



The National and Regional Socio-Economic Impact of Newmont Ghana's Ahafo Mine



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Dr. René Kim, Tias van Moorsel and Prof. Ethan B. Kapstein
Report 2013

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A panoramic view of the Ahafo mine

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A demonstration of agricultural success in a host community

About the Authors

Company Profile

Steward Redqueen is a strategy consultancy firm that aims to make business work for society. As specialists since 2000, Steward Redqueen focuses on integrating sustainability, quantifying impact and facilitating change.

Clients appreciate our rigorous analysis, our ability to solve complex problems, and being ahead of the curve. We work for multinational corporations, (development) financial institutions and public sector organizations.

Socio-Economic Impact Assessments (SEIA)

The costs and benefits of foreign direct investment are often contested by various stakeholders. These debates, however, are not always conducted on the basis of all the facts. The purpose of our Socio-Economic Impact Assessments (SEIAs) is to provide stakeholders with a deeper understanding of the ways in which corporate operations contribute to value-added and employment generation in countries around the world. Using the best available modeling and data, we establish a factual basis for understanding the impacts of investment decisions.

Dr. René Kim

Dr. René Kim is founder and partner of Steward Redqueen. He has worked with many multinational companies and private equity funds in both developed and emerging markets. Previously, he worked for The Boston Consulting Group in Amsterdam and as an academic at the Massachusetts Institute of Technology. He has a PhD cum laude in Hydrology and Meteorology and is the author of many academic articles.

Prof. Ethan B. Kapstein

Professor Ethan B. Kapstein, associate partner Steward Redqueen, is currently Visiting Fellow at the Center for Global Development; Senior Advisor at the U.S. Institute of Peace; and Senior Director for Research at the McCain Institute for International Leadership, a Washington, DC think-tank associated with Arizona State University. This independent Report, however, does not represent the views of these organizations. Previously he held the INSEAD Chair in Political Economy at INSEAD. He has also served in various positions at Harvard University, the University of Minnesota and the Organization for Economic Cooperation and Development. A former international banker and naval officer, Prof. Kapstein provides economic and strategy advice to government agencies and many of the world's leading multinational corporations. His latest books are *AIDS Drugs for All: Social Movements and Market Transformations*; *Economic Justice in an Unfair World*; and *The Fate of Young Democracies*.

The authors were assisted by Tias van Moorsel, MSc, of Steward Redqueen. The supplier and household surveys were conducted by PAB Development Consultants Limited in Tema, Ghana.

Socio-Economic Impact Assessment Track Record

Since 2006, Steward Redqueen has completed more than 50 socio-economic impact studies for multinational mining companies, development finance institutions, multinational food & beverage firms, banks and recreational organizations, in Africa, Asia, Latin America and Europe.

For more information, please visit: www.stewardredqueen.com

Executive Summary

Gold mining remains among the most significant economic activities for Ghana, a country once known as the Gold Coast. Not only is the mining sector the largest tax contributor of the country, it also accounts for about 40% of mechanized exports, while attracting USD 780 million of investment in 2011 and employing over 14,000 people directly.

Despite these impressive statistics, many stakeholders in Ghana still hold unfavorable opinions about the gold mining sector and do not think it has a positive impact on the Ghanaian economy. Some people believe that the sector operates as an “enclave” with few positive “spillover” effects, meaning that few within Ghana benefit from gold mining, while most of the profits go offshore. Unfortunately, these controversies over mining are often debated without a solid foundation of empirical research.

It was within this context that, in 2009, Steward Redqueen carried out a socio-economic impact assessment of Newmont Ghana Gold Limited’s (NGGL) operations in Ghana (the Ahafo mine). Making use of rigorous academic methods in combination with macro-economic and company data, Steward Redqueen was able to generate estimates of the mine’s effects on such macro-economic variables as value added (in terms of household income, profits & savings and tax payments) and employment (in terms of full-time equivalent jobs).

Subsequently, several stakeholders who were involved in this study, including the President’s Office and various Ministries, the Regional Government, the Asantehene (Ashanti King), the District Chief Executives and Ghanaian civil society organizations, expressed an interest in results that not only captured the impact of the mine on the national but also on the regional level. That is why from March 2012 up to April 2013, Steward Redqueen executed this follow-up study which focuses on the national *and* regional impacts of the Ahafo Mine.

The national and regional results presented in this Report were obtained using an economic model which is based on input-output analysis, NGGL’s 2011 financials and a survey of local suppliers to the Ahafo mine. Two aspects of economic impacts are central in this report: value added, i.e. the sum of salaries, profits and taxes in Ghana, and jobs. Although much of the value added and many of the jobs described in this report are to a considerable extent supported by Newmont, they are not created by Newmont alone.

In addition to the developed economic, a household survey was conducted to assess the impact the mine has had on elements such as migration, housing, income, education and access to utilities for households living in its vicinity.

This Report shows that NGGL on a national level:

- Supports USD 360 million value added in terms of economic activity (0.95% of GDP for Ghana), of which USD 230 million is directly attributable to NGGL (0.60% of GDP for Ghana);
- Contributes directly USD 160 million to government tax income (2.56% of national tax revenues of Ghana), USD 39 million to household incomes and USD 31 million as carried interest income to the government (to be paid when dividends are declared by NGGL);

- Supports 41,000 jobs (0.39% of the total labor force in Ghana), of which 1,921 jobs are directly attributable to NGGL (0.02% of the total labor force in Ghana);
- Value added has grown by 135% since 2009 but the number of jobs declined by 15%;
- From a visual impression of the pathways through which NGGL’s spending trickles through the economy, we conclude that for a mine, it is relatively deeply connected to the Ghanaian economy.

A part of this economic impact is created in the Brong-Ahafo region (the region within which the Ahafo mine is located), which is home to 10% of the Ghanaian population and contributes approximately 10% to Ghana’s GDP. This Report shows that NGGL on a regional level:

- Supports USD 31 million value added (0.78% of regional GDP), of which USD 15 million is directly attributable to NGGL (0.38% of regional GDP);
- Contributes directly USD 3 million in tax payments and USD 12 million in household incomes in 2011;
- Supports 8,700 jobs (0.86% of the regional labor force).

The impact of NGGL in the Asutifi district of the Brong-Ahafo region where the Ahafo Mine is located is much larger; approximately 8% of the district’s (estimated) GDP and 10% of (estimated) employment. The Newmont Ahafo Development Foundation (NADeF) amplifies this economic effect with another 23% in terms of value added.

The main conclusions regarding NGGL’s local impact on households are:

- NGGL’s presence and its need for skilled labor has caused in-migration of people from outside the region in search of work at the mine, leading to higher prices for products and services in the region;
- NGGL’s economic impact has translated into higher disposable income for its employees, who spend almost twice as much as people outside NGGL’s catchment area. Households without members that work directly for NGGL (including NGGL’s contractors) and whom reside in the catchment area have 11% more to spend than households outside the catchment area;
- Inevitably, but nevertheless somewhat worrying, the mine has created a certain dependence of people within the catchment area of the mine as they are less engaged in other economic activities than people outside the catchment area;
- A majority of people in the catchment area believe that the overall situation has improved since NGGL’s arrival, with people employed by NGGL holding favorable opinions but the people who were resettled mostly negative ones. To a certain extent, the Newmont Ahafo Development Foundation has contributed to this overall improvement by delivering infrastructural and social amenities including community libraries, teachers’ and nurses’ quarters, ICT centers and school buildings for the communities.

The main recommendations for NGGL are the continuation, and where possible, intensification of local sourcing and business activities. Although the low-hanging fruit may already have been picked, we think there are still areas where NGGL together with its suppliers and contractors can bring about positive changes. We also recommend that NGGL conveys its most successful

programs to the Akyem mine in order to reproduce the positive impacts that are currently generated at the Ahafo mine.

Considering Ghana's increased dependency on resource-related income, we recommend that the Government develop plans for economic diversification to help it prepare for leaner times when commodity prices are lower or resources become depleted. The Government may wish to emphasize the need for diversification in regions where dependency on mining is greatest. In many mining regions, for example, agriculture has also been a traditional occupation of local residents.

Investing in increasing the productivity of agricultural lands—including the development of a stronger property rights regime and access to credit and inputs for farmers—could be among the policies that the Government might contemplate.



The Ahafo Mine

1. Introduction and Objectives

1.1 Introduction

In 2011, Newmont Ghana Gold Limited (NGGL) launched its socio-economic impact study of the Ahafo mining operation in Ghana's Brong-Ahafo region and Asutifi district. The key findings, which were based on NGGL's 2009 financial data along with the most recent economic information on Ghana (prior to the revisions of GDP that were subsequently made by the Ghana Statistical Service (GSS)), indicated that:

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 supported some 48,000 jobs in Ghana;
3. NGGL played a significant developmental role in the communities around the Ahafo Mine and in 2009 alone provided 99 regional companies with nearly USD 6 million in contracts, supporting more than 400 jobs, not including direct employment.

Subsequently, several stakeholders who were involved in this study, including the President's Office and various Ministries, the Regional Government, the Asantehene (Ashanti King), the District Chief Executives and Ghanaian civil society organizations, expressed an interest in results that not only captured the impact of the Mine on the national but also on the regional level.

1.2 Objectives

NGGL therefore requested this follow-up Report to quantify the economic impact of its activities on Ghana, the Brong-Ahafo region and the Asutifi district in which it operates the Ahafo mine. The following questions are addressed in this Report:

- What is the total socio-economic impact of NGGL in Ghana in terms of salaries, taxes, profits and employment?
- How much of that impact is achieved in the Brong-Ahafo region and the Asutifi district?
- What has changed for the households in the vicinity of the Ahafo mine since the start of production?
- Is Ghana making good use of its gold wealth to aid in the process of regional development?
- Is NGGL an effective partner in economic development in the region and district?

1.3 Scope

The Report distinguishes between the direct, indirect and induced socio-economic impact of NGGL in Ghana. The socio-economic impact is captured by value added (household income, profits & savings and government income) in terms of additional economic activity and jobs supported as well as based on more qualitative findings from the surveys conducted. In terms of geographic focus, the results are shown on the national (Ghana), regional (Brong-Ahafo) and district (Asutifi) level.



High rise buildings in a business district in Ghana

The important question regarding the social and health/environmental impacts of mining is not part of this Report. This omission is intentional as the quantification of these impacts would involve a different type of analysis. Although some work has been done to express environmental impacts in financial terms, the socio-economic and environmental impacts are not directly comparable. Yet both are important. This Report however focuses on jobs and economic impact on the national, regional and district level and not on the environmental impacts. In recognition of the importance of the social and health/environmental impacts of the mine, NGGL commissioned separate independent studies on these two areas alongside this study on jobs and economic impact.

This Report is divided into seven sections. Following this introduction, Section 2 describes Ghana's and Brong-Ahafo's economy, the mining sector and Newmont Ghana's operations. Section 3 summarizes the methodology and economic model used and after that Section 4 focuses on the socio-economic impact at the national level and compares the findings with the previous Report. Section 5 then describes NGGL's socio-economic impact on the Brong-Ahafo region while Section 6 outlines NGGL's impacts on the households residing in the region and district where the Ahafo mine is operating. Section 7 concludes this report and gives recommendations.

2. Ghana's Economy

2.1 National and Regional Economic Profile

With an average economic growth rate of 6.9% over the last 10 years and 14.4% in 2011, Ghana's economy has been growing more rapidly than the Sub-Saharan continent as a whole. Unlike many other Sub-Saharan economies that depend heavily upon a single commodity, Ghana is relatively diversified among agriculture, industry, commodities, and services. Table 1 shows that 23.9% of GDP originates from agriculture, 24.1% from industries and 45.3% from services. The 6.3% of GDP that stems from crude oil of the Jubilee field could tilt the economic balance more towards commodities. This is a source of concern as resource dependence can translate into the so-called "resource curse."

Ghana's trade deficit has been stable at around 13% of GDP (see Exhibit 1) as imports, mainly capital equipment, petroleum and food products, increased as fast as exports. This deficit may decrease when oil exports rise, but of course that will also be a function of the price of crude oil on global markets. Gold contributes most to the country's exports amounting to USD 4.9 billion (almost 34% of total exports) and with its 2.8% share of world-wide production Ghana is the world's 10th largest gold producer. However, due to the price decline in 2013, gold will likely contribute less to export revenues.

In recent years, Ghana has taken important strides to improve its business climate, encouraging greater foreign direct investment and private sector participation in the economy. The World Bank's "Doing Business 2013" ranking puts Ghana 64th, down one position from last year. While this suggests that more needs to be done to make the country an attractive place to do business on a global scale, the recent improvements have placed the country among Africa's leading reformers.

The increasing foreign direct investments (FDI), shown in Exhibit 2, confirm this although much of the FDI was to the mining and oil & gas sectors. Gross capital formation, i.e. the investment in fixed assets owned by households and companies fluctuates but trends slightly downward. Considering the current oil boom there is a strong economic rationale for more investment however. Constraints to further development mentioned by companies are access to finance and electricity (in terms of availability and reasonable price).

As economic growth outstripped population growth, Gross National Income (GNI) per capita has steadily increased (Exhibit 3) but inequality is large. Although a relatively bright spot in Sub-Saharan Africa, Ghana's ranking on the Human Development Index (135 out of 187) reminds us that the country's social welfare must continue to advance for the benefit of all Ghanaians.

TABLE 1: Key indicators of the Ghanaian economy 2011¹

	GHANA	BRONG-AHAFO REGION ^A
Population (estimated)	25.3 million	2.4 million
Labor force (estimated)	10.6 million	1.0 million
Gross Domestic Product	USD 38.1 billion	USD 3.9 billion
GDP per capita	USD 1,507	USD 1,653
GDP growth	14.4%	
GDP by economic activity:		
Agriculture	23.9%	46.1%
Industry	24.1%	15.0%
Mining	1.6% ^B	3.0%
Oil	6.3%	-
Services	45.3%	32.2%
Indirect tax revenue	6.7%	6.7%
GDP by expenditure ^C :		
Household consumption	77.8%	
Government consumption	12.5%	
Investments	24.5%	
Exports	38.4%	
Imports	51.7%	
Tax Revenue		
	USD 6.3 billion	
Government Budget:		
Revenue	USD 7.5 billion	
Expenditure	USD 8.6 billion	
Ease of doing business ^D		
	64	
Human Development Index ^E		
	135 out of 187	

A Blanks indicate no regional data is available.

B The figure of 1.6% appears very low. Taxes paid by the mining sector already represent 2.5% of GDP. When including salaries we estimate that the GDP contribution is around 3% instead of the 1.6%.

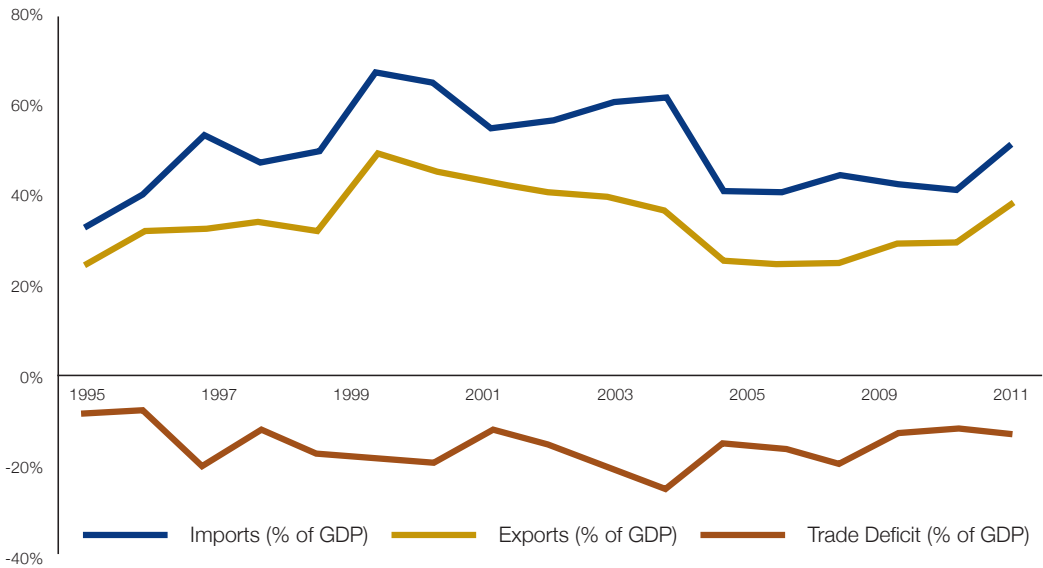
C Reported as percentage of GDP. This breakdown does not add up due to statistical discrepancies reported by the Ghana Statistical Service. This is not uncommon with African statistics and does not impact the validity of the results in this Report.

D The Ease of Doing Business Index provides measures of business regulations and their enforcement across 185 economies that indicate if it is easy to do business in a specific country (<http://www.doingbusiness.org/>). This is for the year 2013.

E The Human Development Index (<http://hdr.undp.org/en/humandev/>) is an index that measures long-term progress in three basic dimensions: long/healthy life, access to knowledge and decent standard of living. This is for the year 2012.

1 Ghana Statistical Services, Bank of Ghana, World Bank, Ease of Doing Business Index, Human Development Index, Oxford Poverty and Human Development Initiative.

EXHIBIT 1: Imports and exports of goods and services and Ghana's trade deficit as percentage of GDP. Source: World Bank Database



2.2 The Brong-Ahafo Region

Brong-Ahafo is situated in the middle of Ghana and is home to 10% of Ghana’s population. The region forms the transition between the wealthier (Southern) and poorer (Northern) parts of the country. It is not surprising therefore that Table 1 shows that macro-economically, the region is not too dissimilar from Ghana overall: GDP per capita is slightly higher, but so is the incidence of poverty. The main difference is that the region’s economy relies on (subsistence) agriculture to a much greater extent than the rest of Ghana.

2.3 The Mining Sector in Ghana

As shown in Table 1, the extractive industries, oil and mining, make up about 8% of Ghana’s GDP. 2011 was the first full year in which Ghana benefited from oil production, which therefore was responsible for most of Ghana’s economic growth. The mining sub-sector, dominated by gold, grew by 14.3% in 2011, the highest growth after the oil and construction sectors. The main driver of this growth was the average price of gold which increased from on average USD 1,129 per ounce in 2010 to USD 1,583 per ounce in 2011². This increase in the price of gold more than made up for the decline in production, which fell by 2% from 2.97 million ounces in 2010 to 2.92 million in 2011. Although it is not a measure of the all-in sustaining cost of mining on a per ounce basis, the average cash cost of USD 751 per ounce was about 17% higher than the global average of USD 643, largely due to expensive electric power, labor and diesel. Nevertheless, investment in the mining sector went up slightly from USD 770 million in 2010 to USD 780 million in 2011.

2 Factoid 2011, Chamber of Mines.

In 2011, the mining sector maintained its position as the largest tax contributor, with total tax payments of approximately USD 640 million³. Higher gold royalty payments and the fact that more mining companies are now paying corporate income tax has led to a growth in tax payments which will increase in 2012 due to the average increase of gold prices but also due to the decision of the Government of Ghana to change fiscal policies for the mining industry, including an increase in the corporate tax rate from 25% to 35%.

The mining sector employs 14,257 persons directly (of which 235 are expatriates)⁴. Compared to 2009, this is a reduction of 17.6%, whereas gold production increased by 0.8%. Not included in the above figures are the illegal and informal mining (Galamsey) activities that continued to grow in 2011. These activities do not only harm other miners who have to protect their own concessions, but also pollute and destroy public land and water bodies.

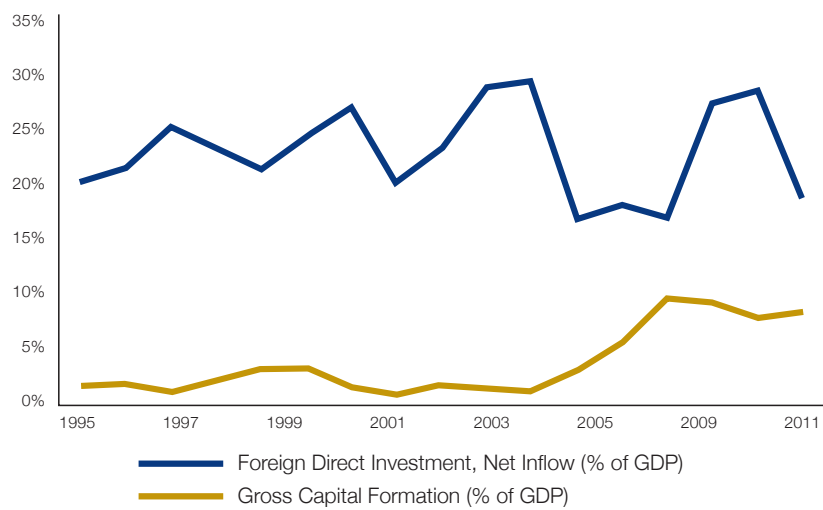


EXHIBIT 2:
Gross Capital Formation (GCF) and Foreign Direct Investment (FDI) as percentage of GDP. (Source: World Bank Database)

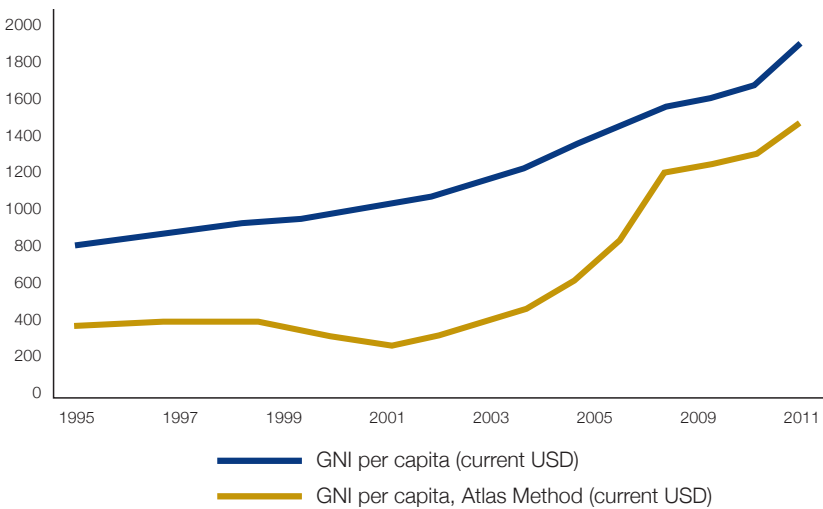


EXHIBIT 3:
Growth of real Gross National Income (GNI) per capita in current USD. (Source: World Bank Database)

3 Factoid 2011, Chamber of Mines.
4 Factoid 2011, Chamber of Mines.



Workers of NGGL at the mine

2.4 Newmont Ghana’s Operations

Mining at Ahafo commenced in 2006 and NGGL currently operates 4 open pits. The mining lease covers 774 square kilometers but the actual mining area, located in the Asutifi district south of Sunyani (Exhibit 4), covers less than 2% of the lease. In addition to the open pits, NGGL is investigating the viability of a potential underground mine. The process plant consists of a conventional mill and carbon-in-leach circuit. The expansion of the mill is being considered and the cost effectiveness of bringing the expansion forward is currently being investigated, but it could be delayed with the current low gold prices. Ahafo’s proven and probable gold reserves, as of 31 December, 2011, were estimated at 12 million ounces.⁵

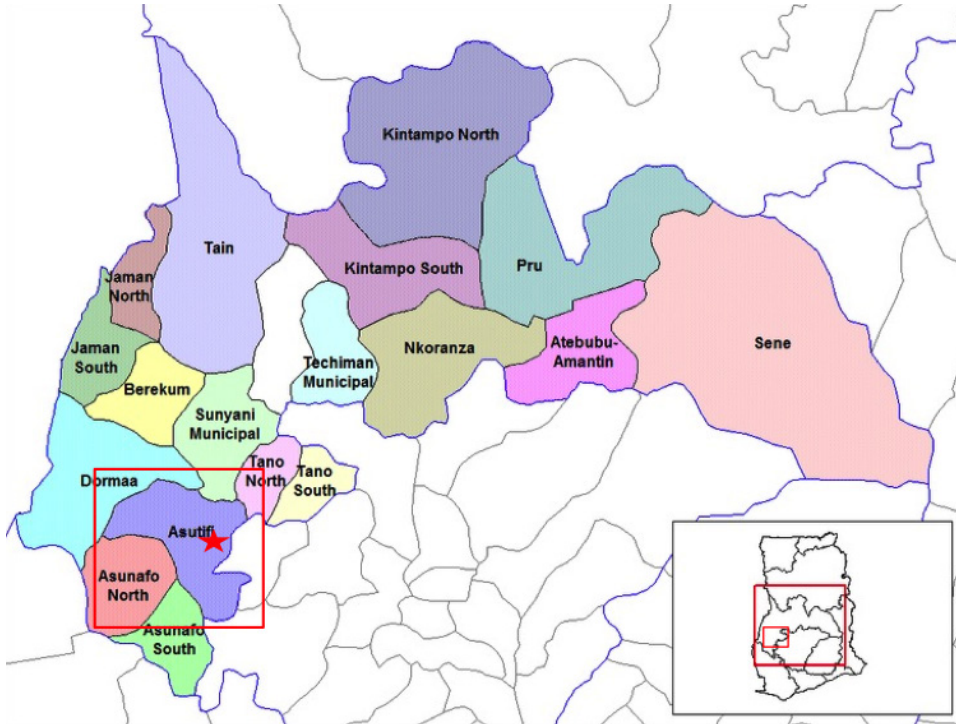
In 2011, the Ahafo Mine produced 566,000 ounces of gold, equivalent to 19.4% of Ghana’s total production. This is 21,000 ounces more than the previous year and 34,000 ounces more than in 2009. NGGL’s revenues were USD 869 million or 18.8% of total gold revenue of the country. Newmont Ghana employed 2,229 people directly, 1,729 of which work at the Ahafo site, 192 in Accra and 308 in Akyem. NGGL’s sister company, Newmont Golden Ridge Limited (NGRL), constructed an open pit mine in Akyem and it poured its first gold in October 2013.

5 2011 Reserves and Non-Reserve Mineralization, Discloses in 2011 Annual Report of Newmont



EXHIBIT 4: Map of Ghana with the red stars indicating the locations of the Ahafo (near Sunyani) and Akyem (near Koforidua) Mines.

EXHIBIT 5: Map of the Brong-Ahafo region and the Asutifi district with the red star indicating the location of the Ahafo Mine.



3. Economic Modeling & Methods

3.1 Modeling of Value Added and Employment Impacts

To assess the socio-economic impact of NGGL’s operations on the national and regional level, we make use of input-output modeling. Simply stated, an input-output model provides a ‘road map’ of an economy, showing the inter-linkages between various sectors. We drive NGGL’s financial data through the model in order to understand how NGGL’s revenues and expenditures impact on other economic agents, including the government via tax payments and other receipts such as royalties.

EXHIBIT 6: Overview of the modeling approach

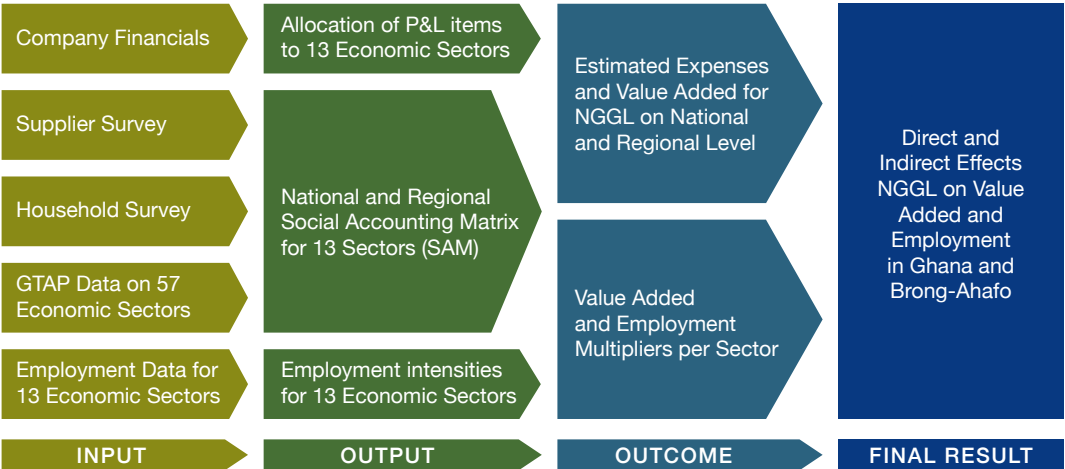


Exhibit 6 summarizes our approach in which we combine NGGL’s financials with macro-economic data to come up with results in terms of value added and employment impact of NGGL on Ghana and Brong-Ahafo. Appendix A discusses the modeling approach in more detail as well as the assumptions made.

EXHIBIT 7: Direct, indirect and induced effects on value added and employment divided into four rounds

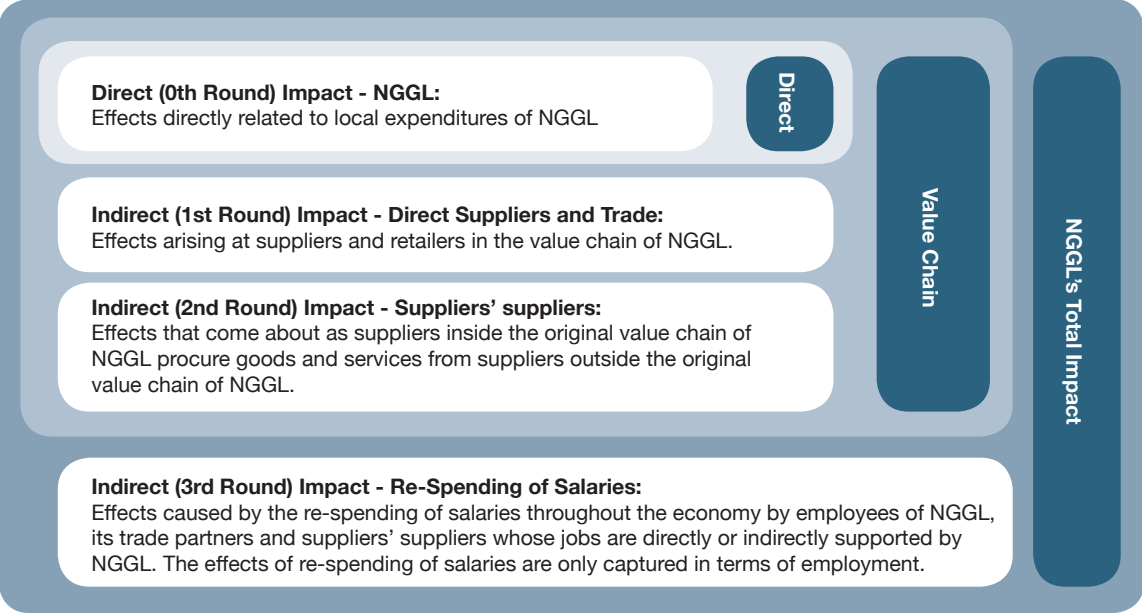


Exhibit 7 shows the rounds of impact that we distinguish in this Report. The rounds of impacts are (i) NGGL's direct impact, (ii) the value chain impact (including suppliers) and (iii) the total impact (including impacts induced by the re-spending of salaries). With respect to value added, induced results are not included as it would constitute a double counting (i.e. salaries are counted twice; once when they are earned and once when they are spent). Induced employment does not suffer from double counting and is therefore included throughout this Report.

3.2 Household Survey

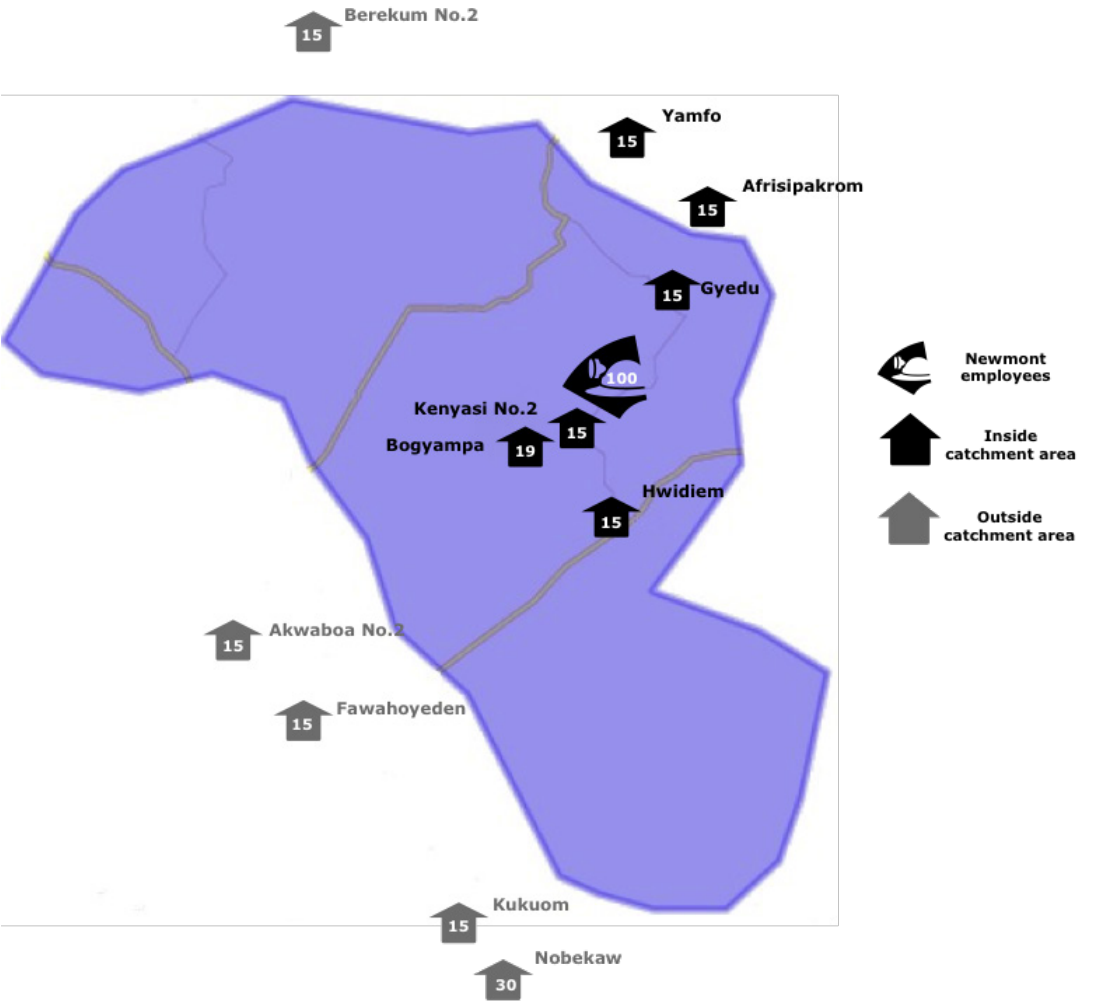
A household survey was conducted to enrich the economic model with more specific and reliable household expenditure data as well as to get a more qualitative picture of how the households in the region as a whole and in the Asutifi and Tano North districts in particular, have been affected by the Ahafo Mine.

In co-operation with the Ghanaian consulting firm PAB Development Consultants Limited (PAB), the survey was structured such that more detailed information about the impact of NGGL's presence at the household level could be obtained. This was done through interviews with a representative sample of 284 households in three sub-groups:

- 100 households that have at least 1 person working for NGGL and that are situated in the catchment area of the Mine;
- 94 households without members that work for NGGL, but which are located in the catchment area of the Mine (of which 30 were resettled);
- 90 households without members that work for NGGL and are located outside the catchment area of the Mine.

For practical purposes, the catchment area of the Ahafo Mine was defined as those communities that are directly affected by the Mine, most of which are located the Asutifi and Tano North districts in Brong-Ahafo (Exhibit 5). Exhibit 8 shows the location of the households, how many people have been surveyed and the three distinct groups in order to more clearly delineate the impact of NGGL. In collaboration with NGGL and PAB, the households in the sample were chosen such that they were representative of the population from which they were selected. The size of the sample size is such that with a confidence level of 95% the error margin of the responses is plus or minus 5%.

EXHIBIT 8: The Asutifi district in the Brong-Ahafo region (numbers inside the figures indicate the number of households interviewed)



4. NGGL’s Socio-Economic Impact on the National Level

In this section, the results from the input-output modeling, as described in the previous section, are provided. After a discussion of NGGL’s expenditures in Section 4.1, Sections 4.2 and 4.3 describe NGGL’s economy wide contribution to value added and employment. Value added is defined as the sum of household income, company profits & savings and government income and employment in terms of full-time equivalent (FTE) jobs. Section 4.4 compares the results of this Report with the previous impact study which covered 2009. NGGL’s impacts on the Brong-Ahafo region will be discussed in Section 5.

4.1 NGGL’s Expenditures in Ghana

The analysis of NGGL’s economic impact starts with its expenditures in 2011 as is shown in Exhibit 9.

From the USD 869 million in revenues, a total of USD 367 million is spent on products and services procured from abroad⁶. Profits of NGGL are maintained in Ghana until such time as a dividend is declared and paid. At that time 90% of the declared dividend accrues to Newmont Inc. (USD 273 million), NGGL’s parent company based in Denver, Colorado (USA), while approximately 10% is paid as a carried interest to the Ghanaian government (USD 31 million).

NGGL’s profit margin and cash flow from operations reflects the record levels of the gold price in 2011. Bear in mind however that this profit margin and cash flow do not reflect the “full” cost of mining as per the All-In Sustainable Cost measure of the World Gold Council. This profit and cash flow is also used to finance its ongoing operations in the form of national, regional, and foreign purchases and procurements.

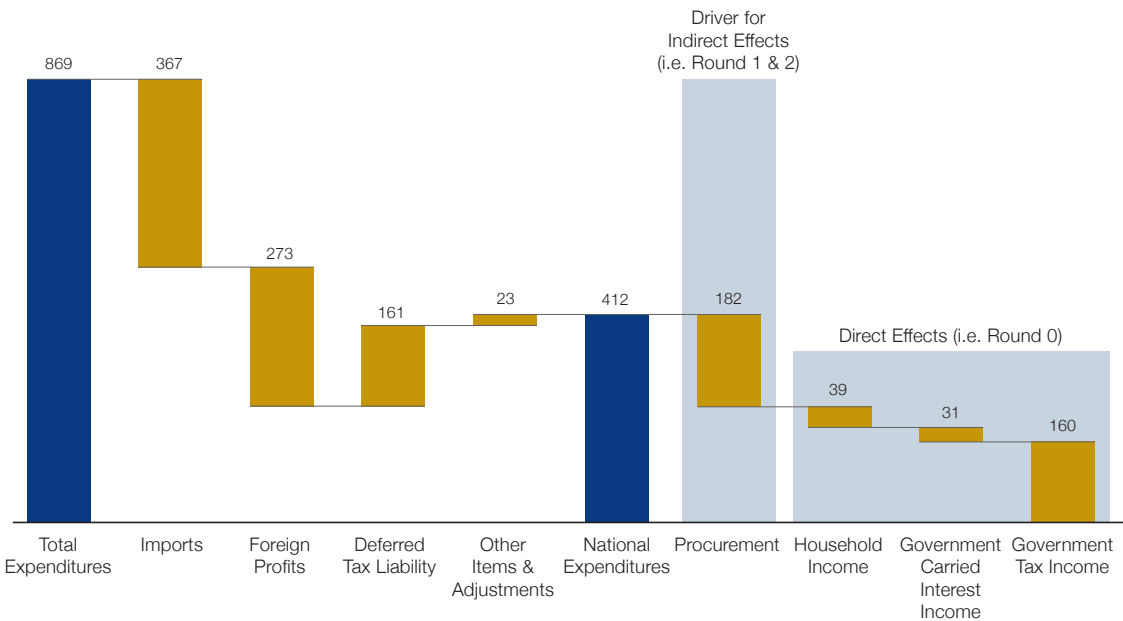
It is important to recognize that a lower gold price will come largely at the expense of profits, which essentially reduces the cash flow available to fund continued investment to maintain current production levels and future growth, and to a much smaller extent tax payments and salaries. If current production levels and future growth are actually declining, NGGL’s impact on the economy might decline as well. However, now that NGGL’s sister company NGRL just started production in a new open-pit mine in Ghana, one which is not included in the calculations, the overall impact that Newmont has in Ghana as reported herein is likely to be conservative.

Going back to the expenditure breakdown shown in Exhibit 9, when imports (USD 367 million) and foreign profits (USD 273 million) are subtracted from revenues just like deferred tax liabilities (i.e. taxes that will eventually be paid to the government) of USD 161 and USD 23 million of other items and adjustments⁷ are added, the resulting expenditures that are based in Ghana are USD 412 million.

Of this amount, NGGL’s direct value added in Ghana is USD 230 million (0.60% of Ghana’s GDP). This amount consists of USD 39 million household incomes and of USD 31 million government revenues in the form of carried interest income (which the government receives when dividends are declared) and USD 160 million in tax income. The taxes and royalties account for 2.55% of national tax revenue.

NGGL’s indirect impact on the national level is driven by its procurement of goods and services worth USD 182 million in Ghana. It should be noted that this Report differentiates between local procurement from a legal perspective and from an economic perspective. The difference is that local procurement from an economic perspective only takes into account procurement that stays within the country while from a legal perspective all expenditures made within Ghana are taken into account. For example, Shell Ghana imports its products and adds a trade margin. The legal perspective would argue that all expenses made by NGGL to Shell Ghana are local procurement while the economic perspective argues that only the trade margin should be allocated as local procurement expense. Since this Report focuses on the economic impact of NGGL in Ghana; the economic, more conservative perspective is chosen.

EXHIBIT 9: NGGL’s revenues in relation to its operating expenditure and value added in 2011 (in USD million)



6 The amount of imports may differ from what Newmont has reported because we consider local procurement in an economic rather than legal way as will be explained later

7 Adjustments are a bundle of different items such inventory movement, gains on foreign currency and interest earnings.

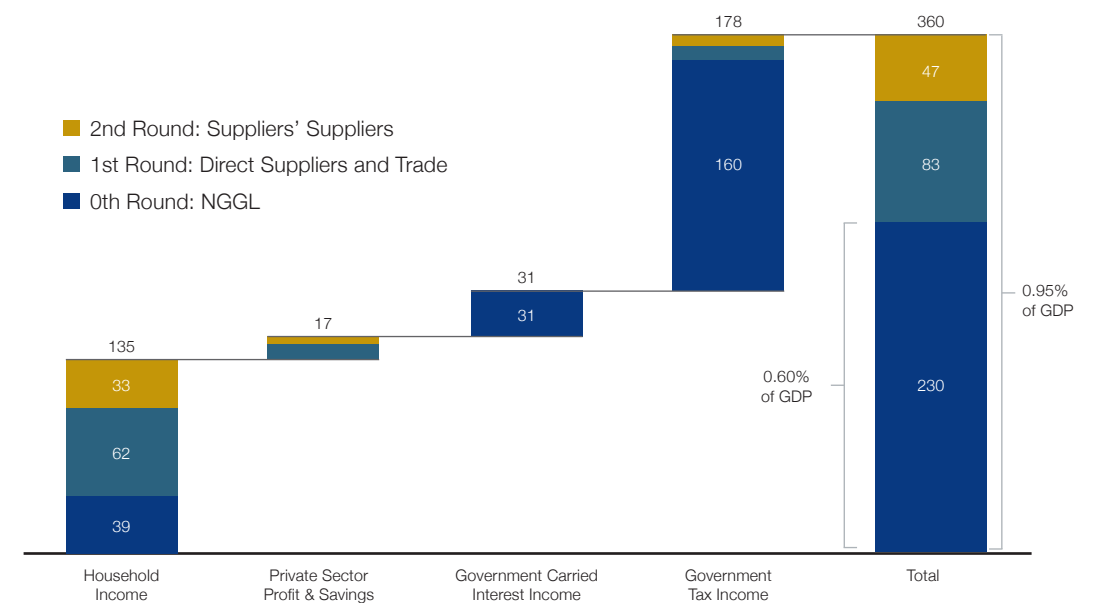


A local signage vendor of NGGL in Ahafo

4.2 Value Added

Exhibit 10 shows a breakdown of total value added supported by NGGL in the Ghanaian economy: household incomes, company profits & savings and government income. Together, these components add up to USD 360 million⁸, which is equal to 0.95% of the total Ghanaian economy. This is an increase of 107% compared to the 2009 total value added supported (for more details see Appendix B) and a decrease of 6% in terms of contribution to Ghana's GDP⁹. The USD 208 million government income (USD 191 million of carried interest income and tax income paid by NGGL directly and USD 18 million paid by its suppliers) constitutes the biggest value added component; followed by the USD 135 million of salaries paid by NGGL and its suppliers to Ghanaian households. Profits & savings of local suppliers are a small component with USD 17 million (note that NGGL's profits accrue to its parent company abroad). Of the USD 360 million total value added, USD 230 million is generated directly by NGGL, largely in the form of royalties and taxes.

EXHIBIT 10: Direct and indirect effects on value added (in USD million)

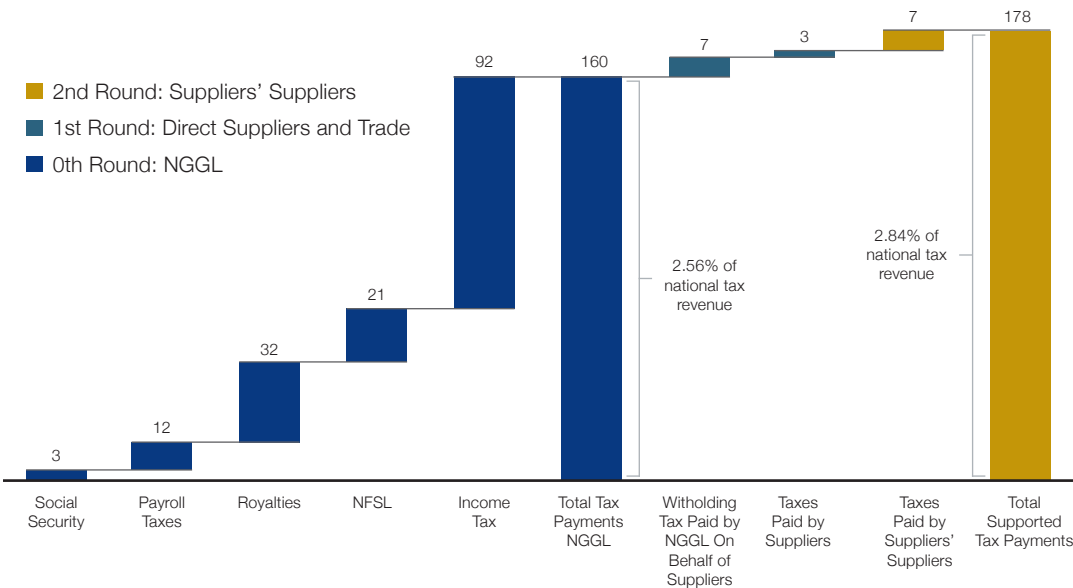


⁸ May not sum up due to rounding.

⁹ The significant increase in Ghana's GDP (60%) is the reason why NGGL's relative contribution to GDP declined. This significant increase in Ghana's GDP estimate is due to a revision in the methodology that estimates Ghana's GDP (See Jerven & Duncan, 2012).

Exhibit 11 shows a detailed breakdown of the USD 178 million total tax payments to the government. The lion's share of these taxes amounting to USD 160 million, are paid directly by NGGL itself. Another USD 18 million is generated by NGGL's suppliers, of which USD 7 million is actually paid by NGGL as withholding tax. The withholding tax enables the government to more effectively collect taxes since NGGL is easy to find in comparison to all the (smaller) suppliers of NGGL. The fact that NGGL pays over 90% of the taxes of its entire value chain underscores Ghana's relatively small tax base and the difficulty of collecting taxes from informal companies¹⁰. The total tax payments of NGGL's value chain make up slightly less than 3% of Ghana's total tax revenues. The USD 160 million taxes paid by NGGL alone represent about 25% of the total taxes paid by the mining sector in Ghana.¹¹

EXHIBIT 11: Direct and indirect effects on taxes (in USD million)^F



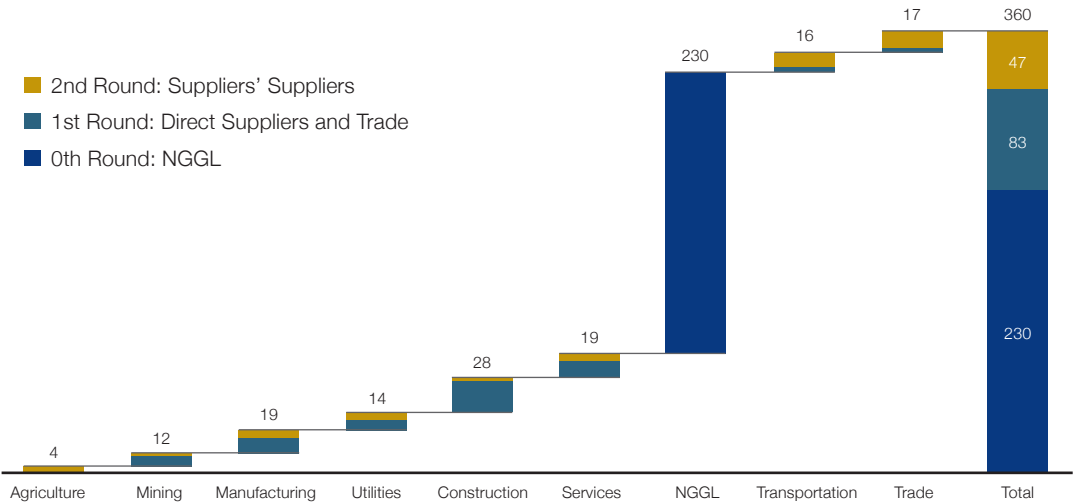
^F The National Fiscal Stabilization Levy (NFSL) is an additional 5% on accounting profits of specified companies and institutions in Ghana in order to reduce Ghana's growing deficit.

¹⁰ NGGL procures its goods and services from the formal sector, but the suppliers of NGGL's suppliers have a higher probability of operating in the informal sector and thereby foregoing tax payments.

¹¹ Factoid 2011, Chamber of Mines. The Chamber of Mines estimates that about GH¢ 1 billion or USD 640 million is paid by the mining sector to the government in the form of taxes.

Exhibit 12 shows the sectors where the value added is created. Apart from NGGL's direct value contribution, most value added is found in the construction sector due to the nature of the business which requires the company to hire contractors for construction and maintenance of its infrastructure. With the exception of agriculture, the value added is fairly evenly spread over the other economic sectors. The reason for this is that Newmont procures goods and services from quite a number of different sectors which then source a portion of their supplies from within Ghana, reflecting the relative diversified nature of Ghana's economy.

EXHIBIT 12: Direct and indirect effects of NGGL on value added per sector (in USD million)



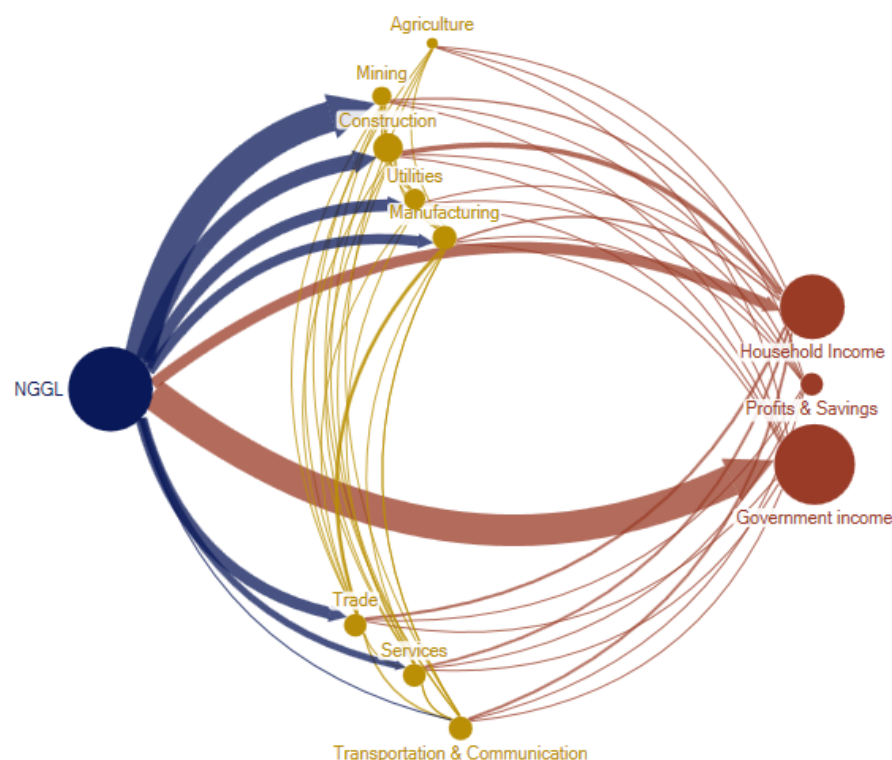


EXHIBIT 13: Pathways through which NGGL's spending creates value added. Size of the nodes indicates the total value added generated or received and the line thickness indicates the size of a flow. NGGL's spending is dark blue, direct and indirect value added flows to households, profits and government income are light blue and intermediary demand flows between sectors are green.^G

G For reasons of interpretation intra-sector flows and flows smaller than USD 100,000 are excluded.

The exhibits shown so far described the value added results from the economic modeling. A more visual impression of the pathways through which this value added is created as NGGL's spending travels through the economy is shown in Exhibit 13.

The exhibit shows that the single largest flow is in the form of NGGL's tax, royalty and carried interest payments to the government of Ghana. NGGL's considerable expenditures on mining services, construction, utilities and manufacturing are clearly visible. The fact that mining services contribute less value added than, say, construction (as indicated by the size of the nodes) despite the larger inflow of NGGL cash flow is because the bulk of these services rely on imports of foreign capital goods and skills and require relatively little (low-skilled) labor from within Ghana. The construction sector by contrast is more labor intensive and requires fewer skills, allowing it to keep more of its value added in Ghana. Overall, the diagram shows that for a mining company, NGGL is relatively deeply integrated into the Ghanaian economy.



A large tax payer office in Accra

4.3 Employment

This section captures NGGL's impact on employment in fulltime equivalents (FTE). As described in Section 2, the number of jobs that are supported by NGGL's operations throughout the Ghanaian economy have been determined based on government statistics about the labor force per sector.¹²

As mentioned in Section 2.4, Newmont directly employed 2,229 people in 2011 of which 1,921 are related to the Ahafo Mine¹³. Taking the indirect and induced effects into consideration, the total number of jobs supported is 41,000 jobs (or 0.39% of the labor force in Ghana) which is broken down by sector in Exhibit 14. The jobs supported in the 1st round (9,000) are substantially smaller than the jobs created by the suppliers of NGGL's suppliers (14,000). The main reason for this is that NGGL's direct suppliers are companies that operate in the formal, more productive and less labor intensive economy in contrast to the informal sector in which many 2nd round suppliers operate. On top of the 1st and 2nd round jobs supported, the re-spending of salaries, which are earned by NGGL employees and employees of suppliers in round 1 and 2, support an additional 16,000 jobs.¹⁴ This impact that is caused by the re-spending of salaries is only applicable to jobs supported as discussed in Section 3.1.

¹² Ghana Statistical Services have published the census 2010 which contains the breakdown of the labour force on the national and regional level. See Appendix A for more details about our methodology to calculate the number of jobs.

¹³ The sum of people that work at the mine site (1,729) and those that work at the Accra office (192).

¹⁴ Expenditures on agriculture have been omitted since this will mostly be "auto-consumption". Of the 3,000 induced jobs in manufacturing, almost all are related to food & beverage production commensurate with the fact that most household spending is on basic needs.



Newmont Ghana is proud to be associated with quality jobs.

EXHIBIT 14: Direct, indirect and induced effects on employment per sector (in '000 jobs)

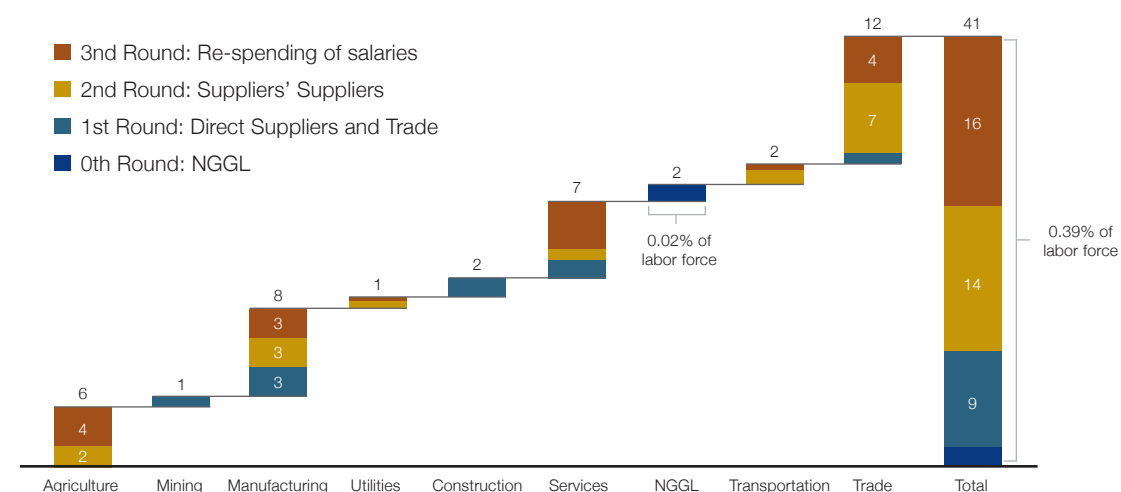
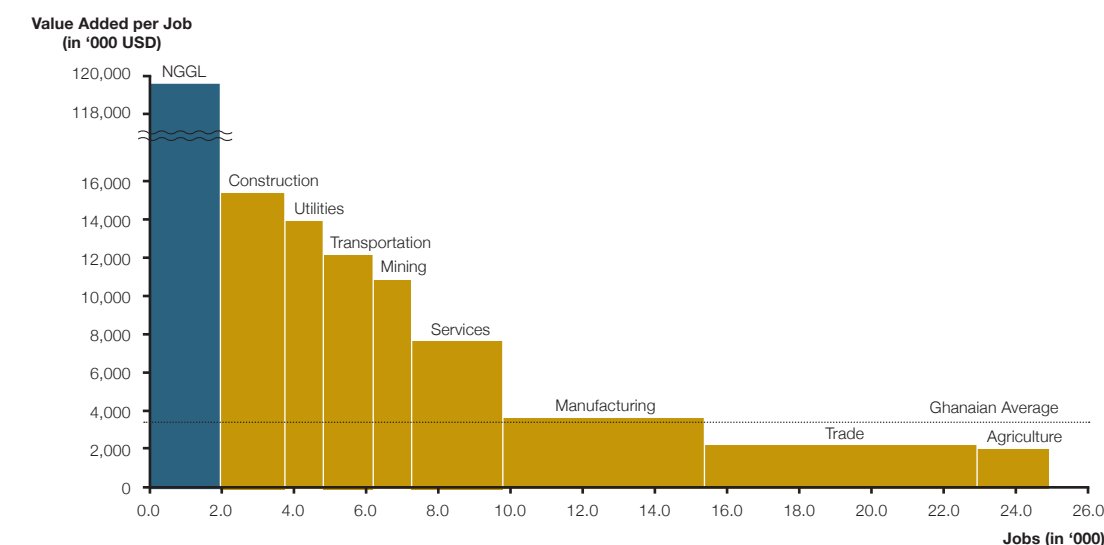


Exhibit 15 puts employment associated with NGGL in context in terms of their quality. In this graph, value added per job supported is used as an indicator for the quality of jobs.¹⁵ Although many jobs are in the trade and manufacturing sectors, these are generally less productive or 'lower quality jobs' (in the informal sector). The quality of jobs within NGGL is particularly high with a value added per job of USD 119,000, which is 34 times higher than the Ghanaian average.¹⁶ The high capital intensity of NGGL's operations is the key driver here. Overall one can conclude that most jobs associated with Newmont's presence in Ghana are above average in terms of value added.

EXHIBIT 15: Value added per direct & indirect job supported by NGGL (in USD '000)^H



^H Exhibit 15 excludes the induced effects on jobs supported because the induced effect is not taken into account when calculating the value added.

¹⁵ Exhibit 15 shows the value added per employee, which consists of household income, profits & savings and tax payments. A direct comparison with the average annual salary therefore does not hold.

¹⁶ The Ghanaian average is estimated by dividing GDP by labour force; USD 38.1 billion / 10.6 million = USD 3,578 per person in the labour force.

4.4 Comparison with the 2009 Report

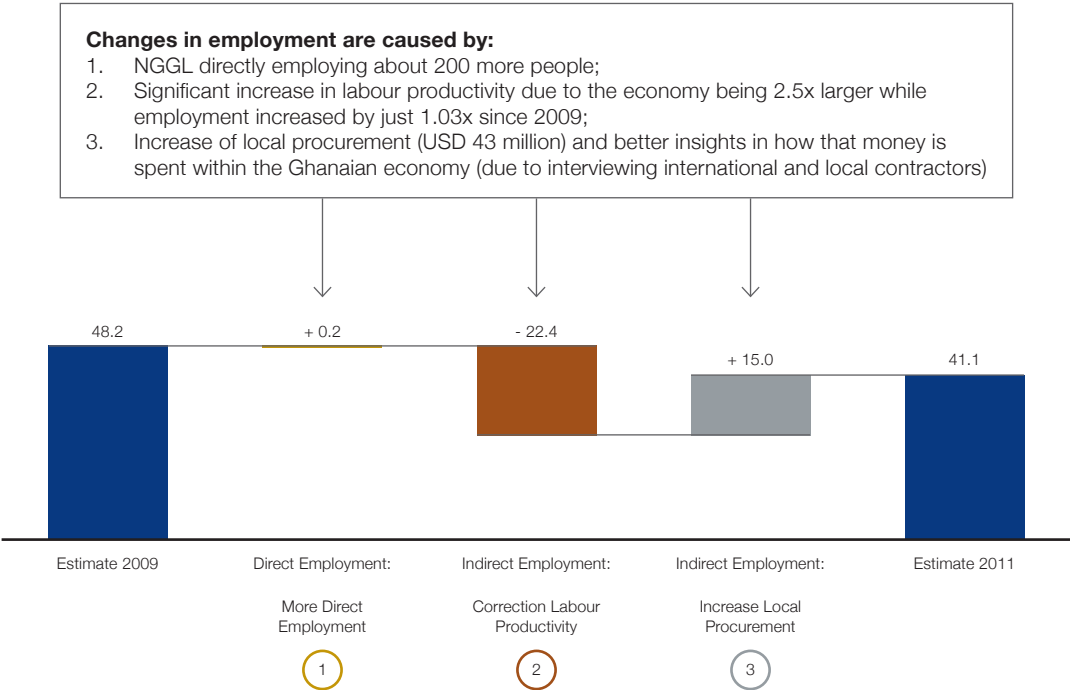
In 2010, Steward Redqueen performed a socio-economic impact assessment for NGGL based on its 2009 financials. A detailed comparison is included in Appendix B. Overall, the results at the national level shown above correspond well with the results of the previous study. The main differences are:

1. NGGL's revenues have increased by USD 341 million (+65%) driven by the higher gold price and somewhat higher production volume;
2. Most of these higher revenues translated into increased profits from operations; from USD 128 million to USD 273 million. This will ultimately result in increased income to the government due to its carried interest once dividends are declared;
3. In Ghana, procurement increased by USD 43 million to USD 182 million;
4. NGGL's direct value added in Ghana increased by USD 174 million from USD 56 million to USD 230 million;
5. USD 152 million of this higher value added accrued to the government because tax payments and (deferred) carried interest income share increased almost fivefold from USD 39 million to USD 191 million, largely because NGGL started to pay taxes on its profits¹⁷;
6. Household income from salaries paid by NGGL rose by USD 22 million to USD 39 million, reflecting NGGL's larger workforce and increase of unit labor costs.
7. When including the larger indirect effects (coming from the larger in-Ghana procurement), total value added in Ghana increased more than twice from USD 153 million to USD 360 million;
8. As a percentage of Ghana's GDP, NGGL's contribution is substantially smaller (0.95% compared to 1.30%) as the economy in 2011 was two and a half times larger than in 2009 because of fast economic growth and the rebasing of GDP measurement in 2010, which resulted in a 60% larger economy.¹⁸
9. The total number of jobs that can be attributed to NGGL's presence declined by about 7,100 (-15%). Exhibit 16 explains these changes in more detail. The decrease in the number of jobs supported is solely due to revision of country statistics and has nothing to do with the methodology used or the performance of NGGL (which actually improved in terms of direct employment and local procurement expenditures).

¹⁷ The reason that Newmont did not pay taxes on profits until 2010 is not that mining companies are exempted during the first 5 years of operations as often is assumed but rather that favorable depreciation schemes and the carry forward of losses are allowed. Over the life of the mine Newmont thus pays taxes over all of its profits. In lieu of such a favorable regime, capital intensive investments would be much less attractive.

¹⁸ Jerven. M, & Duncan. M.E. (2012). Revising GDP estimates in Sub-Saharan Africa: Lessons from Ghana. African Statistical Journal, 15.

EXHIBIT 16: Change in employment supported by NGGL over the period 2009-2011 (in '000 jobs)



5. NGGL’s Socio-Economic Impact on the Brong-Ahafo Region and Asutifi District

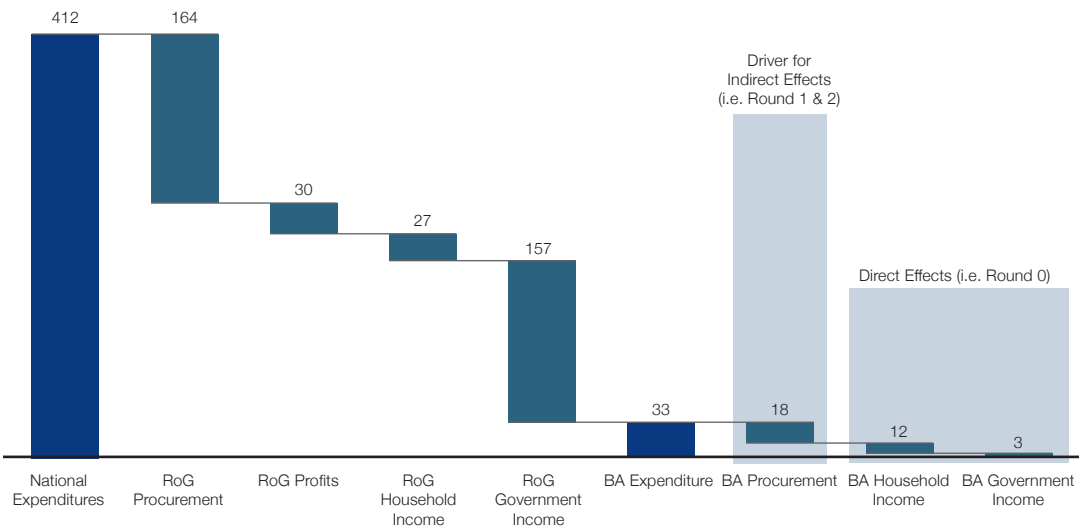
In this section, NGGL’s direct impact in terms of value added, i.e. the sum of salaries, taxes and profits, and jobs are shown as well as the indirect impact that stems from the procurement expenses that are done within Brong-Ahafo. After a discussion of NGGL’s expenditures in Section 5.1, Section 5.2 will discuss the value added that is supported within Brong-Ahafo. Section 5.3 discusses the jobs supported and Section 5.4 compares the regional and district impact with the national impact.

5.1 NGGL’s Expenditures in Brong-Ahafo

The analysis of NGGL’s economic impact starts with its expenditures as shown in Exhibit 17, for which the starting point is the USD 412 million in National expenditures from Exhibit 9.

NGGL’s national expenditures have been broken down into Rest of Ghana (RoG) and Brong-Ahafo (BA) procurement and value added. In order to assess NGGL’s impact on Brong-Ahafo only the BA procurement (USD 18 million) and value added (USD 12 million of household incomes and USD 3 million of government income¹⁹) have been used to estimate the impact on the Brong-Ahafo region.

EXHIBIT 17: NGGL’s revenues in relation to its expenditures and value added in Brong-Ahafo (BA) and the Rest of Ghana (RoG) in 2011 (in USD million)



19 USD 3 million in government income are royalties that accrue to the local government. It is estimated by NGGL’s tax department that 9% of royalty payments accrue to the Ahafo region of which 55% goes to the district authorities, 25% to landowners and 20% to the local chiefs.



A panoramic view of Ahafo Mine

5.2 Value Added

Exhibit 18 shows a breakdown of total value added which is supported in the Brong-Ahafo economy: household incomes, profits & savings for direct and indirect suppliers and government income. These sum up to USD 30.5 million, which represents 0.78% of the total GDP for the Brong-Ahafo economy. The reason that NGGL’s share of Brong-Ahafo’s GDP (0.38%) is lower than the share of national GDP (0.60%, see Exhibit 10) is that NGGL’s tax and royalty payments largely accrue to the national government.²⁰ In addition, due to the simple and open nature of Brong-Ahafo’s economy much of the money flows out of the region rather quickly i.e. just a small part of NGGL’s demand can actually be procured regionally and therefore spillover effects (round 1 & 2) are smaller.

The USD 15.4 million of indirect value added (1st and 2nd round) are the spillover effects from the USD 18 million of local spending done by NGGL (see Exhibit 17), half of which was part of the Ahafo Linkages Program²¹. Exhibit 18 also shows that most of total value added goes as salaries to households and about half of the value added is generated directly by NGGL.

20 See footnote 30.

21 The Ahafo Linkages Program was set up in conjunction with the International Finance Corporation. As an indication, local purchasing under the program has increased from USD 1.7m (with 25 suppliers) to USD 9.0m (with 143 suppliers) in 2010.

EXHIBIT 18: Direct and indirect effects on value added (in USD million)

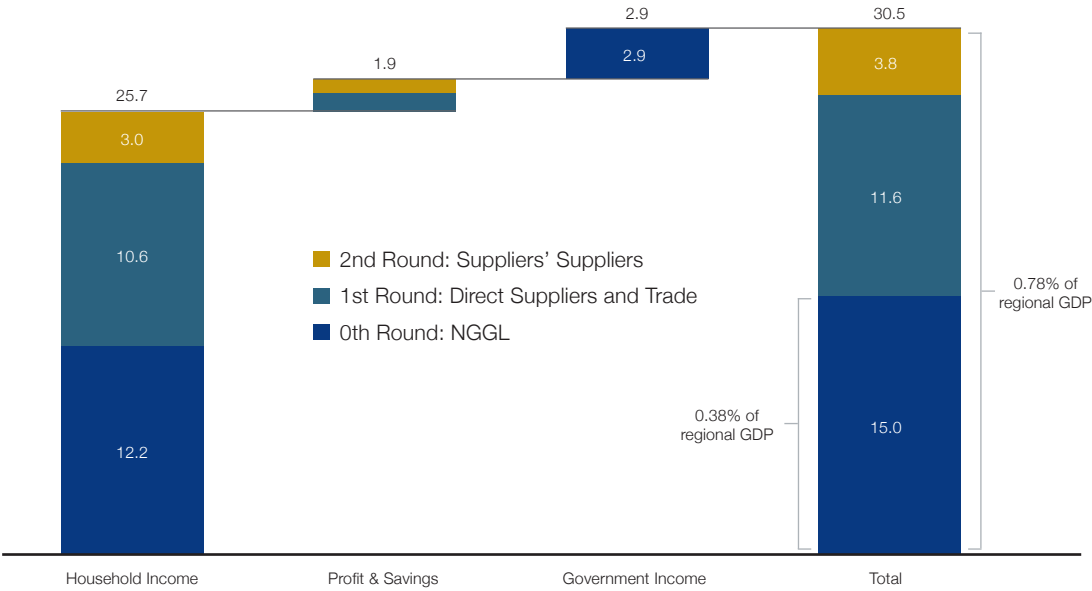


EXHIBIT 19: Direct and indirect effects on value added per sector (in USD million)

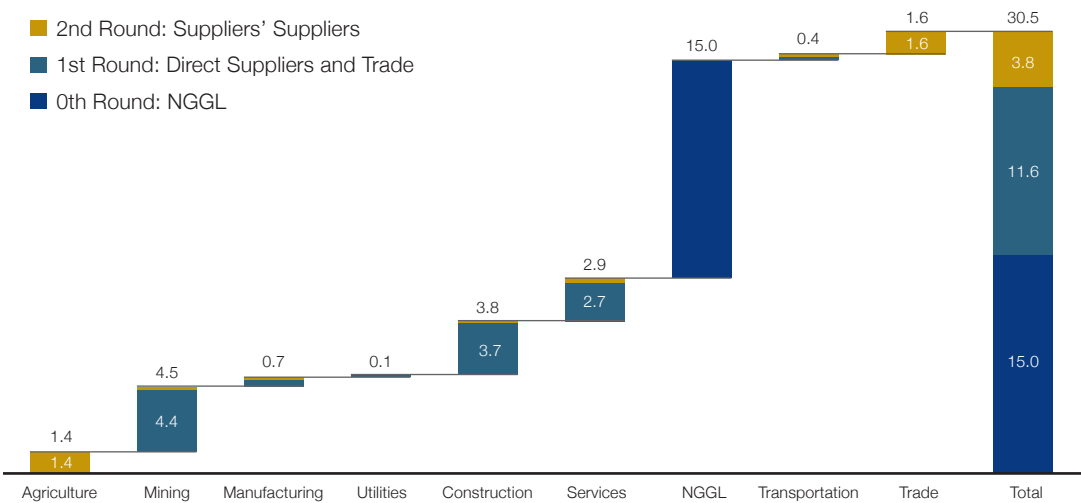


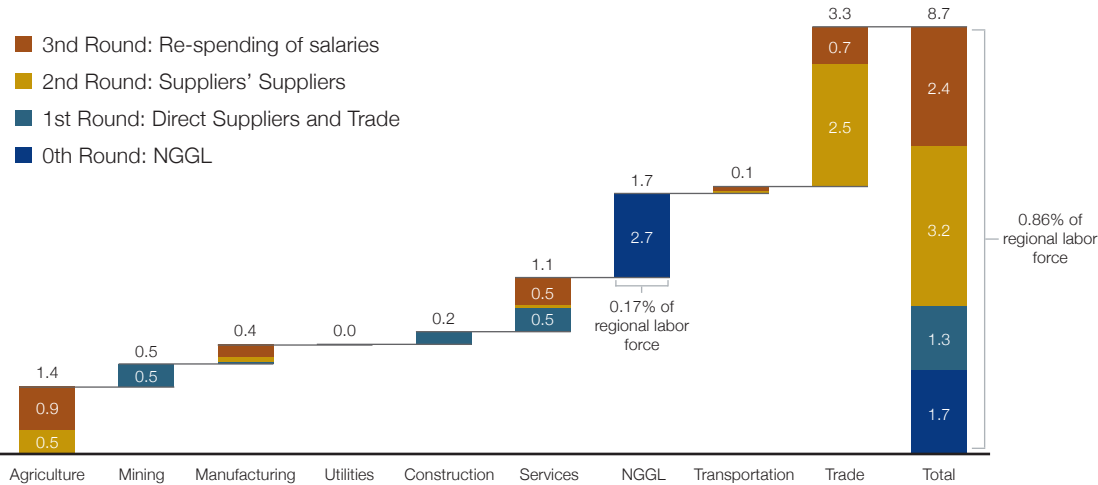
Exhibit 19 shows in which sectors the value added is created. Apart from NGGL's direct contribution, most value added can be found in the mining sector. Within the mining sector, USD 4.4 million of the total USD 4.5 million indirect value added relates to contractors hired by NGGL, e.g. for the construction of the underground mine. In addition, construction and other services (e.g. the catering and lodging services provided on site) respectively add USD 3.9 million and USD 3.2 million to Brong-Ahafo's GDP.

NGGL's impact on the Asutifi district is of course many times larger than the impact on the whole BA region. It is realistic to assume that about 55% of the USD 27.6 million²² Brong-Ahafo household income and profits & savings are generated in the Asutifi district since about 55% of the Newmont employees live there. This USD 15.2 million value added in Asutifi is about 8% of the district's GDP as it represents about 5% of Brong-Ahafo's GDP.

5.3 Employment

As mentioned in Section 2.4, NGGL employed 2,229 people in 2011 in Ghana, of which 1,729 people were employed in Brong-Ahafo. When including the indirect and induced effects, the total employment that is supported sums up to 8,700 jobs which are broken down by sector in Exhibit 20. The 1,300 jobs supported by suppliers in the 1st round are smaller in number than the 3,200 jobs supported by the suppliers of NGGL's suppliers. The main reason for this is that NGGL's direct suppliers are considered to be companies that operate in the formal, more productive and less labor intensive economy vis-à-vis the informal sector in which many 2nd round suppliers operate. In 2011, on average, 4,139 of NGGL's contractor employees worked on site which is about 92% of NGGL's 4,500 indirect employment (1,300 1st round jobs and 3,200 2nd round jobs). On top of the indirect effects (the 1st and 2nd round jobs supported), the re-spending of salaries that are earned by NGGL employees and by employees in round 1 and 2 support an additional 2,400 jobs. Most of these jobs, are jobs in the agricultural and trade sectors.

EXHIBIT 20: Direct, indirect and induced effects on employment per sector (in '000 jobs)



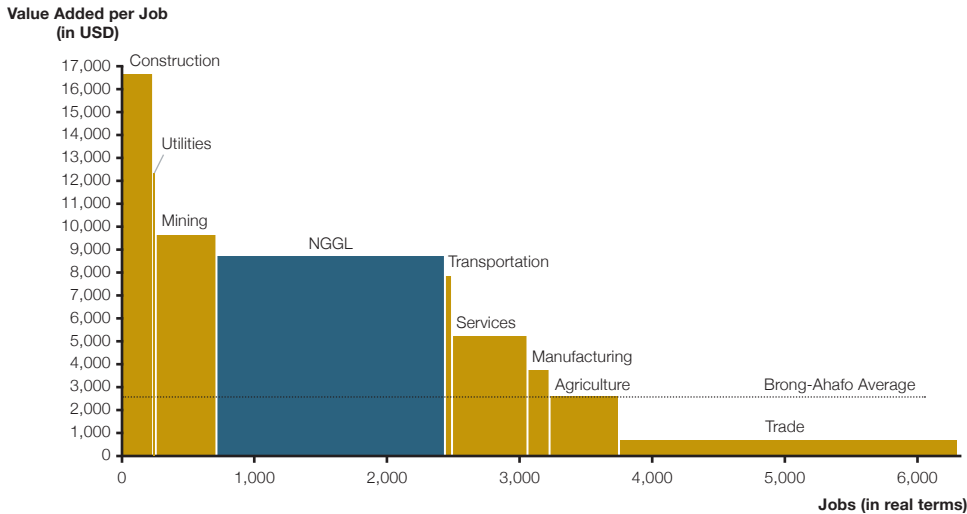
22 The regional government income of USD 2.9 million has been excluded from the total impact of USD 30.5 million because it can't be attributed to the Asutifi district, while household income and profits & savings can.

The 8,700 jobs in Brong-Ahafo represent 0.86% of Brong-Ahafo's workforce. Given the assumption that 55% of the workforce lives in the Asutifi district, which accounts for 5% of Brong-Ahafo's population, it follows that about 10% of Asutifi's employable population is directly or indirectly related to NGGL's presence. Taking into account the substantial unemployment and underemployment present in Brong-Ahafo²³, NGGL's share of the employed workforce is probably much bigger.

Exhibit 21 shows that value added per NGGL employee in Brong-Ahafo is not nearly as high as at the national level (see Exhibit 15). The main reason for this is that the largest portion of value added by NGGL, namely the tax payments, accrues nearly in its entirety to the national government. The value added per jobs in the other sectors is comparable to the national figures, except for the trade sector which is informal to a much greater extent.

The reason that value added per job for the construction and mining sector is higher in comparison to NGGL's value added per job is due to the specific high value added services these sector deliver to NGGL (e.g. underground mining services). The utilities high value added per job is a common finding as the nature of this sector is that it is more capital than labor intensive.

EXHIBIT 21: Value added per direct/indirect job supported by NGGL (in USD '000)



23 Unfortunately no reliable data about unemployment is available.



A female employee at work at the Ahafo Mine

5.4 Comparison of NGGL's Impact at the National, Regional and District Levels

NGGL's relative economic impact at the national, regional and district levels as described in Sections 4 and 5 is summarized in Table 2. NGGL's value added impact largely accrues at the national level in absolute terms, but in relative terms the impact is more or less comparable at the national and regional level. Because the bulk of its operations are in the relatively smaller Asutifi district, its value added impact there is an order of magnitude larger. As expected, NGGL's employment impact is largest in Asutifi and smallest at the national level.

TABLE 2: Summary of NGGL's direct and total impact on value added and employment at the national, regional and district level

IMPACT	GHANA	BRONG-AHAFO REGION	ASUTIFI DISTRICT
Direct Value added	0.60%	0.38%	~ 4%
Total Value Added	0.95%	0.78%	~ 8%
Value Added multiplier	1.6x	2.0x	~ 2x
Direct Employment	0.02%	0.17%	~ 1.5%
Total Employment	0.39%	0.86%	~ 10%
Employment multiplier	21x	5x	~ 6x

Exhibit 22 combines NGGL’s absolute and relative economic impact in one image showing that although very large at the Asutifi district level, NGGL’s absolute value added is far larger at the national level.

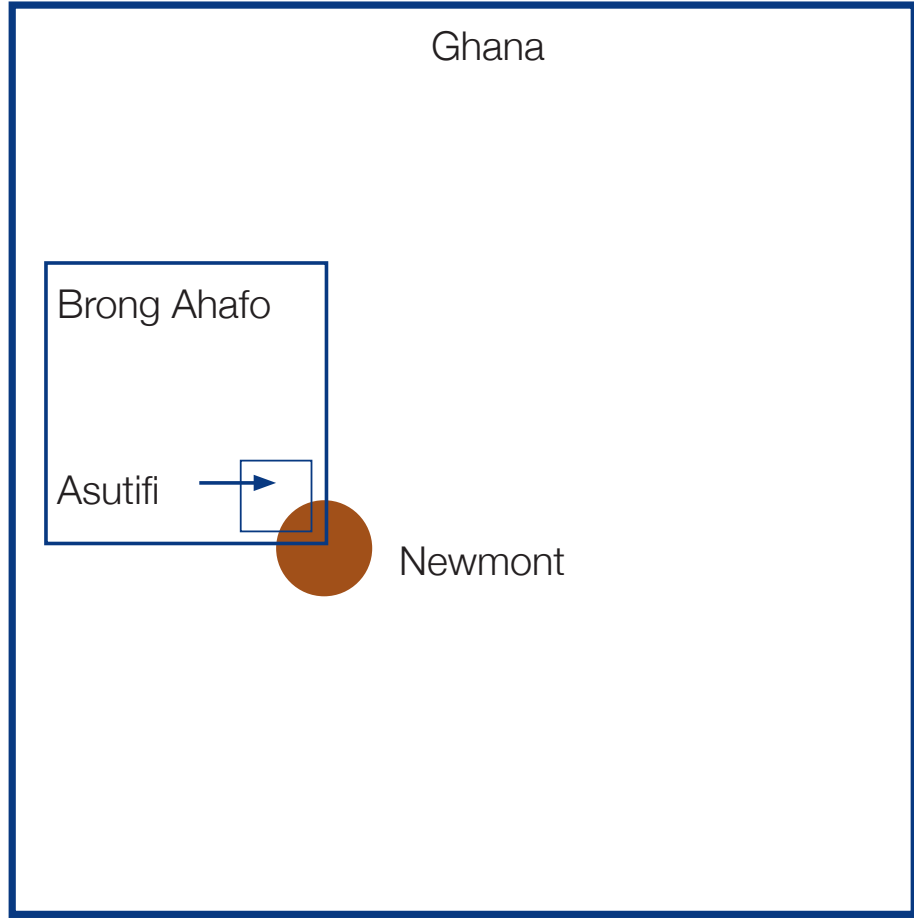


EXHIBIT 22: Visual impression of NGGL’s national, regional and district level economic footprint in terms of total value added (Table 2). Surface areas of the national, regional and district levels and NGGL’s value added are proportional to GDP and value added

6. Impact on the Household Level

When NGGL signed its investment agreement with the Government of Ghana in December 2003, it was clear that a lot of capital would flow into a region that is predominantly occupied with subsistence agriculture. Interestingly, the actual capital that flowed in was much larger than originally anticipated by Newmont and the government. This inflow of capital did not only alter the structure of the regional economy but also influenced the people’s traditional way of living. In this section, we elaborate on what has actually changed for households in this region based on a household survey that was conducted as part of this assessment.

The households that were interviewed were chosen such that three groups can be distinguished (see also Section 3.2):

- Households within the Ahafo Mine’s economic catchment area²⁴ with at least one member working for NGGL;
- Households within the Ahafo Mine’s catchment area but without members that work for NGGL;
- Households outside the Ahafo Mine’s catchment area without members working for NGGL.

This division allows us to determine the impact of being employed by NGGL (first and second groups) as well as the more general impacts of the Mine because the third group is a kind of ‘control’ group.

The results from this survey are compared with findings from the External Stakeholder Perception Survey 2013 done by the Bureau of Integrated Rural Development of the Kwame Nkrumah University of Science and Technology (KNUST). The main difference between the two surveys is the sample selection. Whereas this Report distinguishes three sub-groups, KNUST does not make a distinction between households that are and aren’t affected by the Ahafo Mine. This led to some opposing findings, but these have been addressed accordingly.

The results of the household survey carried out for this assessment will be discussed in detail below but are here summarized as follows:

- The presence of the Mine led to an influx of people to the region;
- The household spending power of NGGL employees in the region is on average twice as high as the average households in the region;
- Households inside the economic catchment area of the Mine are less entrepreneurial than households outside the catchment area;
- Households of NGGL employees are on average better educated than other households in the region;
- Access to water and electricity has not improved significantly since NGGL started its operations;
- Households report that their economic situation has improved since NGGL started its operations.

24 The catchment area of the Ahafo mine is defined as the Asutifi and Tano-North district in Brong-Ahafo. Exhibit 8 in Section 3.2 shows the location of the households and how many people have been surveyed.



An aerial view of Ntotroso, a community in Ahafo

6.1 Migration

Households that are economically closer to the Mine (i.e. employed by NGGL or living in the vicinity of the Ahafo Mine) are more likely to have migrated into the area from outside. Table 3 shows that from the households with NGGL employees only 64% of their members were born within the region. For households living close to the Mine this is 82% and for the households living outside the catchment area this is 87%.

TABLE 3: Place of birth (% of total households surveyed) per group of households

	BORN IN THE REGION
NGGL Employees	64%
Households inside catchment area	82%
Households outside catchment area	87%

Table 4 also shows that NGGL employees are less likely to own a house in the region. In fact, more NGGL employees still own a house outside the region than inside indicating that they have migrated into the area. Other households inside the catchment area are again less likely to own a house than households outside the catchment area, which explains the high demand and consequently the high price for housing.

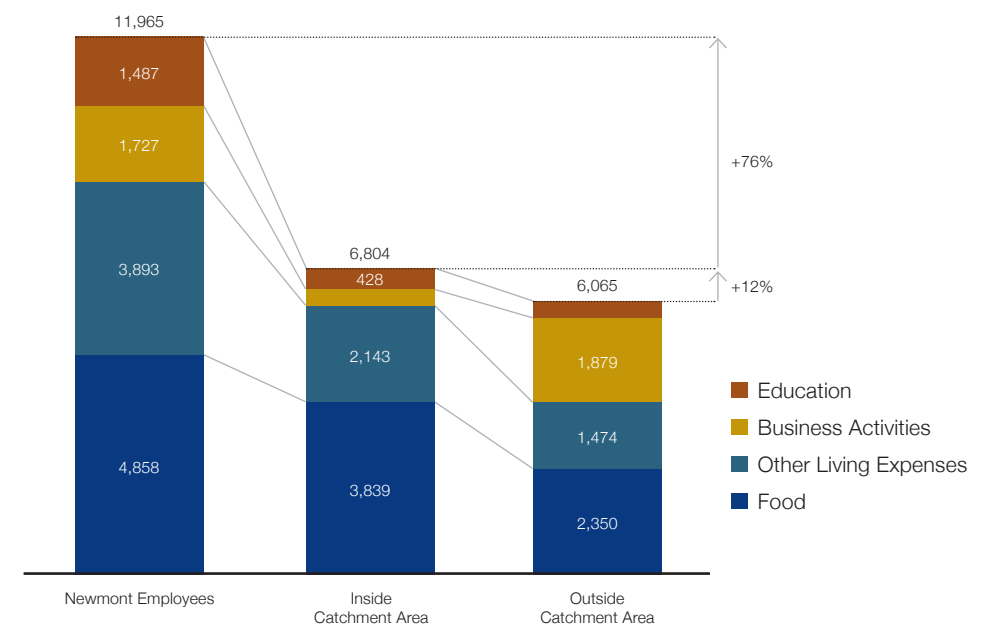
TABLE 4: The ownership of a house inside the region or somewhere else in Ghana (% of households surveyed in their respective group) per group of households²⁵

	OWNERSHIP OF A HOUSE IN BRONG-AHAFO	OWNERSHIP OF A HOUSE IN THE REST OF GHANA
NGGL Employees	30%	36%
Households inside catchment area	45%	18%
Households outside catchment area	64%	19%

6.2 Household Spending

It is not surprising that NGGL's presence has led to an influx of people into the region considering that the Mine's employees are able to spend on average twice as much as other households in the region. Exhibit 23 shows that the annual spending of NGGL employees is almost GH¢ 12,000 (approximately USD 7,700) whereas the average expenditures of households in the catchment area are GH¢ 6,800 (approximately USD 4,400). Outside of the catchment area, the average annual figure is GH¢ 6,000 (approximately USD 3,900). These findings are in agreement with KNUST's conclusion that the combination of in-migration and higher household expenditures lead to less affordable goods and services in the communities, especially that of housing. In addition to this price effect, people living inside the catchment area may have developed a somewhat more expensive lifestyle.

EXHIBIT 23: Average household expenditure (in GH¢ on annual basis) per group of households



²⁵ Ownership of a house in Brong-Ahafo does not exclude ownership of a house in the Rest of Ghana.

6.3 Business Activities

Exhibit 24 shows that households inside the catchment area (but with no members employed by NGGL) spend about 6% of their income on business activities whereas households outside of the catchment area spend 31%. A partial explanation for this is shown in Exhibit 25 which shows that non-agricultural self-employment (e.g. day labour or trade) as a source of employment, is significantly more important than agriculture, which typically requires more inputs and (self) financing.²⁶ In that sense, the presence of the Mine seems to have made people inside the catchment more dependent on employment by the Mine and to be less active in agriculture, which is the mainstay of the economy in the region. In addition, KNUST concluded that the compensation payments made to those who lost their land, and thereby their main source of income, were not used to make meaningful investments (in assets or skills) but instead it led to a more luxurious life style.

KNUST continued to conclude that NGGL programs like the Agricultural Improvement and Land Access Program (AILAP) were underutilized. AILAP, set up in cooperation between the Ministry of Food and Agriculture and NGGL, helps to develop agriculture in the communities most affected by NGGL. From 2006 until 2012, NGGL spent USD 5.4 million on the inputs (seeds, fertilizer and herbicides) and training²⁷. Apart from an increase in the amount of land under cultivation, yields have increased by 65% for plantain and 80% for maize. In short, for those who made use of it, the program helped achieve substantial improvements but further improvements are possible and in fact needed. ATS, NGGL's supplier of camp and hospitality services, is able to source only about 60% of its agricultural products locally. The main reason for this is that the demand from ATS is more diverse than what is locally produced. By all reasonable standards, the diversification of agricultural production ought to be possible in a fertile region like Brong-Ahafo.

EXHIBIT 24: Average household expenditure (% breakdown) per group of households

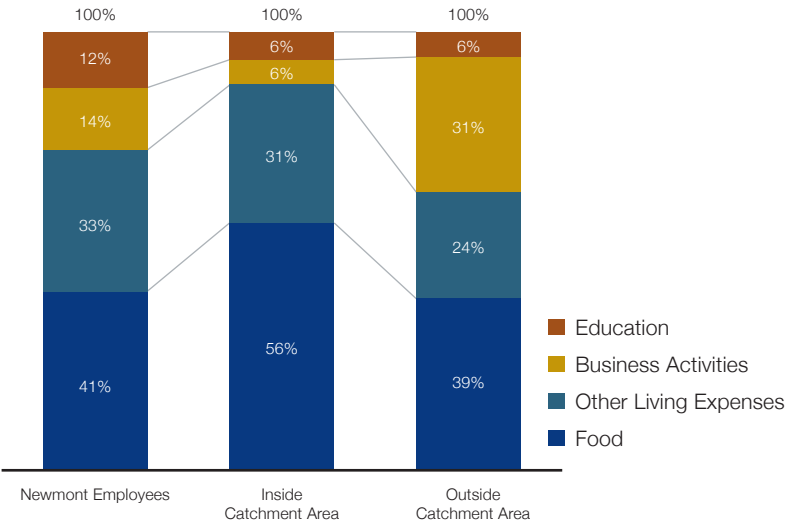
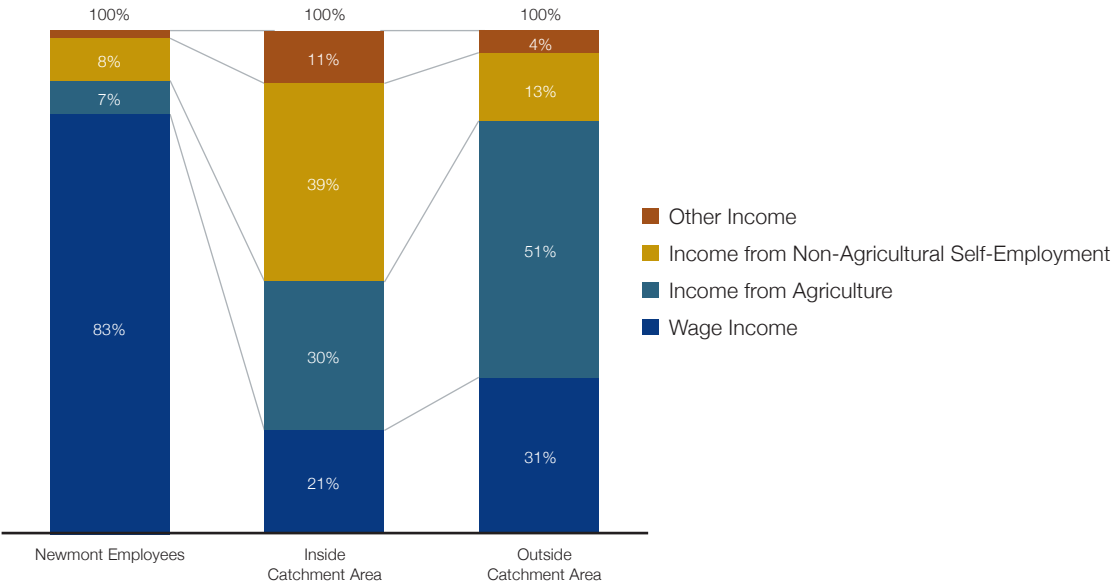


EXHIBIT 25: Source of income (% of total household income) per group of households



26 KNUST reports agriculture to be the major source of income for households inside the catchment area and income from non-agricultural self-employment as the second biggest source of income. We think based on the survey results that there is more non-agricultural employment inside the catchment area than outside. We cannot, however, conclude that it is more important than agriculture as the results indicate.

27 The fact that NGGL supplies agricultural inputs may also partly explain why households in the catchment area spend less on business activities.



Happy children playing on the compound in front of a school building

6.4 Education

The fourth conclusion from the household survey is that households of NGGL employees are on average better educated. This is not surprising because NGGL requires in general more skills than the average job in Brong-Ahafo. Exhibit 26 shows that although 55% of household members with NGGL employees have not finished high school, this is 70% for other households in the catchment area and 79% for household members outside the catchment area.

The same graph shows that 18% of NGGL households have either a university degree or a technical diploma, while only 5% of non-NGGL households inside the catchment area and about 2% outside the catchment area have these skills, although this last difference is not statistically significant.²⁸

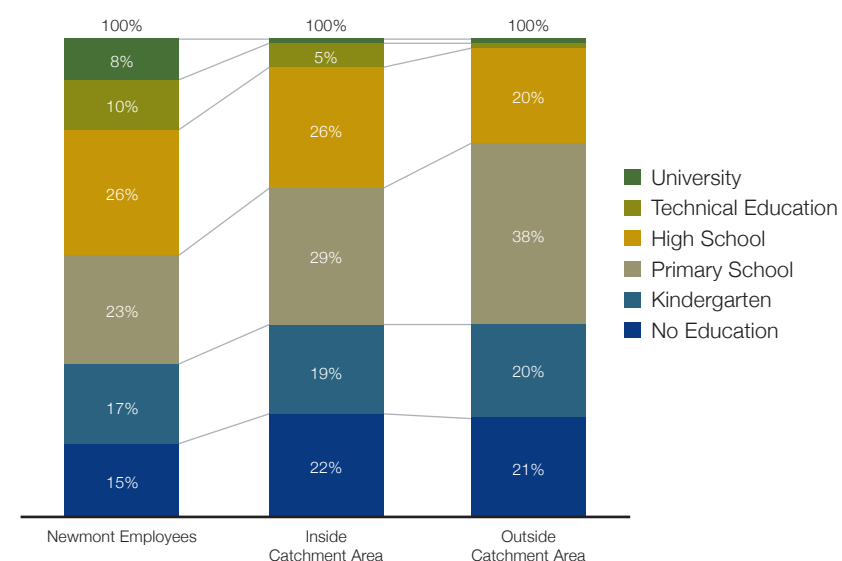
Because the Mine has been operating for just seven years, it is difficult to delineate NGGL's impact on the overall long-term education level of the region. That notwithstanding, Exhibit 23 shows that NGGL households spend at least three and a half times more on education of household members (or as shown in Exhibit 24 twice as much in relative terms) which is likely to translate into better education outcomes. Apart from NGGL, employees having more disposable income, the higher proportion of their income that is spent on education is

²⁸ The education breakdown reported by KNUST is similar to the breakdown shown here for NGGL employees. Because the KNUST study does not distinguish between households with and without members that work for NGGL no conclusions can be drawn on any differences.

consistent with the fact that the better educated invest more in their children's education.

In addition to these findings from the survey, it should be mentioned that NGGL provides work place safety training for its employees and contractors to ensure safe and efficient mining operations. In 2011, a total of 2,068 NGGL employees received an average of 208 hours (26 working days) of training and 7,190 contractor employees received 22 hours of training on average, with safety being a major topic. When people move on to other jobs, they take their improved skills with them. Because the number of contractors who received training in 2011 was 70% higher than the 4,139 contractors employed as per year end 2011, this shows that skills instilled by NGGL diffuse into the wider economy.

EXHIBIT 26: Education breakdown in terms of highest formal education level completed by household members per group of households





NGGL staff in training

6.5 Access to Water and Electricity

Since the start of mining operations, the household survey shows that access to water has not changed significantly.²⁹ Surprisingly, however is that the availability of electricity has reportedly gotten worse. Before the start of the Mine, respectively 64% and 72% of the households inside and outside the catchment area indicated that they were cut off from electricity at least once a week. Now, respectively 91% and 94% of those households indicate such cuts. The main reason for the worsening situation lies with the mismatch in national demand and supply of energy rather than the presence of NGGL, which in actual fact has made significant investments in the transmission and electricity supply infrastructure in the region and district. National demand for electricity far outweighs actual supply and therefore it is no surprise that electricity shortages have led to nationwide power cuts and blackouts.³⁰

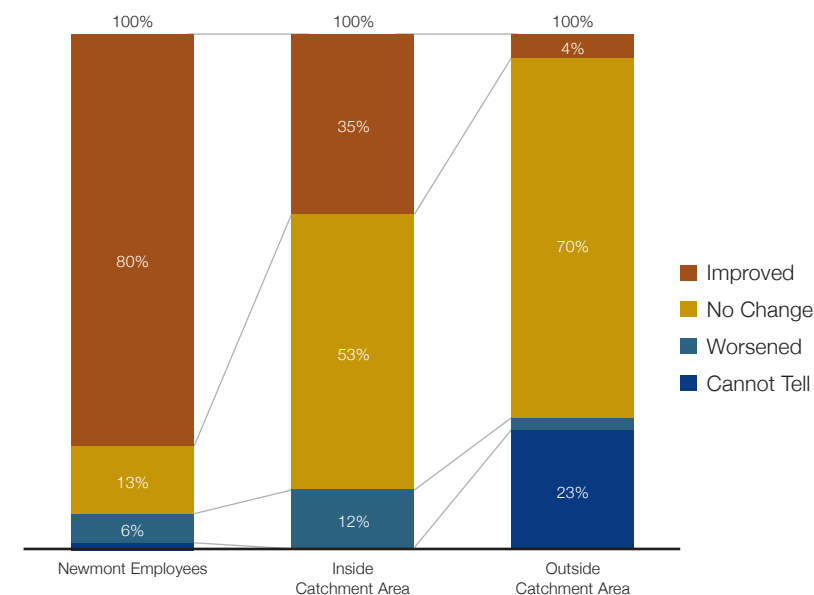
6.6 Overall Change

The final conclusion drawn from the survey is that the perception of whether the general socio-economic conditions have improved for the better or the worse depends on how the Mine has affected people. In line with general expectation, the vast majority of NGGL employees think that the situation has improved, as shown in Exhibit 27, while households without NGGL employees think different. Although outside the catchment area, 93% (70%+23%) of the people have not noticed or cannot tell any change and of the households without NGGL employees living closer to the Mine, 53% think that the overall situation has not changed. Of the other 47% of households inside the catchment area, most think the situation has improved since those

²⁹ Although KNUST reports only on water issues for resettled households the overall picture of this household survey seems to be in line with the findings in this Report.

³⁰ Energizing Economic Growth in Ghana: Making the Power and Petroleum Sectors Rise to the Challenge, 2013, Energy Group African Region World Bank.

EXHIBIT 27: Perception of the overall situation (% of total households) per group of households



who think the situation has improved outnumber those who reported a worsened situation by 3 to 1. It must be noted that KNUST reports the opposite. They show that 15% indicated an improvement in the standard of living while 62% indicated an actual decline. The majority of those who have experienced a decline in their living standards are those who lost their land to NGGL or a job related to that land. This is important to note as it probably explains the differences in perception. The KNUST survey overwhelmingly focused on the land-impacted communities (300 households out of the survey sample 430) whereas the survey used for this assessment did that to a lesser extent (only 30 out of the sample of 94 households).

Although the economic activity generated by NGGL is its most notable impact on the district, the Newmont Ahafo Development Foundation (NADeF) is most likely to improve the overall socio-economic conditions in the communities most affected by the Mine. The Foundation receives 1% of NGGL's profit after taxes and USD 1 for every ounce of gold sold.

Since the establishment of the Foundation in 2008, NGGL has contributed almost USD 13 million to NADeF, of which USD 3.531 million was for 2011 alone. This is about 23% of the USD 15 million value added generated directly by NGGL in Asutifi (see Section 5.2). When projects are selected carefully so that they contribute to alleviating development bottlenecks, the long-term economic effect of NADeF may even be larger.

³¹ GHC 4.2 million according to the NADeF annual report



Members of Ahafo Sustainable Development Committee in a meeting

According to its charter, NADeF puts 10% of NGGL's contributions into a capital endowment (currently about USD 1.2 million) and the remainder is spent on human resources development, infrastructure, social amenities, economic empowerment, natural resource management, and cultural heritage & sport activities³², subject to approval by the Board of Trustees³³. So far the foundation has spent about USD 9 million on scholarships and projects like the building of schools, community houses, boreholes and the delivery of tools and equipment. This implies that the foundation has spent USD 3 million less than intended due to the lack of sufficiently robust projects³⁴, which increases the foundation's 'dry powder' for supporting future projects.

From a pure development economics standpoint we would argue that NADeF's charter is too much focused on 'one off' projects and that a more investment-driven approach would be better. Although a change of the charter would need to be approved by the communities, the foundation is fortunately moving in that direction and has, for example, set up a revolving fund for providing microcredit to women. Investments into new livelihood sources, e.g. agribusiness and textile processing, would also be highly recommendable.

For example, NGGL and its contractors cannot source their work clothes locally because there is no local tailor with the required production capacity. Another example is the difficulty of procuring eggs and poultry locally. We would also advocate that the contributions to the endowment would be larger so that it can ultimately be used as an economic shock absorber when the Mine closes.



A collage of NADeF projects

³² These areas do not have equal share of funds.

³³ The board of trustees consist of the following people: Kwame Saarah-Mensah, Kojo Bedu-Addo, Edwin Allotey-Acquaye, Imoni Akpofure, Randy Barnes, Jacob Ntim-Agyei, Yaw Ofosu-Kusi, Maxwell Badu, Joseph Osei Manu

³⁴ The External Stakeholder Perception Survey 2013 mentions that communities expect that the funds that are not being used should be allocated to those sectors that are in need of infrastructural and social development.



Kwasi Asamoah - AILAP Beneficiary and 2011 National Plantain Best Farmer

7 Conclusions and Recommendations

7.1 Conclusions

The conclusions that can be drawn from this economic impact study are as follows:

1. NGGL is economically important for Ghana. Specifically, the company supports 0.95% of Ghana's GDP, generates 2.84% of the country's total tax revenues and creates employment for 0.39% of the Ghanaian workforce;
2. NGGL's regional economic impact is somewhat smaller than its national impact on an absolute level due to the fact that taxes and royalties are paid at the national level. Specifically, NGGL generates 0.78% of the Brong-Ahafo GDP and employs 0.86% of the region's workforce;
3. NGGL's economic footprint at the Asutifi district level is significant, generating about 8% of value added and employing about 10% of the workforce;
4. NGGL's presence and need for skilled labor has attracted people from outside the area to migrate to Brong-Ahafo and the Asutifi district;
5. NGGL's economic impact has translated into higher disposable income for especially its employees, who spend almost twice as much as people outside NGGL's catchment area. Households without members that work for NGGL but that are located in the catchment area of the Ahafo Mine spend 11% more than people outside;
6. The Mine has created a certain dependence of people not employed by it inside its catchment area. These people are thereby less able to pursue more sustainable means of livelihood;
7. A majority of people in the catchment area believe that the overall situation has improved since NGGL's arrival. The Newmont Ahafo Development Foundation is likely to have contributed to this.

7.2 Recommendations

Based on the findings of this study, our recommendations focus on the necessity to create a larger and more vibrant private sector in Asutifi and Brong-Ahafo. We think there are ample opportunities for a more concerted effort among NGGL, its development foundation, its suppliers and the (regional and national) government. Specifically:

1. Although the Ahafo Linkages program has come to an end, we would advise NGGL to continue and if possible expand it. Specifically, NGGL could embark on a detailed assessment of its suppliers' spending on items that ought to be produced in the district or region. Together with the Newmont Ahafo Development Foundation, a coordinated effort can then be made to start (a portfolio of) companies to fill this need;
2. As the remaining life of the Mine shortens, there is a need for the private sector in the district and region to diversify economic activities by pursuing alternative livelihoods and gradually but steadily moving away from mining-related activities. The presence of the Mine represents a window of economic opportunity during which private sector activity can be incubated. With finance being a major development constraint, NGGL and the regional government can actively look for ways in which the financial contributions to

NADeF can catalyze other (debt/equity) capital, be it public or private, to flow to the region. This may also help to reduce the dependence on the Mine by households in the catchment area.

3. Similarly, the Agricultural Improvement and Land Access Program and especially Ahafo Agribusiness Growth Initiative should be continued as a more effective and productive agricultural sector is a prerequisite for the private sector to grow. It may be worthwhile that the program explores cooperation with NGGL supplier ATS to substantially increase its local sourcing;
4. NGGL's ability to train people and hone business skills remains important to improve people's skills and help business provide higher value added products and services. Access to an educated workforce is an important constraint as mentioned in Section 2.1;
5. Access to power is another large bottleneck for the private sector and ought to be provided by the government. The household survey results (seem to) indicate that the access to utilities has not improved since NGGL came to the region. If this is indeed the case, we recommend NGGL to use its influence with the national and regional government to advocate improvement. It may be worthwhile to explore opportunities for retaining more of NGGL's tax payments within the region;
6. As Newmont is building a second mine in Akyem we recommend that it replicates its successful linkages program. When Akyem produces at capacity (and with the planned mill expansion for Ahafo) Newmont will be the largest gold miner in Ghana by some distance. In our view, it is important that this larger scale enables its national and local suppliers to scale up as well;
7. Considering Ghana's increased dependency on resource-related income, we recommend that the Government develop plans for economic diversification to help it prepare for leaner times when commodity prices are lower or resources become depleted. The Government may wish to emphasize the need for diversification in regions where dependency on mining is greatest. In many mining regions, for example, agriculture has also been a traditional occupation of local residents. Investing in increasing the productivity of agricultural lands—including the development of a stronger property rights regime and access to credit and inputs for farmers—could be among the policies that the Government might contemplate.

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<http://data.worldbank.org/>

Appendix A: Methodology Background

The modeling approach outlined in Exhibit 6 is discussed in more detail in this Appendix.

A.1 Inputs

Company Financials

The 2011 audited Profit & Loss statement and Balance sheet of NGGL have been used.

Supplier Survey

Five big suppliers of NGGL as well as 17 regional suppliers of NGGL have been interviewed in order to get a better insight of their spending pattern. The following suppliers have been interviewed by Steward Redqueen: AUMS, ATS, Mantrac, Toyota, and WBHO. PAB Development Consultants Ltd. has surveyed the 17 regional suppliers that reside in Brong-Ahafo and that are either active in construction, trade, transportation or provide services.

Household Survey

284 households have been interviewed by PAB Consulting in order to assess the impact NGGL's operations have on the households as well as to get a better insight of the spending pattern of households in Brong-Ahafo (see Section 5.3 for more details).

GTAP Data

For Ghana, the most recent Social Accounting Matrix (SAM) dates back to 2007 and has been taken from GTAP 8 database.³⁵ The SAM will be explained in more detail in the next section.

Employment Data

The 2010 population and housing census from the Ghana Statistical Services has provided us with an employment breakdown by economic activity on the national and regional level.³⁶

A.2 Output

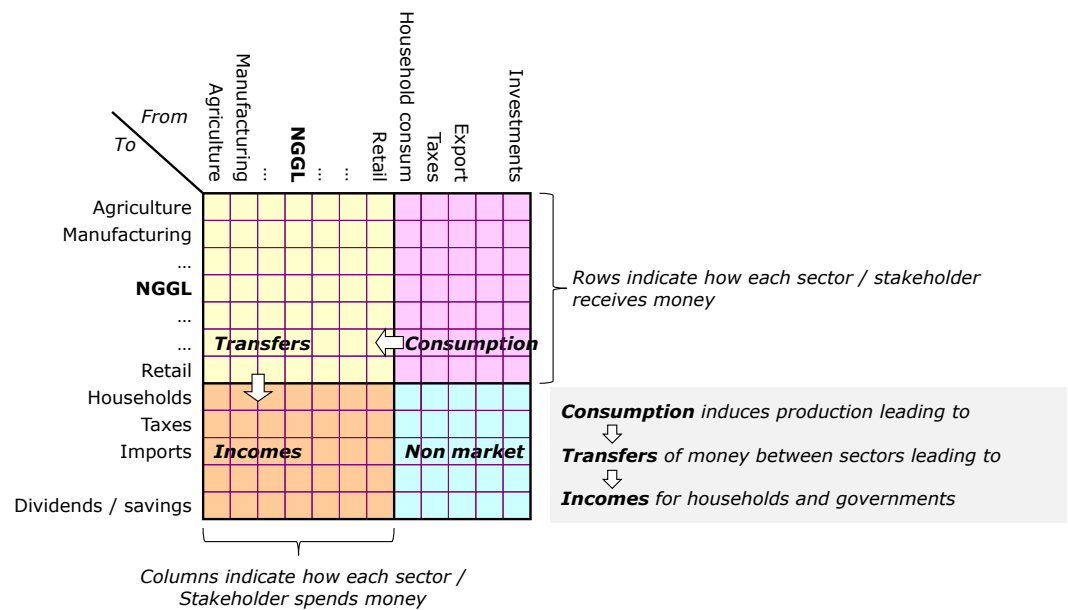
Allocation of P&L Items

As input for this study, the audited P&L account of NGGL has been disaggregated and aggregated based on the economic recipients in the Ghanaian Economy. Here, a clear division is made between regional recipients (i.e. farmers, traders, transporters, households and government in Brong-Ahafo), national recipients (i.e. service providers, households and government in Ghana) and recipients abroad (i.e. imports of goods and services). In addition, the biggest (multinational) contractors have been identified and their costs have been allocated accordingly (see supplier survey for further explanation on the allocation of these expenses).

³⁵ Global Trade Analysis Project, GTAP 8.

³⁶ Ghana Statistical Services, 2010 Population and Housing Census. <http://www.census-ghana.net/index.html>

EXHIBIT A-1: Social Accounting Matrix



National and Regional SAM

The key factor of the input-output model is the Social Accounting Matrix (SAM). The SAM describes the financial flows of all economic transactions that take place within the Ghanaian economy. As shown in Exhibit A-1, 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). Final consumption induces production, which leads to financial transfers between the various sectors, which subsequently generate incomes for households, governments (taxes) and profits (dividends and savings).

The SAM is a statistical and static representation of the economic and social structure of Ghana and since economies are subject to change, SAMs should preferably be updated periodically. For Ghana, the most recent Social Accounting Matrix dates back to 2007 and has been taken from GTAP 8 database.³⁷ Using data from the Ghana Statistical Services and the Bank of Ghana, the Social Accounting Matrix has been updated to 2011 using the RAS method.³⁸

The 2011 SAM concerns the national level. In order to get better estimates on the impact on Brong-Ahafo, a regional SAM is necessary. We 'regionalized' the SAM using a hybrid methodology in which we combine non-survey (top-down) and survey (bottom-up) techniques.³⁹ The top-down approach makes use of the same technique when updating the national SAM from 2007 to 2011, respectively through the RAS method. The only difference here is that regional GDP figures are used instead of the national figures.

37 Global Trade Analysis Project, GTAP 8.

38 Balancing a social-accounting matrix: Theory and application, Fofana, I. et al, 2005

39 Hybrid methods assure the best compromise between accuracy and required resources (Kuhar, Golemanova Kuhar, Erjavec, Kozar, Cor; 2009).

The bottom-up approach makes use of data collected from the household survey (see Section 5.3 for more details) and the supplier survey (see Section A.1). From those surveys the spending patterns of households as well as of the construction, trade, transportation and services sector have been derived and are incorporated in the SAM to derive at a regional SAM.

The main assumption of an input-output analysis is 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 demand for the product and therefore will not experience an increase of production. 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. With the possible exception of skilled labor, due to unemployment in Ghana this does not seem to be an issue.

Since many households are farmers as well, their so-called auto-consumption (consumption of self-produced products) is unlikely to be affected. In our model therefore all household expenditures on food crops and livestock by agricultural households have been excluded. An exception has been made for NGGL employees, for which household expenditures on food crops and livestock are in line with the spending patterns derived from the household survey. Whereas often induced employment effects are significantly overestimated, this approach leads to a much more robust and realistic estimation of them.

Employment intensities

Because this Report focuses on 2011 results, the employment breakdown from the 2010 Housing and Population census has been adapted using the best correction figures available: average growth of population over the last 10 years⁴⁰.

Making use of the 2011 employment data and the output that we derived from the national and regional SAMs, employment intensities can be calculated. The employment intensity shows the number of jobs per one unit of output and that intensity is multiplied by the amount of output that is supported by NGGL's activities in order to estimate the total number of jobs supported. This Report differentiates between formal and informal jobs. These employment intensities have been determined using data on the formal and informal output and employment per sector. Data gaps have been compensated using the following assumptions:

- In line with findings presented by Khan (2012)⁴¹ and Schneider, Buehn & Montenegro (2010)⁴² we have assumed that about 65% of national output is formal and 35% is informal.
- Following the reasoning that more agricultural, less developed economies tend to be more informal we have assumed that about 50% of Brong-Ahafo's input is formal and the other 50% is informal.
- In line with findings from the 2010 Housing and Population Census from the Ghana Statistical Services we assume that about 15% is formally employed and the other 85% is working in the informal sector.

40 Averaging the population growth figures from the World Bank over the last 10 years results in a 2.4% increase of population.

41 <http://fr.slideshare.net/AsiaHouse/1-razia-khan-standard-chartered-bank>

42 http://www.econ.jku.at/members/Schneider/files/publications/2011/IEJ_NewEstimates_ShadEc_World.pdf

- Following the same reasoning as in point two, we assume the informal sector to be bigger in Brong-Ahafo compared to the national average. Therefore we assume only 10% of the employed people to be working in the formal sector.
- Breakdown of the average and formal output and employment figures over the different industries has been done using information from Ghana Statistical Services as well as insights from PAB Consulting, NGGL and Steward Redqueen.

A.3 Outcome

Value-added and employment multipliers

Making use of the national and regional SAM, value-added and employment multipliers can be calculated. These multipliers are used to calculate the impact on different dimensions such as impact per round, per industry and per value add component.

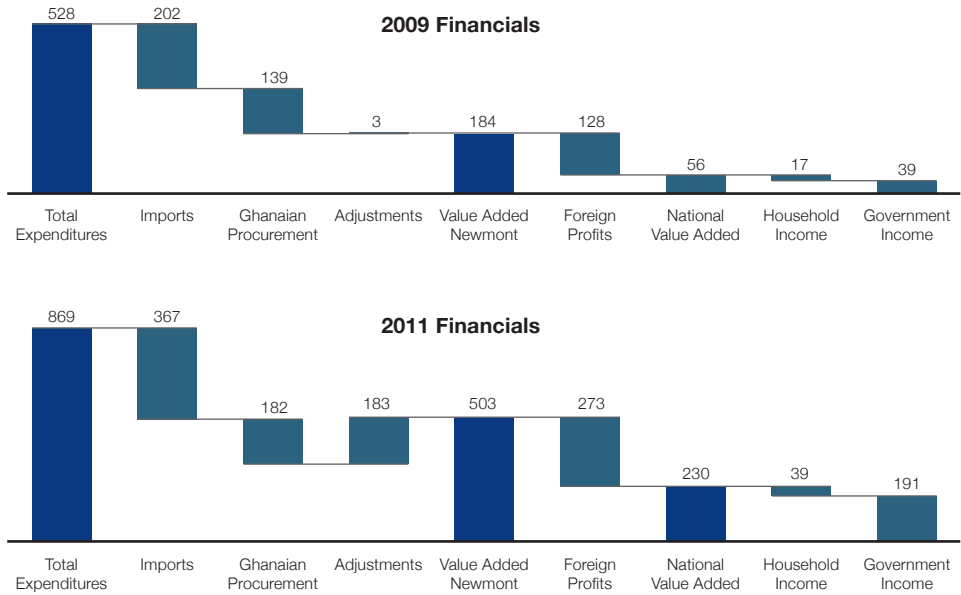
Appendix B: Comparison of Results with the 2009 Report

This section explains the differences between NGGL's socio-economic impact in 2009 and 2011.⁴³

Exhibit B-1 shows that total expenditures have increased by almost 65% from USD 528 million in 2009 to USD 869 million. In 2011, imports likewise increased by almost 65% and only procurement in Ghana did not increase that much. The most striking difference of all is the adjustments. The main reason for these adjustments is that NGGL already anticipated for (higher) tax payments in the near future.⁴⁴

The remainder is the value added created by NGGL, respectively USD 184 million in 2009 and USD 503 million in 2011. Because of the higher gold price compared to 2009, profits from operations that accrue to Newmont's shareholders, and the government for its carried interest, have increased drastically. Because we assume that NGGL's shareholders are foreign, this profit from operations is not attributed to the value added created within Ghana. Value added in Ghana increased from USD 56 million in 2009 to USD 230 million in 2011. This increase can be largely attributed to the increase in government tax and carried interest income. This increase in government income is because the higher gold price boosted revenues and therefore also carried interest and income tax (see Exhibit 12).

EXHIBIT B-1: NGGL's revenues in relation to its expenditure and value added in 2009 and 2011 (in USD million).



⁴³ The figures represented in the Exhibits 11 and 12 are in nominal terms. For a fair comparison, figures should be presented in real terms, but this would lead to too many assumptions to be meaningful.

⁴⁴ In accounting terms, it is called a deferred tax liability.

The indirect value added that is supported by NGGL has also increased (see Exhibit B-2). This Report assumes that productivity and thus value added in Ghana has increased over the last two years, but the increase in NGGL's Ghanaian procurement is probably the main driver behind the increase in value added from USD 99 million (USD 60 million in the 1st round and USD 39 million in the 2nd round) in 2009 to USD 130 million in 2011. Whereas 1st and 2nd round profits from operations and tax income remained stable over the years, household income has increased from USD 65 million (USD 39 million the 1st round and USD 26 million in the 2nd round) in 2009 to USD 105 million in 2011.

Exhibit B-3 shows that total jobs supported by NGGL declined by 7,100 to a total of 41,100 in 2011. This decline in jobs supported is counterintuitive when taking into consideration the increase of Ghanaian procurement by NGGL (USD 43 million since 2009). There are several reasons for the changes in jobs:

- NGGL directly employing about 200 more people;
- Significant increase in labor productivity since 2009 due to the economy being 2.5x larger while employment increased by just 1.03x;
- Ghana's GDP increased by more than 60% in 2010 due to a revision of the methodology that estimates Ghana's GDP⁴⁵;
- Increase of local procurement (USD 43 million) and better insights in how that money is spent within the Ghanaian economy (due to interviewing international & local contractors).

EXHIBIT B-3: Direct, indirect and induced effects on employment per sector in 2009 and 2011 (in '000 jobs)

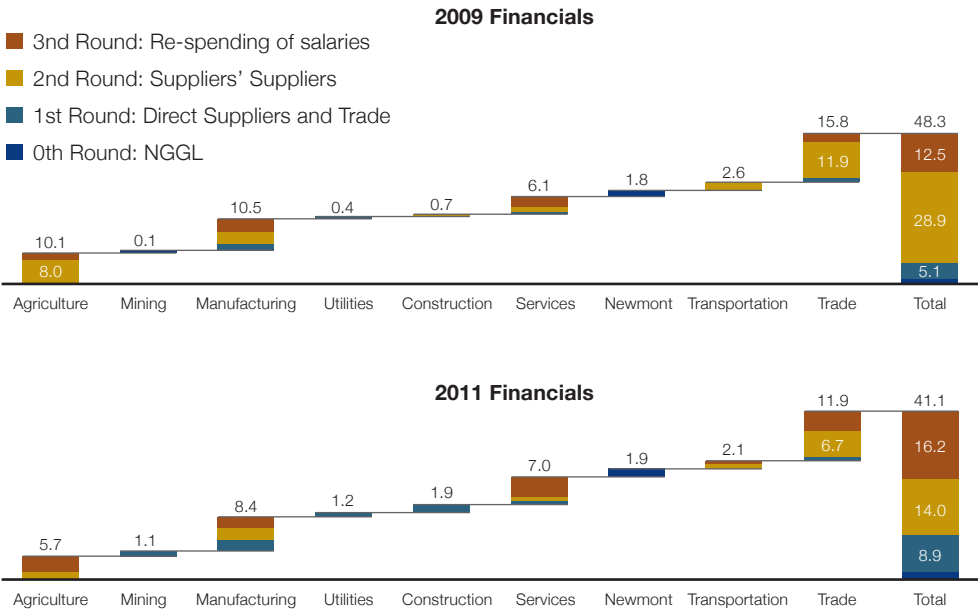
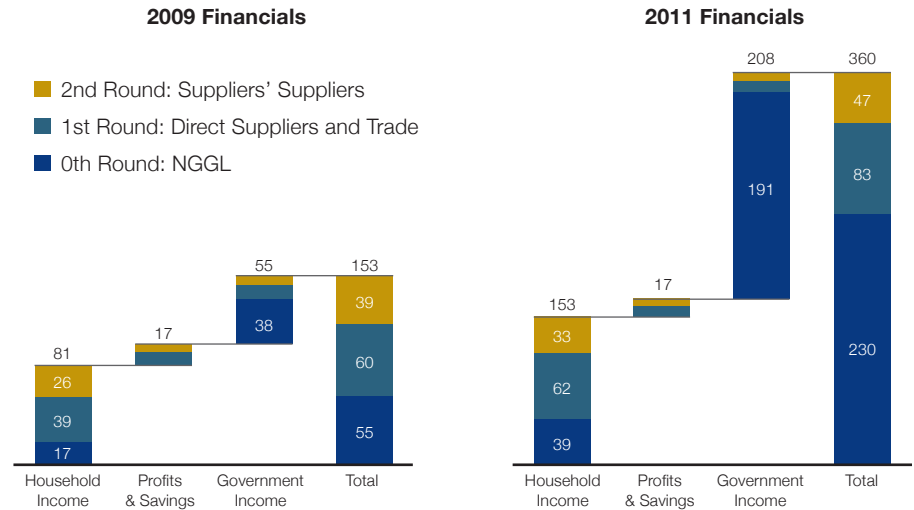


EXHIBIT B-2: Direct and indirect effects on value added in 2009 and 2011 (in USD million)



45 Jerven. M, & Duncan. M.E. (2012). Revising GDP estimates in Sub-Saharan Africa: Lessons from Ghana. African Statistical Journal, 15.

Appendix C: Sector breakdown

Agriculture

- Paddy rice
- Wheat
- Other grains
- Vegetables, fruit, nuts
- Oil seeds
- Sugar cane, sugar beet
- Plant-based fibers
- Other crops
- Cattle
- Other animal products
- Raw milk
- Wool, silk-worm cocoons
- Forestry
- Fishing

Manufacturing

- Cattle Meat
- Other meat
- Vegetable oils and fats
- Dairy products
- Processed rice
- Sugar
- Food products
- Beverages and tobacco products
- Textiles
- Wearing apparel
- Leather products
- Wood products
- Paper products, publishing
- Petroleum, coal products
- Chemical, rubber, plastic products
- Mineral products
- Non-metallic minerals
- Iron & Steel
- Non-Ferrous metal
- Fabricated Metal products
- Motor vehicles and parts
- Transport equipment
- Electronic equipment
- Other Machinery and equipment
- Other Manufacturing

Mining

- Coal
- Oil
- Gas
- Other mining

Utilities

- Electricity
- Gas manufacture, distribution
- Water

Construction

- Construction

Trade

- All retail sales
- Repairs of motor vehicles and personal and household goods
- Retail sale of automotive fuel
- Wholesale trade and commission trade
- Hotels and Restaurants

Transportation

- Transport
- Water transport
- Air transport
- Communication

Services

- Other financial intermediation
- Insurance
- Other business services
- Recreation & Other services
- Other Governmental services
- Dwellings



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