The Socio-Economic Impact of Newmont Ghana Gold Limited

Haarlem, June 2011

Prof. Ethan Kapstein, PhD; René Kim, PhD

steward redqueen

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Newmont Ahafo employees working on a reclamation project

Newmont reclamation nursery

About the Authors

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Dr. Rene Kim is a partner at Steward Redqueen, a consulting firm based in The Netherlands that works at the interface of business and society. He has worked with many multinational companies and private equity funds in both developed and emerging markets, including several mandates in Africa. Previously, he worked for the Boston Consulting Group in Amsterdam and as an academic at the Massachusetts Institute of Technology. He is the author of many academic articles. The authors were assisted by Willem Ruster and Hedda Eggeling of Steward Redqueen.

Almost half of Newmont Ghana's heavy mobile equipment operators are local Ahafo women

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Executive Summary

Gold mining is a significant activity for Ghana. In 2009 Ghana's Internal Revenue Service (IRS) collected USD$ 243 million in taxes from the mining sector, equivalent to almost 20% of total tax collections. The sector directly employed more than 17,000 workers, and job growth has averaged over 4% per year since 2002. Overall, the mining sector contributed 6.3% to Ghana's 2009 Gross Domestic Product (GDP).

This Report describes the socio-economic impacts of the gold mine operated by Newmont Ghana Gold Limited (NGGL) in the Brong-Ahafo Region of Ghana. It examines these impacts both on the local community and the nation as a whole. The Report is the product of over six months of research by a study team composed of Professor Ethan B. Kapstein of INSEAD and Dr. Rene Kim, Willem Ruster and Hedda Eggeling of Steward Redqueen, a strategic consulting firm based in the Netherlands. This team gathered quantitative data from NGGL and then “drove” these figures through the Input-Output Table and Social Accounting Matrix of Ghana, in order to generate estimates of the mine's effects on such macro-economic variables as employment, tax revenues, household incomes, the balance of payments, and supplier profits. The team also gathered qualitative input and conducted scores of interviews in order to assess NGGL's relations with its immediate community and with a variety of stakeholders within Ghana. The result is an unprecedented study on the influence of one mine on the regional and national economy. Our methodology is described in greater detail in the Appendix.

Gold mining is a significant activity for Ghana. In 2009 Ghana's Internal Revenue Service (IRS) collected USD$ 243 million in taxes from the mining sector, equivalent to almost 20% of total tax collections. The sector directly employed more than 17,000 workers, and job growth has averaged over 4% per year since 2002. Overall, the mining sector contributed 6.3% to Ghana's 2009 Gross Domestic Product (GDP) and 43% of its exports.

Despite these statistics, some Ghanaian stakeholders assert that mining has not had a significantly positive impact on the nation's economy. It is perceived by some to be an “enclave” economy with few “spillover” effects, meaning that few within Ghana benefit from

this activity while most of the profits go offshore. There is further contestation about the environmental and social impacts of mining, given the physical and human displacement caused by large-scale projects.

It is within this context of scepticism about mining's benefits on the one hand, coupled with its significant economic impacts on the other, that this Report about NGGL's operations in Brong-Ahafo was written. Our objective was to bring rigorous academic methods to this analysis in order to generate some facts about NGGL's socio-economic effects. While the Report was commissioned by NGGL, it is not responsible for the content, and any errors or omissions are the responsibility of the authors.

The key findings of the Report include the following:

1. NGGL is a major contributor to Ghana's economy, generating nearly 10% of the nation's total exports; 4.5% of its total foreign direct investment and 1.3% of GDP

2. NGGL directly and indirectly produces some 48,000 jobs in Ghana;

3. NGGL has played a significant developmental role in the communities around the Ahafo mine, and in 2009 alone it provided 99 local companies with nearly USD$ 6 million in contracts, supporting more than 400 jobs, not including direct mine employment.

The first gold pour at Ahafo in July 2006

Preface

This study is one in a series that we have undertaken on the African continent and elsewhere looking at the social and economic impacts of specific multinational corporations. Among our published reports are studies performed for Unilever in South Africa, SabMiller in Uganda and Honduras, and Standard Chartered Bank in Ghana and Indonesia.

Our methodology relies on both quantitative and qualitative research. We generate estimates of a company's direct, indirect and induced impacts on a nation's economy using the host country's national input-output tables. Combined with a Social Accounting Matrix, these data and our analyses reveal the impacts of the companies on variables such as household incomes, employment and government revenues.

Mining is often considered a controversial sector in many parts of the world. Much of the debate is focused around the extent to which resource-rich nations and communities profit (or not) from their mining operations. Unfortunately, controversies over mining have often taken place without the benefit of empirical research. Newmont Ghana Gold Limited, a wholly-owned subsidiary of Newmont Mining Corporation, asked us to deploy our methodology to assess the impact of its Ahafo Gold Operation in Ghana. The resulting study is, we feel, among the first such detailed assessments in the mining sector and the results are quite revealing.

Newmont made its relevant data available to us, and gave us access to senior managers and to key suppliers. In the course of our research we also engaged with many agencies and organizations, including the Ghana Statistical Service, the Bank of Ghana, the Ghana Minerals Commission, several government ministries, including the President's Office, and Ghanaian civil society organizations. We also had

The company was provided an opportunity to correct figures but, other than this, the study and its report have been done entirely at arm's length and independent of Newmont.

Our research with the Bank of Ghana, IMF, Ghana Minerals Commission, Ghanaian civil society organizations and other relevant bodies was done wholly independent of the company, and we are grateful for the assistance these organizations provided.

the high honour to meet with the Asantehene (Ashanti King) and with District Chief Executives in the Brong-Ahafo region. We are grateful to the many individuals who took time from their busy schedules to provide us with data, guidance, and assistance. NGGL was provided an opportunity to correct figures but, other than this, the study and its report have been done entirely at arm's length and independent of Newmont. As a consequence, Newmont is not responsible for our findings, which are ours alone.

We note that the Government of Ghana re-calculated its Gross Domestic Product (GDP) while we were nearing the end of our research for this study. While our report reflects Ghana's GDP figures prior to this revision, the effects on most of our micro-economic findings would be minimal. Newmont's macro-economic impacts, in contrast, should be considered in light of the changed GDP figures. We appreciate the opportunity that Newmont has given us and look forward to continuing periodic assessments of the company's impacts in Ghana and elsewhere. We hope, also, that this report will contribute to national debates in resource-rich countries like Ghana and also to broader global development discussions about the role that the private sector in general and the extractive industries in particular can and do play in developing economies.

Ethan B. Kapstein
René Kim

June 2011

1 Introduction and Objectives

Few sectors of the economy are more contentious than mining. Environmentally, mining operations are often accused of causing great damage to the ecosystems and communities where they are located. Economically, mining (along with oil production) is at the centre of public debates and concerns over "Dutch Disease" effects (the negative effects of natural resource discoveries on the macro-economy) and the "Natural Resource Curse," (the negative effects of natural resources on governance), both of which are said to undermine long-term economic performance. For all these reasons, it is probably accurate to say that mining faces a large number of reputational issues and risks.

... when done responsibly, mining can kick-start private sector development in places where the private sector is small.

Yet on the flip side, few sectors are more essential to any nation's daily life than mining. After all, mines provide the raw materials which sustain the industries that consumers depend upon for most of the goods and services they purchase. And when done responsibly, mining can kick-start private sector development in places where the private sector is small. Mines, therefore, cannot be wished away, even by those stakeholders who are critical of their operations.

This report examines Newmont's gold mining activities in the Brong-Ahafo region of Ghana. What are the benefits of these activities to Ghana's socio-economic development? Is Ghana making good use of its gold wealth to aid in the process of development? Is Newmont a good partner in that endeavour? These are among the questions the report raises and attempts to answer.

In order to address these questions, a study was carried out from January 2010 - May 2011 to assess the socio-economic impact of NGGL. NGGL is fully owned by Newmont Mining Corporation (NMC), one of the largest gold producers in the world with assets in

the United States, Australia, Peru, Indonesia, Ghana, Canada, New Zealand, and Mexico. NMC is a publicly traded company with headquarters in Denver, Colorado and it has approximately 31,000 employees worldwide. Newmont's Ghana operations are significant to Newmont, in that its gold reserves are estimated to comprise almost 20% of NMC's worldwide assets.

2 Ghana's economy

2.1 Economic profile

Ghana has been viewed by the international community in recent years as an African success story. Free and fair elections, and peaceful changes of government, have demonstrated that there are no inherent barriers to democratization in Africa, while the management of the economy has also been professionalized, providing investors and entrepreneurs with reassurance about the prospects for economic stability.

To be sure, the introduction of potentially large oil revenues into the economy beginning in 2011—following the coming on-stream of the offshore Jubilee field—coupled with increased earnings from gold mining, will pose challenges for the Central Bank and relevant ministries as they try to manage the potentially inflationary inflow of hard currency. Asset bubbles could be created, making the economy more volatile and brittle. Further, some of Ghana's traditional sectors as well could be squeezed by these inflationary developments, as they could face higher prices for inputs, including labor (and particularly skilled labor).

Unlike many developing world economies that depend heavily upon a single commodity, however, Ghana's economy is relatively well diversified between agriculture, industry, and services. Exports of gold, timber, cocoa, diamond, bauxite, and manganese are important drivers of GDP, although at an estimated value of USD $5.2 billion, they are far outstripped by imports of capital equipment, petroleum, and food products with a total value of USD $10.3 billion. With the start of oil production in early 2011, the balance of trade could become more positive, though this effect will be offset to some degree if strengthened currency values prompt higher levels of imports. Still, despite the excitement in Ghana that revolves around the recent oil discoveries, it is important to recall that the domestic economy continues to be heavily based upon subsistence agriculture which employs 85% of the work force, mainly smallholders.

Table 1 summarizes some key economic indicators of Ghana.

Population (2009 estimated)	23.9 million
Size of workforce (2009 estimated)	10.3 million
Gross Domestic Product (GDP, 2009)	USD $15,187 million
GDP per capita (2009)	USD $635
Trade as % of GDP	100.0%
○ *Exports (fob) as % of GDP*	*36.3%*
○ *Imports (fob) as % of GDP*	*70.8%*
○ *Trade balance*	*-34.5%*
Domestic government revenues as % of GDP	27.9%
Sector breakdown of GDP[1]	
• Agriculture	33.6%
• Industry	25.9%
○ *Manufacturing, Utilities & Construction*	*20.3%*
○ *Mining*	*5.6%*
• Services	31.8%
• Indirect Taxes	8.7%
Consumption breakdown of GDP	
• Domestic demand	93.0%
○ *Private consumption*	*74.9%*
○ *Government expenditure*	*18.1%*
• Real investment	34.0%
• Net exports of goods and services	-27.0%
Government receipts as % of GDP[1]	
• Domestic revenues	27.9%
• Overseas Development Assistance	4.8%

Table 1: Ghana: Key Economic Indicators, 2009

Source: *Central Bank of Ghana.*

For more than two decades after independence in 1957, the economic situation in Ghana was quite unstable. Protectionist policies that encouraged import-substitution led to inefficient industries that could not compete on world markets. Not until 1983, after the adoption of a World Bank and IMF prescribed Structural Adjustment Programme, did the economy stabilise and GDP growth ever since has hovered around 5.5% per annum. This rather abrupt change of the economic situation is visible in the share of trade in GDP after 1983, as shown in Exhibit 1. The diagram also shows that as overall trade with the global economy increased, so did the trade deficit, with imports being roughly twice as large as exports.

[1]Ghana Statistical Service

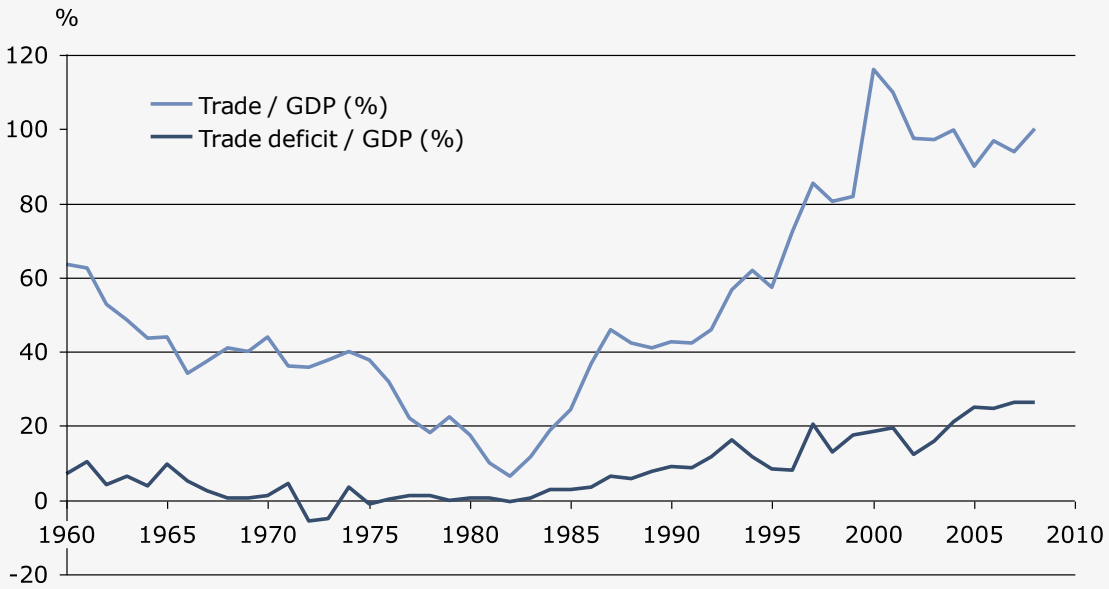

Exhibit 1: *Trade and trade deficit as percentage of GDP*

In line with the changes in economic policy, gross fixed capital formation started to grow again after 1983, as is indicated in Exhibit 2. In recent years the private sector has accounted for about 60% of capital formation, which is an encouraging vote of confidence in the nation's political stability. Foreign direct investment has also picked up since the early 1990s, largely due to the discovery of new gold and oil fields.

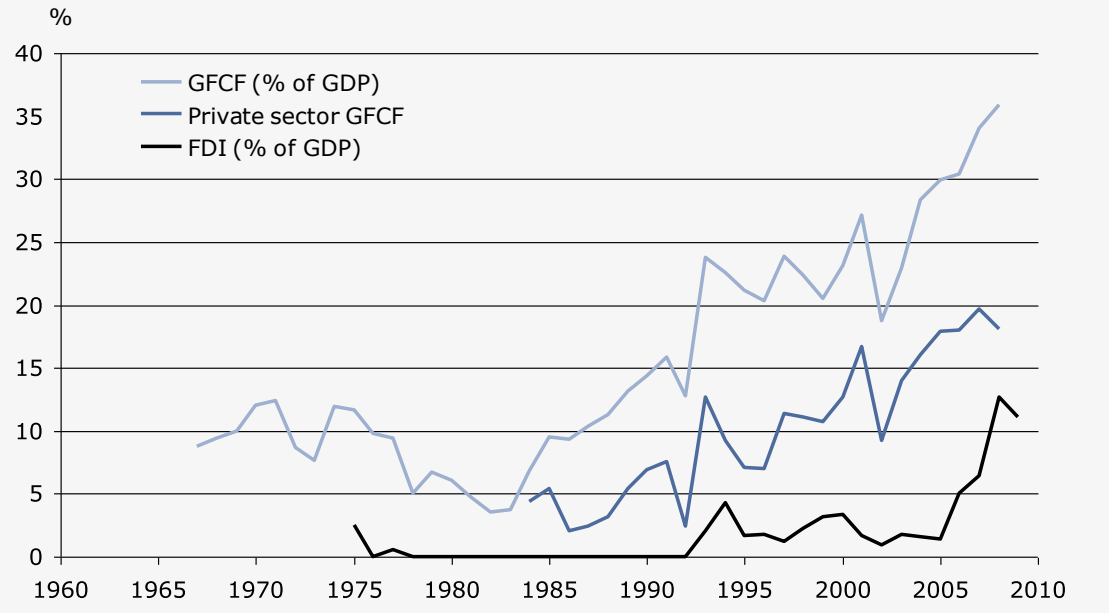

Exhibit 2: *Gross Fixed Capital Formation (GFCF) and Foreign Direct Investment (FDI) as percentage of GDP*

Despite the more stable economic situation since 1983, the growth in income per capita (GNI) has lagged behind, and only since 2002 has it seen real increases (see Exhibit 3), as a result of accelerating GDP growth on the one hand and decreasing population growth on the other. The same graph shows that on a purchasing-power parity (PPP) basis, per capita income grew at a fairly constant rate since 1983.

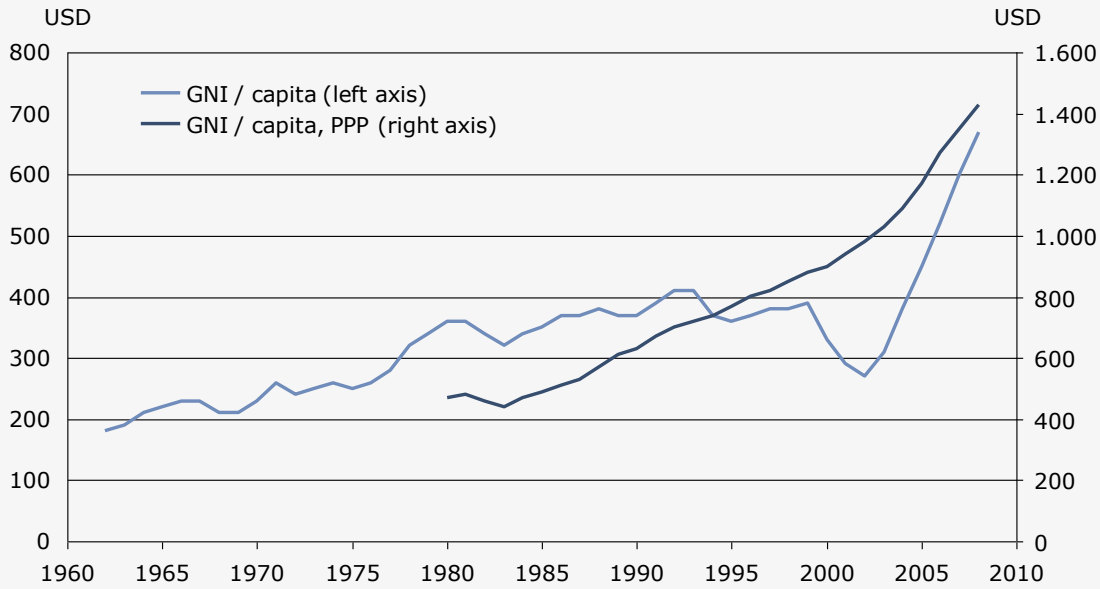

Exhibit 3: *Growth of real Gross National Income[2] (GNI) per capita[3] in current USD*

Ghana ranked 67 out of 183 in the category of "ease of doing business" in the 2010 *Doing Business* Report of IFC/World Bank. This is the fifth highest rank among Sub-Saharan countries and an improvement relative to 2009 (92) and 2008 (87). The ranking does suggest, however, that further improvements are warranted, and some of our recommendations to the Government are found at the end of this Report. Ghana ranked 130 out of 169 countries in the UNDP Human Development Index (HDI)[4], reminding us that the country's social welfare must continue to advance for the benefit of all Ghanaians.

The Jubilee field began production of crude oil mid-December 2010. This development could feasibly slow or even reverse the recent weakening of the Ghanaian Cedi. That, in turn, would make the cost of importing goods and services even more attractive, which could further increase the trade deficit, undermining domestic import-competing industries in the process. As already noted, this so-called "Dutch Disease" has been observed in many resource-rich

[2] In Ghana GNI and GDP are virtually identical
[3] Worldbank data
[4] The HDI is a composite measure of three dimensions of human development: living a long and healthy life (i.e. life expectancy), being educated (i.e. adult literacy and enrolment at the primary, secondary and tertiary level) and having a decent standard of living (i.e. purchasing power parity (PPP) income).

countries around the world. It constitutes part of a larger syndrome, popularly known as the “resource curse”, or the fact that many resource-exporting countries have been economically worse off since a major resource discovery.

Current estimates are that oil production may eclipse gold production in future years. The government has so far not laid out a clear plan with respect to the prudent management of the influx of oil revenues and it must make sure that long-term structural investments are made (with some revenues placed in a trust fund) rather than the money being spent to meet immediate needs. Investments in agriculture (still the largest contributor to GDP, see Table 1), human resources and education, health, and infrastructure are clearly needed, but Ghana would also do well to create a “rainy day” fund to preserve a portion of the oil revenues for future generations. Although the government, of course, needs to implement policies and programs that guard against the “Dutch Disease”, resource companies also need to play their part in ensuring that the corrosive effects of increased earnings are avoided and that revenues are used wisely.

2.2 The Role of Mining and Mining Economics

The contribution of the mining sector to Ghana's GDP has tripled from slightly less than 2% in 1991 to 6.3% in 2009 (5.9% in 2008). With a value of USD $2,551 million in 2009, gold represented 97.4% of Ghana's mineral exports and 43.4% of Ghana's total exports.

Mining, and especially gold mining, has been important to the Ghanaian economy and its development for several centuries; the country was once known, of course, as the “Gold Coast.” The country was at one time a leading producer of gold in the world and accounted for about 35.5 % of total world gold output between 1493 and 1600[5]. Together with cocoa, exports of gold are among the most important sources of foreign exchange.

Since the IMF-led Structural Adjustment Programme of 1983, many policy reforms have been introduced which have led to increased investment, particularly by foreign firms, with new mines coming into production. Currently Ghana is the world's 10th and Africa's second largest producer of gold. In 2009, Ghana's mines produced 3.1 million ounces, up 12%

[5] Quashie, L. A. K., Pentsil, B. K., Kesse, G. O. & Thompson, P. T. A., 1981. Report of the Committee for Increased Gold Output in Ghana. Revised Edition. New York. DP/ UN/ GHA-78-003/ 3.

from 2008. In 2008, Ghana accounted for 3.4% of the world's gold production. Ghana counts 19 operating mines, 40 mining projects in the feasibility stage and more than 150 local and foreign companies hold exploration licences. About 70% of FDI (see Exhibit 2) flows into the mining sector.

The contribution of the mining sector to Ghana's GDP has tripled from slightly less than 2% in 1991 to 6.3% in 2009 (5.9% in 2008). With a value of USD $2,551 million in 2009, gold represented 97.4% of Ghana's mineral exports and 43.4% of Ghana's total exports. Gold thus serves as a major source of foreign exchange for the Ghanaian economy. In addition, as this Report will show in detail, gold mining is a source of high value-added jobs and firms like NGGL also engage in the provision of “public goods” in the regions in which they operate and, by extension, to the country as a whole. For example, NGGL's presence has brought new infrastructure to the Brong-Ahafo Region, like roads, communication systems and electrification, which will serve the people there long after the mine is closed.

In 2008, Ghana's Internal Revenue Service (IRS) collected USD $173.0 million in taxes from the entire mining sector, equivalent to 17.2% of total tax collections. In line with higher gold prices and increased production, mining-related tax collections in 2009 increased to USD $243.0 million, equivalent to 19.8% of total tax collections. The three main sources of mining-related tax income are mining royalties, corporate income taxes and Pay As You Earn (PAYE) taxes, a withholding tax paid by employers as a provisional income tax on employees’ earnings. These three mentioned taxes each represent approximately 30% of total taxes paid by the industry. Other taxes represent the remaining 10%.

A total of 17,300 people were directly employed by mining companies in 2009, following a yearly growth of 4.3% since 2002. This growth is more or less in line with the average annual growth of 4.9% in gold production, indicating that average labor productivity in the mining sector has increased little over time (as we will show in a later section of this report, however, NGGL's labor productivity is higher than the sector's average). Based on estimates that less than 20% of the total workforce of 10.3 million has formal jobs, this implies that less than 1% of the formal workforce is employed directly by the mining companies.

Despite the rapid growth of the mining sector, some Ghanaian stakeholders have argued in interviews with the authors of this Report that mining has not had a significantly positive impact on the nation's economy. While the various reforms since the early 1980s aimed to improve the competitiveness of gold mining and to attract private foreign capital, critics contend that the reforms have been too “neo-

liberal" in character, effectively increasing the leverage of multinational companies and curtailing the power of the state to extract revenues from the sector. The perception is that various tax incentives (e.g. five year carry forward of losses and favourable depreciation schemes) have suppressed corporate income taxes, while the government receives low dividends from its interest in the mines. It is hoped that this report will help inform national debates about the costs and benefits of mining in Ghana, by illustrating the broader economic impacts of Newmont's Ahafo operations that might be largely hidden from public view.

In Ghana, royalties are levied every quarter on the market value of the mining company's gross output. In the new mining code of 2006, the maximum royalty that can be levied was reduced from 12% to 6% while the minimum remained 3%. However, companies do not pay more than 3% and Ghana's parliament only recently voted to increase the minimum level to 5% for those companies without stability agreements with effect from March 2011.

The life of a mining project is a function of the price of the commodity on the one hand and the cost of production on the other. As the commodity rises in price, the life of the project increases as, for example, it becomes profitable to mine lower grades of ore or higher cost ore. But in this context it is important to recall that commodity prices are volatile: they go up, but they also come down. When they fall below the cost of production the project is, of course, no longer viable. If we suppose that the operating cost (which does not include capital expenditure, exploration and other non-operating cost) of the Ahafo mine is in the neighbourhood of USD $500 – USD $600 per ounce then the mine would not have been profitable before 2006. However, production costs prior to 2006 were much lower too. In any event, it took 16 years from the first gold discovery at Ahafo to the first gold production in 2006.

When seen from this perspective, an increase in royalty payments, for example, effectively acts to decrease the life of the mine (and therefore its benefits), as visualised in Exhibit 4. In setting royalties, governments must, therefore, consider the influence of their policies on the life-span of the mine.

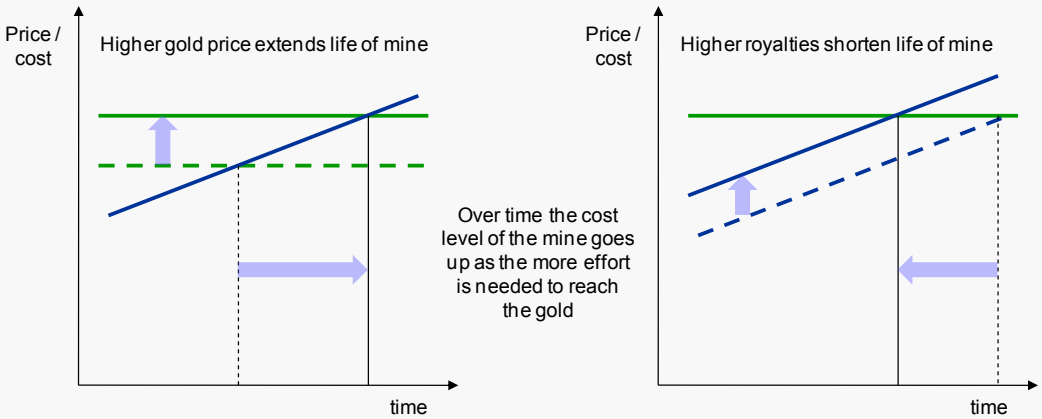

Exhibit 4: *The effect of a higher gold price (green) and cost of production (blue) on the life of a mine.*

3 NGGL's Operations

NGGL currently operates one gold mine in Ghana, in the Brong-Ahafo Region. However, a sister NMC company, Newmont Golden Ridge Limited (NGRL) is currently planning to build a second mine in Akyem in the Eastern Region of the country as well (see Exhibit 5). NGGL commenced its interests in Ghana in February 2002 after NMC, which until then had no presence in the country, acquired the Australian gold company, Normandy Mining Limited in 2002; it was Normandy, in turn, which held the licenses to the Ahafo and Akyem projects. The Ahafo Project was formalised on 19 December 2003 with the signing of a foreign investment agreement between Newmont and the Government of Ghana. In 2004 NGGL started resettlement negotiations with the communities surrounding the mine and resettlement of around 1,700 households started in March 2005, with compensation and resettlement costs totalling USD $45 million. At about the same time, based on NGGL's environmental impact study in 2004, the Environmental Protection Agency granted the Ahafo project an environmental permit in March 2005. In turn then, based on NGGL's Environmental and Social Impact Statements and the company's Resettlement Action Plan, the International Finance Corporation (IFC) approved a loan of USD $125 million for the Ahafo project on January 31, 2006, and it has been an active partner in this project ever since. In particular, IFC's involvement has been helpful to NGGL as it has assisted in the development of a wide variety of community programs; more on this in a later section of the report.

Mining at Ahafo commenced in January 2006 and the company poured its first gold there on July 18, 2006; commercial production commenced in August 2006. NGGL currently operates four open pits at Ahafo with total reserves contained in 15 pits across the Mining lease. In addition, an evaluation of underground mining potential is underway with development of an underground exploration decline. The process plant consists of a conventional mill and carbon-in-leach circuit. Ahafo's proven and probable gold reserves, as of 31 December, 2009, were estimated at 9.1 million ounces.

In 2009, NGGL produced 531,470 ounces of gold (about 15 tonnes), equivalent to 17.0% of Ghana's total production. Corresponding revenues were USD $528 million or 20.7% of Ghana's gold exports. The company had 1,731 direct employees on its payroll.

Exhibit 5: *Map of Ghana with the red stars indicating the locations of the Ahafo (near Sunyani) and Akyem (near Koforidua) mines*

Exhibit 6 contains an overview of the Ahafo project's actual and projected cumulative capital expenditures and cumulative net profits after tax. The cumulative expenditures on the Ahafo project made by Normandy prior to it being acquired by Newmont have been estimated at USD $135.0 million[6]. By extrapolating the 2009 results, the estimated break-even point of NGGL's investment in the Ahafo project is 13 years[7]. Further increases of the (already record-high) gold price would shorten the time to break-even whereas a

By extrapolating the 2009 results, the estimated break-even point of NGGL's investment in the Ahafo project is 13 years.

[6] This estimation is based on the value of the Ahafo reserves in the total Normandy acquisition in 2002.
[7] This does not include the time value of money which would increase the time needed to break even. It further has been assumed that operating expenditures remain constant whereas in reality they go up over time since the most easily mined (and therefore cheapest) gold is taken (as indicated in Exhibit 4).

decrease would obviously increase it. By the time it breaks even, NGGL's extrapolated[8] cumulative capital investment in Ahafo will stand at approximately USD $1,500 million.

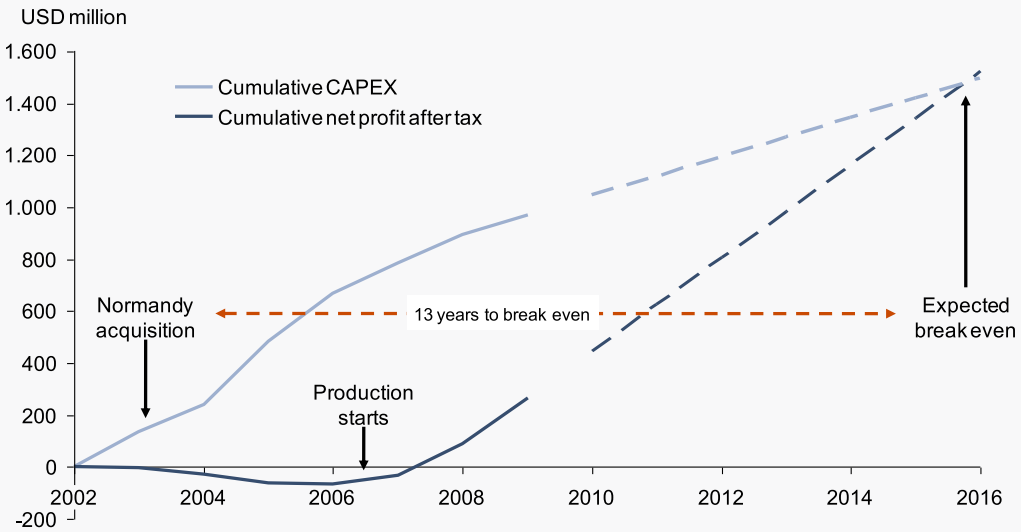

Exhibit 6: *Cumulative net profit after tax and cumulative capital expenditure (CAPEX) for the Ahafo project.*

[8] Extrapolated capital expenditure from the 2009 level of USD $75 million. Gold price assumption of $967 per ounce. Estimated break-even timing depends on future gold prices, operating costs, and production expectations.

4 NGGL's Economic Impact

Because of the size and nature of its operations, NGGL could be expected to have substantial economic, social, and environmental impacts in Ghana in general and in the Brong Ahafo Region in particular. Table 2 contains an overview of the main economic, social, and environmental impacts. The same table also indicates the methodology by which these impacts have been analysed in this Report. Briefly—as detailed in the Appendix—our quantitative model involves "driving" the financial statements of NGGL through the Social Accounting Matrix (SAM) of Ghana. The SAM is a detailed representation of the Ghanaian economy, broken into sectors. Essentially, our model allows us to see how spending by NGGL translates into jobs, household incomes, tax revenues, and orders for local and foreign suppliers who provide NGGL with goods and services. While such models are widely used by economists in the public and private sectors, we have made every effort to ensure the highest data quality in preparing this report.

Table 2: *Overview of the main economic, social and environmental impacts of NGGL and how they are included in this report*

	Quantitative description	Quantitative model	Qualitative description	Not Included
Macro-economic Impacts				
• Contribution to GDP	X			
• Contribution to balance of payment	X			
• Contribution to (foreign) capital investment	X			
Socio-economic impacts and linkages				
• Contribution to value added (direct / indirect)	X	X		
• Contribution to employment (direct / indirect)	X	X		
• Contribution to government revenues (direct / indirect)	X	X		
• Contribution to education and skill development	X			
• Contribution to infrastructure (housing, roads, utilities)			X	
Community Impacts				
• Resettlement			X	
• Reduction of available farm land			X	
• Community Development			X	X
• Changes in community and social structures				X
• Migrant workers (intended and non intended)			X	
• Community Health			X	
Environmental impacts				
• Air pollution / dust emissions			X	
• Water pollution / depletion	X			
• Landscape modification and restoration	X			
• Deforestation and loss of bio-diversity				X

4.1 Macro-economic Impacts

This section outlines NGGL's effects on Ghana's macro-economy. As we will see in this and the following parts of the Report, our model suggests that NGGL's effects are wide-spread. The mine influences both the size and composition of the nation's economy and, as a consequence, its impacts are felt by government and throughout many industries. NGGL has also magnified these influences deliberately through its 'Ahafo Linkages Program' (ALP), which has played a strategic role in the development of local entrepreneurs and small businesses.

Beginning at the "highest level" of analysis, however, the direct contribution of NGGL to Ghana's GDP is about 1.3%[9], making it one of the largest contributors in Ghana. Since all of NGGL's production is exported, the company has a positive impact on Ghana's trade balance. This is quantified in Exhibit 7.

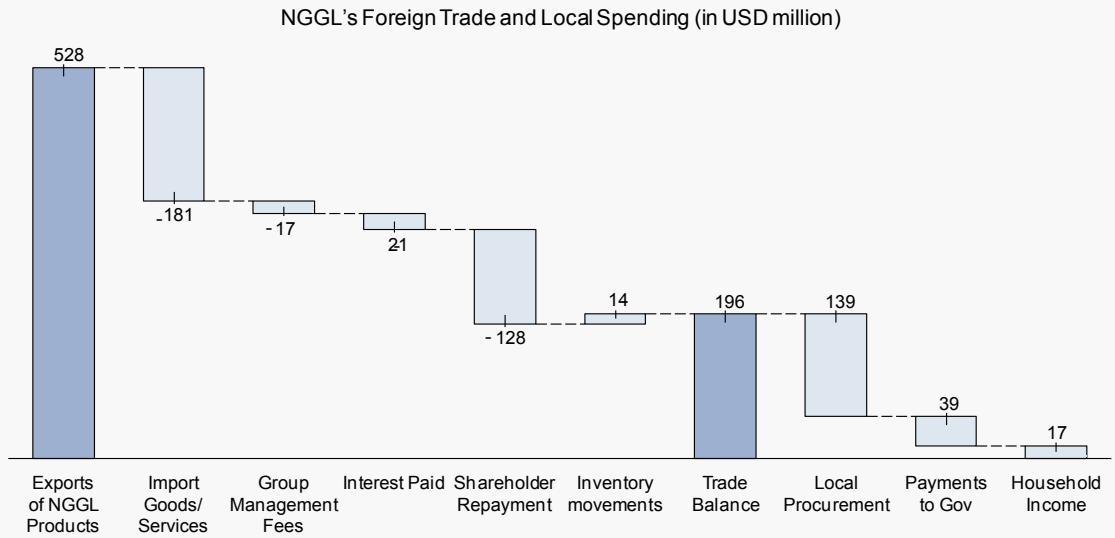

Exhibit 7: *Impact of NGGL on Ghana's trade balance*

NGGL's USD $528 million of gold exports represented 9% of Ghana's total exports in 2009. Of this, USD $196 million remained in the Ghanaian economy and was spent on local procurement, payments to government, and salaries. The payments to the government (i.e. taxes and royalties) amounted to nearly USD $40 million which is equal to nearly 1% of

... in the absence of NGGL the trade deficit would have been 35.7% rather than the current 34.4%.

[9] The mining sector contributes 6.3% to GDP; gold exports represent 97.4% of all mineral exports and NGGL produces 20.7% (USD 528m/2551m) of Ghana's gold exports: 6.3% x 97.4% x 20.7% = 1.3%. This is congruent with the USD $196 million positive trade balance which divided by the GDP figure of USD $15,187 million is 1.3% as well.

The USD $75 million of capital investments made by NGGL are equal to about 4.5% of the USD $1.67 billion in direct investments in Ghana recorded in 2009 by the Bank of Ghana.

the government's domestic revenues. The USD $75 million of capital investments made by NGGL are equal to about 4.5% of the USD $1.67 billion in direct investments in Ghana recorded in 2009 by the Bank of Ghana.

4.2 Social-economic Impacts and Linkages

In addition to the direct macro-economic contribution of NGGL as quantified in the previous section, the mine's operations also generate numerous economic benefits that are much less visible. These benefits arise because NGGL's suppliers and employees (and their households) earn and then re-spend the money they make (due to the orders placed and wages paid) as a result of NGGL's operations. Employees, for example, go out to the economy to buy various goods and services, while NGGL's suppliers must buy inputs from local companies and make investments in order to maintain their order book. These impacts, which are discussed in this section, have been quantified using economic input-output modelling. For more detail about the modelling approach and the assumptions involved, please refer to Appendix I.

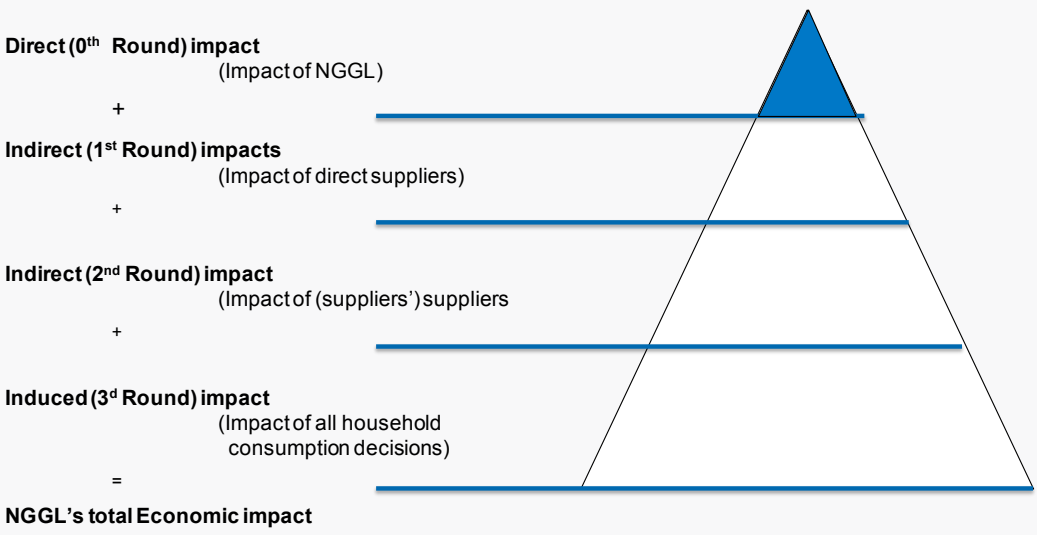

Exhibit 8: *NGGL's total economic impact consists of direct, indirect, and induced impacts*

4.2.1 Economy-wide Value Added

From the viewpoint of the Ghanaian economy, NGGL has what are called “direct,” “indirect,” and “induced” impacts. The direct effects are those associated with the operation of the mine and NGGL itself, while the indirect effects are those that result from the activities of the mine's suppliers and, in another round, the suppliers' suppliers. As already noted, the induced effects we compute are those that result from how all the Ghanaian workers supported by the Brong-Ahafo mine spend their incomes. When all is said and done, the net value added of NGGL's operations to Ghana consists in each of these rounds of three separate (value added) components: wages paid to workers (household income); taxes paid to the government; and corporate profits, savings and dividends.

Exhibit 8 summarizes the approach we take to analyzing NGGL's “total economic impact.”

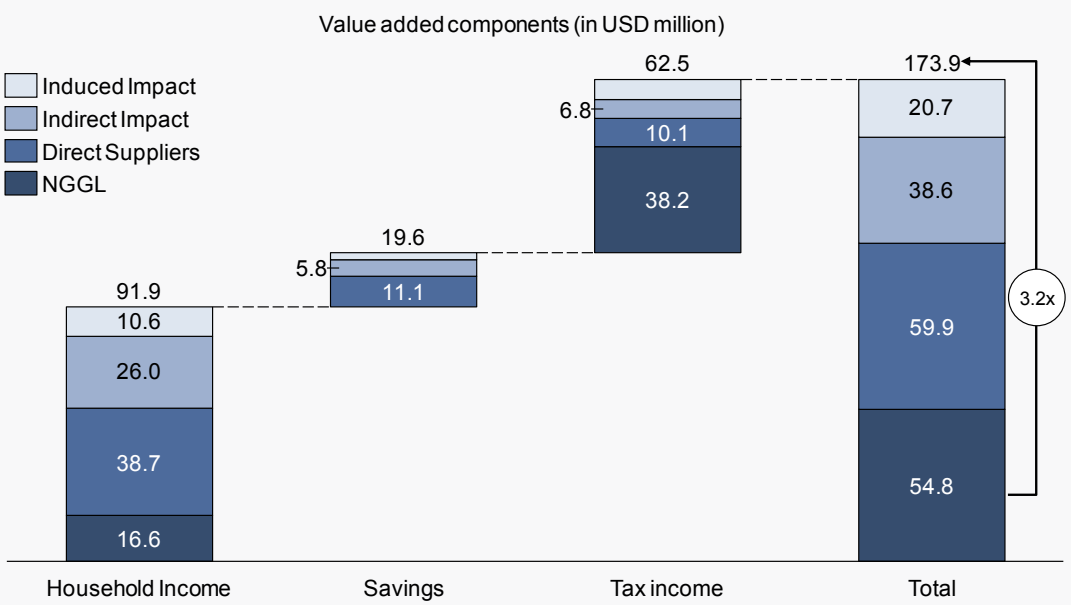

Exhibit 9: *Value added in the Ghanaian economy associated with NGGL. For each USD 1.0 value added generated by NGGL USD 3.2 are generated in the entire Ghanaian economy*

Exhibit 9 shows that the economy-wide value added of NGGL's mining operations, or its contribution to GDP, is equal to USD $174 million. Of this amount, it should be stressed that most of the value added (USD $92 million; or 53% of the total) accrues to Ghanaian households in the form of wages. More than one-third of

total value added flows to government in the form of tax payments, whereas somewhat more than 10% fuels the corporate profits of NGGL's suppliers. The reason why there is no direct contribution of NGGL to profits and savings within Ghana is the fact that, as a foreign-owned company, all profits of NGGL leave Ghana in the form of debt repayments to foreign financiers (namely NGGL's parent company and to the IFC). The finding that significant tax income is being generated by suppliers is the result of NGGL's policy of procuring from local companies whenever it can; in so doing, NGGL helps to formalize the Ghanaian economy.

4.2.2 Economy-wide Employment

One of the biggest concerns of most stakeholders when it comes to the socio-economic impact assessment of a firm or a project concerns the effects on local employment. Calculating these effects requires the assignment of labor coefficients to the various branches of industry that NGGL uses in its mining operations. These are diverse, and include inputs from agriculture that grows the food that feeds the workers, to construction and transportation, to all manner of goods and services. Again, the effects on employment are considered over the “three rounds” of direct, indirect, and induced impacts.

Newmont Ghana exploration teams preparing sample bags.

The Ghana Statistical Service (GSS) has published several reports that cover the size and allocation of the labor force in Ghana. For this study, we have used the data reported in the Ghana Living Standards Survey, fifth round (GLSS 5), which was published in September 2008. In conjunction with the size of the labor population of 10.3 million (see Table 1) and the output per sector from the Social Accounting Matrix (see Appendix I), the employment intensity for 12 sectors was determined. Although GSS reports that there is substantial uncertainty around the employment figures, the resulting breakdown appears realistic and represents the best available information.

Based on our model's estimations of the sectoral inputs that are necessary for NGGL's production, coupled with the employment intensities per sector, the employment associated with NGGL's presence has been computed and the results are shown in Exhibit 10.

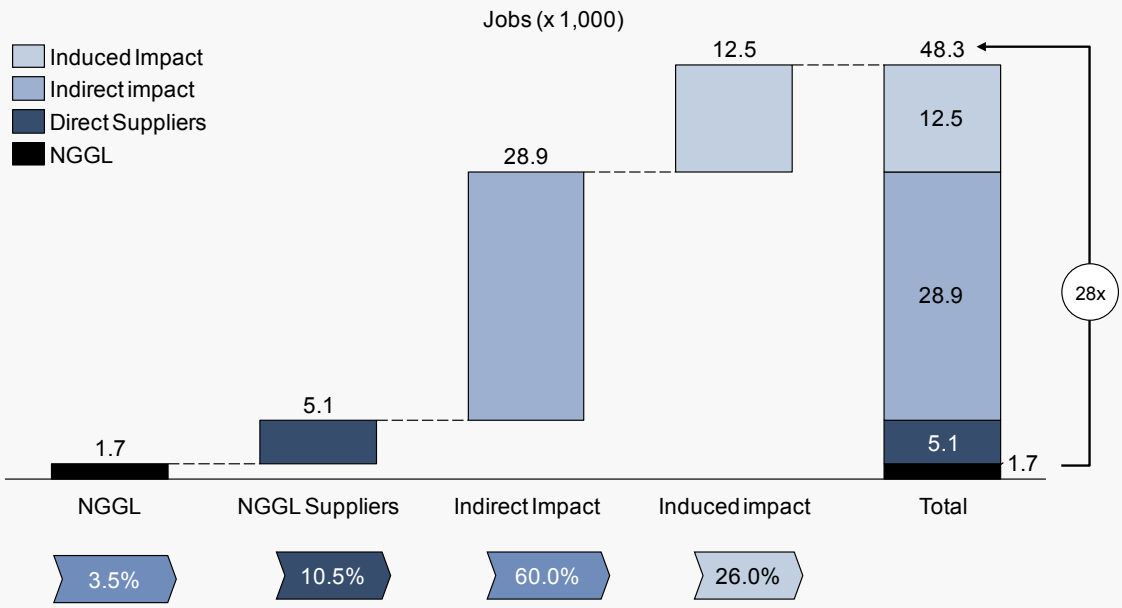

Exhibit 10: *Employment in the Ghanaian economy associated with NGGL. For each job within NGGL 28 jobs outside NGGL are supported.*

As can be seen, for each job within NGGL, 2.8 jobs[10] are created elsewhere in the direct value chain, implying a job multiplier of 3.8[11]. The number of jobs created indirectly (i.e. by NGGL's suppliers and by the suppliers' suppliers) and are induced by household consumption decisions are 28.9 and 12.5 thousand

[10] 5.1k jobs with NGGL suppliers divided by 1.8k jobs in NGGL = 2.8 jobs. This number corresponds reasonably well with the 1.7-2.5 range mentioned in the World Bank study *Large Mines and the Community.*
[11] Total jobs with NGGL suppliers and NGGL divided by jobs in NGGL: (5.1 + 1.8)/1.8 = 3.8.

... for each job within NGGL, another 28 jobs are supported throughout Ghana's economy.'

respectively, for a total of nearly 50,000 jobs, or a multiplier of 28x relative to Newmont's own employment. The fact that these amounts are significantly higher with each "round" is due to that fact that NGGL itself only procures products and services from formal companies, but that as we move farther away in the value chain the informal sector, which is more labor-intensive (and less efficient) plays a larger role in economic activity (e.g. the trade sector is largely informal). Best estimates indicate that productivity in the informal sector is about one-fifth that of the formal sector and it therefore takes about five times more labour to produce the same output. Naturally, increasing local procurement, as NGGL strives to do through its Ahafo Linkages Program (described in detail in a later section) will increase the employment multiplier.

A word of caution regarding the job multipliers is in order here. A company's job multiplier can be increased by outsourcing activities or by procuring from less productive firms, although no value added is necessarily being created by generating employment in this way. Nonetheless, many stakeholders view "employment creation" by itself as one of the key criteria for judging the economic benefits of a project or of a firm's investments, irrespective of the kinds of jobs being produced.

Exhibit 11 contains a sector breakdown of the employment figures. Unsurprisingly, the approximately 6,900 jobs of NGGL and its direct suppliers are largely present in manufacturing, services, trade (including hotel and catering service) and obviously NGGL itself. The large indirect impact in agriculture and trade is in part due to their high informality and low productivity.

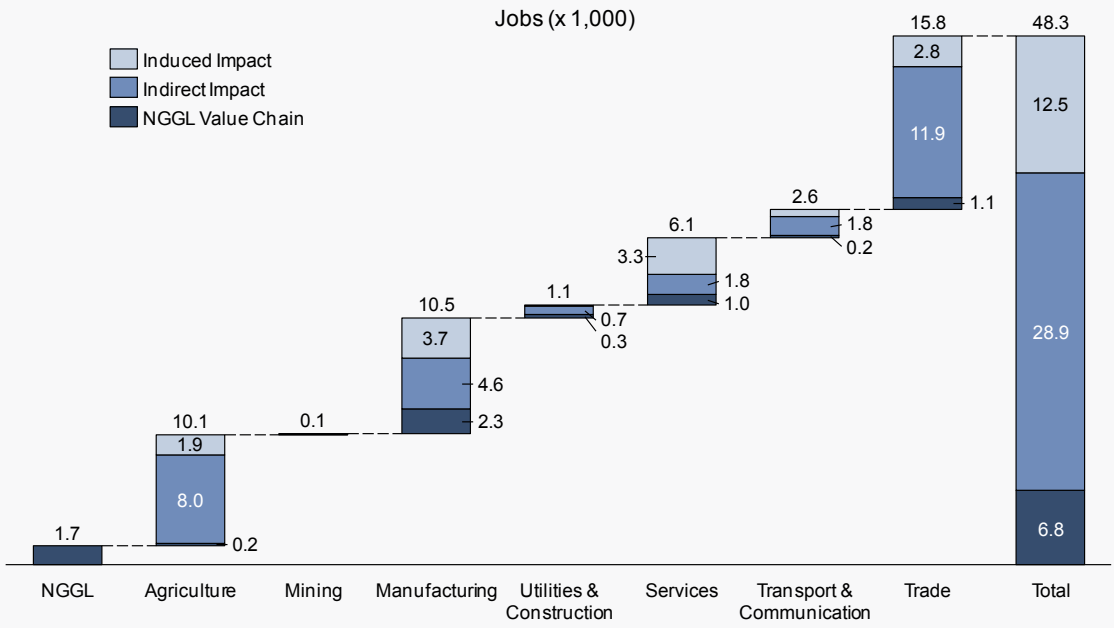

Exhibit 11: *Sector breakdown of employment in the Ghanaian economy associated with NGGL.*

Newmont mechanical apprentices

In order to better reflect the very different levels of productivity, Exhibit 12 depicts the value added per employee of the 48.3 thousand jobs in Exhibit 11. The surface area of the blocks in Exhibit 12 indicates the total value added for each of the sectors.

The Ahafo operation has stimulated many small scale businesses in Ghana, including tailoring

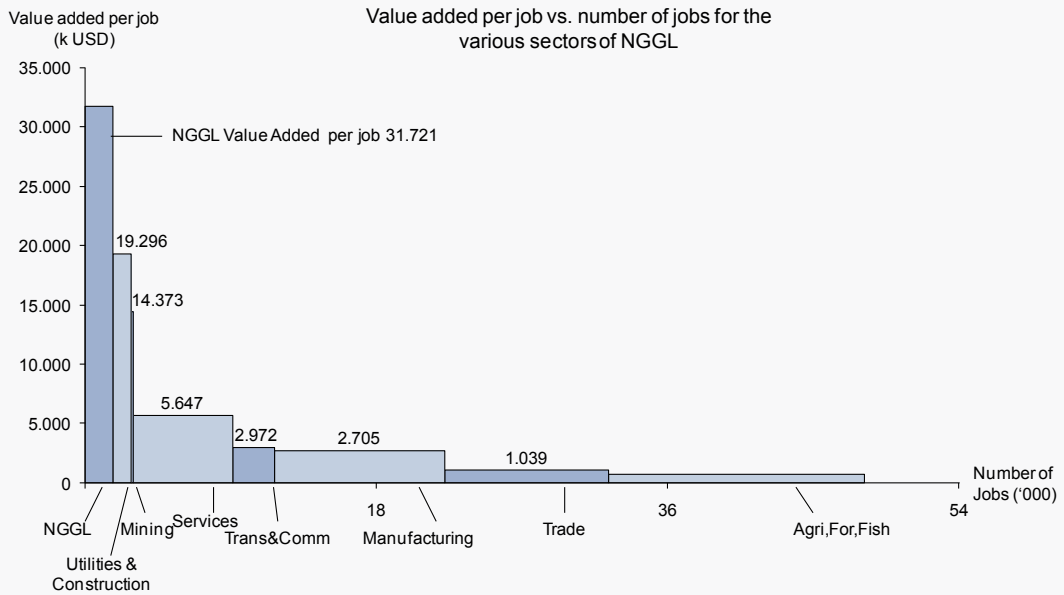

Exhibit 12: *Value added per job associated with NGGL*

Each member of the labor population maintains on average 2.3 persons in a household[12]. When combined with the per capita GDP of USD $635, this means that the average GDP per working person is USD $1,473. As expected, value added per employee is substantially below this in agriculture and trade, reflecting the low productivity in these sectors. Conversely, the value added per worker at NGGL is more than 20 times the average, reflecting the high labor productivity of the Ahafo mine, especially in comparison to the rest of the economy.

4.2.3 Labor force characteristics

For the communities in which a mine operates, employment is perhaps the most tangible benefit that the local population can receive. NGGL has policies in place that require unskilled jobs within NGGL and its direct suppliers to be filled by local people (those living in communities within the Mining Lease Area). Of NGGL's 1,739 employees, 619 (36%) have been verified to be local. This is in keeping with the NGGL commitment to have, as a minimum, 35% local employees (meaning from the Ahafo area). Of the 2,911 contract employees, 883 (30%) are local, 1,960 (67%) non-local and 68 (2%) are expatriates.

Of NGGL's 1,739 employees, 619 (36%) have been verified to be local. This is in keeping with the NGGL commitment to have, as a minimum, 35% local employees (meaning from the Ahafo area). Of the 2,911 contract employees, 883 (30%) are local, 1,960 (67%) non-local and 68 (2%) are expatriates.

Although the number of local people does not seem very high, one has to realise that a high percentage of NGGL's contract work requires substantial skills (e.g. equipment maintenance, infrastructure construction etc.) and that the Ahafo area was and is overwhelmingly based on subsistence farming. Through its policies and programmes, Newmont is helping to develop these skills among the local population. Reflecting their lower skill level at present, local employees earn on average USD $563[13] per month, equivalent of 64% of the average salary of USD $876[13], whereas non-local Ghanaian employees earn 120% of that amount.

[12] From Table 1: the population of 23.9 million people divided by the labor force of 10.3 million.

Newmont Ahafo Lab Technician at work

Women occupy 196 (11.2%) of all jobs. Surprisingly perhaps, the most common occupation that these women have is heavy mobile equipment operator, including haul trucks; 30 out of 134 haul truck operators are female.

Women occupy 196 (11.2%) of all jobs. Surprisingly perhaps, the most common occupation that these women have is heavy mobile equipment operator, including haul trucks; 30 out of 134 haul truck operators are female. Interestingly as well is that the women's average monthly salary of USD $986[13] is 14% higher than the male average salary, reflecting that on average they hold positions that require more skills.

Employee turnover has been very low in general and has been falling: 5% in 2007 and 2008, and 3% in 2009. Turnover increases with higher job levels in line with better job opportunities. Still, the Ahafo mine is generally viewed by Ghanaian workers as providing excellent employment opportunities, and many skilled workers have come from Accra and other cities to take up positions at the site.

[13] Excluding pension contributions, 13th month, bonuses and other financial and non-financial benefits.

4.2.4 Education and Skill Development

In addition to paying wages and benefits that are considerably above the averages found in Ghana's industrial sector, NGGL invests heavily in worker training. In 2009 the company spent USD $3.2 million on training, and on average each worker had 150 hours of skill training; between 2007 and 2009 more than USD $8 million was spent on some 380,000 man hours of training, including a major apprenticeship program. A wide variety of training courses are offered, reflecting the various skills needed to run the mine. They included office skills like computer technology, and mine-specific skills including mine operations and maintenance. By “upskilling” its workers through a dedicated training program, NGGL in essence creates “public goods” for the Ahafo region and perhaps for Ghana as a whole, since some of these well-trained workers may, eventually, take their skills with them to other employers and even other parts of the country.

NGGL runs an apprenticeship program, and in 2009 54 local apprentices were trained in a variety of occupations, with another 50 planned to be trained in coming years (see sidebar on Hagar Gyamfi). These apprentices generally work in various areas of equipment maintenance and it is NGGL's objective to hire a large percentage (if not all) of these apprentices when their training is completed. It should be emphasized that these workers came into the programs with very low levels of skills and through the courses receive a London City & Guilds Training Certificate at the end of their apprenticeship, providing them with a valued market credential.

In addition to these programs, NGGL has also made available more than 80 places for “national service” participants, or for recent university graduates,

In 2009 the company spent USD $3.2 million on training, and on average each worker had 150 hours of skill training;

HAGAR GYAMFI'S STORY

Among NGGL's trainees is a determined young woman named Hagar Akosua Gyamfi, one of four women working in the apprenticeship program. Hagar was raised in a single parent family of six children, and her family faced severe financial challenges. The Newmont Apprenticeship Program is training her to work as a mine technician, and upon completion she will receive a City and Guilds of London Institute certificate. In addition to learning a trade and earning a good wage, Hagar is able to save toward her future. As Hagar says about her participation in the apprenticeship, “that is one decision I do not regret—not at all.”

including engineers. Again, it is expected that a percentage of these national service workers will be retained as permanent employees.

4.3 Economic and Community Development

Newmont has won several international awards for its efforts on behalf of the Ahafo community, including the Best Community Procurement Award and the Best Supplier Diversity Project Award at the 2010 Chartered Institute of Purchasing and Supply Procurement Awards (UK).

Since the earliest days of its involvement in the Ahafo mine project, NGGL has sought to make extensive use of local content and to grow and utilize local entrepreneurs and industries. As a consequence of this decision, NGGL has initiated several programs to increase the productivity of businesses and communities around the Ahafo mine. In this section several of these programs and their outcomes are described. It should be emphasized that Newmont has won several international awards for its efforts on behalf of the Ahafo community, including the Best Community Procurement Award and the Best Supplier Diversity Project Award at the 2010 Chartered Institute of Purchasing and Supply Procurement Awards (UK).

4.3.1 Growing Local Entrepreneurs

The *Ahafo Linkages Program* (ALP) was set up together with co-financier IFC in 2007 to increase income and employment opportunities for the local community (see sidebar on entrepreneur Alex Boampong). It seeks to do so by promoting the development of local suppliers who can provide needed goods and services; by supporting the diversification of the Ahafo economy; and by creating or improving business associations and other institutions that can nurture the region's entrepreneurs.

Specifically, ALP consists of three elements:

1. Local Suppliers and Contractors Development (LS&CD): The purpose of LS&CS is to build the capacity of selected local micro, small, and medium enterprises (MSMEs) so that they are better positioned to win contracts on a competitive basis with NGGL and with other large regional and national

companies.

2. Local Economic Development (LED): LED builds the capacity of local SMEs engaged in non mining-related activities, such as brick production, to help ensure the development of a diversified and sustainable economy outside the mining sector.
3. Institutional Capacity Building (ICB): ICB strengthens local business associations and consulting services to address the lack or very low availability of business support services to the business community in the Ahafo area.

The role of LS&CD within NGGL's supply chain management deserves some further explanation, since it goes beyond local supplier development and contracting. In addition to setting standards regarding local procurement with NGGL, it manages education and skills training (but not finance) for local companies, including non-NGGL suppliers, in a wide variety of sectors. Becoming legally compliant, and more competitive and capable of conducting business to higher standards are some of the outcomes of the program. Another example of NGGL's involvement in business development is that it encouraged Accion microfinance, a leader in the field, to come into the community through Ecobank to improve companies' opportunities to obtain finance. Some outcomes of ALP in 2009 are summarised in Table 3.

As part of ALP, NGGL has several policies and programs in place to increase local sourcing. When competitive product offerings meet technical, commercial and safety requirements, preference is given to a Ghanaian supplier. If products or specifications cannot be procured in Ghana, then in some cases a foreign supplier may be required to work with a Ghanaian company to develop the necessary skills. Specific discussions are currently ongoing for partnering to achieve this in certain areas of supply and service.

Another example of NGGL's involvement in business development is that it encouraged organizations such as Accion microfinance, a leader in the field, to come into the community through Ecobank to improve companies' opportunities to obtain finance.

ALEX BOAMPONG: An Ahafo Entrepreneur.

Alex Boampong, owner of Alexiboam Company Limited, exemplifies what NGGL hopes to achieve in the ALP program. Alex started working on contracts for NGGL as a sole chainsaw operator, clearing land. A hard worker, he purchased more chainsaws and hired more workers. Soon, he purchased excavators and bulldozers, receiving training and contracts from Newmont and its major infrastructure contractor, WBHO of South Africa. Alex, who is self-financed, now hopes to expand his business to develop construction projects for other companies and for the local government as well. Today, he employs 250-300 local workers.

Some of the more than 300 Alexiboam Company employees

	NGGL Suppliers
Companies Supported	99
Value of Contracts	$5,717,816
Jobs Created	439, of which 330 skilled and 109 unskilled

Table 3: *Overview of outcomes of the Ahafo Linkages Program, 2009*

Small Ahafo tailoring businesses produce thousands of uniforms for the Company

4.3.2 Boosting Agricultural Productivity

The Agricultural Improvement and Land Access Program (AILAP) is a post-resettlement mitigation facility assisting farmers directly affected by the development of the Ahafo Mine. Technically, the program is part of the broader Resettlement Program discussed in Section 4.3.3. AILAP's focus is to deliver agricultural inputs, technical assistance and incentive programs to encourage traditional land access agreements and incentivize impacted farmers to re-initiate productive farming activities following resettlement. In addition to providing inputs such as seed, fertilizer and herbicides, the program has paid over GHC 1 million in cash to almost 4,000 farmers, covering 6,400 acres of land. The area under cultivation has increased significantly: for cocoa, plantain and maize, 300% or more. Since the start of

The Agricultural Improvement and Land Access Program (AILAP) is a post-resettlement mitigation facility assisting farmers directly affected by the development of the Ahafo Mine.

the project, productivity has gone up sharply as well: for maize the average yield in 2008 was 3.74 metric tonne/hectare versus the baseline yield of 1.74; and for plantain the yield increased from 8.6 metric tonne/hectare to 10. As of early 2010, the cost of the program stood at USD $4.8 million.

AAGI has substantially increased Ahafo farmer yields and incomes

In an economy as dependent on agriculture as Ghana, few things are more important than improving agricultural productivity. The Ahafo Agribusiness Growth Initiative (AAGI) is a community-based, integrated agricultural development project focusing on eight communities in the Ahafo South area, which has been supported by Newmont and other donors. AAGI focuses on strengthening agricultural productivity, improving farm management skills and access to micro-finance, building economies of scale through Farm-Based Organisations (FBOs) formation and development and increasing market linkages and enhancing supply chain interventions. So far,

- 1,800 farmers (total farmers in the area including non-AILAP) are producing chili pepper, plantain, ginger and soybeans to market specifications;
- 850 farmers have been trained in farm-based organisations on business development, good agricultural practices, micro-finance and marketing;
- These farmers have now been organised into groups and associations:

- They have gained access to micro credit (especially input credit).

The impact of the initiative has been to significantly increase the production levels of five selected crops (chili pepper, soybeans, ginger, maize and plantain) and the amount of land under cultivation, while facilitating the access of farmers to much-needed credit.

Ahafo Farmers meeting to discuss the Ahafo Agribusiness Growth Initiative

4.3.3 Land Access and Resettlement

A big mining project like Ahafo requires a substantial amount of land for the excavation of open pits, ore storage, roads and the processing plant. This requires households and businesses to be resettled or displaced. Working with local chiefs and government authorities, as well as with the affected households, NGGL established new communities and supported the purchase of new farmland for those smallholders who lost their plots. As already noted, some 1,700 households were resettled, with compensation (cash and resettlement value) amounting to USD $45 million. Ironically, NGGL's biggest problem is that many households that were not affected by the mine came to NGGL seeking compensation and new housing, a phenomenon that has been observed time and again in other mining communities. The company, therefore, in line with international best practice had

to ensure that it only compensated those who were trulynegatively impacted by the mine's operations.

Ola Village, Kenyasi

As part of these efforts, NGGL also developed two programs aimed at supporting affected communities. Both of these programs, it should be emphasized, were designed with significant input from the local communities, development NGOs and relevant government agencies.

First, the Livelihood Enhancement/Empowerment Program (LEEP) and the related Skills Development and Income Improvement Program (SDIIP), funded at some USD $3.5 million, were designed to support those members of the community whose sources of livelihood were displaced by the mine and who actively sought new, alternative lines of income generation activity.

Second, the Vulnerable Peoples Program (VPP), funded at USD $1.6 million, was designed to support households which suffered transitional vulnerability stemming from a pre-existing situation/condition or from physical or economic displacement due to land access issues associated with mining operations.

4.3.4 Community Development

NGGL has a continuing dialogue with a range of Ahafo stakeholders centering on the region's sustainable development, and it is making a permanent commitment to the region through a dedicated foundation. The Newmont Ahafo Development Foundation (NADeF), which is run by a board with balanced community and corporate representation, along with a secretariat, receives USD $1 per ounce of gold sold and 1% of NGGL net profits made. In 2009, the company added USD $2.2 million to the fund which has received a total of USD $4.3 million thus far. In addition, the Foundation has an endowment provision to ensure its sustainability into the future. Current project, (proposed by local communities and then decided upon by the board) which have been funded thus far by the Foundation include construction of teachers' quarters, water supply and sanitation facilities, library construction, and some 1000 scholarships for local students. Feeding into the work of the Foundation is the Ahafo

The Newmont Ahafo Development Foundation (NADeF), which is run by a board with balanced community and corporate representation, along with a secretariat, receives USD $1 per ounce of gold sold and 1% of NGGL net profits made.

Signing of the Ahafo Social Responsibility Agreements, Yamfo. 2 May, 2008.

Social Responsibility Forum (ASRF), created in response to the Ahafo community's requests to formalise NGGL's commitment to dialogue and to sustainable development. The ASRF is a 55-member multi-stakeholder group with representatives of both the company and the community, including youth and women, in addition to traditional leaders. The ASRF established the Foundation's funding categories, which include human resource development, provision of infrastructure, provision of social amenities, and so forth. It is also a venue for broader discussions between NGGL and the community regarding development concerns and issues.

4.3.5 Infrastructure Projects

NGGL has engaged in a number of infrastructure projects as part of its partnership with the local Ahafo communities. These projects include construction of a new police bureau and barracks, upgrading of water and sanitation facilities, improvements to local schools and hospitals, and housing in support of NGGL's resettlement programs. Furthermore, the Ahafo area has been able to “piggyback” on new infrastructure built for the mine, like cellular communication services and the electric power grid. Road improvements and an upgrading of the nearest airport at Sunyani have also been undertaken by government, partly in support of the mine project. While we are not able to put a dollar value on these infrastructure investments it can safely be asserted that they represent considerable value to the local and regional communities.

4.3.6 Community Health

NGGL has made contributions to health care in the Ahafo region through its partnership approach with local medical services and other stakeholders. Specifically, it has:

- Supported the renovation of the Kenyasi Health Center and construction of nurses' quarters;
- Collaborated with the Asutifi District Assembly to construct three community health compounds in local villages;
- Supported capacity building efforts for 60 local health ‘volunteers’, and supplied bicycles and medical equipment to enable them to deliver better service;
- Collaborated with international development partners to deliver medical

Training community members in use of long-life treated bednets

equipment to the nearby Hwidiem Hospital.

NGGL has also worked with the Ghana Health Service to support the management of HIV/AIDS and malaria in local communities through education and, in the case of malaria, through the distribution and retreatment of long-life bed nets. As a consequence, NGGL has helped to reduce the incidence of malaria significantly among its local workforce and their families. The Global Business Coalition on HIV/AIDs and Malaria recently recognized this work by describing NGGL's programs as 'outstanding' and giving it an international award.

4.3.7 NGGL's Commitment to Education and Training in Ahafo

If development economists agree about anything, it is about the central role that education and the “upskilling” of the work force play in sustained economic growth. With globalization, that role has become even more crucial, as economists have found that economic development rewards those with skills. One of the most important contributions that NGGL is making to the Ahafo area is therefore found

in the area of improved education and skills development for both employees and community members. Indeed, since 2006, the company has invested almost USD $ 13.5 million in support of the following education and training programs, several of which (like NGGL's apprenticeship program) are discussed in greater detail in other sections of the report. These programs represent an ongoing effort to mitigate project impacts (i.e., land access or resettlement) and to promote sustainable development in the region through social investment.

Community capacity building / vocational training: Total Investment: USD $12.3 million

- Commencing in 2009, Newmont Ghana committed USD $1.1 million to a four-year Apprenticeship Program at the Ahafo mine for the local youth, enabling them to acquire employable mechanical and electrical skills which are certified through the London City & Guilds certification. It is expected that many, if not all those who complete the program, will go on to work at the mine site;
- In fact, even before the mine was built, more than USD $0.6 million was spent on training local youth of the Ahafo area to prepare them for jobs there. This amount included an investment of USD $0.1 million in the local

Newmont Ahafo Vocational Training Centre, Yamfo

National Vocational & Training Institute;

- In 2009, Newmont further committed USD $0.5 million to the “Skills Development for Income Improvement Program” to train 270 local students in such specialities as catering, dressmaking, electrical, masonry, carpentry, welding & fabrication;
- Training at a cost of USD $1.7 million was conducted for more than 120

The first graduating class of the Newmont Ahafo Vocational Training Centre, 2006

local, small and medium-sized supplier businesses of the Ahafo host communities in financial record keeping, business management, contracts & tendering, among others, through the Ahafo Linkages Program (ALP) as already mentioned);

- Newmont Ghana provided USD $6.6 million for training and empowering 3,200 farmers in the Ahafo host communities through the Agricultural Inputs & Land Access Program (AILAP) from 2006 to 2009;
- Since 2006, more than 3,500 farmers from the Ahafo host communities have been trained in aspects of improved agricultural practices through the Ahafo Agribusiness Growth Initiative (AAGI), described above. The cost of this initiative was USD $1.9 million.

Improving education: Total Investment: USD $1.0million

- A new school for the Ntotroso Resettlement Community was built which improved upon the old structure by adding classrooms, a library and other facilities at a cost of USD $0.1 million. The construction of this school was part of the Resettlement Action Plan;

New Ntotroso School, built by Newmont

- A new fully furnished six-classroom school block, office & store, library and washroom facility for Dokyikrom was constructed at a cost of USD $0.2 million.
- NGGL has supported an international NGO, the Academy for Educational Development – and a local group, the Centre for Educational Development, Evaluation and Management Ghana (AED-CEDEM) - with USD $0.1 million in a three-year commitment to build capacity of teachers and parents in six local schools to improve the standard of learning, especially of English and Mathematics at basic level in Ahafo.
- Newmont has committed more than USD $0.2 million in support of educational programs of national significance since 2006, including the Otumfuo Education Fund and Junior Achievement Ghana;
- Newmont has provided a USD $0.5 million donation to assist the University of Mines & Technology (UMaT) in badly needed infrastructure.

4.4 Environmental Impacts

Mining projects tend not to be environmentally benign; they often involve a large shock to the local ecosystem. In the case of Ahafo, NGGL is making ongoing efforts to mitigate damages and to work with the community to ensure that land reclamation occurs as quickly as possible. At the end of 2009, the Ahafo mining operation occupied 1,632 hectares, equivalent to an area of 4 by 4 kilometres, up 6% from 2008. While this is a substantial area, it is only 2.1% of the total 774 square kilometres which comprises the overall mining license. The open pits are the most visible land disturbance but account for only 14% of the total land use. Stockpiles and waste dumps account for 35%, water and tailings reservoirs 34% and facilities, roads and other infrastructure 17%. Land reclamation is an ongoing process: the areas that are not needed anymore are partially reclaimed while the mine is in operation, rather than waiting until closure of the mine.

Land reclamation is an ongoing process: the areas that are not needed anymore are partially reclaimed while the mine is in operation rather than waiting until closure of the mine.

Table 4 summarises the total capital expenditures (CAPEX) and operational expenditures (OPEX) of NGGL over a three-year period of 2007 to 2009 on environmental management and mitigation measures. NGGL has also accrued $38 million in final reclamation costs to date and has placed nearly $4 million in a restricted bank account specifically for final reclamation along with an established letter of credit for $34 million.

In spite of the considerable CAPEX and OPEX, required by regulation or more strict internal standards, incidents can occur. On October 8th, 2009 Newmont experienced an incident where process waters containing low-level concentrations of sodium-cyanide overflowed from containment ponds located at its processing plant. The company was ordered to pay compensation of GHC 7.1 million (USD $4.9 million) in January 2010.

Table 4: *Overview Capital and Operational Expenditures of environmental mitigation measures (in Thousands)*

Management/Mitigation measure	CAPEX (USD $ '000)	OPEX (USD $ '000)	Total (USD $ '000)
Dust suppression		1,483	1,483
Solid waste management	2,383	651	3,033
Waste water treatment plant	99	1,806	1,905
Reclamation		1,218	1,218
TSF lining/cut-off trenches	6,363		6,363
Cyanide recovery plant	25,774		25,774
Environmental monitoring	488	2,295	2,783
Total	**35,107**	**7,453**	**42,559**

5 Recommendations for Newmont and for the Government of Ghana

5.1 For Newmont

With its current investment in Ahafo and future investment in Akyem, Newmont is, and will be for the foreseeable future, a major player in Ghana's economy. Mining projects, however, normally do come to an end and the closure of mining projects as massive as these must constitute a major shock to the local and even national economy. This observation leads to the following recommendations for Newmont management.

First, NGGL must continuously remind the Ahafo area of the need to prepare for life after mining operations cease. Clearly, the Newmont Ahafo Development Foundation will have a crucial role to play here, since its endowment essentially acts as an investment "smoothing device," enabling the community to build and improve infrastructure and other public goods long after NGGL is gone. It is thus crucial that NGGL works with stakeholders to ensure that the Foundation, along with other programs, is properly managed so that their resources serve the community into the future.

Second, and related, NGGL should continue its support to the various agricultural initiatives in the region which have already generated increases in productivity in the land under cultivation. When mining ceases, agriculture will remain, and thus it is important that young people view that sector as a path towards a sustainable livelihood;

Third, NGGL should consider conducting a socio-economic impact study at the level of the Brong-Ahafo region in order to have a more nuanced set of data at the local level. This recommendation, we note, stems from a detailed discussion we were honored to hold with the Asantehene (Ashanti King) who, it so happens, is a professional accountant. He told us about our study, "The results are very interesting and show the benefits of mining to the whole of Ghana. It would be really great to have these kind of results at the more local level of Brong-Ahafo or even the region around the mine."

Fourth, NGGL should promote joint ventures between the small businesses already created in Ahafo—like Alex Boampong's—and the new ones now starting up in Akyem. In short, despite community expectations at Akyem for programs like those launched at Ahafo, it makes little sense to start from scratch, re-inventing the proverbial wheel. Local companies that have developed expertise should be rewarded for their investments and entrepreneurship, while being encouraged to hire local managers and workers at Akyem on contracts they receive. This will

need to be balanced with the inevitable demand by local Akyem business people that they too get the opportunity for contracts.

Fifth, NGGL should work with local banks to mobilize capital for small and medium-sized enterprises. With NGGL's orders in hand, there is no reason why local entrepreneurs should not be able to obtain working capital and letters of credit.

Sixth, NGGL must make good on its pledges of land reclamation and environmental stewardship. Although Newmont is not contractually obliged to backfill the entire area, it should adopt best restoration practices used around the world. More generally, NGGL should consider conducting an independent environment cost/benefit analysis.

Seventh, NGGL should maintain a dialogue with government aimed at maintaining the competitiveness of local suppliers. For its part, the company should keep up its programs that create and hone business development skills.

5.2 For the Government of Ghana

Ghana has been “blessed” in recent years with several economic windfalls, from extensive new gold mines to oil production. Careful management of the revenues from these resources is essential if the economy is to benefit over the long-run. Equally important, Ghana must maintain the momentum it has achieved in the direction of good governance. In short, Ghana must demonstrate to Africa and the world that the ”Dutch Disease” and “Natural Resource Curse” need not be inevitable and can be avoided by sound leadership and good governance. Specifically, this means that the Government of Ghana will need to take several steps:

First, the Government must maintain the independence of the Central Bank of Ghana as it seeks to control inflation;

Second, the Government needs to ensure continuity in the regimes governing natural resource extraction, avoiding short-run populist approaches that may undermine long-term investment by domestic and foreign firms;

Third, the Government should work with the private sector to maintain the competitiveness of Ghana's manufacturing sector and its local suppliers;

Fourth, the Government must continue to invest in education and skills training;

Fifth, as noted often in this report, Ghana needs to keep investing in its agricultural sector to ensure continuing productivity gains;

Sixth, the Government of Ghana must ensure that the revenue streams that are now flowing from natural resources serve both current and future generations, with a meaningful portion of those funds placed into a trust fund;

Finally, Ghana needs to build governance capacity at local levels.

5.3 For the Government of Ghana and Newmont Jointly

Mining is controversial in Ghana, and adversaries can often point to the negative effects associated with this sector. Despite its positive socio-economic impacts, some people in the mine's vicinity feel that they do not benefit from its presence, and a minority may even believe that their lives have been negatively affected. Both the Government of Ghana and Newmont have a role to play in dealing seriously and honestly with misgivings about mining, while assuring and explaining the economic benefits associated with gold exports for the nation. More generally, Ghana's recent economic growth, and its bright future prospects, attests to the benefits of the country's openness to foreign direct investment and to the dynamism of its expanding private sector. The Government of Ghana needs to keep nurturing the business environment on the one hand while, on the other, the firms operating in the country must continuously make the case that their operations are contributing to sustainable development.

Appendix I Model Description

I.1 Modelling Approach

The model developed for this study combines NGGL financial data with a so-called Social Accounting Matrix (SAM) of the Ghanaian economy and the allocation of the work force over the various economic sectors. A SAM describes inter-industry linkages in an economy, depicting how the output of one industry goes to another, where it serves as an input. It therefore essentially makes one industry dependent on another, both as customer of outputs and as supplier of inputs. Exhibit 13 shows how three information sources are used to arrive at the two main model outputs.

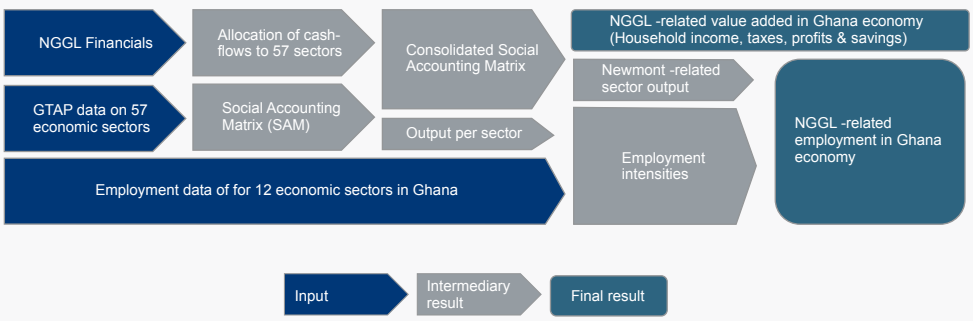

Exhibit 13: *Overview of the modelling approach*

I.2 Social Accounting Matrix

The key ingredient of the model is the Social Accounting Matrix (SAM). The SAM describes the financial flows of all economic transactions that take place within the Ghanaian economy. It is a statistical and static[14] representation of the economic and social structure of Ghana. As shown in Exhibit 14, in the SAM the number of columns and rows are equal because all sectors or economic actors (industry sectors, households, government and the foreign sector) are both buyers and sellers. Columns represent buyers (expenditures) and rows represent sellers (receipts).

[14] SAMs are valid for a specific year. Economies are subject to change and SAMs must be updated periodically.

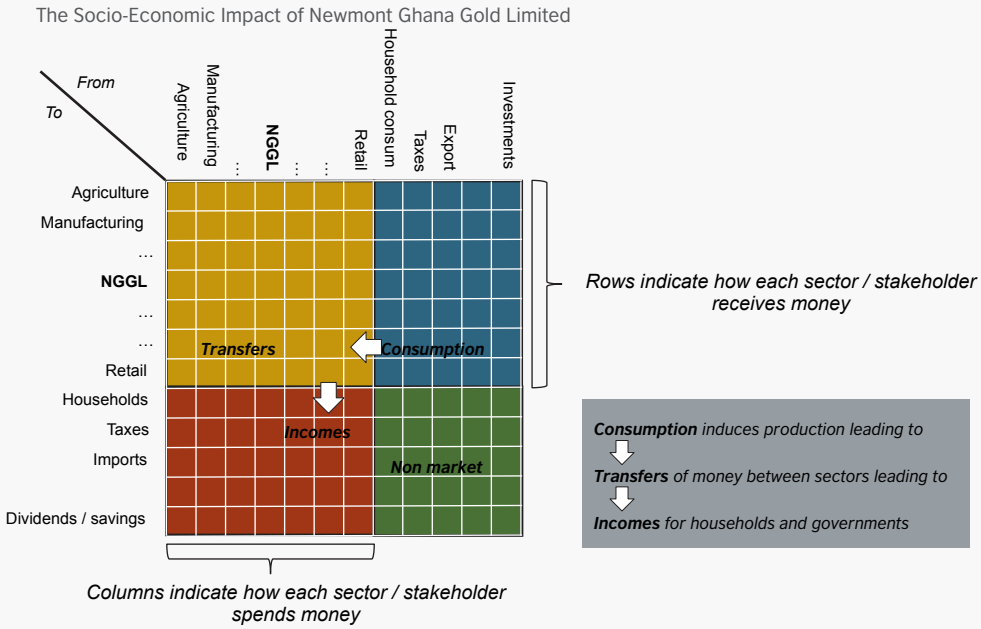

Exhibit 14: *Social Accounting Matrix*

Of the four quadrants in the SAM, three are relevant here. Final *consumption* induces production which leads to financial *transfers* between the various sectors which subsequently generates *incomes* for households, governments (taxes) and profits (dividends and savings). For Ghana, the most recent SAM dates back to 2004 and has been taken from the GTAP[15] database. Using data from the Ghana Statistical Service, the SAM has been updated for the years 2008. As is indicated in Exhibit 14, NGGL has been included as a sector in its own right by adding a row and a column in the SAM. The column is NGGL's re-allocated cash-flow statement. The row is left entirely blank except for the export (i.e. all) revenues that flow to NGGL. The last step in constructing the SAM is to normalize it such that all columns add up to one. Then final consumption can be traced in money terms throughout the economy. In doing so, the economic effect related to the presence of NGGL can be divided into three effects:

1. Direct *value chain* effects: effects directly related to spending by NGGL (e.g. jobs and salaries provided by NGGL) and its direct suppliers. Included in the direct effects are the distribution and retail operations[16];

2. *Indirect* effects: effects due to indirect suppliers re-spending the money that originated from NGGL's direct suppliers (e.g. jobs and salaries provided by suppliers);

[15] Global Trade Analysis Project (www.gtap.agecon.purdue.edu).
[16] Because the money first "passes" through the hands of retailers and distributors these are included.

3. *Induced* effects: effects due to the increased expenditures of households enabled by the increasing incomes generated by the direct and indirect effects.

I.3 Assumptions

The main assumption in the model described above is that input-output analysis implicitly assumes that an increase in demand can be met by an increase of production at constant prices in all affected sectors of the economy. In reality however there are sectors that will not “feel” the effect of an increased final demand and therefore, will not experience an increase of production. Since most households are farmers as well, their so-called auto-consumption is unlikely to be affected by an increase (or decrease) in final consumption. In the model, this has been incorporated by eliminating from the model all household expenditures on food crops and live stock. Whereas often induced effects are significantly overestimated, this approach leads to a much more robust and realistic estimation of them, without the need for a data-intensive General Computable Equilibrium model.

Alternatively, there can also be sectors that are unable to increase production at constant prices because of shortages in, for example, labor, raw materials and production capacity. Labor is not deemed too restrictive since labor (especially if it is unskilled) is relatively abundant in Ghana.

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