facilitate Ghana's industrial development by facilitating spillovers between large anchor industrial activities (such as mining) and local industries.

Alternatively, as is the case in other countries, clusters could also take the form of industrial parks, established adjacent FZs, which could continue to support current export-oriented activities. Such industrial parks would adopt more targeted policies and instruments, aimed at developing domestic value chains, and would offer incentives, sound infrastructure and financial and other institutional support with a view to boosting suppliers' productivity. In general, as foreign investment and trade linkages are cemented, export-oriented strategies inherent in Ghana's FZs may slowly give way to more domestic linkages.

Ultimately, the extent to which clusters can become a successful tool for sustainable industrial development depends on the nature of the relationship established between the clusters and the domestic economy. Special

incentives schemes could be established in line with the country's industrial priorities that would encourage local industries to relocate to FZs provided they meet certain required conditions. For example, the current focus of FZ on exports could be augmented to include the country's 10 strategic anchor initiatives and mineral-related activities.

This in turn depends on the capabilities of the local private sector. In Suame Magazine for instance, it is crucial to take action to improve workers skills in line with industry needs. Indeed, the experience of the Republic of Korea makes clear that enhancing the skills of workers is vital if countries are to achieve their long-term development goals.

8.3.2 Mapping Ghana's industrial potential in the region

Given the role of FZs and their potential for fostering industrialization by exploiting the country's mineral resources, it is vital to examine how clustering can be extended to include mining-related activities, how value chains can be expanded domestically and regionally, and what type of support services are needed to spur this. Annex 9 gives an overview of economic activities in each of the 10 regions in Ghana, and highlights their current economic strengths and their potential in terms of future industrial development.

Sutton and Kpentey (2012) provide detailed profiles of several economic sectors, including a general status report and history of each sector, a breakdown of the main firms in that sector, and an overview of supply chain patterns. This sheds light on the business activities and domestic sourcing of inputs by many sectors that are closely related to mineral extraction.

In order to focus on linkages and value chains feeding into and out of the mineral sector, this report looks at the following four sectors:

cement and quarrying; metals, engineering and assembly; chemicals; and construction.

Cement and Quarrying

This sector has witnessed increased demand due to growth in construction in Ghana. Demand is likely to increase further, since cement/grout is included in the local content list established by the Minerals Commission for the mining sector.

There are three major domestic cement producers, the most important of which is Ghacem Limited. Production locations are varied, and include Tema and locations in the north of the country. Many small firms are active in this area, particularly as importers.

Trade and supply chain patterns reveal the extent of domestic production. They point to the fact that there is significant scope for expanding the domestic supply of raw materials for cement and quarrying products, and then in turn, for scaling up production of domestic outputs for use in construction and other sectors in Ghana. One of the advantages of developing this industry close to the market is that transport costs involved are high because of the low-value but high-volume nature of the sector.

Basic raw materials such as clinker and gypsum, however, are imported, while most limestone is sourced locally, in part because of Government support. Indeed, limestone used to be imported until GHACEM invested in limestone quarrying in Eastern Region. However, it is estimated that 75 per cent of the sector's raw material needs are still sourced from outside the country (Sutton and Kpentey, 2012). The import value of cement products has increased between 2005 and 2010.

Efforts to spur national involvement in value chains have involved a 5 per cent tax on raw materials,¹³³ and plans for the establishment of a new cement factory in the Western Region. This initiative could tie in to FZ operations there. Such a location would benefit from local economic activities in Western Region that take place under FZ regulations.

Eastern Quarries Limited also has operations in the Tema Industrial Area. Most of the company's raw materials are produced locally, although consumables such as spare parts are imported (Sutton and Kpentey, 2012). The company plans to diversify its product range and compete across West Africa. It is therefore important to strengthen the existing demand for local raw mineral and material inputs, and the local provision of other inputs and spare parts. Stone quarries are also located in the Western Region, adding to this potential. In general, these firms not only benefit from incentives and proximity to suppliers, partners and consumers in the Tema Industrial Area, but also exploit the region's proximity to mineral and petroleum producing regions in order to utilize the outputs of those regions and provide services to extractive industries. In order to facilitate such activities, it is important to upgrade existing transport infrastructure (Sutton and Kpentey, 2012).

Metals, engineering and assembly

The *aluminium industry* is based on Ghana's deposits of bauxite, located at Awaso in Western Region. Although these bauxite deposits provide domestic raw inputs, Ghana does not have a bauxite mill. The raw material is thus exported to Jamaica and elsewhere to be processed into aluminium oxide, then re-imported and smelted by the Government-run Volta Aluminium Company (VALCO), which runs Africa's most important aluminium smelting operations.

133 Not applicable to ECOWAS countries.

VALCO has faced significant challenges in recent years, in particular due to energy issues, and renewed investments are needed to enhance production (Oxford Business Group 2013). Infrastructure linking elements of the bauxite and aluminium value chain are also latent and needs to be supported. The Ghanaian Government has announced its intention to develop the country's bauxite value chain, and must take action to address the factors impeding the industry's efficiency and cost effectiveness. Potential also exists for downstream processing of aluminium into different aluminium products. These products in turn could serve as inputs to Ghanaian firms, such as in construction. Such aims in higher value aluminium products are quite ambitious and would require overcoming the above mentioned energy and capacity constraints, and would require a significant increase in production to achieve economies of scale.

The *metal fabrication* industry comprises many small firms, and is best illustrated by the Suame cluster. Steel outputs serve as inputs for the domestic construction industry, petroleum sector and mining industry. Indeed, castings for mining – based on steel imports – can account for a quarter of a company's turnover (Sutton and Kpentey, 2012). Plans had been drawn up to promote the use of domestically produced steel to manufacture a variety of goods, including castings and wire coils, at plants run by both United Steel Limited and Sentuo Steel Limited (Government of Ghana; Oxford Business Group 2013). This would certainly boost production and employment in this subsector. To facilitate that process, the ban on scrap metal exports must be more strictly enforced.

Wire weaving also feeds into domestic use. Yet this production is based on ready-coated wire imports. Cables produced in Tema are used in a variety of domestic sectors, including energy, industry, construction and communications. However, aluminium and copper

inputs for this are still imported, despite the local bauxite deposits and aluminium smelting potential. Most inputs are imported, except for colour coatings in aluminium, and the outputs of domestic iron and steel plants. Some 50 per cent of inputs are provided locally but local production cannot meet needs. Half of outputs are consumed locally while half are exported.

Imported aluminium from China presents significant competition due to its low-cost, even after the imposition of high import duties.

Any policy changes must take into account existing and potential domestic supply chains. Demand still out-paces local production even when capacities to meet that need exist, and initiatives to scale up production through capacity development and financial incentives would be helpful. Indeed, if price rather than quality is a key factor in the competitiveness of imports, then the incentives provided to the local aluminium sector or the interventions needed to overcome constraints need to be examined. Smart interventions can promote the use of locally produced products as substitutes for imported products.

The Government also needs to strengthen the scrap metal export ban, which has been extensively violated since its introduction in 2007, leading to the removal of raw materials that could be used as inputs to the four domestic steel companies. The Ferrous Scrap Metal Monitoring Committee should also be strengthened and must be empowered to impose appropriate penalties on those who violate the law.

Expansion of the metal fabrication industry is providing more geographically equitable access to processed outputs that can be used in Ghana's gold mining region. It is now time to consider practical means by which the provision of locally sourced metal inputs for mining operations can be scaled up, either

by amending Ghana's regulations on the Free Zones or by creating new mining-metal specific regulations.

Construction

This study considers construction firms that are particularly oriented towards the mining sector, existing areas of domestic upstream provision, and opportunities for further linkage development. In particular, supply chains feeding into those construction firms could offer business opportunities for companies providing local mineral inputs.

PW Group, a civil engineering company, provides as its core business "the provision of support services to mining companies in Ghana, especially gold" (Sutton and Kpentey, 2012). Other activities include "feasibility studies for mine development and expansion" and "earth moving, opencast mining, road and bridge building, construction of industrial and residential buildings..." PW Group sources a variety of inputs for its construction projects locally, including but not limited to cement, bitumen, electrical goods, plumbing materials, sand and stones. Thus there is potential to develop a strong supply chain to yield a virtuous cycle of domestic sourcing and production, wherein nationally-sourced minerals are used as inputs to construction opportunities which serve the mining industry, which then engages in further mining and so forth.

The De Simone Group also provides civil engineering services to the mining sector, including the construction of buildings and pipelines, and earth moving activities. Like the PW Group, it sources many inputs locally, including sand, concrete, stones, granite chippings and bitumen. While this domestic sourcing is admirable, it focuses on raw material inputs. Domestic supply chain development strategies for the mining sector need to expand and look at how other manufactured and higher

value-added upstream inputs can be provided by domestic firms.

Chemicals

Unlike the other sectors profiled above, the majority of inputs for the chemicals sector are imported (Sutton and Kpentey, 2012). Chemical outputs of the sector, including basic chemicals, petrochemicals, fertilizers, paints, gases, pharmaceuticals and dyes, go to a variety of sectors, including mining. These chemicals must be able to compete domestically with imported final chemical products. As with metals, when this is a price issue, innovative means are needed to promote domestic production and link it with domestic consumers, particularly in the mining sector. When this is a quality issue, support must be provided to local firms to help them produce outputs that meet relevant international quality standards.

Further study is needed to ascertain how local sourcing and linkages with domestic and regional enterprises has evolved in recent years.

Many firms mention that a lack of access to reliable sources of energy at reasonable cost is a key constraint impeding the expansion of domestic production. It is thus critical to draw up policy recommendations to address that issue, which affects all firms and sectors. For example, renewable sources are already being used for power generation in Ghana, and there is significant potential for scaling up solar, biomass and hydroelectric power generation, in line with the 2011 Renewable Energy Act, the Sustainable Development Goals and Agenda 2063 of the African Union. Mineral-industrial clusters must, moreover, ensure that they enjoy access to an appropriate energy resource mix.

A key message which emerges is that, with sufficient support to local firms and incentives along the value chain, mining sector supplier

and value chain development can be effective and self-reinforcing. That is, mineral outputs can serve as raw inputs for construction, metals and other sectors, which in turn provide upstream inputs to mining firms. Upgrading quality and being able to compete on cost are two vital elements ensuring that those upstream inputs can compete with imports.

It is regrettable that, despite Ghana's long mining history, it remains, primarily, an exporter of raw materials. Indeed, downstream value addition will be the focus of future research based on this study. However, a focus on beneficiation ignores the many unexploited opportunities for upstream value addition, and the upstream industrial and services inputs that create jobs and may be more easily attainable. Furthermore, beneficiation can be quite capital, technology and energy intensive. Indeed, VALCO currently operates at only 20 per cent capacity because of energy constraints. In that regard, an in-depth analysis is needed with regard to the steps that must be taken to boost capacity, and the potential impact of increased production on jobs and incomes.

Although mining occurs in many parts the country, it is the focus of only one cluster and is omitted altogether from the stated missions of Ghana's Free Zones. There is not only an opportunity, but also an imperative, to ensure that mining can play its full role as a partner of the industries promoted in FZs and country-wide. The linkages potential of a number of sectors identified here – and indeed far more exist than detailed in this study – indicate the potential of partnering with the mining sector in industrial clusters for the benefit of both mining input suppliers and the mining industry itself.

In identifying and promoting opportunities for linkages and supply chain development, reliable, up-to-date data on the distribution and capacities of industrial operations across

the country is vital. The 2006 GSS National Industrial Census Report, compiled in collaboration with MoTI and UNIDO, provides detail on business enterprises and employment across manufacturing, mining and quarrying, and electricity and water. However, the report does not provide information on supply chains, procurement, or linkages between firms. It should, moreover, be noted that the survey was based on 2003 data: updated information is therefore needed in order to identify recent sectoral developments and trends and evaluate possible steps to promote linkage development.

8.3.3 Means to promote local production chains

The GIPC advertises incentives for foreign investors in the country's mineral sector. While many of those incentives have been designed to attract foreign investment in mining operations themselves, GIPC also seeks to draw attention to opportunities for higher-value inputs to and outputs from mining, including, in particular:

- (a) The production of industrial minerals for both local and international consumption, and
- (b) Applications/processing of industrial minerals in construction, ceramics, paints, electronics, filtration, plastics, glass, detergents and paper.

The factors impeding the development of local supply chains providing upstream inputs to gold mining in Ghana have been examined earlier in this study. According to the Ghana Chamber of Mines, mining companies spent a total of \$1.5 billion on local procurement for their operations in 2015, equivalent to some 48 per cent of total revenue. However, this figure does not reflect the value added by local manufacturers.

To encourage local mineral sector supply chain development, policymakers launched the made-in-Ghana policy in 2016, the goal of which is to ensure that more goods are produced and sourced from local manufacturers. The policy targets, in particular, Governmental and other public sector bodies that are under pressure to source locally. The policy may be amended at some point in the future to provide for the establishment of local content enforcement mechanisms.

The products listed in that policy were selected on the basis of a number of criteria, and include: goods that are already produced locally but at lower than viable scale; goods whose production could be increased without the investment of substantial financial resources; and goods for which the country has a competitive advantage over imported alternatives.

Although it may not be possible to produce certain high-value goods locally in the near future, it is important to support technology transfer, R&D, financing for innovation and other measures, which can lay the ground work for the potential production of those goods in the future. However, the more realistically attainable products should be the focus of immediate interventions in linkages development.

The African Centre for Economic Transformation (ACET) has concluded that the scale and depth of Ghana's gold production provides room for the development of local supply chains (ACET, 2015). The large opportunities for development show that, to date, gold mining suppliers have suffered from strategic policy gaps, inadequate workforce skills, unreliable energy provision and inadequate access to finance, particularly regarding more capital-intensive activities.

Although more can be done, a number of mining firms are in fact already sourcing

inputs from domestic sources, in part helped by good relationships between the Chamber of Mines, the Minerals Commission and other stakeholders. These structured private-public dialogues need to be replicated in other clusters, in order to facilitate local sourcing, which would benefit not only producing firms but would enhance buyers' options and procurement opportunities.

While 20 per cent of spending by mining firms was on local procurement and 18 per cent of their expenditure was on fuel and power in 2008, these proportions do not reflect the value addition of suppliers. Attention needs to be given to the difference between sourcing through local production and through distribution using local intermediaries, and innovative strategies developed to boost the former at the expense of the latter. Going forward, policy makers should consider adopting fiscal approaches that incentivize local production.

8.4 Policy options for strengthening industrial clusters

Based on this analysis of industrial policy, the role of the Free Zones, and their potential linkages with the mineral sector through value chains, a number of policy options should be considered.

It is important, in that regard, to articulate industrial policy on clustering clearly and to design policies to address bottlenecks, encourage the development of Free Zones and clusters, and promote broader linkages with other economic sectors.

It is therefore proposed that dedicated mineral supplier clusters should be established.

This will build on the mineral sector specialized skill sets that have developed in Ghana over the years, and entrench those skill sets in new and existing SEZs so that they can foster

the emergence of dynamic transformational clusters. To establish these clusters, the following steps should be taken:

Apex-level alignment of mineral sector upstream supply needs with industrial policy goals. This will facilitate an analysis of procurement patterns, local content policies and listed products, industrial development targets and manufacturing capabilities. Such coordination should be an integral part of the NSDP and overseen by the Economic Management Team.

As part of the country's institutional reform process, it is important to determine the role that the GFZB, GIPC and other entities working on the ground in economic development can play in clustering and linkage development. An assessment should be made of how an expanded role of the Free Zones would help link the Zones' current export-oriented firms with domestic economic activity in industry, mining and other key sectors, including firms located physically in the Zones or in other parts of the country.

These reforms should also focus on the conditions identified by the private sector as necessary for linkage development and industrialization. Engaging foreign firms in partnerships with a view to expanding linkages and value chains can also involve working with subsidiaries of those firms based elsewhere in Africa; given their presence in the continent and knowledge of regional markets, these firms are uniquely placed to assess risks and expand operations, potentially with a view to establishing a West Africa economic hub in Ghana.

Physical and business linkages should be established between the mineral sector and existing Free Zones, through sidestream linkages in infrastructure and in line with stated needs. Individual FZs should build on their expertise and relevance to the mining sector.

The following steps, in particular, should be taken:

- (a) The Suame Magazine should be enhanced to facilitate the establishment of broader industrial networks with the mining sector;
- (b) The Ashanti Technology Park should be scaled up so that it can provide needed technical expertise, skills and capacities to participating firms;
- (c) The Shama Export Processing Zone should facilitate the use of innovations developed in the growing petroleum sector in the country's mining sector, and should also facilitate the sharing of best practices.

Although every cluster development project is unique, experience in Africa has demonstrated that certain key factors are needed for a cluster to be successful. These include: access to natural resources; proximity to major local markets and infrastructure; local entrepreneurs with tacit knowledge and basic skills in trading, design or manufacturing; sensitivity to the needs of the market; and limited government intervention (Zeng, 2008). All these factors will help ensure the success of any proposed new mineral linkages cluster in Ghana.

It is important however to ensure that any new initiatives do not foster a "mineral enclave mentality", as, indeed, happened in northern Chile, where, because policies had been adopted only with a view to attracting multinational corporations to the region and attracting FDI, few linkages were established between local suppliers and those multinational corporations (Arias and others, 2012). Thus policy interventions must foster the linkages necessary for "true" cluster development, including through domestic supply chains, with a view to promoting Ghana's economic diversification.

Box 12

Mineral Cluster Potential – case of the United Republic of Tanzania

The United Republic of Tanzania holds significant mineral potential but the mineral sector remains poorly linked with the rest of the country. An ECA study (2008) noted that, as is the case in Ghana, gold represented a very large proportion of exports (44 per cent in 2003). This had fallen to 14 per cent by 2015, due to other growing exports as the value of gold exports had remained relatively constant at \$1.3 billion since 2010 (Tanzania Invest). The recent ban on raw and concentrate gold and other mineral exports imposed in March 2017 will undoubtedly have a significant impact on that figure.

Economic liberalization had facilitated significant investments and exploration in gold mining, but costs in the sector remained relatively high, particularly because of high procurement costs. As for linkages, the five gold mines in operation had processing plants on site, but then sent gold abroad for refining, leading to the identification of some downstream value addition opportunities. It noted that for three major mines, Tanzanian suppliers were used for 99.4 per cent of goods and services procurement, including spare parts, fuel, cement, iron, steel, general merchandise and food. But many of those local supply firms had in fact imported those goods. Furthermore, items actually produced locally did not necessarily imply high-value inputs, particularly in services.

In promoting local procurement, some items were already produced locally but mining companies still relied on imports due to poor local quality. This underlined the need to boost local capacities and identify products and segments of chains that required particular support.

The study highlighted a potential mining corridor in Mtwara, which was being considered by the Government. Yet only information on plans, and not actions and implementation, was readily available. This region features a number of assets conducive to cluster development, namely a variety of mineral endowments, energy, and proximity to borders. Some initiatives, including mines and pipelines, had begun, and plans had been drawn up for bridges and roads and a power station.

Thus a successful mineral-based cluster should take advantage of endowments important for industrial development – energy supply, proximity to markets, mineral assets – and maximize sidestream linkages, including infrastructure, in order to develop these avenues simultaneously. The outputs – including energy – would be useful for the region itself as well as other parts of the country.

Based on this, the study listed requirements for a successful mineral cluster, including:

- Improving the business environment
- Collaboration across sectors, government, and stakeholders
- Human resources development
- Supporting the industrial base
- Regional integration
- Providing infrastructure
- Supporting SMEs
- Promoting local value addition
- Engaging in PPPs

Left alone, a cluster will not develop on the basis of under-exploited endowments, and linkages – especially backward linkages – will be limited to what already exists and simple activities. The study stressed that successful clusters rely on trust and cooperation among regional actors. Entities from across the public and private sectors in various related industries need to work together, with their cooperation institutionalized.

Taking advantage of existing natural resource endowments and the potential for connectivity and energy development presents a clear strategy for the case of the United Republic of Tanzania, and holds potential for other mineral producers including Ghana. With gold, bauxite, diamonds and other mineral endowments serving as resources for extraction and inputs for other industrial activities, and Ghana's pivotal role in the West African regional market, there are clear opportunities to capitalize on these assets. Furthermore, the strategic linking of mineral and energy development should go hand in hand, due to both the large energy needs of mining and industry, the proliferation of energy reserves in areas close to mineral endowments, and the benefits that enhanced energy production will have for other sectors of the economy and the country as a whole.

It is observed that in the case of informal or naturally-developing clusters, such as the Suame Magazine, investment in education and physical infrastructure is often insufficient (AfDB, 2013). In order to support the growth of such clusters and to link them with national development and cluster policies, specific interventions will need to be implemented with a view to addressing the needs identified by stakeholders in those clusters. It is easy to draw up a laundry list of possible interventions, such as access to credit, market

access, education and physical infrastructure, but this is clearly not sufficient. Instead, Ghana needs to engage in a structured and systematic dialogue with its private sector partners to determine which of these interventions are most critical and the form those interventions should take.

In its profile of mineral cluster potential in the United Republic of Tanzania, ECA developed a set of guidelines for successful mineral-based corridors (see Box 12).

9. Conclusions

While mineral extraction has contributed to Ghana's development path since its independence, the extent to which broader economic linkages have been created, both within the extractive sector and with other economic sectors, has been disappointing. Ghana has relied mostly on mineral revenues but fiscal linkages have shown their limits and local industries have not managed to provide high-value supplies to the mining industry or to use mining as a stepping stone for other investments. Procurement imports remain high, despite efforts to increase local sourcing, notably through regulatory measures such as the local content regulation passed in 2012.

This report is the outcome of a wide consultation process with various stakeholders in Ghana, in the context of the implementation of the African Mining Vision (AMV). The AMV seeks to bring a new paradigm to the use of mineral resources through a more transformative role of the mining industry. In particular, various forms of economic linkages from the mining industry are examined and supported, with a view to providing wider opportunities for growth, job creation and economic diversification.

Based on the methodology developed by AMDC, this report provides a thorough assessment of the contribution of the mining industry to the Ghanaian economy. It highlights the main strengths of the sector, in particular the revenue contribution of the industry and the unique position of Ghana in West Africa as the region's largest gold producer. The BGR demand model provides interesting insights regarding potential opportunities in that regard. The report also underlines the major threats posed by the country's over-dependence on fiscal revenues from the extractive

sector, which makes Ghana vulnerable to commodity price shocks. It also points to the challenges facing local industries and negatively affecting their ability to provide competitive inputs to the mining industry.

This report proposes a number of policy recommendations aimed at supporting local economic development and diversification, and, in particular, the strategic industrial agenda being pursued in the country. The report stresses the need to capitalize on the importance of the mining industry in the political-economy landscape, and the significant business opportunities that the mining industry can offer to local enterprises. To achieve these objectives, the report proposes the following:

9.1 Improving the overall business climate and facilitating investment

Ghana must address the structural weaknesses currently hindering the country's drive to diversification and industrialization. It must also take the necessary steps to improve firms' productivity and remove bottlenecks to competitiveness so that local industries can take up opportunities to supply the mining industry and other economic sectors.

The success of policy reforms is conditional upon certain key factors. For example, the competitiveness of Ghana's supply chains is conditional upon the existence of a **conducive business environment** that promotes the productivity of domestic firms. Today, firms operating in Ghana face numerous challenges, including cumbersome administrative procedures, complex fiscal regimes, unfair trade policies favouring imports at the expense of local manufacturers, high border tariffs; weak

logistics networks and high energy prices. These factors drive up the cost of doing business and severely impede firms' capacity to participate competitively in the supply chain.

In addition, the **current industrial regulatory framework is weak** by international standards, as there are insufficient tools to implement the country's industrial policies, particularly for small and medium-sized enterprises (SMEs). The issue of informality must be addressed. At the same time, there are a large number of local firms that are too small to participate in a meaningful manner in value creation; it is therefore important to promote the expansion of those firms. Furthermore, the regulations governing the use of the term "Manufactured in Ghana" remain vague and open to interpretation.

The report also notes that **investment incentives available to SMEs** are insufficient: interest rates are too high; credit remains inaccessible; entrepreneurs and business startups are not sufficiently nurtured; subsidies are insufficient to support technological acquisition; and targeted industrial instruments to support infant industries are limited.

To foster linkages, in particular in higher value-added activities, Ghana must also improve its **investment climate**. Today, certain foreign investment preconditions, such as capital requirements for joint ventures, are overly restrictive and tend to encourage investments in extractive activities, rather than promoting investment in other industrial activities. Strong supply chains in higher value-added products will require the procurement of foreign technology and know-how. Moreover, the framework to protect intellectual property rights, essential for business development and innovation, is also too weak.

A **highly educated workforce** is an essential prerequisite for effective technology transfer and knowledge spillover. Labour productivity

in Ghana remains low by international standards and skills mismatch can have a negative impact on the absorptive capacity of supply chains. Moreover, the skills of the workforce remain a major challenge. The report highlights the main challenges facing human resource development in Ghana and proposes some concrete recommendations to foster capacity building. These include improving academic curriculums so that greater emphasis is placed on science, technology, engineering and mathematics, scaling up institutional capacities to respond to specific needs of the industry, addressing skills gaps and facilitating the movement of talent across West Africa.

9.2 Establishing a national suppliers' development programme in Ghana

To coordinate national efforts to establish and strengthen domestic supply chains in support of the mining industry, **the report recommends the establishment of a national suppliers' development programme (NSDP)**. The NSDP will provide support to local industrial enterprises to help them deliver competitive products and services to the mining industry and to the Ghanaian economy more broadly. It will also help local firms develop a competitive advantage that will enable Ghana to become a regional hub for mining supply chains in West Africa.

The core pillars of NSDP are as follows:

- (a) *Promoting sustainability and inclusiveness*: this pillar will ensure the long-term success of the NSDP and help reconcile the interests and expectations of industries and local communities;
- (b) *Increasing the depth and breadth of national suppliers*: a range of measures will be enacted to support new and confirmed/existing suppliers, and potential suppliers

will be identified through business incubators and other entrepreneurship programmes;

- (c) *Enhancing skills and promoting workforce development*: this pillar is the soft arm of the NSDP and will ensure that workers, at mines and mine suppliers, have the necessary skills and competences to perform their jobs effectively;
- (d) *Branching out to other economic sectors and promoting territorial development*: this pillar is a critical one if Ghana is to foster links between the mining industry and other economic sectors. The pillar will help foster linkages across industries by providing a platform for inter-industry collaboration. Opportunities for the development of horizontal linkages, in particular linkages using mining infrastructure to foster territorial development, will also be explored;
- (e) *Developing research, technological and innovation capabilities*: this strategic pillar is necessary to prepare Ghanaian firms to move up the value chain and improve their productivity; those firms will receive support to facilitate their access to technology and promote innovation;
- (f) *Looking beyond the mine*: this pillar will provide a forward-looking agenda that will lay the foundations for a post-mining economy. Issues relating to mine closure and rehabilitation will be examined, as will steps that should be taken to promote the transfer of knowledge acquired in the mining and related industries to the region and beyond.

High-level leadership, support and policy guidance are critical to the success of the NSDP. Political oversight of that body should therefore be exercised by the Ministry of Lands and Natural Resources and the Ministry of Trade

and Industry, under the auspices of the Economic Management Team, which is chaired by the Vice President.

9.3 Setting up Mineral Supply Clusters

Industrial clusters can foster the conditions necessary for supply chain development. In that regard, **Ghana should conduct a review of its policies on Free Zones and explore ways to extend incentives to industries linked to domestic and regional mineral supply chains.** Currently, companies that produce goods for export enjoy more favourable conditions than those that supply industries based in Ghana, despite the adoption of policies to foster local content. It is crucial to take action to facilitate companies' access to regional markets.

This report looks at the role of mining sector economic clusters in spurring value creation and local development in Ghana. Specifically, it examines how the mineral sector can help spur industrialization in the economy at large, how more competitive domestic industries can provide inputs to the mineral sector, and how Government-supported geographical and sector-specific clusters can reinforce those developments.

Industrial clusters foster agglomeration and provide positive externality benefits among economic activities located in or linked with clusters. Clusters established within the Government-supported Free Zones would have a particularly export-oriented focus. The report notes that several of these Zones are particularly suitable for the establishment of clusters related to Ghana's mineral sector that would help firms providing services to mining firms while also benefiting from mining sector outputs and infrastructure. In this connection, the report looks at Shama Export Processing Zone, Ashanti Technology Park

and the Suame Magazine informal industrial area. Each of these provides a sectoral area of expertise, and can be linked both remotely or geographically with the country's mineral endowments and areas of mining activity, provided that steps are taken to enhance their domestic market orientation.

To ensure the success of mineral supply clusters, industrial, mineral, trade and free zones policies, which, at present, lack coherence, must be better coordinated. Furthermore, stakeholders must acquire a deeper understanding of how enhanced industrialization can strengthen mining operations, and how mining outputs can more effectively support domestic industries.

9.4 Market analysis of procurement

The report focuses on the value contribution of the mining industry with a particular emphasis on upstream linkages in Ghana. In that regard, Kaiser Economic Development Partners assisted BGR with the development of a demand model for West African mining that looked at the economic potential and market realities for local procurement in Ghana and three other gold-producing West African countries, namely Burkina Faso, Côte d'Ivoire and Mali. The model estimated mining operational expenditure on procurement in 2015 for all mining companies operating in 2015 in those four countries, based on publicly-reported expenditure figures. The model looked at procurement spending in 32 product and service categories. Spending in each category was verified using available bottom-up procurement data from the region and refined on the basis of input from relevant experts.

The demand model estimated the overall cost of procurement in the four countries at \$2.66 billion in 2015. Of the four countries assessed, Ghana was by far the largest

gold-producing country and therefore had the largest market potential in West Africa. Ghana therefore has considerable potential to develop as a regional hub. For the purpose of the analysis, ten of the country's largest mines in operation were surveyed. These accounted for total procurement spending of \$1.21 billion and Ghana alone accounted for 45.5 per cent of the four countries' total procurement expenditure. However, despite Ghana being a major gold-producing country, the market remains small by international standards.

The \$2.66 billion market presents immediate opportunities in a number of products for local suppliers. These hold immense potential for Ghana's mineral-based industrialization.

9.5 Getting institutional coordination right

To ensure that policies are coherent and consistent, relevant Ministries, governmental agencies, private sector actors and academia/research institutions must coordinate policies effectively, set shared priorities and adopt strategic plans for action at the national, regional and international levels.

Although Ghana has a strong institutional framework, the country needs to establish specific agencies that can (i) coordinate efforts to enhance productivity and competitiveness; (ii) support national mechanisms to promote innovation; (iii) ensure respect for property rights; and (iv) ensure overall coordination and monitoring of policies across ministries and agencies. There is also a need for an independent body to take a key role in oversight to ensure the effective implementation of agreed policies, support the Government through policy analysis, and translate policy into action. **The report has put forward clear suggestions on how coordination mechanisms can be improved, including, in particular, through the NSDP.**

It is the aim of this report, the research and consultations engaged in its production, and its consequent policy recommendations, to serve as a tool for Ghana and West Africa in general in their push towards harnessing the power of mineral resource endowments to fuel socioeconomic development. AMDC, BGR and all parties involved in the

undertaking of this initiative are firmly committed to supporting value-addition and establishing linkages to create jobs and raise incomes in Ghana. With the right policy actions, the potential is clear and the possibilities are endless to harness Ghana's natural resources for positive outcomes for current and future generations.





Annex 1

Distribution of GDP at basic prices according to economic activity (per cent)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*
AGRICULTURE	29.1	31.0	31.8	29.8	25.3	22.9	22.4	21.5	20.3	18.9
Crops,	20.3	22.4	23.6	21.7	19.1	17.2	17.4	16.8	15.7	14.5
of which, Cocoa	2.7	2.5	2.5	3.2	3.6	2.6	2.2	2.2	1.8	1.7
Livestock	2.3	2.1	2.0	2.0	1.8	1.6	1.4	1.2	1.2	1.2
Forestry and Logging	4.2	3.7	3.7	3.7	2.8	2.6	2.2	2.3	2.3	2.1
Fishing	2.3	2.7	2.5	2.3	1.7	1.5	1.4	1.2	1.2	1.1
INDUSTRY	20.7	20.4	19.0	19.1	25.6	28.0	27.8	26.6	25.1	24.3
Mining and Quarrying,	2.8	2.4	2.1	2.3	8.4	9.5	9.4	8.0	5.3	4.2
of which, Mining only	2.8	2.4	2.1	1.9	1.7	1.8	1.2	0.8	1.4	
of which, Oil and Gas	0.0	0.0	0.0	0.4	6.7	7.7	8.2	7.2	4.1	2.1
Manufacturing	9.1	7.9	6.9	6.8	6.9	5.8	5.3	4.9	4.8	4.6
Electricity	0.6	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.9	1.1
Water and Sewerage	1.0	0.8	0.7	0.8	0.8	0.7	0.6	0.5	0.6	0.5
Construction	7.2	8.7	8.8	8.5	8.9	11.5	12.0	12.7	13.5	13.7
SERVICES	50.2	48.6	49.2	51.1	49.1	49.1	49.8	51.9	54.6	56.8
Trade, Repair of Vehicles, Household Goods	6.1	6.0	5.9	6.2	5.9	5.6	5.8	5.6	6.1	6.4
Hotels and Restaurants	5.6	6.0	6.2	6.0	5.4	4.8	5.8	5.6	5.8	5.9
Transport and Storage	13.1	11.4	10.5	10.6	10.7	11.0	11.2	12.3	13.0	13.3
Information and Communica- tion	2.4	2.2	1.8	1.9	1.8	2.2	1.7	2.3	2.7	3.3
Financial and Insurance Activ- ities	3.4	3.8	4.3	5.2	4.4	4.7	6.5	8.4	8.9	9.4
Real Estate, Professional, Administrative and Support Service Activities	4.7	4.1	4.1	4.5	4.6	4.8	3.9	3.6	3.9	4.0
Public Administration and Defence, Social Security	5.9	6.3	7.0	7.0	7.0	6.8	5.9	5.4	5.3	5.4
Education	3.9	3.9	4.2	4.3	4.1	4.3	3.6	3.6	3.7	4.0
Health and Social Work	1.4	1.3	1.4	1.6	1.3	1.3	1.1	1.0	1.2	1.4
Community, Social and Person- al Service Activities	3.7	3.6	3.7	4.0	3.9	3.7	4.3	4.1	3.7	3.7
GDP at basic prices	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: GSS, 2016; * Revised.

Annex 2

Detailed overview of Ghana's participation in intra-African trade¹³⁴

Figure A.1
Key African import markets, 2016
 (Ghana's total imports from Africa totalled \$825 million)



134 This Annex is based on data from the Atlas of Economic Complexity, MIT, 2017.

Figure A.2

**What did Ghana import from South Africa in 2016
(Ghana's total imports from South Africa totalled \$332 million)?**

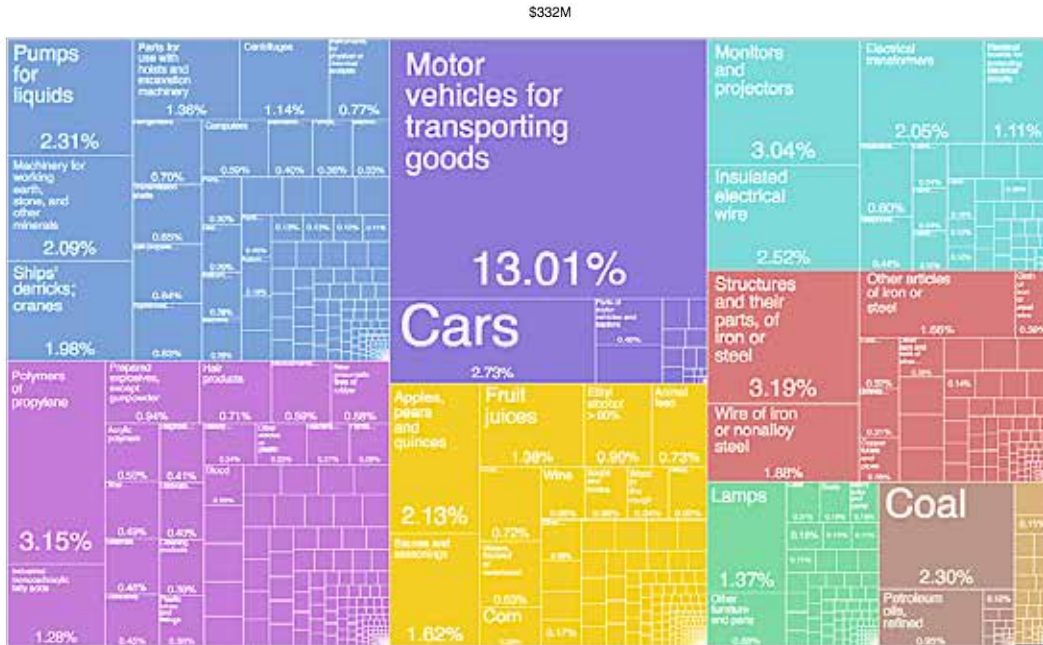


Figure A.3

**What did Ghana import from Morocco in 2016
(Ghana's total imports from Morocco totalled \$87.4 million)?**

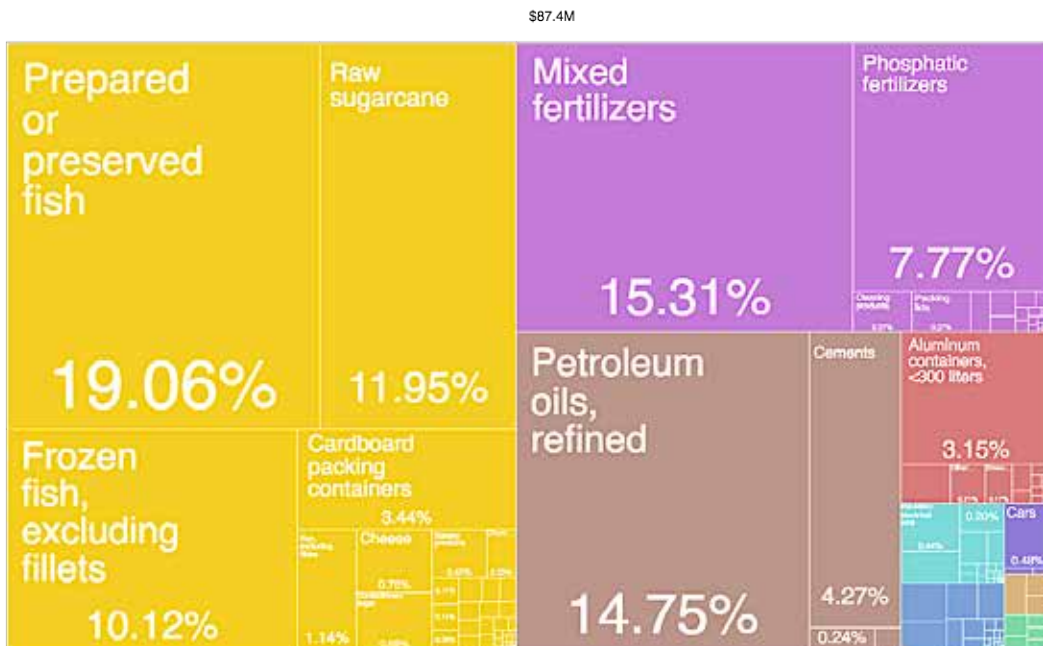


Figure A.4

**What did Ghana import from Egypt in 2016
(Ghana's total imports from Egypt totalled \$69.3 million)?**

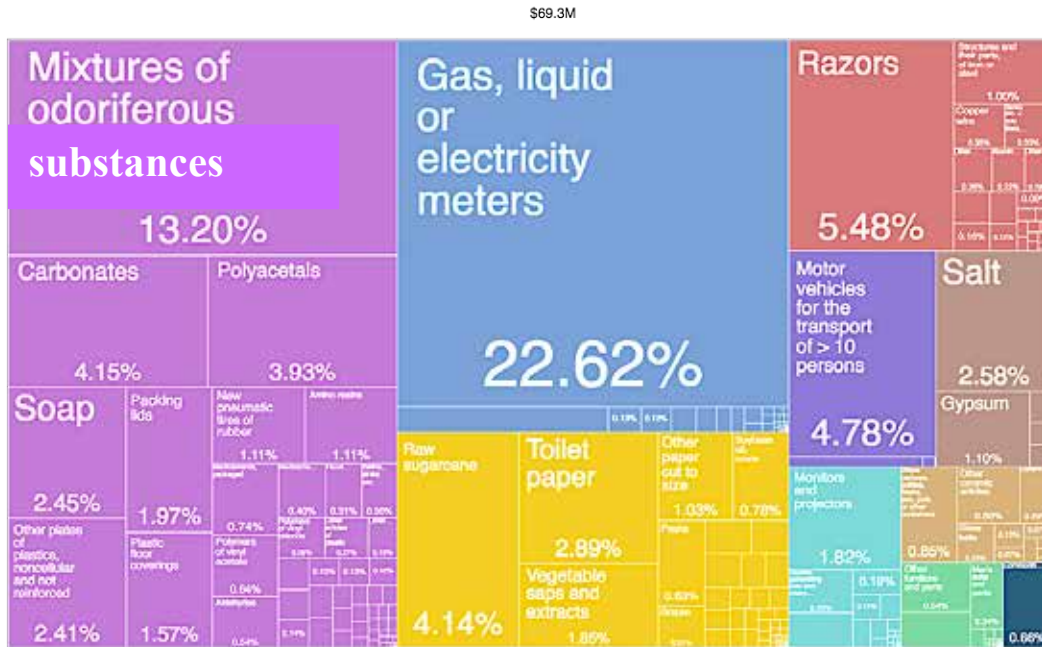
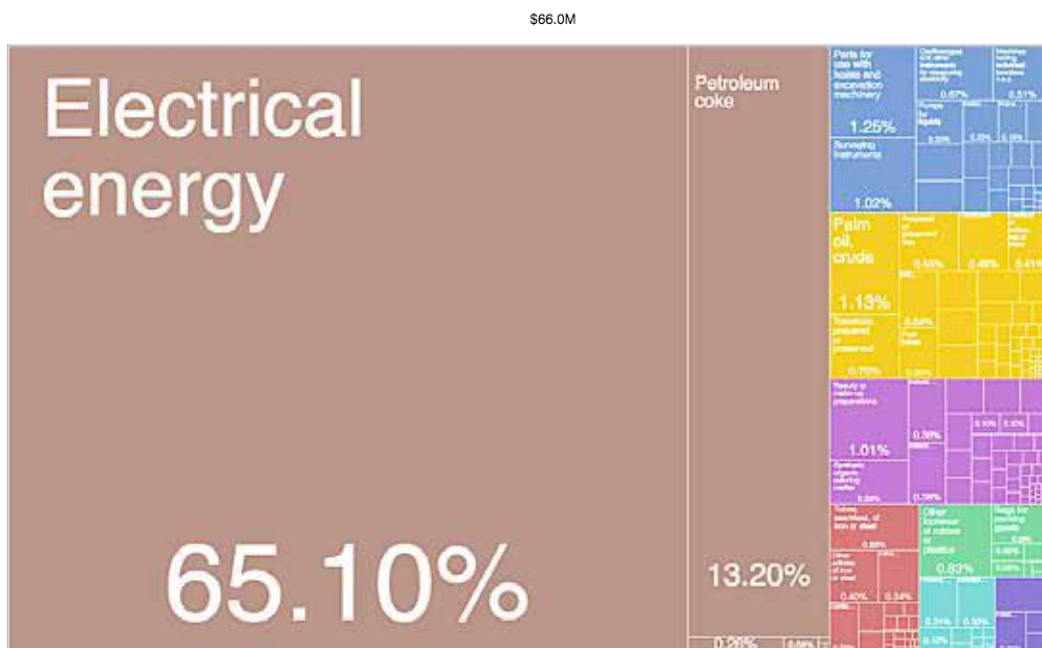


Figure A.5

**What did Ghana import from Côte d'Ivoire in 2016
(Ghana's total imports from Côte d'Ivoire totalled \$66 million)?**



Annex 3

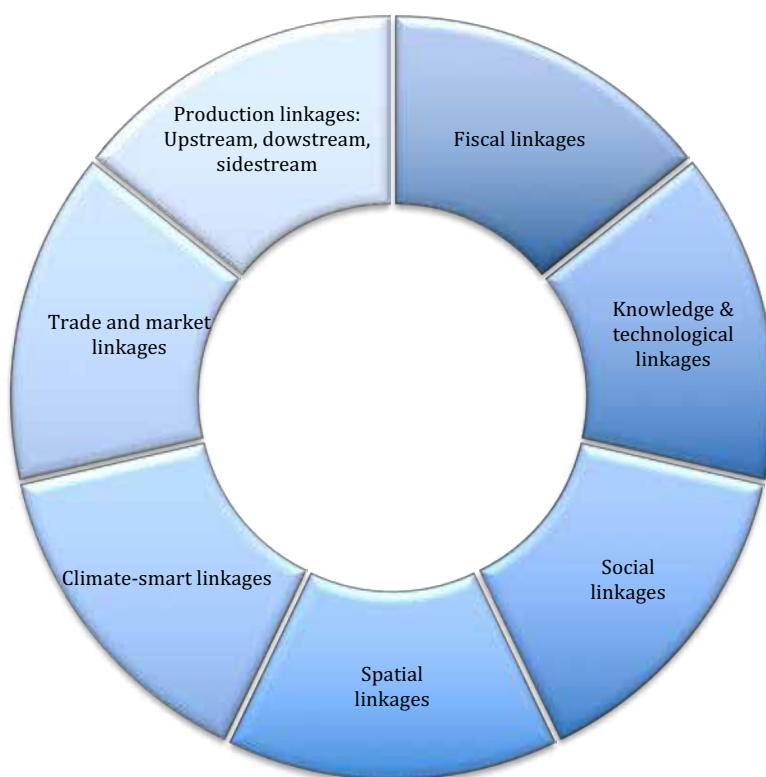
Linkages:¹³⁵ outlining the CMV approach

The socioeconomic benefits to be gleaned from value creation in the mineral sector depend on seven interlinked core areas, as illustrated in Figure A. These areas are *multi-faceted*, meaning that each type of linkage comprises several elements that must be scaled up. These areas are also interconnected and complementary, in that the development of each one is dependent on the development of the others.

Figure A shows the seven interconnected sets of linkages that must be developed in order to realize the potential of resource-based industrialization. These are as follows:

Fiscal linkages, i.e., spillovers that can be created from the overall revenue contribution of the mineral sector, in particular through tax collection and expenditure, export revenues, total revenue appropriation and distribution.

Figure A
The breadth of linkages



135 A. O Hirschman defines linkages as “effects of a given product line as investment-generating forces that are set in motion, through input-output relations, when productive facilities that supply inputs to that line or utilize its outputs are inadequate or nonexistent”.

This dimension takes fiscal rules into account and their relationship to the development expectations in Ghana. It also underscores the need to address "leakages" from the system, notably through revenue loss due to illegal mining, base erosion and profit shifting as well as illicit financial flows.

Production linkages, i.e., multipliers that may be created through:

- (a) Upstream¹³⁶ procurement/local supply chain linkages, i.e., procurement and supply chain expenditures from the mineral sector to create and capture added value through broader and deeper linkages. These linkages can provide business opportunities, not only to local suppliers near mining sites, but also to suppliers who are able to branch out to other industrial sectors at the national and regional levels.
- (b) Downstream linkages,¹³⁷ i.e., efficient and competitive transformations of raw minerals, which can be used to create more value-add industries and jobs at the domestic level.
- (c) Sidestream linkages, i.e., inputs or outputs from the mineral sector that can be used to foster broader economic development, and particularly development in non-mineral sectors. These inputs or outputs may be goods, services or labour and their potential may be scaled up to the regional or international level.

Spatial linkages, i.e., mineral-related infrastructure that can be leveraged to facilitate broader economic development, both within the mineral sector and in other sectors. This concerns "hard" and "soft" infrastructures, as well as logistics networks that may have an impact on the effectiveness of economic

activity. These linkages are seen as crucial, since they have equal potential to foster mineral and non-mineral activities, the latter of which may include agriculture, industry and services. This can generate "spillovers" that create growth clusters in mining regions and along mineral-rich regional corridors.

Trade and market linkages: i.e., trade policies and instruments, such as trade and investment agreements, and the ensuing policies that they provide, (such as removing non-tariff barriers, securing intellectual property rights, and facilitating the movement of professionals), which can be used to foster the development of regional and global value chains in Ghana and for Ghanaian products abroad, both at the regional and international level.

Social linkages, particularly those within local communities and society, i.e., the support provided by a mine to socioeconomic development around mine sites or in the close vicinity of the mine. These types of linkages go beyond merely complying with CSR requirements with a view to obtaining a licence to operate, but involve the creation of real economic opportunities for local communities, including the provision of support to suppliers' development programmes.

Knowledge and technological linkages, i.e., efforts by the mineral sector to promote entrepreneurship, capacity building, research, skills development, technology transfer and innovation with a view to creating employment opportunities and enhancing the employability of the workforce. Knowledge linkages have been a core strategy of countries that have successfully moved into high-value markets.

Climate-smart linkages, i.e., business opportunities derived from gains in efficiency due to sustainable environmental strategies, which

136 According to Hirschman, backward or upstream linkages lead to new investment in input-supplying facilities.

137 Hirschman defines forward or downstream linkages as those leading to investment in output-using facilities.

can be exploited to support value creation in the mineral sector. These opportunities are particularly important in countries where serious power shortages affect the productivity of mining activities and impede industrial development.

In Ghana, the breadth and depth of linkages in the aforementioned seven areas are at various stages of development. This is because, over time, certain economic imperatives have been prioritized at the expense of others. In fact, in order to honour its domestic and international financial obligations, Ghana has placed much emphasis on fiscal linkages, notably by maximizing rents. This has often been at the expense of other critical areas such as production/industrial linkages, both upstream and downstream, and infrastructure linkages.¹³⁸

That approach has seriously impeded the ability of the country to create a framework for the diversification of the economy. Today, Ghana's financial stability is strongly dependent on fiscal receipts collected from companies, royalties and corporate taxes, all of

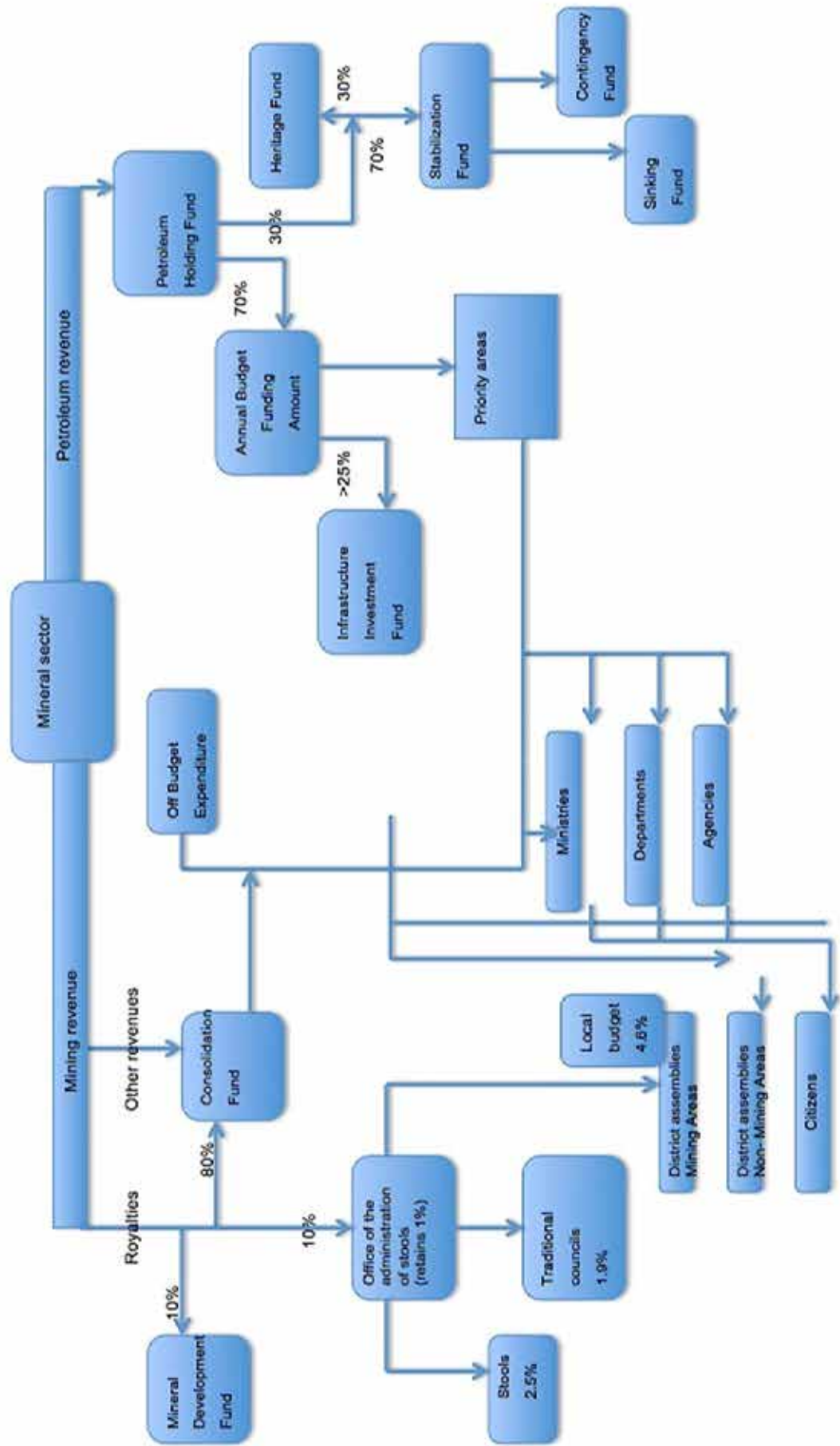
which tend to fluctuate with movements in the commodity markets.

In order to change this state of affairs, a holistic approach regarding the economic contribution made by various activities must be adopted. In fact, true transformation can only occur when a country creates the necessary conditions that allow it to realize the full potential of its mineral sector.

To enable the development of a realistic policy framework regarding types of linkages, it is necessary to fully understand the political economy dynamics in the mineral sector, and, particularly, the various historical, structural and enabling factors and institutions that have shaped and continue to shape the development of the mineral sector in Ghana. Some of these factors have sometimes impeded progress, or have been responsible for delays in major policy decisions aimed at changing the way the mining sector has operated historically. The advent of oil production has brought the rules governing the mining sector to the forefront.

138 Like most African countries, Ghana was able to rely on Bretton Woods institutions for financial bail outs following deep economic and debt crises. It had access to structural adjustment programmes that were supervised by the World Bank, and benefited from the International Monetary Fund Heavily-Indebted Poor Countries Initiative. These programmes essentially focused on fiscal discipline and on the dismantling of policies considered to be inefficient by the Washington Consensus. Industrial policies were included in this group of policies. Similarly, severe cuts to public spending, including health, education and infrastructure budgets, severely affected the capacity of the country to provide necessities to its population. Schools and health care centers, particularly in rural areas, were most affected by budgetary measures intended to curb public expenditure. Similarly, today's infrastructure deficits are due, primarily, to inadequate public investment.

Annex 4 Mineral sector revenue allocation



Annex 5 Procurement information provided by AngloGold Ashanti, 2004

Procurement item	Level of Ghanaian content	Value, \$	Procurement item	Level of Ghanaian content	Value, \$	Procurement item	Level of Ghanaian content	Value, \$
Electric power	High	24,590,236	Drilling	Medium	1,869,102	Fuel	Low	7,637,359
Banking services	High	6,228,221	Construction company for BSVS project area	Medium	1,178,602	Buying agents	Low	5,985,684
Mining contractor	High	4,668,721				Cyanide	Low	4,869,046
Lime	High	3,599,593				Mining equipment	Low	4,243,599
Transport	High	3,058,370				Grinding media	Low	4,211,232
Ore haulage contractor	High	2,771,161				Mining machinery spares	Low	2,497,352
Clearing	High	2,377,778				Mill and crusher spares	Low	1,343,576
Housing for company employees	High	1,642,116				Chemicals	Low	1,080,066
Insurance services	High	759,073				Engine Spares	Low	1,067,923
Supplier of food items	High	661,571				Tyres	Low	1,031,897
Cement	High	560,165				Activated carbon	Low	956,250
Transport of cyanide	High	500,943				Pumps and spares	Low	888,949
						Safety equipment	Low	668,320
						Explosives	Low	648,174
						Diesel	Low	629,236
						Motor spares	Low	591,191
TOTAL in category		51,417,947			3,047,704			38,349,855
Est. share Ghanaian content		38,563,460			1,523,852			3,834,985
%Ghanaian content		75%			50%			10%

Source: ICMIM, 2007.

The level of content, as depicted in the 2004 company's procurement information and replicated in the above table, was explained as follows:

- (a) High content meant, on average, 75 per cent Ghanaian input by value;
- (b) Medium content meant, on average, 50 per cent Ghanaian input by value; and
- (c) Low content meant, on average, 10 per cent Ghanaian content by value.

Annex 6

Procurement categories in the mining sector

A careful examination of procurement needs for equipment, services and labour requirements within the Ghanaian gold industry suggests that there are significant opportunities for business operators and the labour force. The activities that occur during each phase of the life cycle of a mine have minimum requirements of three categories of equipment, services and labour, namely **critical supplies, items that are core to the mining sector, but potentially relevant to other industries, and other, non-core, items.**

The tables below list certain items and services in those three categories that could be produced or supplied in Ghana, in accordance with:

- (a) How critical they are to the mining industry;
- (b) The scope of their possible uses in other industrial sectors, or the technical knowledge and expertise that suppliers may gain from making certain items, thus enabling them to produce items for other sectors as well.

(i) Critical supplies

These are specialized or core equipment items that cannot easily be used in other economic sectors and are rarely needed in non-mining activities. From among this list of items, the most prominent items include specialized equipment. These items are complex, highly

technology-intensive and sophisticated, and include products such as drilling equipment or heavy machinery, which are supplied by only a few multinational specialized companies and OEMs and are produced by a select group of companies in only a small number of industrialized countries. Very few developing countries that are rich in natural resources have managed to capitalize on global value chains in this area.

Furthermore, given the level of sophistication of the aforementioned machinery items, mining companies are sometimes bound by manufacturer guarantees and contracts. Such guarantees and contracts may include the exclusive purchase of spare parts and post-sale services. Machinery items are generally expensive and comprise a large portion of a company's capital expenditure, and yet there is limited scope for these items to be produced locally.

At present, there are no local Ghanaian companies that have the capacity to manufacture such items. Instead, they are imported by local distributors who then sell them to the mining industry. These items are globally sourced and are rarely the focus of local content policies as there is very little direct opportunity for local manufacturing in Ghana. Service providers or spare parts manufacturers may, however, have opportunities to provide local value addition, provided this is permitted under OEM contracts.

Table A

Specialized core services, labour and equipment needed during various phases of mining operations

7 - 10 years	5 - 10 years	2 - 20 years	2 - 10 years
Exploration		Mining	
Planning & construction		Extraction/exploitation	
Mine closure		Mine closure	
<i>Types of activities</i>	<i>Types of activities</i>	<i>Types of activities</i>	<i>Types of activities</i>
<i>Specialized/ core technical services</i>			
Gold prospecting equipment			
Geological and geoscientific services (including geochemistry, geophysics, geomechanical, hydrogeological etc)			
Drilling services			
Chemical analysis and research		Chemical analysis and research	
Exploration services (including surveying)		Exploration services (including surveying)	
Data handling and management services		Data handling and management services	
Resource evaluation services		Resource evaluation services	
Reconnaissance services (including photography, spectral imaging, geological mapping)		Reconnaissance services (including photography, spectral imaging, geological mapping)	
Sampling and laboratory services		Sampling and laboratory services	
Sismic interpretation		Sismic interpretation	
Core data logistics (including handling management and storage)		Core data logistics (including handling management and storage)	
Geological modelling (including statistics)		Geological modelling (including statistics)	
		Elemental cross-belt analysers	
		Flow measurement systems	
<i>Specialized equipment (specific to mining)</i>			
Chemicals			
	Drilling equipment and supplies (including trucks, loaders, diggers)		
	Blasting tools		
		Industrial heavy machinery equipment (including earth movers, bulldozers, haul trucks, excavators)	
		Crushing equipment (including stone crushers, grinding mills, conveyors, ball mills)	
		Hydraulic system (including filtration system, washing plants, water management)	
		Feeding and conveying equipment (including belt scale systems, automatic sampling machines, loading systems)	
		Washing and screening equipment (including trommel screen, rotary scrubber, log washer, vibrating screens, spiral classifiers, tube thickeners)	
		Gravity concentration equipments (incl centrifugal concentrator, jig machine, spiral concentrator, various types of shaking tables, automatic discharge type, vibrating gold sluice, gold panning machine)	
		Flotation machines	
		Magnetic separators	
		Laboratory equipment	

Source: Author's compilation.

In addition, a range of core technical services are also needed over the course of a mine's life cycle. Some of these services require sophisticated resources, such as laboratories, geological instruments and data collection. In general, these services are location specific and require highly skilled personnel

and adequate local infrastructure, including, access to sophisticated software, and IT capacity for data management and analysis. In contrast to equipment production, these services represent a huge opportunity for local suppliers, provided that those suppliers have access to the necessary skills and equipment.

(ii) Items that are core to the mining sector, but potentially relevant to other industries

A second category of items, featured in Table B, includes items that are critical in the mining industry, but also have other industrial and household applications. This category includes items such as electrical cables, pipes, cement, steel and steel products, as well as

nuts and bolts. The level of sophistication of these equipment items varies between products, and therefore the items most accessible to the local manufacturing sector are featured here. Given their wider range of possible applications, they have the greatest potential to create broader industrial linkages, including those that go beyond the mining sector.

Table B
Equipment and services critical for mining activities, but with other possible applications

7 - 10 years	5 - 10 years	2 - 20 years	2 - 10 years
Types of activities			
<i>Direct services critical for mining but that can also be used elsewhere</i>			
Engineering services (ground, civil, design, mechanical, electrical, chemical etc)			
Chemical services			
Electrical services			
Transport services (including freight-forwarding)			
Environmental services			
Health and safety			
Technical auditing and compliance services			
Quality control services			
Lifting services			
Construction services (civil works; earthworks; building services)			
Maintenance, technical, mechanical and repair services			
Machinery operations			
Manufacturing services (for machinery and other parts and equipment)			
Haulage services			
Specialized equipment (core to mining but with other applications)			
Scaffolding and fall protection equipment			
Skips			
Buckets			
Nets for construction			
Scaffold platforms			
Tarpauline eyelets			
Tools (including hammers, pliers, crane and lifters, cut saws, asphalt cutters)			
Release agents			
railings			
Cement mixer for construction sites			
Wheelbarrows			
Temporary storage facilities (including box containers)			
Crane and lifters			
Manufacturing supplies (steel, pipes, metal structures)			
Mechanical appliances			
Steel and steel products			
Pipes (various type)			
Metal structures			
Cables (including heavy duty)			
Nuts and bolts			
Explosives			
Pumps			
Filters			
Electric cables			
Retreading tyres for special machines			
Grinding media			
Crucibles			
Lime			
Metal/ PVC core trays			

Source: Author's compilation.

Local suppliers may capitalize on the types of services required in this category with relative ease, provided that their efforts can be scaled up and are supported infrastructure-wise. Equipment and services in this category are scalable beyond the mining industry, allowing for local suppliers to quickly grow their businesses and access other markets.

Current local content regulations target a number of items in this category. A number of challenges were highlighted in the most recent evaluation undertaken by the Mineral Commission, including with regard to the ability of local companies to deliver the level of quality needed by the mining sector, and their capacity to provide supplies on a regular basis and in a timely manner.

(iii) Other non-core items

Table C highlights goods and services that have both general applications as well as being important to the mining industry, with multiple uses within that industry. Most likely, these are small ticket items, but they may be the items most easily accessible to local suppliers, and to small companies in particular,

due to low barriers to entry and the low level of industrial sophistication required for their manufacture. Examples of such items include office supplies, boxes, bags or clothing and apparel. Once again, there is enormous potential in this area, assuming that suppliers can foster linkages with other economic sectors. For example, suppliers of boxes could form linkages to the agro-processing industry.

The same principle applies to general services needed in the mining sector: this encompasses a variety of jobs, from those with low skilled labour requirements, such as catering, security and cleaning, which are generally reserved for Ghanaians, to higher skilled positions, such as jobs in human resources, financial services and legal services, which have the potential to be staffed locally. Certain countries, including Mauritius, have managed to boost growth by using other economic sectors such as sugar, tourism and manufacturing as a foundation or as “anchor clients”, before branching out into areas such as financial services internationally. Ghana could examine how to leverage professional services in its mining sector for use within other economic sectors.

Table C

Equipment and services with general applications that are needed in mining activities

7 - 10 years	5 - 10 years	2 - 20 years	2 - 10 years
<i>Types of activities</i>			
<i>Indirect services (i.e. services of general nature, essential for mining)</i>			
Auxiliary and support staff services			
Project management and administration			
Site support services (catering, camp management, health services, security services)			
Waste management services (including hazardous waste)			
Human resources services (including recruitment, training, supervisory, health and safety etc)			
Transport management services and logistics support			
Financial and risk management services			
Legal and regulatory services			
Energy provision services (power plants)			
IT/communication services			
Water treatment services			
<i>Equipment of general application</i>			
Fuel			
Lubricants and chemicals			
Electronic equipment and appliances			
Electrical equipment and appliances			
Vehicles and spare parts			
Clothing and safety apparels			
Excavation equipment and machinery			
Construction materials (cement, gravel etc.)			
Furniture and wood products			
Chain link fencing, wirenetting etc			
Office supplies and site support consumables (catering, water, office supplies)			
plastic bags			
Calico bags			
Retreading tyres for other vehicles			
Bullion boxes			

Source: Author's compilation

A study conducted in Ghana by IFC in 2012 showed that products that had general applications, but with special importance for the mining sector, scored quite highly in areas such as competitiveness performance, management assessment, production, finance and quality capacity within companies. The study concluded that these products scored better than technical products because they were more adaptable across a variety of industries outside of mining, meaning that they were solidly anchored in the industrial landscape.

This underscores the need to improve the conditions that make these products competitive.

The aforementioned conclusions cite the different types of supply opportunities that exist for local industries in Ghana. There is a need for a more targeted approach in supporting local industries in their attempts to capture market share and capitalize on so-called "quick wins", and to lay the groundwork for moving up the supply chain as industries mature.

Annex 7

Overview of international supplier development initiatives

The table below summarizes international experience in the oil sector, notably in developed countries, including Australia, Denmark, Norway and the United Kingdom, but also in developing countries, including Angola, Brazil, Malaysia, Nigeria, and Trinidad and Tobago. The table summarizes the main policies and institutional architecture established to ensure that oil companies make use of local firms.

Economic criteria	The United Kingdom	Norway	Denmark	Australia	Brazil	Malaysia	Nigeria	Angola	Trinidad and Tobago
Key milestones and policy framework	1970s: Establishment of the Offshore Supplies Office (OSO). 1970s: establishment of State oil company Statoil and Nirske Hydro. 1972: Establishment of Goods and Services Office (GSO).	1965: Norwegian Petroleum Law enacted; emphasis on joint ventures, Government equity participation and local content. 1970s: establishment of State oil company Statoil and Nirske Hydro. 1972: Establishment of Goods and Services Office (GSO).	No local preference or purchasing policy in place. However, a single company, namely DUC, has been given an exclusive license on North Sea oil exploration.	No local content policy in place. However, operators are encouraged to use local suppliers and manufacturers. 1984: Establishment of Industrial Supplies Office (ISO) as facilitator for project developers and local industry. 2001: Australian Industry Participation Framework outlined Government policies to support local content in large investment projects.	1953: Petrosbras created and granted exploration and production licences throughout Brazil. Mid-1990s: Petrosbras' monopoly eliminated and the National Petroleum Agency (ANP) established to regulate petroleum activities in Brazil and ensure local benefits of oil projects in the context of a competitive leasing system of oil blocs.	1974: Establishment of the State oil company, Petronas. Petronas is key in fostering local content. It creates registries of local licensed oil and gas companies.	Since 1999: Government action to increase local content in the domestic oil and gas industry. Local Business Development/Global Procurement Unit established. 1997: Establishment of the Onne Oil & Gas Free Zone.	1976: Establishment of the State oil company, Sonangol. Sonangol was made exclusive concessionaire for oil exploration in Angola, and was allowed to enter into associations with foreign companies on oil exploration, development and production	2004: Government adoption of Local Content and Local Participation Framework Policy for the energy sector, along entire value-add chain.

Economic criteria	The United Kingdom	Norway	Denmark	Australia	Brazil	Malaysia	Nigeria	Angola	Trinidad and Tobago
Definition	1960s: Discretionary licensing of oil blocs. 1970s: OSO monitoring of direction of trade of oil companies (value of contracts with impact on local employment and value addition in manufacturing and subcontracting). 1990s: Entry into EU brings a refocus on development of export markets.	1972: Article 54 of the Royal Decree of 1972 directed Government to support local companies, as long as they were competitive in prices, quality, schedule and service. 1990s: Article 54 rendered invalid as Norway accessed EU markets; emphasis changed to support international expansion of local oil industry.	The Danish Energy Administration did not calculate capture rates or levels of local content in industry.		ANP specified detailed local content percentages on the purchase of goods and services for exploration and development of on-shore and off-shore operations.	Petronas' monitoring of local companies defined by (i) local equity participation; (ii) employment creation and use of local inputs Production Sharing Contracts (PSCs) with Petronas' participation include recommendations on the local purchase of goods and services to the maximum possible extent.	Local Business Development/Global Procurement Unit monitors (i) awarding of contracts to local firms; (ii) farming out oil fields to Nigerian oil companies; (iii) technology transfer initiatives; (iv) local content development fairs/events.	Since the mid-1990s, Sonangol has undergone restructuring and has become a holding company with autonomous subsidiaries. Sonangol is currently pivotal in the supply and service sector of the local oil industry.	Local content defined in terms of ownership, control, decision-making, and preferential access to financing. International companies required to commit to contracting local firms. Education and training of workers a critical part of the policy framework.

Economic criteria	The United Kingdom	Norway	Denmark	Australia	Brazil	Malaysia	Nigeria	Angola	Trinidad and Tobago
Efficiency considerations	OSO focused on ensuring a competitive domestic industry through range of programmes offered to local contractors.	Favourable initial conditions when oil was discovered (1960s); Norway had considerable industrial technological capacity. Statoil has been pivotal in technology transfer and personnel training.	Large platform structures usually supplied by European companies. Danish strength in supplying services and suppliers of medium-sized structures and equipment	Reports from the U.S. Department of Commerce on Australia's Oil and Gas Field Equipment Market optimistic regarding local content shares in projects.	1970s: Petrobras used numerous foreign contractors in early years of off-shore development. In the 1980s the focus was on development of domestic technology using licensing agreements with international suppliers.	Malaysia has developed an important supply industry that now competes for projects around the world.	In cooperation with international oil companies, the Government is trying to meet efficient oil producing standards and local content targets on the use of local technology.	Numerous production sharing arrangements between global oil companies and Sonangol are currently in place.	Government has engaged the business community in supporting broad based job training efforts, small business capacity building and technology development.
Information dissemination	OSO was an independent agency set up expressly to help domestic firms in the oil sector.	GSO was an independent agency set up expressly to help domestic firms in oil sector.			Local oil sector was kept closed for decades; Brazilian labour and companies were hedged while skills and capabilities were developed.		Local content initiatives widely known.	Sonangol has established a resource link on their webpage regarding opportunities for local suppliers.	Government has established base on project statuses and opportunities for local suppliers.
Acknowledgement of spin-off effects into non-oil economy	Limited.	Government actively focused on in-country research and technology development in general.			Petrobras has an aggressive investment programme in oil production, but also high-tech, refineries and pipelines.		Limited.	Sonangol's business interests are in both the oil and non-oil economy.	Government strategy also focused on development of opportunities in the non-oil economy.

Sources: Appendix 2, Alvesson and others (2003); INTSOK (2003); Neff (2005); Wade Locke (2004).

Annex 8

Ghana's key industrial stakeholders

The Ministry of Trade and Industry (MoTI) aims to establish Ghana as a major manufacturing, value-adding, financial and commercial hub in West Africa. The Ministry has twelve departments, many of which focus on areas directly relevant to value chain and linkage development.

The Ghana National Chamber of Commerce and Industry (GNCCI) is the voice of Ghana's organized private sector and holds regular consultations with the Government on policies and measures that affect business and the economy (GNCCI, 2014). It has a membership of almost three thousand businesses and consists of twelve sectoral groups and seven regional chambers. The GNCCI was created from independent regional chambers, the first of which was established in 1850. Thus, regional groupings of business interests along industrial lines existed long before there was a consolidated national policy on industrial development.

The Association of Ghana Industries (AGI) is a private sector association with more than 1,200 members and is composed of small, medium and large-scale manufacturing and services industries. AGI covers most economic sectors within Ghana, including food and beverages, agri-business, pharmaceuticals, electronics and electrical, telecommunications, information technology, utilities, service industries, transport, construction, textiles, garments and leather, banking and advertising. AGI seeks to promote the growth and development of industries, to support the country's industrial sector through networking and knowledge sharing, and facilitate international trade, notably through the organization of trade fairs.

The Ghana Investment Promotion Centre (GIPC) plays a key role in encouraging and promoting investments in Ghana and is a one-stop-shop for investors, serving as a liaison between investors and relevant Government authorities. The Centre was re-established under the GIPC Act of 1994.

Entities whose purpose is to facilitate the import of essential products, particularly products relevant to the mineral sector, include the **Ghana National Procurement Agency Limited** and **Ghana Heavy Equipment Limited**.

The **Ghana Standards Authority (GSS)** was established in 1967 to ensure high standards, promote standardization and industrial efficiency, and perform other relevant mandates. The Authority engages in several activities that focus on measuring, testing and certification.

The **Ghana Free Zones Board** is a Government agency established by a 1995 parliamentary act that was promulgated with the aim of establishing free zones in Ghana, promoting exports, attracting investments and disseminating information. Services provided by the Board include the following: providing information on investment opportunities in the Free Zones; issuing licences to approved free zone enterprises; securing other permits from relevant agencies; providing work and residence permits for expatriates in the Free Zones; and providing additional investor-requested services.

Annex 9

Economic potential in the 10 regions of Ghana

Ashanti Region

Agriculture is the dominant economic activity in the region, and key products include cocoa, cotton, bast fibre and palm oil. In addition, food crops include maize, plantain, cocoyam, cassava, yam groundnuts and vegetables.

Other activities include mining, timber processing and industry. Gold, which is the country's second highest foreign exchange earner after cocoa, is mined at Obuasi. This is one of the richest gold mines in the country and is believed to still contain significant reserves. Deposits of other minerals can be found elsewhere in the region, including Konongo-Benemase, Attonsu, Kwakwakwa, Ntronang, Bilpraw and Akrokerry-Mampamhwe (KPMG, 2015). The region has important deposits of bauxite, diamonds and clay.

Eastern Region

Eastern Region is dominated by agricultural activities including the commercial production of pineapples, kola nut, cocoa, coffee and oil palm. Other activities include small-scale trade, inland fishing and mining.

The urban areas in the region are home to a number of industrial establishments that produce pharmaceutical products, lumber, poultry feed, alcoholic beverages, furniture, textiles and other hardware.

Diamond mining is the area's key mining activity, with the centre for diamond extraction located at Akwatia.

Brong-Ahafo Region

As in other regions, agriculture is the mainstay of the regional economy, with about 70 per cent of the population engaged in farming. Main crops are cocoa, plantain, oil palm, maize and oranges.

The importance of industrialization has grown with the extension of hydro-electric power to the region. Presently, key industries include semi-processed wood products, primarily for export; a tomato processing factory; stone quarries; brick and tile factories and sawmilling.

The Central Region

Key economic activities in Central Region include small-scale traditional agriculture in the inland areas and small-scale fishing along the coast.

Recent development programmes have focused on the improvement of the fisheries sector (through the rehabilitation of facilities for boats, fish handling, curing and processing), the promotion of fishing and exports of fish products, and the development of shrimp, lobster and squid farming. A marine stock research centre has also been established at the University of Cape Coast.

Other activities include the expansion of tree crop farming, including agro-forestry and fruits for export and the tourism industry, as well as the creation of farmer service companies.

Current development programmes are also supporting the growth of the informal

market's chain of micro-entrepreneurs, small-scale salt and affiliated chemical production, the production of kaolin and related products, and small-scale gold mining, as well as the establishment of palm oil/kernel refineries.

More recently, investments have been made in the tourism sector in order to preserve the region's vast cultural and historical assets and sites. In that regard, steps have been taken to conserve and rehabilitate forts, castles and monuments, establish game parks and protect rare species.

Greater Accra Region

The Greater Accra Region is the country's industrial centre and the largest market for domestic manufactured goods. Most of the country's manufacturing establishments and industrial employment are located in this region. Most jobs are located in Accra and Tema, the latter being the largest port in Ghana. Due to these industrial activities, the region consumes about 46.5 per cent of the total amount of electricity generated within the entire country.

Fishing plays an important role in this region's economy. Approximately 30,000 people, or about one-third of the total number of fishermen in the country, operate in this region. However, fishing is still dominated by small-scale canoe fishermen, despite the construction of the fishing harbour in Tema and the emergence of a limited number of large fishing establishments.

Farming is another important economic activity in rural areas in the region. As in other parts of the country, most rural residents practice small-scale farming. There are also about 20 large commercial crop farms and 25 livestock farms. Because the natural vegetation consists primarily of grassland, the region is among the few in the country where livestock, including cattle, poultry, sheep and

goats, are raised. The main crops grown in the region are cassava, maize, ground nuts, vegetables, beans, cowpeas, coconut, pineapples, onions and shallots.

Northern Region

Farming is the main economic activity for more than two-thirds of the population in the region. Among the crops grown are maize, rice, sorghum, yams, tomatoes and cotton in addition to tree crops such as shea nut and kapok. Rice, ground nuts and guinea corn are cultivated on a large-scale basis.

Livestock farms are also an important economic activity in the area. Industry is essentially agro-based, which includes the processing of agricultural produce such as ground nuts into edible oil and shea nuts into shea butter. Several rice mills also operate in the region.

Non-agro industries are not prevalent in the region, which is mainly due to an underdeveloped exploitation of mineral resources. However, it is estimated that the region is home to high quality limestone deposits, which can be used in the manufacturing of cement. There may also be iron ore deposits and substantial deposits of clay.

Tourism is also an important economic activity due to the attraction of the local customs and cultural practices of the resident population. These include activities such as handicrafts, weaving, carving, tanning and pottery. The waterfalls of Dung and Nankpanduri attract tourists throughout the year, as do the Mole-Game Reserve and the Larbanga Mosque.

The Upper East Region

Like many regions in Ghana, Upper East Region is dominated by agricultural activity, with about 70 per cent of the working population

engaged in farming, fishing or animal husbandry. Cultivated food crops include rice, millet, maize, sorghum and ground nuts. In particular, the fertile valleys of Gbedemblisi and Wiesi are known as the “rice bowl” of the region and have great potential for the cultivation of cotton, ground nuts as well as onions and tomatoes.

Furthermore, with its rich vegetation, the region can support significant livestock and poultry production. It produces about 25 per cent of the nation’s total cattle stock and a significant percentage of the total number of sheep and goats in Ghana.

Primary manufacturing activities include tomato processing, meat processing, rice milling, stone quarrying and granite and marble extraction. On a smaller scale, smock weaving, leatherworking, pottery, and shea butter and ground nut oil extraction also contribute to the economy.

The Upper West Region

More than 80 per cent of this region’s population is engaged in subsistence agriculture involving staples such as guinea corn, millet, rice, yams, beans, ground nuts, and cowpeas. These staples are produced for local consumption while the main cash crops are cotton and shea nuts. Animal husbandry includes the rearing of cattle, goats, sheep and poultry. The region produces 40 per cent of the nation’s cotton output but manufacturing activities are limited to pottery making, shea butter processing, ground nut oil extraction, soap making, and cloth and smock weaving.

The Volta Region

Agriculture is the Volta Region’s predominant economic activity, which involves more than 60 per cent of the population in the production

of food crops such as cassava, maize, rice and yams. The region is Ghana’s largest producer of cassava and shallots, the second largest of yams and third largest of maize.

Commercial crops grown in the region include cocoa, coffee, cotton, sugar cane, citrus fruits and pineapples. The region contributes 13 per cent of Ghana’s total saltwater catch and 75 per cent of the total freshwater catch. The region is particularly well known for its anchovies, shrimp and oysters.

Western Region

About half of the population of the region is employed in the agricultural sector, including the cultivation of cocoa, coffee, rubber, oil palm, citrus, coconut, rice, cocoyams, plantains, cassava and vegetables. The region is the nation’s most important producer of cocoa. Fishing is also a key economic activity, although the industry has been affected by the embargo on fishing around the oil rigs situated off the coasts of Cape Three Points.

Western Region is the country’s leading producer of timber and timber products, contributing approximately 42 per cent of the total national output of those products. It is also home to the third largest concentration of industrial activity after Greater Accra and Ashanti. Besides mineral production, which is a key driver of industrial activities, the region is involved in agricultural processing operations, including for products such as cocoa and tobacco, edible and industrial grade palm oil, paper products, rubber tyres and tubes, cement, flour, aluminium products, furniture and corrugated iron sheets. The recent discovery of oil off the Ghanaian coastline has contributed to making Takoradi the fastest growing city in Ghana.

Annex 10

Assessing the level of development of the competitiveness of African economies

Stage of development	African countries	Examples of other countries	Key areas driving competitiveness
Stage 1: Factor driven economies (GDP per capita < \$2,000)	Benin*, Burkina Faso, Burundi, Cameroon, Chad, Côte d'Ivoire, Ethiopia, the Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia*, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, , Uganda, United Republic of Tanzania, Zambia, Zimbabwe	Bangladesh, Nicaragua, Pakistan, Viet Nam, Yemen	Basic requirements (60%) and efficiency enhancers (35%)
Countries in transition from stage 1 to stage 2 (GDP per capita \$2,000 to \$3,000)	Algeria, Angola, Botswana, Gabon, Libya	Azerbaijan, Bolivia (Plurinational State of), Brunei Darussalam, Iran (Islamic Republic of), Venezuela (Bolivarian Republic of)	Basic requirements (between 40% and 60%) and efficiency enhancers (between 35% and 50%)*
Stage 2: Efficiency driven economies (GDP per capita \$3,000 to \$9,000)	Cabo Verde, Egypt, Morocco, Namibia, South Africa, Swaziland, Tunisia	Albania, Belize, China, Colombia, Indonesia, Jordan, Peru	Basic requirements (40%) and efficiency enhancers (50%)
Countries in transition from stage 2 to stage 3 (GDP per capita \$9,000 to \$17,000)	Mauritius, Seychelles	Argentina, Brazil, Chile, Croatia, Malaysia, Mexico, Russian Federation, Turkey	Basic requirements (between 20% and 40%) and efficiency enhancers (50%), innovation factors (10% to 30%)*
Stage 3: Innovation driven economies (GDP per capita > \$ 17,000)		Germany, Norway, Republic of Korea, Spain, United Kingdom, United States of America	Basic requirements (20%) and efficiency enhancers (50%), innovation factors (30%)*

Sources: World Economic Forum 2014, 2013 (Benin and Liberia).

Note: Countries with a share of mineral exports that is higher than 70 per cent of their total exports are categorized in a lower stage of development.

*Based on the GCI 2014–2015.

Annex 11

Business environment: How Ghana performs compared to its peers in West Africa

Indicator	Ghana DB2018 (190 countries)	Ghana DB2017	Doing Business (DB) 2018 – Ghana's regional partners				OECD countries	Best performer Sub-Saharan Africa (2018)	Best performer Global (2018)	
			Côte D'Ivoire	Nigeria (Lagos*)	Mali	Burkina Faso				Sub-Saharan Africa
Overall DB Ranking	120	108	139	145	143	148	142	27	Mauritius: 25	New Zealand: 1
DB DTF (%)	57.24	58.82	53.71	52.03	52.92	51.54	50.43	77.46	Mauritius: 77.54	NZ: 86.55
Starting a business										
Rank	110	110	44	130	104	74	125	47	24	1 (NZ)
DTF (%)	84.02	83.73	91.72	80.8	84.46	88.17	76.82	91.35	93.65	99.96
Procedures, min (no.)	8	8	4	8.5	5	3	7.6	4.9	3	1
Time (days)	14	14	7	18,9	8.5	13	24	8.5	7	0.5
Cost, min (% of income per capita)	17.5	19.7	16.5	28.8	58.4	42.6	49.9	3.1	8.3	0
Paid-in minimum capital (% of income per capita)	1.7	2	2,8	0	5.6	6.7	25.6	8.7	11.8	0
Construction permit process										
Rank	131	117	152	147	134	53	129	46	9	1 (Denmark)
DTF (%)	61.9	65.34	57.5	58.8	61.36	73.2	56.91	75.4	82.45	86.79

Indicator	Ghana DB2018 (190 countries)	Ghana DB2017	Doing Business (DB) 2018 - Ghana's regional partners					Sub-Saharan Africa	OECD countries	Best performer Sub-Saharan Africa (2018)	Best performer Global (2018)
			Côte D'Ivoire	Nigeria (Lagos*)	Mali	Burkina Faso					
Procedures (no.)	16	14	21	15.1	13	14	14.5	12.1	10		
Time (days)	170	170	162	110.3	124	121	147.5	154.6	98		
Cost (% of warehouse value)	5.4	2.9	5.4	18.5	6.2	4.8	9.9	1.6	0.6		
Building quality control index (0-15)	9	8	9	11.5	5.5	12	8	11.4	14		
Accessing electricity											
Rank	136	120	129	172	154	179	148	40	51	1 (U.A.E)	
DTF	56.8	60.3	58.73	34.68	51.12	29.42	45.91	84.44	82.03	99.92	
Price of electricity (\$ per Kwh), 2017	n/a	19.3	13.9	20.1	15.3	25.4	n/a	n/a	15.1	9	
Procedures (no.)	4	4	8	9.8	4	4	5.3	4.9	4		
Time (days)	78	79	55	149.4	120	169	115.3	79.1	81		
Cost (% of income per capita)	1,080.5	1,265.8	2,280.8	334.8	2,794.6	9,438.4	3,737	63	229.4		
Reliability of supply and transparency of tariff index (0-8)		0	5	0	0	0	0.9	7.4	6		
Registering property											
Rank	119	77	113	179	137	140	131	44	2	1 (NZ)	
DTF	56.5	65.99	57.56	34.09	51.43	50.44	51.71	76.81	93.26	94.47	
Procedures (no.)	6	5	6	11.3	5	4	6.2	4.7	3		
Time (days)	47	46	30	68.9	29	67	59.3	22.3	7		
Cost (% of property value)	6.2	1.2	7.4	10.5	11.1	12.0	7.8	4.2	0.1		
Quality of the land administration index (0-30)	8	8	10.5	7.4	8	11.5	8.6	22.7	28		

Indicator	Ghana DB2018 (190 countries)	Ghana DB2017	Doing Business (DB) 2018 – Ghana's regional partners					OECD countries	Best performer Sub-Saharan Africa (2018)	Best performer Global (2018)
			Côte D'Ivoire	Nigeria (Lagos*)	Mali	Burkina Faso	Sub-Saharan Africa			
Accessing credit										
Rank	55	44	142	6	142	142	115	62	2	1 (NZ)
DTF	65	65	30	90	30	30	40.73	63.03	96	100 (NZ)
Strength of legal rights index (0–12)	7	7	6	10	6	6	5.1	6	11	
Depth of credit information index (0–8)	6	6	0	8	0	0	3	6.6	8	
Credit registry coverage (% of adults)	0	0	0.3	0.1	0.1	0.4	6.9	12.1	7.4	
Credit bureau coverage (% of adults)	16	16	4	7.8	0.8	0.3	7.6	67.1	16.6	
Protecting minority investors										
Rank	96	87	146	33	146	146	126	47	16	1 (Kazakhstan)
DTF	51.67	53.33	40	66.67	40	40	43.72	63.93	70	85
Strength of minority investors protection	5.3	5.3	4	6.5	4	4	4.3	6.5	7	
Extent of conflict of interest regulation index (0–10)	6.4	6.7	4.3	7	4.3	4.3	4.8	6.4	7	
Extent of shareholder governance index (0–10)	4	4	3.7	6.3	3.7	3.7	4	6.4	7.7	
Paying taxes										
Rank	116	122	175	171	166	153	129	42	10	1 (UAE; Qatar)
DTF	66.47	62.91	43.88	48.44	51.55	55.89	57.49	83.07	90.85	99.44

Indicator	Ghana DB2018 (190 countries)	Doing Business (DB) 2018 - Ghana's regional partners						OECD countries	Best performer Sub-Saharan Africa (2018)	Best performer Global (2018)
		Ghana DB2017	Côte D'Ivoire	Nigeria (Lagos*)	Mali	Burkina Faso	Sub-Saharan Africa			
Payments (no. per year)	31	33	63	59	35	45	37.2	10.9	8	
Time (hours per year)	224	224	270	360.2	270	270	280.8	160.7	152	
Total tax rate (% of profit)	33.2	32.7	50.1	34.8	48.3	41.3	46.8	40.1	21.9	
Postfiling index (0-100)	49.54	37.9	44.5	47.48	27.71	48.33	54.4	83.5	87.7	
Trading across borders										
Rank	158	154	155	183	85	113	137	24	32	1 (10 economies)
DTF	52.32	52.32	54.15	19.93	73.3	66.58	52.56	93.87	92	100 (10 economies)
Time to export: border compliance (hours)	108	108	110	135	48	75	100.1	12.7	2	0 (18 economies)
Cost to export: border compliance (\$)	490	490	387	786	242	261	592.2	149.9	134	0 (18 economies)
Time to export: documentary compliance (hours)	89	89	120	131	48	84	87.8	2.6	2	1 (25 economies)
Cost to export: documentary compliance (\$)	155	155	136	250	33	86	215.2	35.5	76	0 (19 economies)
Time to import: border compliance (hours)	89	89	125	284	98	102	136.4	8.7	3	0 (25 economies)
Cost to import: border compliance (\$)	553	553	456	1077	545	265	686.9	111.6	134	0 (28 economies)
Time to import: documentary compliance (hours)	76	76	89	173	77	96	103	3.9	4	1 (29 economies)

Indicator	Ghana DB2018 (190 countries)	Ghana DB2017	Doing Business (DB) 2018 – Ghana's regional partners					OECD countries	Best performer Sub-Saharan Africa (2018)	Best performer Global (2018)
			Côte D'Ivoire	Nigeria (Lagos*)	Mali	Burkina Faso	Sub-Saharan Africa			
Cost to import: documentary compliance (\$)	474	474	267	564	90	197	300.2	25.7	76	0 (30 economies)
Enforcing contracts										
Rank	116	114	101	96	159	163	128	45	27	1 (Rep. of Korea)
DTF	54	54	55.74	56.32	42.8	41.05	48.14	67.48	69.58	84.15 (Rep. of Korea)
Time (days)	710	710	525	454	620	446	656.8	577.8	519	164 (Singapore)
Cost (% claim)	23	23	41.7	42.3	52	81.7	44.1	21.6	25	9 (Ireland)
Quality of judicial process index (0–18)	6.5	6.5	8.5	7.9	5.0	7.5	6.5	11	12.5	15.5 (Australia)
Resolving insolvency										
Rank	158	155	68	140	99	112	124	23	36	1 (Japan)
DTF	24.77	25.27	49.13	30.6	41.46	39.25	30.16	77.15	69.06	93.75
Recovery rate (cents on the dollar)	22.8	23.7	39	27.8	24.8	20.7	20.1	73	67.4	
Time (years)	1.9	1.9	2.2	2	3.6	4	3	1.7	1.7	
Cost (% of estate)	22	22	18	22	18	21	23.1	9.1	14.5	
Strength of insolvency framework index (0–16)	4	4	9	5	9	9	6.2	12.1	10.5	

Source: World Bank, "Doing Business 2017"; "Doing Business 2018".

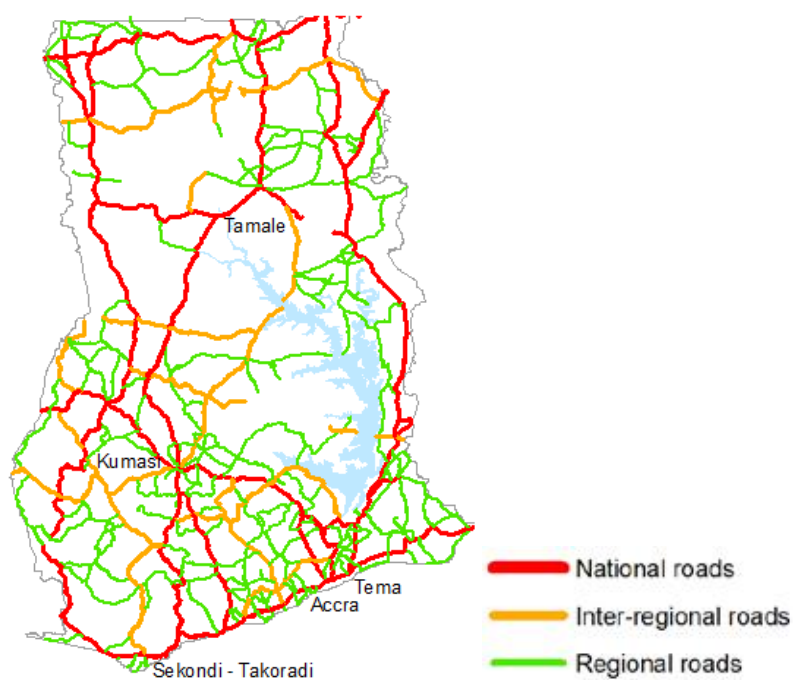
Annex 12

State of infrastructure networks in Ghana

The road system in Ghana includes three types of roads: trunk, feeder and urban roads. In the system there are about 13,000 km of

trunk roads, 12,000 km of urban roads and 42,000 km of feeder roads.

Figure A
National trunk roads



Source: NSDF Study 2014, based on GHA 2012.

Figure B
Trunk road surface conditions and road quality, 2012

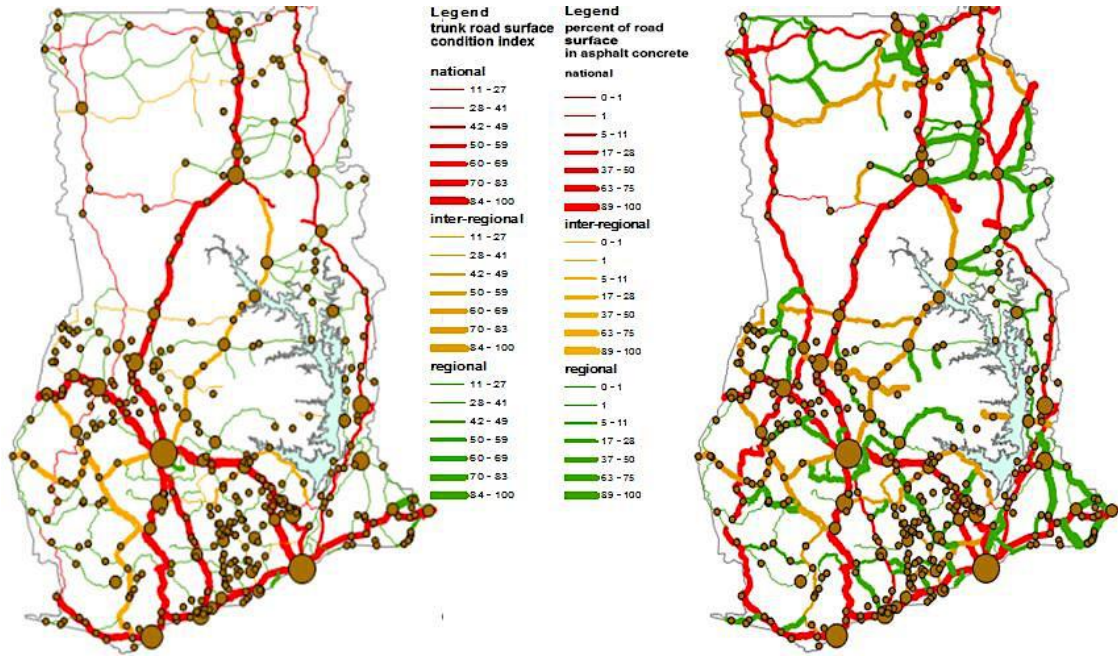
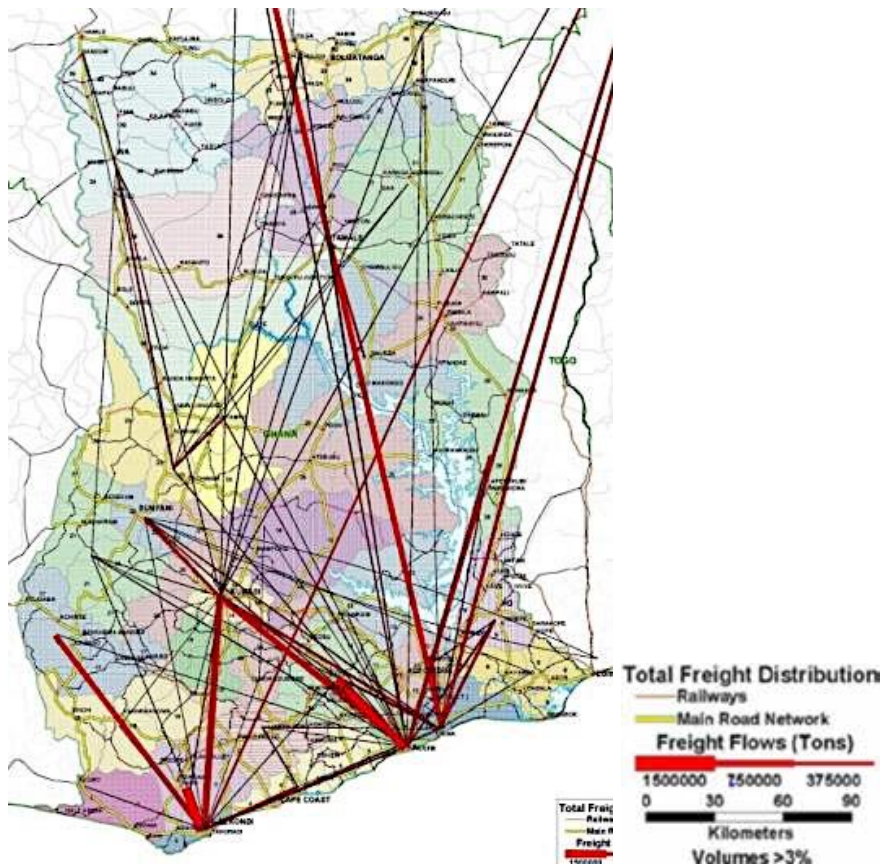


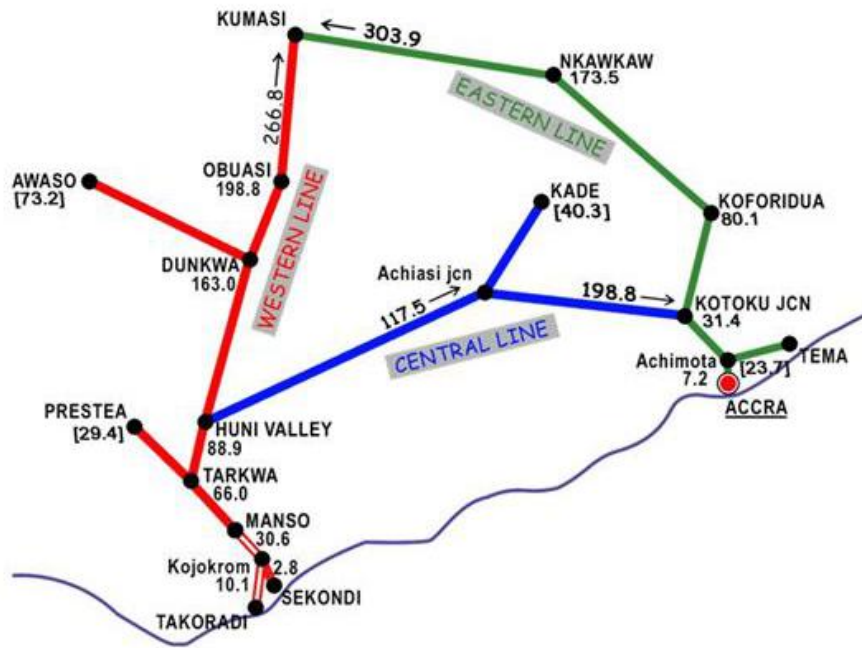
Figure C
Estimated freight flows on roads, 2013



Source: Ghana Railway Master Plan, 2013.

Figure D

Existing railway network in kilometres



Source: Ghana Railway Master Plan Inception Report, 2013.

Annex 13

Ghana's Logistics Performance Index

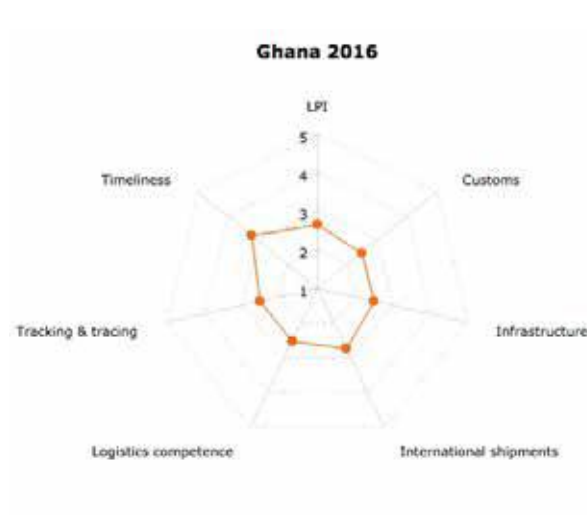
Table A
Domestic logistics performance in 2014 and 2016

	2014	2016
Export time and cost/Port or airport supply chain		
Distance (kilometres)	387	260
Lead time (days)	4 days	3 days
Cost (\$)	2,259	N/A
Export time and cost/Land supply chain		
Distance (kilometres)	713	625
Lead time (days)	9 days	4 days
Cost (\$)	3,129	N/A
Import time and cost/Port or airport supply chain		
Distance (kilometres)	146	199
Lead time (days)	5 days	4 days
Cost (\$)	1,856	N/A
Import time and cost/Land supply chain		
Distance (kilometres)	361	276
Lead time (days)	9 days	6 days
Cost (\$)	3976	N/A

	2014	2016
Shipments meeting quality criteria (%)	66.92	81.77
Number of agencies – exports	5	6
Number of agencies – imports	8	6
Number of documents – exports	4	6
Number of documents – imports	6	5
Clearance time without physical inspection (days)	4 days	2 days
Clearance time with physical inspection (days)	6 days	2 days
Physical inspection (%)	45.12	32.57
Multiple inspections (%)	15.98	5.55
Declarations submitted and processed electronically and on-line (%)	n/a	100
Importers using a licensed customs broker (%)	n/a	100
Ability to choose the location for final clearance (%)	n/a	41.67
Goods released pending customs clearance (%)	n/a	83.33

Source: World Bank Logistics Performance Index 2017.

Figure A
Ghana's performance in 2016



Ghana versus best global performer (Germany) in 2016

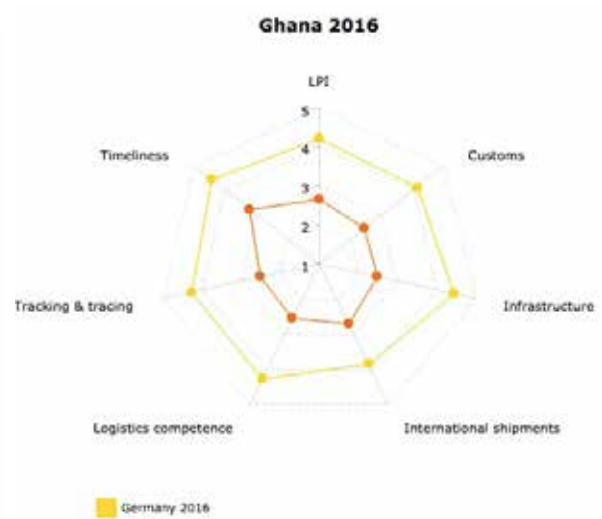
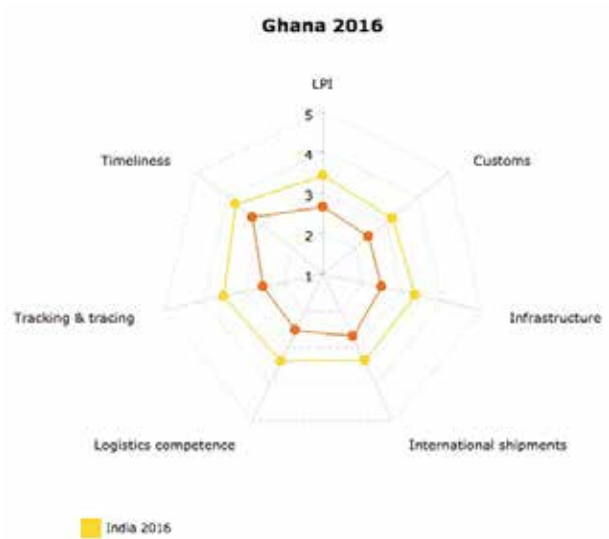


Figure B
Ghana versus best performer in Africa (South Africa), and versus best performer within its income group (India)

South Africa



India



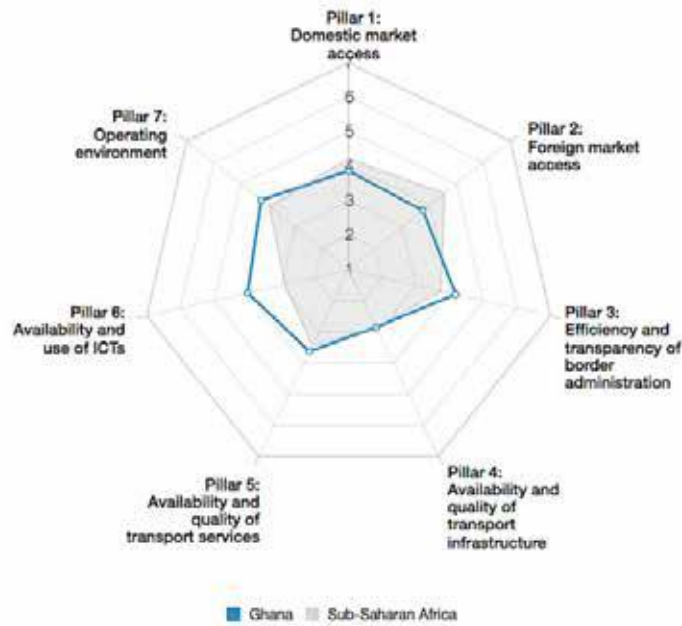
Source: World Bank, 2017.

Figure C
WEF Global Enabling Trade Index

Ghana's rank: 100th out of 136 countries in 2015

Key Indicators, 2015 Source: International Monetary Fund, World Economic Outlook Database (April 2016); World Trade Organization, Merchandise Trade Statistics (22 November 16)

Population millions	26.9 ^①	Trade openness % GDP	60.6 ^①
GDP US\$ billions	38.0 ^①	Share of world trade % world total	0.07 ^①
GDP per capita US\$	1340.4 ^①	Merchandise trade balance US\$ billions	-3.74 ^①



Source: World Economic Forum, 2016.

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