KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF AGRICULTURE AND NATURAL RESOURCE

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DEPARTMENT OF SILVICULTURE AND FOREST MANAGEMENT

THE PERCETIONS OF LIKELY SOCIO-ECONOMIC IMPACT OF ANGLOGOLD ASHANTI LTD'S (AGA) MINE CLOSURE ON THE OBUASI MUNICIPALITY

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THE PERCETIONS OF LIKELY SOCIO-ECONOMIC IMPACT OF ANGLOGOLD ASHANTI LTD'S (AGA) MINE CLOSURE ON THE OBUASI MUNICIPALITY

Thesis submitted to Kwame Nkrumah University of Science and Technology in partial fulfilment for the degree of Master of Philosophy in Natural Resources and Environmental Governance.

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BA. Geography and Rural Development

November, 2016

DECLARATION

I declare that this project was personally written by me under supervision. It has not been copied from any one. I undertook the entire study herein submitted and therefore assume responsibility for any error found in it.

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ABSTRACT

Mining has a long and important history in Ghana, and gold in particular has played a key role in the country's development. Mining and minerals has been a major source of economic growth and especially in towns and communities directly affected by mining operations. The Obuasi Municipality is rich with gold resources which have been mined commercially since 1897. In 2014, AGA Ltd restructured and downsized the Obuasi Mines to 39% of the original concession area of 475km^2 and it resulted in more than 3500 workers being laid off. In this study, Case Study and Triangulation approach were adopted to investigate community perceptions of the likely socio-economic impacts in the eventual closure of the AGA Ltd mining operations in the Obuasi Municipality. Using questionnaires, data was elicited from 105 respondents in 11 communities while qualitative data was obtained through Indepth Interviews, Focus Group Discussions and Key Informants from 6 purposively selected communities in the Obuasi Municipality. The study results revealed that 90% of the respondents perceived adverse impacts of mine closure on the Municipality and in particularly, 88% agreed that the closure of the mine would worsen the poverty situation in mining communities. The findings of the study revealed lack of diversification of the local economy of the Obuasi Municipality due to over dependency on mining. The study therefore concluded that there has not been deliberate policy interventions in providing alternative economic opportunities that could sustain the Municipality in the event of mine closure. This study recommended that timely measures are designed to provide sustainable and alternative economic opportunities through diversification of the local economy of Obuasi. Additionally, Integrated Mine Closure Planning should be adopted and implemented through stakeholder engagement as a mitigation strategy towards solving problems associated with mine closures in Ghana.

DEDICATION

I dedicate this work to my parents- My mother and late father (Mr. and Mrs. Angyobore) and all supportive family members especially my wife and my three children and all friends who gave me their support throughout the period that this project was being undertaken.

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CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The World Summit on Sustainable Development WSSD stressed the importance of minerals and metals for the world economy and modern societies and the vital role of the mining industry to all countries with mineral resources particularly in developing countries. The Inter-governmental Forum on Mining, Minerals, Metals and Sustainable Development IGF, (2002) is also of the view that mining has the potential to propel holistic economic development, reduce poverty and provide support for countries to achieve their United Nations (UN) Millennium Development Goals (MDGs) if mining operations are managed properly. In order for mining to contribute meaningfully to sustainable development objectives, a holistic and fully integrated approach is needed. Mining operation must have linkages with the economic, social and environmental sectors while efforts are directed to ensure communities benefit from mining.

According to Hobbs (2005), the Report on Mining Minerals and Sustainable Development MMSD highlighted the mining sector as one of the priority areas on the sustainability agenda as evident in the Johannesburg Plan of Implementation (JPOI). Paragraph 46 of the 170 paragraphs of the WSSD noted that "mining, minerals and metals are important to the economic and social development of many countries". Mining has the potential to transform natural capital into human capital and other forms of capital, integrate communities, and address basic needs like health and education, creation of employment and boost businesses and services that are related to mining and non-mining activities

The development of a mining project can be a source of transformation in the local social and economic conditions in a particular mining area, country or region. The closure of the mine must therefore be designed in such a manner that ensures community infrastructure, social amenities as well as economic and social conditions generated during mining operations last beyond mine closure. Implementation of an Environmental Impact Assessment (EIA) is usually adopted and implemented by large mining firms in order to maintain best practices of environmental management systems. The socio-economic dimensions of mining operations are however usually not incorporated into these environmental management systems.

Mining project has the potential to support sustainable development when closure objectives and impacts are considered from the project inception. According to Sassoon (2000) cited in MMSD, mine closure policy and planning must have an initial vision that define the end result and set out concrete objectives towards implementation and attainment of that vision. This kind of vision was however not an important element of consideration in the mining industry at the start of commercial mining in 1897 at the Obuasi Mines. Sassoon (2000) maintained that in order to achieve that kind of vision, "a mine closure plan should be an integral part of a project life cycle and be designed to ensure that public health and safety are not compromised; environmental resources are not subject to physical and chemical deterioration; the after-use of the site is beneficial and sustainable in the long term; any adverse socio-economic impacts are minimized and all socioeconomic benefits are maximized".

According to Kemp *et al* (2008), the closure of mines can seriously affect the viability of some mining communities and towns. Some of the impacts of mine closures

identified are the decline of local economies and decrease in population which may have adverse effects on social services, schools, labor markets, employment, housing prices and other impacts. It is also realized that mine closures and completion either results in the cessation or considerable reduction in the payment of taxes and royalties which has direct impact on local expenditure of governments and other beneficiaries.

Mine Closure in this study is contextualized as the holistic approach to mine closure that give equal attention in addressing both environmental and socio-economic impacts of mining. It is conceived as mine closure that imbibes the best principles and practices in mining. In this regard Mine Closure Planning involves the sound measures and strategies that are adopted by the mining firm from the exploration and feasibility stage of mine to the final closure and decommissioning with the ultimate aim of ensuring sustainable development. When socio-economic impacts of mine closure are considered early in the operations of the mining firm, it guides mining operations to be conducted in such manner that ensures that environmental and health hazards are minimized while social and economic benefits are maximized at the close of mining operations.

According to Wikipedia website, the history of mining in Ghana and especially commercial gold-mining in Obuasi point to the fact that Obuasi is one of the oldest mining towns in the world. Mining has therefore remained the major economic activity of the inhabitants of Obuasi for over a century since commercial mining was commenced in the town in 1897. The socio-economic activities of Obuasi town are largely influenced by goldmining and mine related economic activities. The Obuasi Mines concessions have gone through various transformations in terms of its ownership, management and shareholding but it is currently owned and managed by AngloGold Ashanti (AGA Ltd) since 2004. The

company is therefore mostly held responsible by the affected mining communities and other stakeholders for the socio-economic and environmental impact of mining on the Obuasi Municipality. In the past, the Obuasi Mine had the capacity to employ a higher workforce but the workforce is now being reduced mainly due to automation, reduction in ore, fluctuating of world market prices and subsequence restructuring and retrenchment exercises.

1.2 PROBLEM STATEMENT

There is ample evidence which suggest that countries such as Canada, Chile, Australia and Bostwana and a host of many other countries have realized impressive contributions from mining in terms of social and economic development. While experiences in some other countries have also shown worsening economic growth where the exploitation of minerals are not well managed (MMSD). The MMSD Report indicated that the large volume of existing literature on mine closure is skewed towards the "environmental dimension of mine closure planning and implementation with relatively less case studies available on successful integrated mine closure, i.e. successfully closing all facilities at a mine site, while also considering the economic and social impacts in the affected mining communities. Integration of other aspects of sustainable development, i.e. economic and societal interests, has not been equally considered to the same extent as the considerations for environmental issues" (Van Zyl *et al,* 2002).

Principle nine of the Draft Mining Policy of Ghana, (2010) stresses that, in the cessation of the mine, the mining project should have created opportunities for the postmine economic viability and sustenance of local communities. The measures to be outlined to ensure the attainment of environmental, economic and social acceptability in mining

communities must be subjected to approval by relevant Government agencies such as the Environmental Protection Agency (EPA), the Minerals Commission and the local communities. In reality, Ghana has no mining policy.

Mining has played a key role in social and economic development of Ghana. However, the Operation and Evaluation Department (OED) of the World Bank (2003) cited in Roe and Samuel (2007) revealed that the problems of mine closure have not received the necessary attention in Ghana and stated further that if the Obuasi Mine were to close, the consequences would be disastrous for the local people. This is attributed to the fact that the local economy of Obuasi has depended on mining activities for more than a century with no deliberate measures towards diversification of the economy into other alternative and sustainable areas of development.

In 2014, the Obuasi Mines was downsized to 39% of its original concession due to what AngloGold Ltd termed as restructuring and redevelopment of the mines. As a result, over 3,500 employees, including contractors were laid off leaving a skeletal staff for 'maintenance and care,' due to the temporary closure of the mine (AGA Ltd, 2015). Currently, the Obuasi Mine which is a subsidiary of AngloGold Ashanti Ltd is under serious restructuring, and there are concerns that there might even be a possible early closure of the mine than expected. The practice of Mine Closure may vary from region to region or from mining firm to firm depending on the environmental and mining laws that regulate the mining industry in a particular region or country.

The question therefore is, to what extent do mining companies in Ghana comply with the internationally best practices and mine closure guidelines in ensuring

socioeconomic viability and sustainability of mining communities in Ghana, especially towards the closure of the mines? What are the likely social and economic implications of the closure of the AGA Ltd operations on the Obuasi Municipal of which the local economy is mine dependent?

1.3 JUSTIFICATION OF THE STUDY

AngloGold Ashanti Ltd generates large employment opportunities on which the economy of Obuasi depends (Roe and Samuel, 2007). Gold-mining directly employed over 6700 people as at 2004 and mining constituted 35% of the local economy of the Obuasi Municipality. AGA directly employed the local people while other opportunities are indirectly generated through mine and non-mine related businesses such as supply of mining equipment, mining contractors, banking, insurance and so on.

The Obuasi Mine currently under the management of AngloGold Ashanti, the world's third largest gold producer, generates quite a substantial source of employment in the Obuasi Municipality and mining is the main backbone of the economy of the Obuasi Municipality and a key foreign exchange earner for Ghana. The ultimate objective of mine closure is to ensure the sustainability of the ecological system while also ensuring that socio-economic benefits last through the life cycle of the mines and beyond mines closures.

The focus of the study is to investigate the likely socio-economic impacts in the closure of the Obuasi Mines which is currently faced with some serious challenges resulting in massive retrenchment of its workers, downsized of operations and concerns being expressed over an early closure of the mine by AngloGold Ashanti Ltd. Golder

Associate, (2014) stated that Wikipedia website has listed more than 200 mining towns around the world that have become ghost towns which adversely affected millions of lives. It is therefore appropriate to undertake this study so as to examine the likely impact of the closure of the mine on the socio-economic lives of the inhabitants of Obuasi Municipal and its surrounding environs.

1.4 RESEARCH QUESTIONS

1. What is the contribution of AGA Ltd to socio-economic activities in the Obuasi Municipality and how sustainable are these socio-economic activities after the closure of the mines?
2. What are the likely effects of the mine closure on the workers and their immediate dependents?
3. To what extent would the mine closure affect the provision of social services in the Obuasi Municipality?
4. What is the likelihood of population drift or movement of people from the Obuasi Municipal as a result of the closure of the mines?
5. What are the alternative economic activities that are likely to emerge in the Municipality after the closure of the mine?
6. What will be the likely effect of mine closure on employment opportunities and livelihoods in the complete closure of the mine in the Municipality?

1.5 THE OBJECTIVES OF THE STUDY

The broader aim of this study is to determine the likely socio-economic impact of mine closure on the Obuasi Municipality. The study seeks to assess the impact of mining on the Obuasi Municipality and determine how the closure of the mine will affect sustainable development of the Municipality. Specifically the study seeks to:

1. Identify some of the major socio-economic projects and programs which are implemented by AGA Ltd in the Obuasi Municipality and its environ as a contribution towards sustainable development of the mining communities.
2. Assess the likely effect of mine closure on the provision of social services in the Obuasi Municipality.
3. Determine the likely effects of mine closure on mine workers and their dependents
4. Assess the alternative economic opportunities available for the mining communities in the closure of the mines.

2.0 CHAPTER TWO

LITERATURE REVIEW

2.1 THEORETICAL FRAMEWORK

The Queensland Mining Council cited in Stacey *et al,* (2010) postulates that the guiding principles for mine closure today stems from the "concept of sustainable development, that is using, conserving and enhancing the communities' resources such that the ecological processes on which life depends are maintained and the total quality of life now and the future can be maintained". The "sustainable development" model in mining is the development that should be realized in an environmentally and socially responsible manner so that the costs to the community are minimized while the benefits are shared with affected communities so that they can build a sustainable future beyond the life of the mine, (Barry cited in Antwi-Bosiako, 2003).

The Report of the World Commission on Environment and Development (WCED) or better still the Brundtland Commission, (Our Common Future) is accredited with the concept of sustainable development. The WCED defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Ciegis *et al* (2009) maintain that Sustainable development is a balance of environmental, economic, and social goals of the community that ensures the wellbeing of the present and future generations".

The MMSD Report noted that Sustainable development in mining communities is to achieve locally acceptable social, environmental, and economic goals especially long term community aspirations. Additional value should be realized in the form of human, financial, physical and information resources from the interactions between the mining

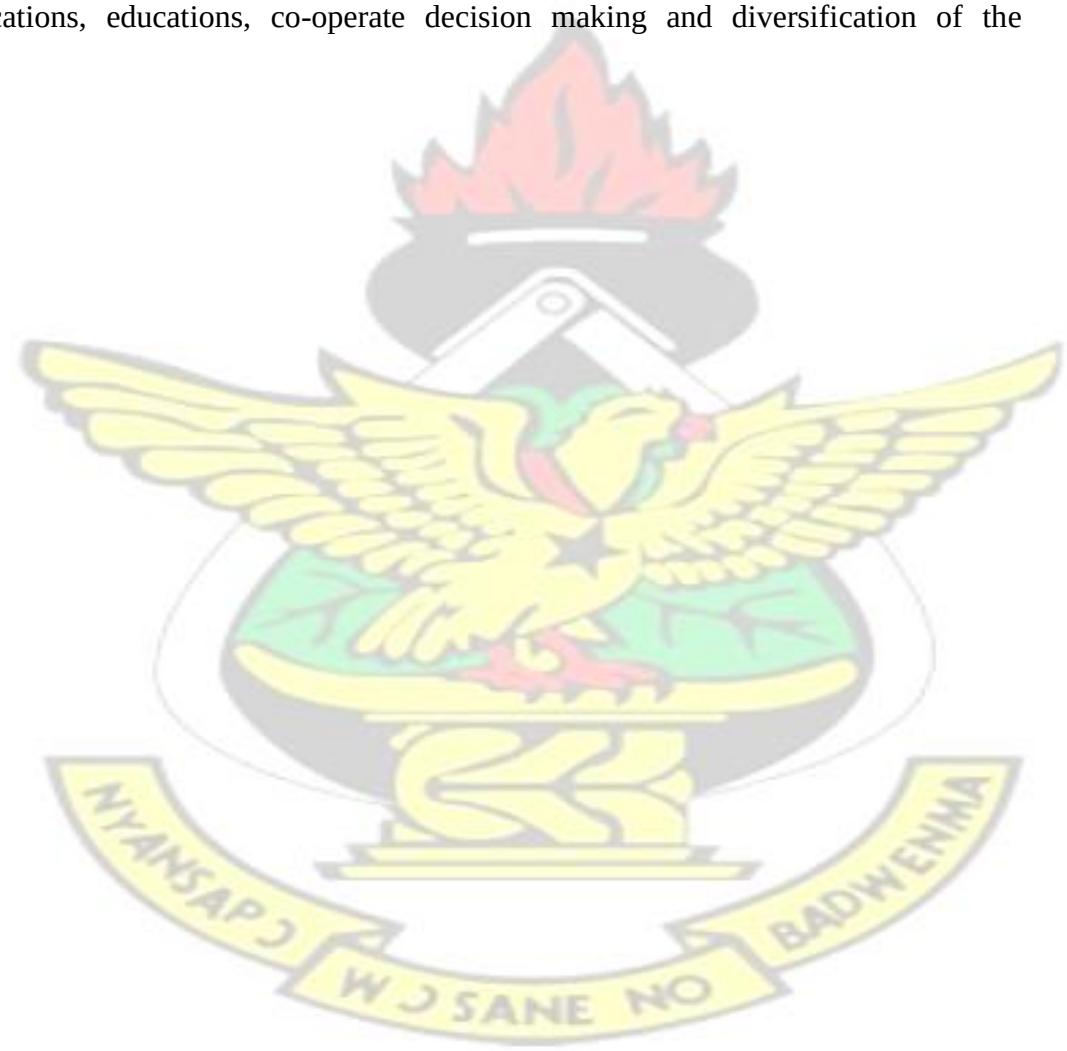
operation and the community while measures are adopted to minimize the adverse externalities that are usually associated with mining operations.

The concept of sustainable development has received a lot of attention and debate on its applications in modern socio-economic development paradigms. Enriquez & Drummond cited in Davis *et al,* (2012) postulated that "Sustainability can be 'weak' or 'strong' depending on the substitutions that are considered between natural capital and human-made capitals. The concept of strong sustainability reflects a conservative approach to sustainability, takings its roots from deep ecology, in which it is considered that various capitals are complementary and that both natural and human-produced capitals must be preserved in order for economic activity to continue. The approach to Strong Sustainability is in fundamental conflict with mining as mining converts natural capital to human-made capital, utilizing other resources and sinks in the process".

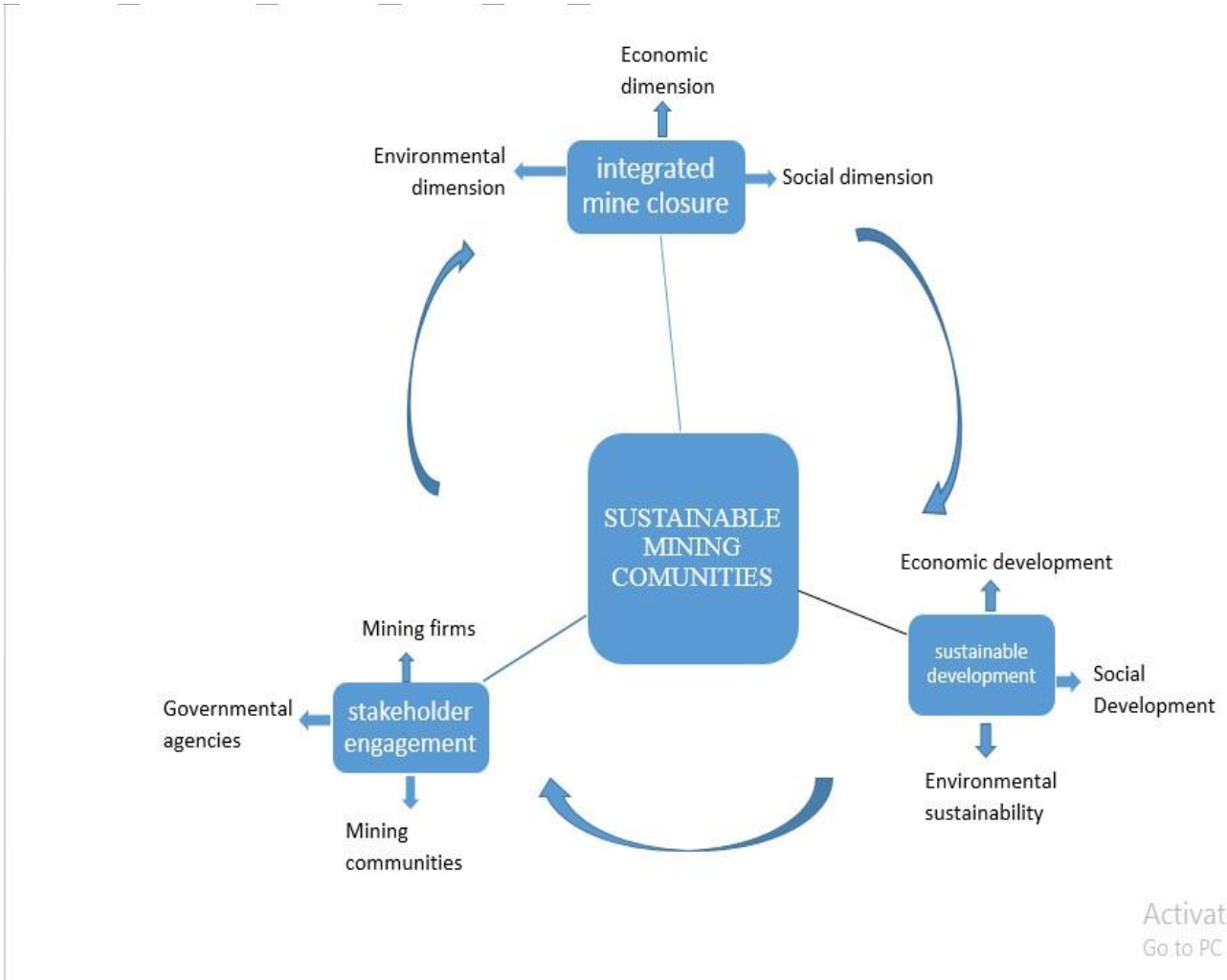
Enriquez & Drummond emphasizes that in contrast, 'weak' sustainability is in tandem with mining activities because it is possible to interchange natural capital with human-produced capital. This approach allowed human welfare to be maintained into the future, even after the mineral resource has been exhausted. The flow of incomes and other benefits generated from mining operations is channeled into investments that include development of human capital, physical capital and social capital. The focus is not on preservation of natural capital but to maintain the total stock of assets such that they continue to produce a benefit stream that yields the goals of sustainable development for present and future generations (Davis *et al,* 2012).

The concept of sustainable development in mining has become very relevant in the wake of the World Summit on Sustainable Development held in Johannesburg, South Africa.

When mining operations are conducted in tandem with the principles of sustainable development, mining communities can expect positive social and economic benefits to last through the operational stage of mining and beyond the closure of the mines. The closure of the mine should therefore equip mining communities with sustainable development in the form of sound environment, alternative economic opportunities and quality human resource base. According to Veiga *et al* (2001) sustainability in mining also entails communications, educations, co-operate decision making and diversification of the economy.



CONCEPTUAL FRAMEWORK



Source: Benjamin Smith, (Adopted and Modified) Figure 2.1, Conceptual Framework

The figure 2.1 above represent the processes that must be adopted to achieve an integrated mine closure through which sustainable development can be realized in the affected mining communities in the lifecycle of a mining project. To achieve sustainable development through mining, the process must involve the appropriate stakeholders (refer to figure 2.1) such as the Government and its local authority and agencies (the Municipal/District Assembly, Minerals Commission, EPA, and Forest Commission), the mining firms,

communities and their traditional leaders (chiefs and opinion leaders) that are affected by mining operations and other stakeholders that matter, including NGOs and International Organizations.

The role of stakeholders and the active involvement of these stakeholders must ensure that mining operations are conducted in an integrated manner towards yielding maximum benefit to both the mining firms and the society at large. Integration of all dimensions of sustainable development that is the environmental, social and economic dimensions as indicated in figure 2.1 is ensured through the lifecycle of the mine if the principles and practices of Integrated Mine Closure are implemented thoroughly (Smith undated). Sustainable development can be realized from a mining project when all stakeholders play their roles effectively towards an integration of all aspect of sustainable development, beginning with the inception of the mining project to the final closure of the mine (ICMM). The 'sustainable Development Model' in mine closure must maintain the adoption of best practices during the mining operations to enhance environmental sustainability, create a viable economic and social development in the mining community as well as ensuring social equity in the distribution of wealth in the society (Antwi-Bosiako, 2003).

The arrows in figure 2.1 is indicating that best practices of sustainable development in a mining project is an adaptive management processes of endless continuous circle through the lifespan of the mining project. The process of stakeholder engagement usually begin at the exploration and feasibility stage of the mining project, through the construction and operational stage to final closure and decommissioning (Australian Department of Industry, Tourism and Resources, 2006). Community and stakeholder engagement must

therefore ensure that the mining project adopt an Integrated Mine Closure approach. The principles and practices of Integrated Mine Closure approach has the potential to yield the goals of sustainable development for the communities affected by mining especially in final stage of mine closure (ICMM) as demonstrated in figure 2.1.

2.2 MINE CLOSURES

Kemp *et al* (2008) observed that the focus of mine closure even in countries where mine closure plans are required or form part of consent conditions is often only on environmental and physical aspects, such as land rehabilitation and asset removal, rather than social, cultural and economic aspects while Xavier *et al,* (2015) argued that "even in cases where the closure plan considers social dimensions, the approach is usually not well articulated, and does not consider the implementation of comprehensive and sustainable initiatives that would prepare local communities to cope with the many changes brought on by the cut in supply of resources when a mine ceases its operations".

Kempt *et al* (2008) maintained that mine closures present opportunities through the design, establishment and implementation of projects and programs that address community needs, build local capacity for self-management and foster resilience to changes that are brought by the closure of a mining project. More importantly, opportunities must be explored in the design of the mining operations and its associated infrastructure and community development programs that ensure long-term sustainable development. Davis *et al* (2012) agreed that mining operations possess the potentials that are capable of developing new societal values and new social interactions.

Mine Closure is defined as the period or the stage where the operation of a mine is on the verge of termination or has terminated and the final decommissioning and mine

rehabilitation is being undertaken. A mining project may also be temporarily closed in some cases, or may result into a program of care and maintenance (Commonwealth of Australia, 2006, Smith, undated). “A mine is considered closed when the designated government authority issues a certificate absolving the owner/operator of the mine from any further requirement and responsibility to operate the mine, and for all liabilities and responsibilities related to the social, environmental and economic impacts of the mine” (Commonwealth of Australia, 2006). A mine closes either when resources reach a point of exhaustion or when it is not profitable to continue mining (Xavier *et al,* 2015). Mine closure is a process and not a discrete event and standard practices require that closure planning start at the inception of mine feasibility stage (ANZMEC/MCA, 2000 cited in Stacy *et al* 2010:6).

Peck *et al*, (2005) stated the importance of mine closure as a pressing issue for many governments, stakeholders and the mining industry. The impact of the closure of a mine can be devastating for the local community, especially if the mining project is the main economic activity in the region serving as the major source of incomes, government revenue and social services such as education, health, water and power supply. Azapagic, (2004) cited in Stacy *et al*, 2010) agreed that some of the major problems created by the closure of a mining project are unemployment, the loss of social services and amenities, pollution, disturbance of the landscape, the loss of economic usefulness of land and increased risks to health and safety.

Digby, (2012) and Loxton, (2014) have also identified the impacts of mine closures on the local economy as involving unemployment, low wages and lack of inward investment, migration of youthful and skilled personnel. Moreover, aging population are associated

with demography while on public health - poor housing and unhealthy lifestyles are linked to closures, whereas on education- impacts include lack of transferable skills and poor education performance; on leadership - crime and anti-social behaviors are also linked to mine closures.

Robertson and Blackwell (2014) reported that the world is replete with examples of unsuccessful mining towns which have collapsed or disappeared following the end of a boom period and the subsequent closure of the associated mines and "identifying why these towns have collapsed while others have succeeded has been uppermost in the minds of scholars for decades". According to Digby (2012) the impact of mine closure is often more felt than it would be for other types of industries especially where the larger proportion of the a particular local economy is constituted of mining activities. In the typical remote mining town, closing the mining project often implies that the town may be deserted due to the lack of the existence of few alternative economic opportunities in such remote areas. The social and economic welfare of humanity to a large extend is dependent upon environmental health, and the socio-economic status of poorer communities in developing countries, in particular, is very much dependent on the availability of renewable and finite natural resources (Veiga *et al,* 2001).

Planning for mine closure is relatively a new development and its scope and practices are still evolving (Veiga *et al* 2001). According to Limpitlaw and Hoadley, (2008) the need to manage closure impacts on communities is relatively a new dimension in the practices of the mining industry and has only been necessitated by the widely acceptance of the principles of sustainable development in the mining industry. Kemp *et al* (2008) maintained that in the closure of a mine operation, it should be acknowledged that

communities exhibit different characteristics in terms of the levels of reliance on the mining operation for social support and economic benefits. Some communities are more prone to the adverse impact of mine closure while independent and diversified communities may have alternative opportunities that can bridge the social and economic benefits that may be reduced in the closure of the mine.

Mine Closure may not succeed when the closure plans of developed countries are applied in developing countries without the appropriate modification and consideration of the unique social, economic and developmental challenges that prevails in developing countries different from the prevailing social and economic scenarios of developed countries (Stacy *et al*, 2010). Additionally, developing countries such as in Africa are beset with serious issues of structural poverty and particularly associated with rural communities and the closure planners usually do not recognize these complexities in their closure designs and implementation. Mine closure planning should therefore be designed sitespecific and in consultation with affected communities to meet the needs of different regions, countries, communities and different cultures and scenarios (Stacy *et al*, 2010).

According to Ahmad *et al*, (2003) cited in Amposah-Tawiah and Dartey-Baah (2011) "the most difficult issues to predict and deal with in the mining industry are the socio-economic impacts". It is often recognized that social and economic dimensions of mine closures issues are not easily dealt with because they are largely determined by human perceptions, hopes and expectations as well as the fundamental matters of skills, jobs, local beneficiation and sustained quality of life.

Digby, (2012:34) stressed that many countries that are rich in minerals resources, lack the necessary skills to exploit these resources. These minerals-endowed countries are therefore prone to economic vulnerability and if mine closures do not yield alternative opportunities the consequence of socio-economic problems of closures may therefore become dire in such countries. Mining companies in pursuance of their interest must therefore ensure a balanced between their interest and that of the developmental goals of the local communities where they are operating.

Planning for Mine Closure not only during the life of the mine but also for the shutdown, start-up, or care and maintenance has therefore become necessary responsibility for government, communities and mining sector decision makers (Robertson and Blackwell, 2014). Planning provides the opportunity to transfer benefits not only to local workers in the mines but also more broadly to the community beyond the life of the mine. Robertson and Blackwell (2014) argued that planning for mine closure can benefit the local community or region as well as the mining company through developing viable economic alternatives, transforming mined land for the use of cash crops, and timing new mining projects to follow consecutively. The benefits to mining companies include: reducing the extent and cost of final remediation, lowering the risk of future strict regulation, reducing tension and conflict with local communities and improving the reputation of the company.

Peck *et al*, (2005:5) argued that in order to inculcate in the mining industry the urgent need for proper closure of 'abandoned mines and the need to ensure that currently operating mines and future mines are appropriately closed and rehabilitated would require the co-operation of a diverse stakeholder community, new innovative methods of financing

closure and significant policy and legislative amendments to ensure post mining sustainable development and economic viability of post mine land use'. In this regard, mine closure is necessarily not the primary responsibility of any single particular stakeholder and therefore requires the effort of all the relevant stakeholders in the successful design and implementation of closure plan.

2.3 MINE LIFE CYCLE

According to Robertson and Blackwell (2014) mine lifecycle planning has four main stages that is exploration, project development, operations, and mine closure. The Australian Department of Industry, Tourism and Resources, (2006) in its Leading Practices and Sustainable Development Handbook identifies six phases in a mining project which include: the Exploration Phase; Feasibility Phase; Planning and Design Phase; Construction Phase; Operational Phase; and Decommissioning and Closure Phase. When the exploration stage confirms the existence of mineral deposit that can be mined economically, the project development stage begins.

The project development stage comprises numerous components, including the determination of environmental, economic and social baselines and impact assessments; development of sustainability and community programs, regulatory and government approvals. The Exploration and Project Development stage also consists of developing a Community Engagement Plan, Community and stakeholder identification and analysis, preliminary assessment of current land use and ownership (Australian Department of Industry, Tourism and Resources, 2006).

The final stage in the life cycle of a mine is 'decommissioning and closure' which may involve such activities as "demolition and removal of old infrastructure, reshape of remaining mining landforms, completion of the rehabilitation and remediation processes. Moreover, there is monitoring and measuring the performance of closure activities against the agreed standards and criteria, inspections, consultation and reporting to stakeholders on the progress and the final sign off by government" (Australian Department of Industry, Tourism and Resources, 2006).

The details involving in mine closure will vary in each phase of the mine cycle with focus on specific issues that are site-specific. To succeed in implementing a closure plan, the management of the mining firm will have to ensure an early integration of the planning process rather than focusing closure activities at the end of mine life (Australian Department of Industry, Tourism and Resources, 2006). The effectiveness and success of closing a mine can possibly be affected at the exploration and feasibility phases of the mining project if management failed to recognize the need for closure planning in the initial ground work. In order to ensure optimal results, it is critical that community and other stakeholder engagements occur throughout the processes of planning for mine closure.

Hodge (cited in Robertson and Blackwell, 2014) stated that the success of a mining activity should be judged on its contribution to the wellbeing of the associated communities and the environment. Thus, by the end of the mine lifecycle, the affected communities should be more viable, durable and equitable than they were before mining commenced

(Australian Department of Industry, Tourism and Resources, 2006).

2.4 MINING AND SUSTAINABLE DEVELOPMENT OF COMMUNITIES

A community is said to be a mining community mainly due to its proximity to the mines and the impact of the mining operations on that particular community (Veiga *et al*, 2001). Sheldon *et al* (2002) observe that the mine and the community may develop a mutual relationship with regards to infrastructure, employment, services, environmental impact issues, taxes and royalties. The level of interdependence and interaction is measured by several factors including 'the age and location of the mine, the company's developmental approach to the community and region, government policies, and the structure of the local and the regional economy'. There is much differences in the way mining communities may perceive the mining project and the mining firm with regards to the communities' needs and developmental expectations.

Peck *et al* (2005) assessed that various literatures indicate that improved mine closure and mine site rehabilitation planning, in modern and best practice mining procedures, considers Mining for Closure as a 'sustainability issue, and is no longer simply, an environmental issue. According to Hobbs (2005) Sustainable development in mining was confined to environmental management while the industry was perceived as a 'necessary evil' because they were no deliberate attempts to seek out the potential positive development opportunities embedded in mining operations. There were only attempts to mitigate and ameliorate some of the environmental impacts inherent in mining operations. The World Bank cited in Antwi-Bosiako, (2003) defines "Sustainable Development as ensuring that, actions today to promote development and reduce poverty do not result in environmental degradation or social exclusion tomorrow". "An ideal sustainable mining community is where the desire of the people is to achieve decent levels of health and

wellbeing in pleasant surroundings with strong community networks and a diversity of opportunities for work and fulfillment" (Veiga *et al*, 2001). In the earlier history of mining communities, little attention was given to sustainability and many suffered and wilted after the closure of the mine (Robertson and Blackwell 2014).

Blignaut & Hassan, (2002) and Kumah, (2006) cited in Davis *et al*, (2012) are of the view that functioning institutions are required to retain resource rent in order to ensure investment that yields sustainable income stream from renewable natural capital and human-produced capital but in their view, this has not been a reality in the case of Africa especially for South Africa and Ghana, where these institutions are either ineffective or do not exist at all.

It is imperative for the mining firm to engage meaningfully with the host community such that mutual partnership could be nurtured from the start of the mining operations and consolidated throughout the operational stage till final closure. This partnership can produce long lasting of sustainability and improved well-being of the mining community as issues of environmental degradation and social dislocation are mutually being tackled by the two parties. In this regard, sustainability in mining also incorporates effective communication, educations, co-operate decision making and diversification of economic opportunities (Veiga *et al* 2001).

The ICMM as part of its goal in ensuring that the mining industry yield the goals of sustainable development, developed 10 principles of sustainable development to serve as a guide for its members and the mining industry in general. These principles are:

1. "Implementation and maintenance of ethical business practices and sound systems of corporate governance;

2. Integration of sustainable development considerations within the corporate decisionmaking process;
3. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by their activities;
4. Implement risk management strategies based on valid data and sound science;
5. Seek continual improvement of their health and safety performance;
6. Seek continual improvement in environmental performance; Sustainability and Integrated Mine Closure
7. Contribute to conservation of biodiversity and integrated approaches to land use planning;
8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of products;
9. Contribute to the social, economic and institutional development of the communities in which they operate; and
10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with stakeholders" (ICMM, 2003 cited in Smith, undated).

2.5 AGA LTD SUSTAINABILITY APPROACH

According to the Australian Government Department of Industry, Tourism and Resources (2006) the future of the mining industry is very much dependent on the legacy it leaves with the host communities. Good and standard practices in mining and sustainability of mining communities helps to foster good relationship and the right reputation for mining

companies, enhance easy access to new concession and minimize conflicts within mining communities.

One main core values of AGA Ltd is to ensure sustainability of their host communities. The company aims to ensure better communities and societies once AGA Ltd having operated in such communities (AGA Ltd, 2015). AngloGold has sustainability offices in its management set-ups in the various countries and communities it operates. AGA Ltd believed it uphold and promote fundamental human rights in doing business. The company accept responsibility and hold itself accountable for its work, behavior, ethics and actions. Accordingly, the company contributes to building productive, respectful and mutual beneficial partnership in communities in which it operates.

Among others, AGA Ltd aim to leave host communities with sustainable future. As part of its sustainability measure, AGA Ltd believed it is committed to continually improving processes in preventing pollution, minimizing waste, increasing carbon efficiency and making efficient use of natural resources. Innovative solutions to mitigate environmental and climate risks are also being developed. Additionally, investment in host communities in terms of community infrastructure and human resource development is being pursued by the company.

2.6 CORPORATE SOCIAL RESPONSIBILITY (CSR) AND SOCIAL LICENSE TO OPERATE (SLO)

According to Digby, (2012) due to societal expectations and pressure on mining companies, it is becoming almost impossible to close a mine and leave without making sure that the necessary measures are taken to remediate and rehabilitate the mine site. In standard mining practice, social license to operate is considered as an important

requirement that allows a mining firm to operate. The activities and reputations of Multinational Mining Companies are also closely being monitored and interrogated by both local and international Non-governmental Organizations (NGOs). According to Mensah *et al* (2014) CSR has emerged not simply as a development tool but as an approach by the mining industry attempt in managing marred relationship with mining communities.

Westphalen, (2012) postulated that in the mining sector, "Corporate Social Responsibility (CSR) refers to a company's voluntary actions to either minimize the economic, social, and environmental impacts of mining or to improve the living conditions of the local communities affected by mining. Negotiated agreements reached between communities and companies are not also considered part of a company's CSR program because these agreements are considered as binding contracts".

"While mining companies may regard CSR as good for business, from the communities' perspective, CSR is a mechanism of compensation for the social and environmental costs associated with mining. These social costs often relate to environmental impacts, higher food and housing costs, and the social impacts from the influx of immigrants, pressure on health and public services, prostitution, gambling, and alcohol consumption" (World Bank and IFC, 2002 cited in Westphalen, 2012). Westphalen, (2012) observed that "from a business perspective, the effectiveness of CSR programs is difficult to evaluate because its success is measured in terms of what doesn't happen rather than what does happen".

Corporate Social Responsibility (CSR) and Social License to Operate (SLO) have become common terminologies in mining companies (Robertson and Blackwell, 2014). The concepts of SLO, CSR and sustainable development overlap as CSR is part of the

means to achieving sustainable development. “Corporate Social Responsibility refers to business’ obligations to pursue policies, make decisions, or follow actions which are desirable given society’s objectives and values” (Robertson and Blackwell, 2014). Westphalen, (2012) indicated that CSR programs usually consist of investments in infrastructure such as hospitals, schools, roads, health facilities, electricity, clean water and drainage repairs. Investments in building human capital such as the provision of education, training and skills.

Hamann (cited in Robertson and Blackwell, 2014) proposed four necessary conditions to achieving CSR: i) “it must go beyond philanthropic community investment and environmental impact mitigation; ii) embrace economic, social and environmental aspects of sustainability in a holistic manner; iii) be integrated into core activities and decision making of a company to provide maximum benefit; and iv) have a mind-shift away from confrontation towards constructive engagement”. Hamann argues that “due to globalization and company power, the sustainability challenge, ethics in business and the business case for CSR mean that corporate greed is balanced by Corporate Social Responsibility”.

In the view of Robertson and Blackwell (2014) SLO is a critical component of the concept of CSR because it is a “community’s perceptions of the acceptability of a company and its local operations’ and they indicated further that SLO was ‘developed in response to a United Nations initiative that requires industries that operate in the territories of indigenous people to secure free, prior and informed consent from those indigenous people”. Robertson and Blackwell (2014) indicated that the concept of SLO is measurable through

four elements that include economic legitimacy, socio-political legitimacy, international trust and institutionalized trust.

Owen and Kemp (cited in Robertson and Blackwell, 2014) are critical of the SLO concept because they believe it emerged as a response to opposition to the mining industry and they therefore contend that "rather than open up critical enquiry, 'social license' serves to limit discussion and debate about the industry's role in poverty alleviation and sustainable development". Lacey et al (cited in Robertson and Blackwell, 2014) however considered that, over time, the importance of SLO would increase as communities would become more empowered through increased availability of information through the media.

2.7 INTEGRATED MINE CLOSURE PLANNING

Kemp *et al*, (2008) revealed that in the past, mine closure planning was not properly regulated and that the existing literature on mine closure policies and practices failed to recognize the importance of mine closure planning. According to Kemp *et al*, (2008) "most countries do not have 'comprehensive legislation for mine closure and surety regulations incorporated in the closure plans". Smith (undated) argued that "an integrated approach to mine closure, should take into account the environmental, social and economic considerations at an early stage of mine operations and occurs throughout the mine process and that this process is elementary in the development of long term sustainable development and effective mine closure and completion practices".

Government mine related institutions, mine regulators and the public now expect mining companies to try to integrate social aspects into early closure planning practices even if specific laws or regulations do not exist in some jurisdictions relating to Integrated

Closure Planning (ICMM). The MMSD report, "Breaking New Ground" recommended Integrated Mine Closure planning as a necessary element of responsible mining performance. According to Digby, (2012) "Integrated Mine Closure is the coherent planning approach that addresses socio-economic aspects at the same level of detail as environmental impacts, and which is integrated into the corporate and engineering planning processes". The ICMM considers two types of integration that need to be implemented: (1) the closure approach should integrate the social and environmental aspects and (2) the integration process should be part of the consideration in the lifecycle planning and engineering processes of a mining project.

According to the ICMM, the elements of Integrated Closure Planning and the associated benefits with its implementation and practices have been strongly agreed upon by the mining industry in generally. These include engineering, waste management, financial, re-vegetation aspects as well as social considerations such as sustainable economic programs. Integrated Closure Planning is considered more meaningful when some factors such as stakeholder engagement, thorough costing analysis and an understanding of monitoring needs are well incorporated. There is also the need to have regular review on the use of land and other aspects of integration to "fit within developmental, ecological, social and political imperatives as these change with time.

Clark *et al*, (2000) cited in Peck et al (2005) postulated that "in order to embrace the need to close abandoned mines and to ensure that current and future mines are appropriately closed will require the effort and co-operation of a diverse stakeholder community, new and innovative methods of financing closure and major policy and legislative change in most nations to ensure post-mining sustainable development". Essential community services such as medical care, schools, water supply, which are directly and indirectly supplied by the mining company during operations must be maintained through consultation with the government

and community leaders to device the necessary strategies on how these services can be continued after mine closure" (Sassoon cited in Stacy *et al*, 2010).

2.8 MINE CLOSURES EXPERIENCE IN SOME REGIONS

Sheldon *et al* (2002) revealed that mine closure is currently a complex issue confronting mining firms, government and mining communities. Apart from the physical reclamation, it is now becoming increasingly imperative for the consideration of the socio-economic issues of mine closure and the impact of mine closure on workers, their families and communities.

2.8.1 MINE CLOSURE IN CORNWELL - UNITED KINGDOM

In Europe, Cornwell experience is one of the classic examples that demonstrate the adverse impact of mine closures. Digby (2012) stated that when the last tin mine in Cornwell closed in 1997, the County experience was something similar to grief. There were only 400 workers at the stage of the closure. Emphasizes of the impact of mine closure was not really on the loss of employment opportunities. "The grief focused on loss of identity, on the end of 3,000 years of Cornish hard-rock mining, on our diminishing influence in the world and powerlessness to do anything about it. Mining was part of our culture, our sense of who we were. Now we were part of a homogenous global service economy, where, 'visitors will make the noise and order drinks from Cornish boys". According to Hobbs, (2005) rich minerals has been exploited in Cornwell since Phoenician times and production of minerals reach its peak at the turn of the 19th–20th centuries.

The UK Government figures for 1966 indicated that Cornwall was a county with the highest degree of dereliction; (Barr 1970 cited in Hobbs, 2005). Cornwell is officially declared as one of the poorest regions in Europe and is a recipient of European Union development aid in spite of its centuries of mineral wealth. Financial assistant received is much directed to the clean-up of the physical legacy of past tin, copper, and kaolin mining.

It is therefore not surprising Cornwell has been considered as the home for a new Post Mining Alliance Initiative, working in partnership with the Eden Project, which has created an educational and tourist resource in a disused China Clay Quarry (Hobbs, 2005).

2.8.2 MINE CLOSURE IN PAPUA NEW GUINEA-ASIA

Another prominent example of mine closure situation is the 'Ok Tedi Mine' in Papua New Guinea (PNG). The mining firm failed to construct planned tailings and waste rock storage facilities. The hazardous waste materials were deposited in the river system under government permit (Veiga *et al*, 2001). The river then became heavily polluted with an estimated waste of 83 million tons of waste material. Environmental NGOs and community leaders came together to fight what they described as one of the worst mining disasters. It was then recommended that the mine be closed in 2000 instead of the official closure in 2010.

The Porgera mine in Papua New Guinea also adopted similar practices as the 'Ok Tedi Mines' discharging 17000 tons of tailings waste per day into the tributary of the Porgera River. The mine directly employed 1900 people. Some benefits provided by Porgera's Community Affairs Department is development of social and business programs including business development, professional training, supermarkets and bakery, health services,

community schooling and sports, youth and women's assistance etc. (Placer Dome Asia Pacific, 1998 cited in Veiga *et al,* 2001). The two cases of early mine closure in PNG meant that the communities and the PNG Government would lose some social benefits provided by mining activities. Additionally, the effect of the environmental pollution was also being borne by the communities. The burden of the removal, clean up and dredging of the polluted rivers also remained a challenge to the communities and the PNG Government.

2.8.3 MINE CLOSURE IN SPAIN

Rio Tinto Company Ltd acquired its name from the mining region in Southern Spain. The mines are located at a geological region that extends from Andalusia, Spain, to Southern Portugal called the Pyritic Belt. The Romans extracted large quantities of gold and silver since mining was started in 3000 B.C. in the region. The natural effect of bacterial leaching on massive pyrites water bodies has been generating acid for millions of years. Over 200 mines are abandoned over the last 5000 years and the natural impact is now mixed with drainage. The Tinto River is an encyclopedic example of an acid drainage with pH below 2. The region has been used by NASA to test the performance of robots in acidic environment similar to those likely to be encountered in Mars (Veiga *et al* 2001).

Nevertheless, the Rio Tinto Company Ltd had become one of the largest copper producers and was bringing significant wealth to the village of Rio Tinto, employing 14,000 people.

2.8.4 MINE CLOSURE IN CANADA

A good example of mine closure is associated with the mining communities in Manitoba in Canada. The second largest primary resource industry in the province is mining.

Manitoba has a long and respected tradition in mining. “Communities were built around the mineral industry and there is generally supportive local culture for mining activities” (Veiga *et al,* 2001). In Northern Manitoba, five traditional mining communities faced mine closures. These communities therefore came together to pull resources to build on their strength as mining communities towards development of a sustainable plan for their future. Some of the sustainable projects adopted in these communities were tourism, engaging in fishing as sports, hunting, canoeing, cross country skiing and ecotourism and to learn about aboriginal cultures and festivals. An abandoned part of one mine was also considered being used to legally grow marijuana for medical purpose and also for the growing of herbs and vegetables hydroponically (Veiga *et al,* 2001).

2.9 TEMPORARAY CLOSURES

Unplanned mine closures, or sudden placement of a mine operation into a care and maintenance mode, can have negative effects on communities surrounding the mine, especially those towns that have mine dependent economies (Robertson and Blackwell 2014). Unexpected circumstances have the potential of putting a mine to a temporary closure, also termed as mothballing. Some of the concerns of temporary closure are: how long the mine can be placed under care and maintenance before it must implement full closure or restart mining; how the idled but key employees and suppliers are to be handled to ensure their services are available when the mine re-opens; and what long-term and short term environmental controls must be implemented to reduce impacts (Stacy *et al,* 2010). Robertson and Blackwell (2014) postulated that three general policy options exist for governments when a remote mine, upon which a community is dependent, faces closure.

Theses policy options include: 1) refraining from any direct involvement; 2) assisting the community to broaden its economic base through diversification; or 3) subsidize the mining operation to prevent its closure. The factors which should be considered in making these policy options are: i) the degree to which a mine is integrated into the regional and national economies; ii) the mining project's long-term financial viability; iii) prospects for successful diversification; iv) the nature of a mining community's population, particularly its age structure and the degree to which it is transient or settled; v) the extent and ownership of community infrastructure; vi) the extent of the community's regional service role; vii) the existence of other producers of the mineral commodity concerned within the same political jurisdiction; and viii) the mining company's plans regarding allocation of capital and other resources withdrawn from the closed project.

2.10 AGA's MINE CLOSURE APPROACH

Mine closure planning is associated with several benefits such as optimization of postmining land use opportunities, reduction in cost of remediation and rehabilitation, and less cost in total operation of the mining project. AGA Ltd as a mining firm has embedded in its operations values that consider the social and environmental issues as interrelated since both have equal bearing on how host communities perceive and remember the mining site and associated mining company's impacts during and after closure; thus making integrated approach to mining essential aspect of the company's operations.

AGA Ltd is said to have conducted its operations in accordance with a Closure Planning Standard. This closure plan of the company consist:

a) Rehabilitation of disturbance areas to maximizes applicable alternative livelihood opportunities.
b) Operations are scheduled in such a manner that maximizes the opportunity for progressive rehabilitation work.
c) The workforce is linked with re-skilling aim at providing alternative livelihoods programs in the event of retrenchment.

Sustainable development is therefore pursued at all levels of the mining operations through improved integration of closure planning in the company's daily operations. The company strives to achieve effective and efficient closure in accordance with the company's values, and deliver on its commitment to stakeholders and mining communities (AGA LTD, 2015).

2.11 STAKEHOLDER ENGAGEMENT

A stakeholder can be said to be a person, group or organization who has something to gain or lose through the outcomes of a planning process or project or in the extraction, management and trade of natural resources. Stakeholders may be government, local communities, or outside actors. Most often, local communities solely depend on natural resources as the main source of income and livelihoods. However, natural resources may hold more than just a purely economic value for the indigenes of a particular society.

Natural resources are more often interrelated with local peoples' culture and identity. Conflicts may arise if managers of natural resources fail to adequately identify all stakeholders involved or refuse to acknowledge their interest and include them in the management of a resource.

Limpitlaw and Hoadley (2008) argued that engagement with communities must ensure creation of awareness and transparency which reduces the potential for perceived exploitation by mining firms. This may encourage community active participation towards identification of post-project initiatives and opportunities and which may consequently whip up enthusiasm in community's ownership of post-projects and programs. Community engagements also determine the kind of the partnership that can be established between the community and the mine if the mining operations is to be undertaken.

There can arise serious community infrastructural developmental gaps and absence of psychological orientations towards closure when there is no early and effective community engagement and other stakeholders, especially the communities most affected by or most dependent on mining activities. The lack of community engagement can also undermine such popular development expectations, aspirations, perceptions or social capital networks available in meeting developmental objectives towards the closure of the mine. In effect, the mine community may not sufficiently and psychological be prepared for life after the mine comes to a closure.

Recognition of the needs and rights of mining communities are becoming overriding values in public decision making throughout the world (Veiga *et al*, 2001). Mining communities now demand their right to live in environment free of pollution and hazardous waste generated through mining activities as well as sharing in the full benefits of the natural endowment of their immediate environment (Veiga *et al*, 2000). In order to minimize conflicts, obtain social license to operate, there is the need for companies to meaningfully engage mining communities, in co-operate decisions that are likely to affect communities' members.

A company's community development program should therefore emanate from the company's community engagement strategy with community's members. "This engagement should be a dynamic and ongoing process throughout the life cycle of the mining operation. Planning for mine closure should be raised with the community as early as possible prior to the planning and design phase. The project design should consider how to minimize the adverse impacts of mine closure and to optimize the opportunities for community development that arise from the active mining and mine closure phases. An early and effective community engagement strategy should be established and the community's active participation throughout the life of the mine operations". (Australian Government, Department of Industry, Tourism and Resources 2006)

2.12 AGA LTD STAKEHOLDER ENGAGEMENTS

Stakeholder Engagement is an important part of how AngloGold Ashanti conducts its business. According to the company its engagement is aimed at building strong and mutually beneficial relationships with key stakeholders. There is identification of key issues which borders on social, governance, health and safety, environmental risks and social license to operate for engagement. Some of the avenues and mechanisms through which AGA Ltd engages with mining communities in Obuasi include the Community Consultative Committee (CCC), the Community Forum (CF) and the community Trust Fund. The CCC serves as the main medium or avenue between the AGA Ltd and the communities within the catchment areas (Mensah *et al*, 2014). It is the medium or channel for communication through which communities that are affected by mining operations convey their concerns and grievances to the officials of AGA Ltd. Each Community within

the catchment area is required to constitute a consultative committee whose mandate is to regularly meet and discuss pressing issues, grievances, decisions and suggestions of the community with officials from the Department for Community Affairs of AGA Ltd. The composition of the CCC includes local chief of the community, local authorities within the community, youth leader, one representative each for men and women and an opinion leader. Each CCC is constituted of ten (10) members.

The CCC usually have periodic meetings with the Community and Social Development Department staff of AGA Ltd to deliberate on pertinent issues and concerns of the mining communities (sea picture 3.1 below). The meetings take the form of round table discussion between representatives of the various mining communities and Social Department office of AGA Ltd. Based on the composition of the CCC, it creates an opportunity for the diverse groups and their interests to be put forward for discussion and for possible consideration. Such meetings are restricted to only members of the CCC and the larger community members do not participate.

According to Mensah *et al* (2014) "the CF is the general community assembly organized by the AGA Ltd to meet all members in the community". The deliberation during the CF is usually led and directed by the officials from the Community and Social Development Department. This forum is the main medium through which individuals can communicate their concerns or make an input into decisions that affect mining communities. The Community Forum is different from the CCC, since the CF allows each community member the opportunity to express his or her views. Mensah et al (2014) however report that "Community members have however lost trust in the CF, labeling it as a 'talk shop' where information and concerns are raised but these concerns are usually not

factored into the decision making process of the company. It seems, in their view, an information delivery point than an input process into shaping process for devising strategies and frameworks towards community development".

2.13 IMPACT OF MINING ON THE ECONOMY OF GHANA

According to the Institute for Economic Affairs mineral exports contributes significantly to economic development in Ghana. The mining sector has undergone several important policy reforms especially in the last two decades resulting in major economic glut within the mining mining industry. The Minerals and Mining Law, PNDC 153 (1986), Investment Code and Privatization Policy were all measures stemmed at creating deliberate attractive environment at attracting the much needed Foreign Direct Investment (FDI) especially in the mining sector. Amposah-Tawiah and Dartey-Baah (2011) argued that "the mining sector of Ghana received priority attention unrivalled by any other sector in the country under the Economic Recovery Program (ERP) in 1983". Additionally, the mining Act (703) 2006, has also been enacted to streamline mining activities in the country.

Mining contributes immensely to the economic growth of Ghana while in another vain, mining has been a major source of environmental, social and economic problems especially associated with mining communities in the country. Amposah-Tawiah and Dartey-Baah (2011) lamented over the fact that livelihoods and the very existence of the people, particular those residing in mining communities are seriously affected by the activities of both small and large scale miners. According to Agbesinyale, (2003) "extensive land alienation, environmental degradation, loss of access to land based resources, widespread despicable poverty in the midst of gold wealth, community

dislocation, and competition for access and conflicts…… are what characterized most of mining communities in Ghana and stressed further that, weak countervailing and bargaining power on the part of the state and the mining communities, ineffective institutional regulatory mechanisms, confused property rights regimes in land and opportunism have contributed in aggravating these problems".

Mining also contributes substantially to the economy as well as the overall development of Ghana. The mining industry is estimated to contribute approximately 5% to the total GDP of Ghana. Undoubtedly, Ghana is rich with a lot of mineral resources and the major minerals include gold, manganese, diamonds and bauxite. Among these minerals resources, gold is predominantly produced in the country. Gold production alone account for over 90% of all mineral exports in the last two decades and beyond.

In the view of Rutherford and Ofori-Mensah (2011) the net contribution of the mining sector to national economic development has been either marginal or negative considering the incentives enjoyed by Expatriate Mining Corporations as against the environmental destruction and social problems generated by the activities of mining. Amposah-Tawiah and Dartey-Baah (2011); Akaabza and Darimani (2001) argued that "while mining companies operating in developing countries are contributing their bit to improving social development through employment opportunities, payment of taxes and royalties, establishment of industrial base, enhancing efficiency and providing foreign exchange and transfer of technology; these mining firms have also been directly linked publicly to deepening the poverty gap, poor labor conditions, pollution incidents, health and safety failings, forced displacement and other human and civil rights abuses".

The mining industry is supposed to play an important economic role in the country's quest to seek alternative sources of funding for the national budget. This quest has been necessitated due to rebasing of the economy and the subsequent declaration of the country as a Middle Income Country in 2010 (Ghana Chamber of Mines). Mining sector also play a vital role in the stabilization of macroeconomic indicators. As a net-import country, regular inflow and access to foreign exchange have direct impact on the stability of the currency, inflation, interest rates and monetary policy setting as a whole'. The mining sector is one of the areas that fetch the country the much needed foreign exchange that is required to import most of the goods and services that are locally demanded.

The Fourth Annual African "Am Cham" (American Chamber of Commerce) Summit was held on February 12, 2014 in Accra. It was disclosed that the country lost US$1.3billion in potential export revenue in the previous year resulting from decline in the prices of gold and cocoa. As a result of decline in these commodities prices, there was reduction in earnings from exports which adversely affected the country's ability to finance imports, thus putting pressure on Ghana's foreign exchange reserves. Subsequently, the country approached the IFM for financial assistance.

There are currently over 13 large mining firms operating in the country. These firms include "11 gold mines and one bauxite and one manganese mines. The major gold producing companies in Ghana are: Goldfields Ghana Ltd (Tarkwa and Abosso mines); Anglo Gold Ashanti (Obuasi and Iduapriem mines); Central Africa Gold, Golden Star Resources (Bogosu/Prestea and Akyempim mines); and recently Redback Mining Ltd (Chirano mine) and Newmont Ghana Gold Ltd (Ahafo and Akyemmines). Ghana Bauxite Co. Ltd. (GBC) operates the country's only bauxite mine at Awaso, while Ghana

Manganese Company Ltd. at Nsuta-Wassa open pit mine remains the only significant producer of manganese ore in the country. Ghana Consolidated Diamonds operates the Akwatia diamond mine and it is also the only operating diamond mine in Ghana" (Amposah-Tawiah and Dartey-Baah, 2011).

At the end of 2012, the mining sector directly employed a total of 17,103 workforce. This workforce compose of 16,819 Ghanaians and 284 expatriates.

2.14 THE MERGER OF ANGLOGOLD AND ASHANTI GOLDFIELD COMPANY (AGC)

Ashanti Goldfield Company was founded by three compatriots (Cape Coasters) that included Joseph Biney, Joseph Brown and Joseph Elias. In the same year the company was founded, it was officially incorporated and listed on the London Stock Exchange in 1897 by Edwin Arthur Cade. Ashanti Goldfields Company (AGC), Ghana, was in need of a partner that has the technical expertise and financial capabilities in deep level mining to compliment the efforts of AGC. Subsequently, there was a merger of AGC with AngloGold in 2004. The government of Ghana maintained 10% as its shares with the merger but the shares were subsequently sold out in 2009.

3.0 CHAPTER THREE

METHODOLOGY

3.1THE STUDY'S SCOPE

The study primarily focuses on the socio-economic impacts of mine closure in Ghana. While the study dimensions attempted the broader context of mine closure in Ghana, a case study of the AngloGold Ashanti Ltd is undertaken in the Obuasi Municipality. This study

mainly considers the catchment area of AGA Ltd with selection of some communities for in-depth studies due to their relative proximity to mining operations. In this study, mining is given a limited definition as the direct extraction or exploitation of solid minerals resources from the natural environment. This operational definition of mining of minerals does not therefore include the mining of crude oil and natural gas. Mining in this context is defined to include extraction of solid minerals such as diamond, bauxite, manganese, tin, gold and others. Moreover much emphasis is being laid on gold mining since AngloGold Ltd operations in Ghana is limited to the extraction of gold.

3.2 PROFILE OF STUDY AREA: OBUASI MUNICIPAL

The Obuasi Mines is one of the richest gold mines in the World which is why the Obuasi Municipality is an attraction to large mining firms as well as legally and illegal small scale miners ("galamseyers") and the mining services industry (OMA). The Mining sector and the associated mining economic activities generate significant employment opportunities that provides about 35% of the job opportunities for the working population in the Municipality (OMA). The Obuasi Municipal Assembly which formerly was the Adansi West District attained its current status as a Municipality through a Legislative Instrument (L.I.) 1795 of 17th March 2004. The Municipality is constituted into five Zonal Councils. These Zonal Councils are further sub-divided into 38 electoral areas.

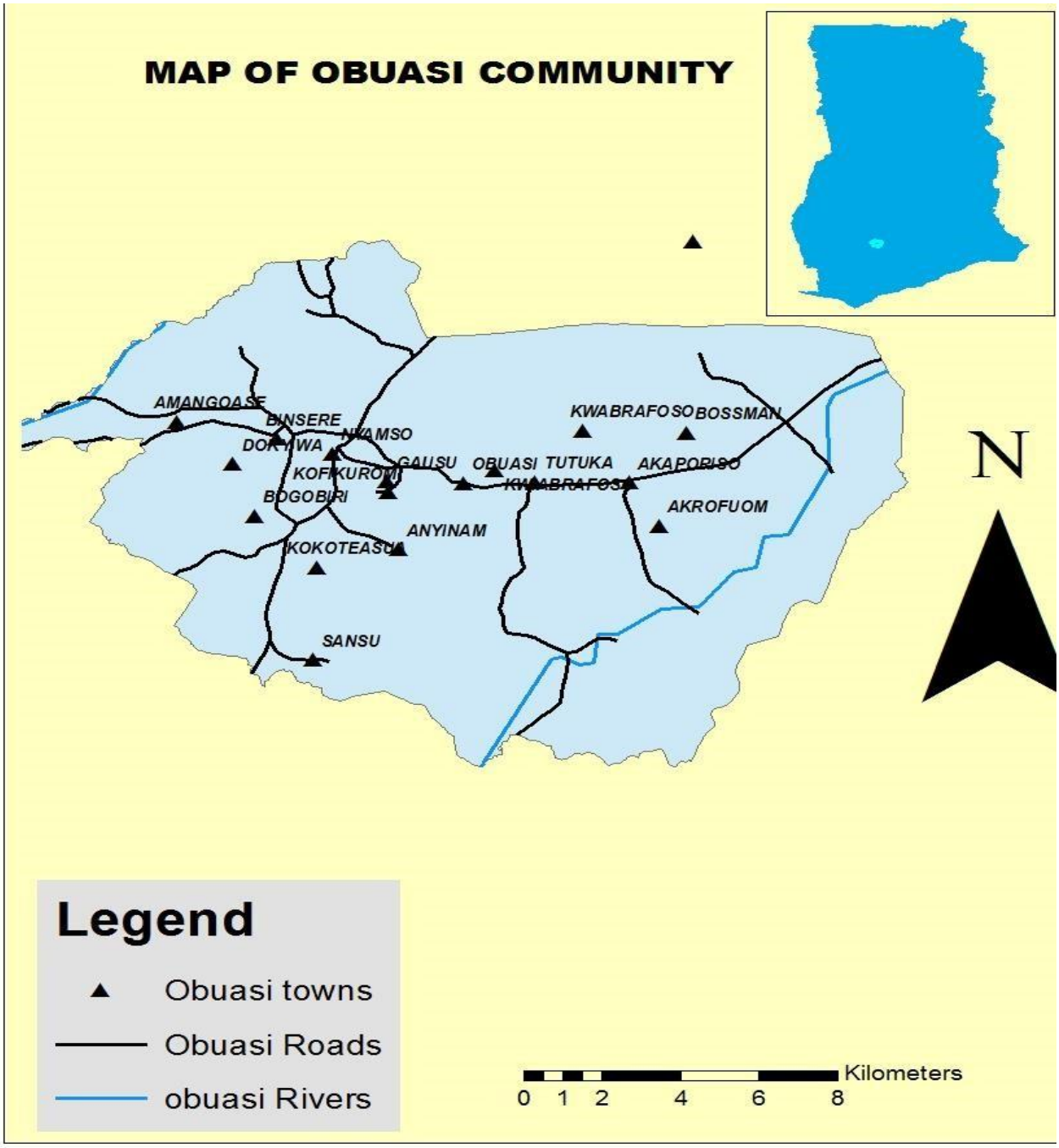
3.3 THE LOCATION AND SIZE OF THE OBUASI MUNICIPAL

The Obuasi Municipality is geographically located in the southern-western part of Ashanti Region of Ghana. The Municipality is found between latitudes 5º35'N and 5º65'N, and longitudes 6º35'W and 6º90'W to the southern part of Ghana. It occupies a land area of about 162.4 km^2 and it is ranked as the second largest political authority in the Ashanti

Region next to the regional capital of Kumasi. Obuasi is the capital of the Obuasi Municipality which is located some 64 kilometers to the southwest of Kumasi. The communities selected for the study are visible on the map of Obuasi (refer to map 3.1). The Obuasi Municipality has common boundaries with Adansi North District to the North, Adansi South to the East and South and Amansie Central District to the West. The Municipality is made up of 63 Communities. Out of the 63 communities, 48 of these communities' populations are above 5,000. The Obuasi Mine has a concession area of 475km^2 (refer to map 3.2) that spans five stool lands that are administered under separate Traditional Councils including Adansi Bekwai, Adankraja, Manso

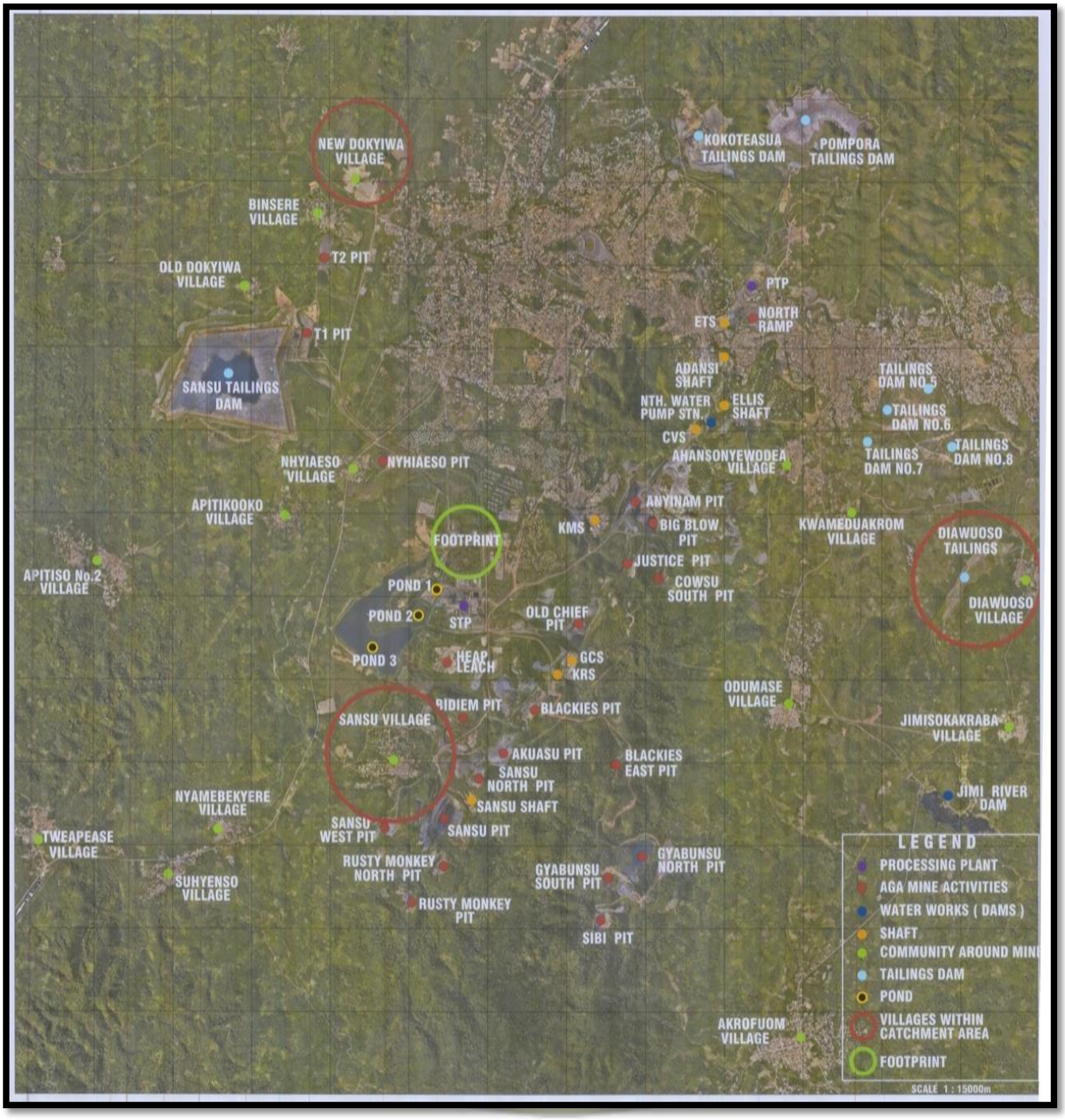
Nkwanta and the Manso and Mem Traditional Councils.

The topography of the Municipality is an undulating terrain with many of the hills with heights above 500 meters above sea level. There are many streams and rivers such as Kunka, Pompo, Akapori, Nyame, and Wheaseammo which meander through the adjacent valleys of the hills within the Obuasi Municipality. These rivers are heavily polluted by both large scale and small scale mining and other human activities (OMA). There is a scanty forest (obviously resulting from extensive mining activities for more than a century) made up of scarce species of hard wood, which are harvested to produce timber. AngloGold Ashanti has embarked on planting and maintenance of large tracts of teak plantation as green belts which approximately covers land area of 12.10km^2 of AGA Ltd concession area (OMA).



Source: Author's Construct Map 3.1, Map of Obuasi Community

CATCHMENT AREA OF AGA LTD OPERATIONS



Source: AGA LTD Map 3.2: AGA Catchment Area of AGA LTD

3.4 POPULATION

The 2010 Population Census recorded the population figure of the Obuasi Municipality as168, 641 people (PHC, 2010). It was further projected that this population figure may have reached 188,888 in 2013 mostly due to high rate of immigration to the Municipality. It was as well anticipated that this figure may further rise due to influx of immigrants (OMA). The distribution of the population is 52% of females and 48% of males.

There is relatively high annual population growth rate of 4.0% in the Obuasi Municipality compared to the national annual growth rate of about 3% (OMA). The higher population growth rate in the Municipality is largely attributed to the increasing number of migrants who come in search of jobs in the mining, mine related and non-mine related industries. The population in the dependent age groups that is 0-14 years and 60 years above is 48% in the Municipality (OMA). The remaining 52% consist of the working and potential labor force in the Municipality. The high working and potential labor force population is a source of concern due to the prevalence rates of unemployment and underemployment partially emanating from AGA Ltd retrenchment and downsize of their mining operations (OMA).

3.5 AGRICULTURE

Agriculture and its associated activities is third in the order of importance of the total economic activities in the Obuasi Municipality. The agriculture sector employs about 25% of the working population in the Municipality (OMA). The nature of agricultural production is predominantly practiced on small scales in the Municipality. The majority (90%) of farm holdings are less than 2 hectares in size, although there are some large farms and plantations. Some commonly grown crops include citrus, oil palm, cocoa, plantain,

maize, cassava, vegetables etc. Livestock production, especially pig farming is becoming very acceptable practice in the Municipality. Some of the domestic animals mostly reared are sheep, goats and cattle. Fish farming is also becoming common practice in the Municipality (OMA).

Agricultural activities are seriously being affected by both large and small scale mining in the Municipality (OMA). Large scale mining by AGA Ltd led to acquisition of large tracts of land as concessions. Communities' lands in Anyinam and Sansu, and others are developed as large estate residential areas for mine workers. Inhabitants from these communities have no opportunities in farming as a source of livelihoods. Large deposits of tailing materials on the land areas of Obuasi make farming on such lands impossible. As a result, illegal small scale mining, popular termed in Ghana as 'Galamsey' is the main occupation of the youth (mostly uneducated youth) in these affected communities.

3.6 MINING SECTOR

The Mining sector and related mine-economic activities are the mainstay of the Obuasi Municipality's local economy. Obuasi is endowed with gold resources and the mining industry is dominated by AngloGold Ashanti Ltd. The mining industry is credited for providing 35% of all employment opportunities for the working population in the Municipality. One of the major threats to the security of the Municipality is the increasing numbers of illegal small scale miners ("Galamseyers)". Most of these illegal miners operate with impunity with some of them operating into the concession areas of AngloGold Ashanti Ltd. This situation has exacerbated the rate of land degradation, water pollution and security problems in the Municipality.

3.7 SERVICE AND COMMERCE

The largest market in the Municipality is located in Obuasi town while seven other satellite markets operates to serve the immediate local environs people of the Municipality and other adjacent districts. The markets are usually daily markets. Commerce is an important economic activity and constitutes about 20% of the local economy especially trading. The service sector provides 20% of the employment opportunities generated in the Municipality.

3.8 THE RESEARCH DESIGN

A case study approach was adopted for the study. Case Study allows for the detail study of the selected area to provide a better understanding of the likely impact of mine closure on mining communities in Obuasi and its environs. Case Study offers a better opportunity to gain an in-depth knowledge into the factors which explain the intricacies, controversies as well as the nature of the relationship between socio-economic development and mining in the Obuasi Municipality. Neale *et al* (2006) maintain that "the basic advantage of a case study is its ability to provide comprehensive information, compared to what is available through other methods. Case Study also allows one to present data collected from multiple methods (i.e., surveys, interviews, document review, and observation) in order to provide a complete story".

A case study approach therefore allows for detail study of causes and effects analysis of mining and socio-economic development in the Municipality. Triangulation is used to ascertain and verify information that is elicited from various respondents.

Triangulation involves the use of different data collection techniques in one study to ensure the validity and reliability of the information. This study employs both quantitative and qualitative data. Quantitatively, different sets of questionnaires were administered to different target groups of the target population. Both closed ended and opened ended questionnaires were administered to key informants such as the Management of AGA Ltd, the Obuasi Municipal Assembly. One Key Informant each was selected from AGA Ltd and the Obuasi Municipal Assembly. They include the Deputy Coordinator in charge of Central Administration at the Obuasi Municipal Assembly and the Community Development Superintendent in charge of Community Affairs at AGA Ltd who were purposively selected mainly due to their knowledge and experience in their respective schedules and duties at their work places. The questionnaires administered centered on the Socioeconomic impact of mining and mine closure and require the respondents to give their perspective on the subject matter.

Questionnaires were also administered to 11 different communities that were purposively selected or considered with the aid of data provided by AGA Ltd. These communities included Amangoase, Kwabrafoso, Bogobiri, Nyameso, Koffikrom, Kokoteasua, Gausu, New Nyameso, Akaporiso, Bossman and Tutuka. In total, 105 respondents willingly responded to questionnaires regarding the impact of mining and the likely impact of mine closure on the Obuasi Municipality. Additionally, in the qualitative approach, six different communities were purposively selected for focus group discussions. These communities included Kokotesua, Anyimedukrom, Dokyiwa, Binsere, Anyinam and Sansu and Nana Okai. Assembly Members who were considered key informants were purposively selected from these six communities for in-depth interviews. Each of the

Assembly Member was interviewed using Interview Guide. Additionally, Focus Group Discussions are conducted involving groups of six to ten (10) persons from each of the six selected communities to assess the impact of mining and the likely impact of mine closure on these communities.

Triangulation which involve different techniques, allowed for the verification and cross check of information given by the various respondents. AGA Ltd officials, for instance, were required to respond to and clarify some communities' concerns about the environmental and health impacts of mining, while the communities also could confirm some of the benefits and developmental projects that the company is said to have extended to these communities.

3.9 SOURCES OF DATA

Data for this study was obtained from both primary and secondary sources. Primary data was obtained using questionnaires that are administered to some members of selected communities of Obuasi town and some mine workers of AGA Ltd. A set of questionnaires that required AGA Ltd to provide information on the socio-economic aspect of mine closure was responded to by the Office for Sustainable Development and Community Affairs Department of the Management of AGA Ltd, while the Obuasi Municipal Assembly responded to questionnaires on issues relating to the likely impact of mine closure and plans towards diversifying the local economy of the Municipality from dependency on mining.

In all instances, questionnaires contained different sets of questions for each category (communities' members, retired and retrenched mine workers, AGA management and Obuasi Municipal) of respondents. Questionnaires were also self-administered to some category of respondents, that is, respondents answered questionnaires on their own with

little supervision, especially where respondents were literates while some respondents, mostly illiterates, were guided to provide their responses to the questionnaires.

In addition, in-depth interviews were conducted with Members of Assembly representing various Electoral Areas, chiefs and business entities. Some purposely selected communities most affected by mining operations also participated in Focus Group Discussions. Some retrenched and retired mine-workers were contacted and interviewed on issues regarding their welfare and their perspective on the likely impact of mine closure on mine workers, in the likely closure of the mine. Officials of governmental agencies such as the officials of Obuasi Municipal Assembly, the Environmental Protection Agency (E.P.A), Chamber of Mines and NGOs operating in the area were granted short interviews on their roles, and perspective on the impact of mining on the environment and on mining communities.

Secondary source of data involved desk top study of published and unpublished research works on case studies of mine closures and closure planning as well as the impacts of mine closures on some mining regions and communities. Moreover, secondary data which was readily available from Ghana Government public documents such as the Ghana Mining Act (703) 2006 and Draft Mining Policy 2010 as well as Ghana Government Presentations and Report Papers on mining at International Conferences. Relevant research works on the socio-economic impact of mining in Ghana also serve as vital source of secondary data. Journal-articles on Mining and Reports (MMSD Report 2002), ICMM Toolkits provides insightful data on mining.

3.10 SAMPLING DESIGN

AGA Ltd mining operations affect a large population of about 250,000 people. The

Company's mines operations directly affect a total of 183 communities and 63 of these affected communities are within a range of 10 kilometers from the operations of the mines. It was therefore not possible to involve every individual that was affected by AGA Ltd operations in the study considering the scope of this research. The purposive selection technique was mainly employed in this study. "Purposive sampling is a technique widely used in qualitative research for the identification and selection of information-rich cases for the most effective use of limited resources" (Patton, 2002 cited in Palinkas *et al*, 2013). "Purposive Sampling involves identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest" (Cresswell *et al*, 2011cited in Palinkas *et al*, 2013). In addition to knowledge and experience, Bernard noted the importance of availability and willingness to participate, and the ability to communicate experiences and opinions in an articulate, expressive, and reflective manner is a requirement in selection of respondents.

Key informants who are deemed to have much knowledge and experience on mining and communities mostly and directly affected by mining were therefore considered in this study. The Purposive sampling technique was therefore adopted in the selection of respondents. It is the deliberate choice of an informant due to the qualities the informant possesses. In other words the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience". "The purposive sampling technique is useful if a researcher wants to study "a small subset of a larger population in which many members of the subset are easily identified but the enumeration of all is nearly impossible" (Babbie cited in Latham, 2007). The method of sampling was therefore a combination of purposive sampling and Snow

balling. The study mainly employed interviews with key informants in the collection of primary data. Communities were purposively selected with consideration to their proximity to the mining operations and socio-economic circumstances of such communities. Qualitative data was elicited from key informants such as Assembly Members, Chiefs and Opinion Leaders from some six communities, namely Kokotesua, Anyimedukrom, Dokyiwa, Binsere, Anyinam and Sansu and Nana Okai. These communities were mostly affected by AGA Ltd operations. Quantitative data on mine closure and the socio-economic impact of mining was also obtained using questionnaires. The questionnaires were administered to one 105 respondents who were selected from the populations of the purposively selected 11 communities (see table 3.1 below). Only communities that live within a range of ten (10) kilometers to AGA Ltd areas of operations or within the Company's catchment area were considered for this study (table 3.1.)

Table 3.1: Purposively Selected Communities

Communities	**No. of Respondents**
Amangoase	9
Kwabrafoso	6
Bogobiri	4
Nameso	4
Koffikrom	19
Kokoteasua	4
Gausu Extension	4
New nyamso	4
Akaporiso	8
Bossman	14
Tutuka	6
Not Responded	23
Total	105

Source: Author's Construct

The selection of the one hundred and five respondents was also purposively selected from the communities. Consideration was given to respondents who were very capable and

conversant with understanding the issues under investigations mostly due to their knowledge and experience. Administration of questionnaires was done with the consent and willingness of the respondents, consideration of place of work, proximity to the mines, time and availability of resources. Only persons who were 25 years and above and have lived for more than three years within AGA Ltd Catchment Area of operation were selected for the study. This is to ensure that respondents who were selected for the study have personal experiences and firm understanding of the issues under investigation by virtue of length of time stayed and close interactions with the particular selected study area. The respondents were basically asked questions relating to the likely socio-economic impact of mine closure on their various communities and what future they envisaged in the eventual closure of the mine. Through Snow balling, some retrenched mine workers were contacted and interviewed. Focus group discussions were conducted in 6 different communities within the Obuasi Municipality. In each of the Focus group discussion, the Assembly Member, Unit Committees and Traditional leaders and chiefs were purposively selected in addition to 5 other community members.

3.11 METHOD OF DATA COLLECTION /COLLECTION INSTRUMENTS

The main data collection instruments used are Questionnaires, Recorders, Interview guide, Field Observation as well as Focus Group Discussion. Interview schedules with Assembly Members and Unit Committees members and Focus Group Discussion with selected sample population of communities most affected by mining operations were conducted.

Field observation was extensively used in this study since the researcher coincidently resides in the study area for the past four years. Field observation was conducted in the six selected communities to gain first-hand information of some of the impacts of AGA's Ltd

operations on the environment and on these communities. Key Informant interviews are also conducted with retired and retrenched mine workers.

Focus Group Discussions involving groups of 6 to 10 persons in each of the six selected communities were conducted. In each of the Focus Group Discussion, the Assembly Member, Unit Committees and Traditional leaders and chiefs were purposively selected in addition to 5 other community members. Themes were developed around which the Focus Group Discussions revolved. These themes centered on the impact of mining in the various mining communities. Some of the themes include pollution of sources of drinking water, destruction of farm crops, effects of tailing materials and loss of livelihoods, employment opportunities, social infrastructure, and compensation payment and so on. These themes were developed to guide the discussions. Freitas *et al* (1998) stated that in Focus Group Discussion, the focus or object of analysis is the interaction inside the group. The participants influence each other through their answers to the ideas and contributions during the discussion.

3.12 DATA ANALYSIS

Quantitative data obtained with the aid of questionnaires was analyzed using SPSS Software and Excel. The analysis of the data generated frequency distribution tables and bar charts. The results of the analysis was then interpreted. Qualitative data was analyzed by using the Constant Comparative Method which yielded from the Grounded Theory approach. The analysis process started with transcribing, coding and categorizing the qualitative data into different sets and then comparing them. A critical analysis of similarities and differences to form categories with the aim of finding out the actual meaning of the data. The themes used in the result emerged from the questions posed and

the analysis process. Moreover, the qualitative data analysis involved recording reflective notes about what is being learned from the field of study by bringing out emergent ideas that help to make sense of reality encountered on the field of study.

3.13 LIMITATIONS OF THE STUDY

The Obuasi Mine which is operated by AGA affects 6 Local Government administrative set-ups within the Mine concessions. They include Obuasi Municipality, Adansi North Assembly, Adansi South District Assembly, Amansie West District, and Amansie East and Amansie Central District Assembly. AGA operations affect 183 communities. Out of these 183 communities, 63 communities are affected within a range of 10 kilometers from operations of the mines. The study employed purposive sampling method which target respondents that were information-rich and equipped with knowledge and better experience about mining issues. The study area was therefore delimited to the Obuasi Municipality and its environs. A major disadvantage of purposive sampling is the fact that findings cannot easily and conveniently be generalized for the larger population. Moreover, there was no complete closure of the mine by AGA Ltd although majority of the workers are laid off and the mine is undergoing restructuring. Most retrenched miners who were contacted and interviewed indicated that their financial status had improved with the severance package that was offered them. The recent retrenchment and shutdown or better still temporary closure therefore did not immediately manifest some of the severest adverse impacts that are usually associated with mine closures elsewhere. The downsized of AGA Ltd concession area to 39%, the retrenchment exercises coupled with the distress state of the Obuasi Mines has created initial adverse impacts that could be exacerbated in the

complete closure of the mine if immediate steps are not being taken to mitigate the situation. However, benefits of mining to the Obuasi Municipality are largely being reduced resulting from the current situation of the Mine.

There was a challenge eliciting some specific information from the AGA Ltd. A request for a mine closure document that details mine closure planning by AGA Ltd was not granted with the reason that the document was subject to amendment and too confidential a document to be released for analysis. In order to overcome this particular limitation, specific questionnaires were directed towards mine closure planning by AGA Ltd and these questions were readily responded to by the management of AGA Ltd. Retrenched miners were mostly not willing to disclose information about their current economic status and their personal data. The reluctance of some respondents not to disclose some information was treated as a matter of confidentiality and the right of the respondents to consent. Overall, the important information required for the study was adequately obtained.

4.0 CHAPTER FOUR

STATEMENT OF RESULTS

This chapter presents comprehensively the results from the field study. The essence of this section is to present perceptions and perspectives of the various stakeholders that are affected by mining activities or that are likely to be affected in the closure of the mine in

the Obuasi Municipality. The results also seek to underscore some of the socio-economic development that are being undertaken by AGA Ltd towards sustainable development. Results are presented in both quantitative and qualitative form in line with the study objectives.

4.1 ETHNICITY OF RESPONDENTS

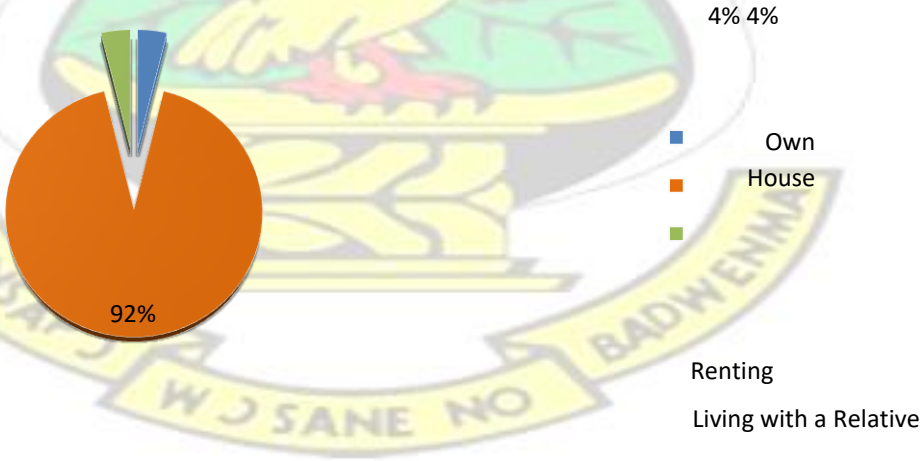
The evidence in the analysis showed that majority of the residents of Obuasi are either settlers or migrants that are attracted to Obuasi Municipality due to the thriving mining industry and the related employment opportunities generated by mining activities. About 88% of respondents said they were settlers while 12% were natives. Many of the respondents were of the view that in the closure of the mine, many of the migrants were likely to relocate or return to their places of origin. This likely drift in the population could affect the viability of the Obuasi as a Municipal or worst still could to lead to a 'ghost town' depending on the number migrants involved. The mining operations have not being able to generate the much needed sustainable development and alternative employment opportunities to last beyond the closure of the mine as reported by the respondents.

4.2 ACCOMMODATION AND HOUSING SITUATION OF RESPONDENTS

Accommodation and housing is one of the major problems that affect people who reside in mining towns in Ghana. The major mining towns in Ghana are usually congested and overcrowded with many people who are seeking to earn a living from either mining, mine related or non-mine related activities in mining towns. The higher numbers of people usually put pressure on social amenities and also create problems of inadequate housing.

The average household size of the Obuasi Municipality is 5.8 which is higher than the national average of 5.2 persons per household in 2005 (Ghana Statistical Service 2005).

The majority of the respondents (92%) as shown in figure (4.2) indicated that they were living in rented accommodation. The study results also showed that 52% of the respondents indicated that one of the problems created due to the recent retrenchment of miners in 2014 was the fact that many of them had to vacate their rented apartment/accommodation that belonged to the miners. This was necessitated as a result of miners and their families losing the benefit of free accommodation previously provided by AGA Ltd and had to return to their own houses that they rented out. The large numbers of people living in rented accommodation and the competition for accommodation facilities leads to higher rent and rent seeking by landlords in the Obuasi Municipality. In the closure of mines which may compound the unemployment situations, many of the respondents are of the view that people may not be able to cope with higher cost of living in the Municipality which may also trigger more population drift from the Municipality.



Source: authors construct Figure.4.1, Mode of Accommodation of Respondents

4.3 MINE WORKERS AND EXTENDED FAMILY TIES

The data analysis as indicated in table (4.1) revealed that 49% of the respondents have relatives who have worked in the mines before or are still working with AGA Ltd. Mine workers usually have higher numbers of dependents as other extended family relatives tend to rely on mine workers for financial support. Respondents indicated that the higher numbers of dependents on mine workers implied that a larger number of people, especially the extended family support would be affected as a result of the recent retrenchment of mine workers and the situation could become worse in a complete closure of the mine.
Table 4.1. Mine Workers and Extended Family Ties

Response	Frequency	Percentage
Yes	51	48.6
No	42	40.0
Not Responded	12	11.4
Total	105	100.0

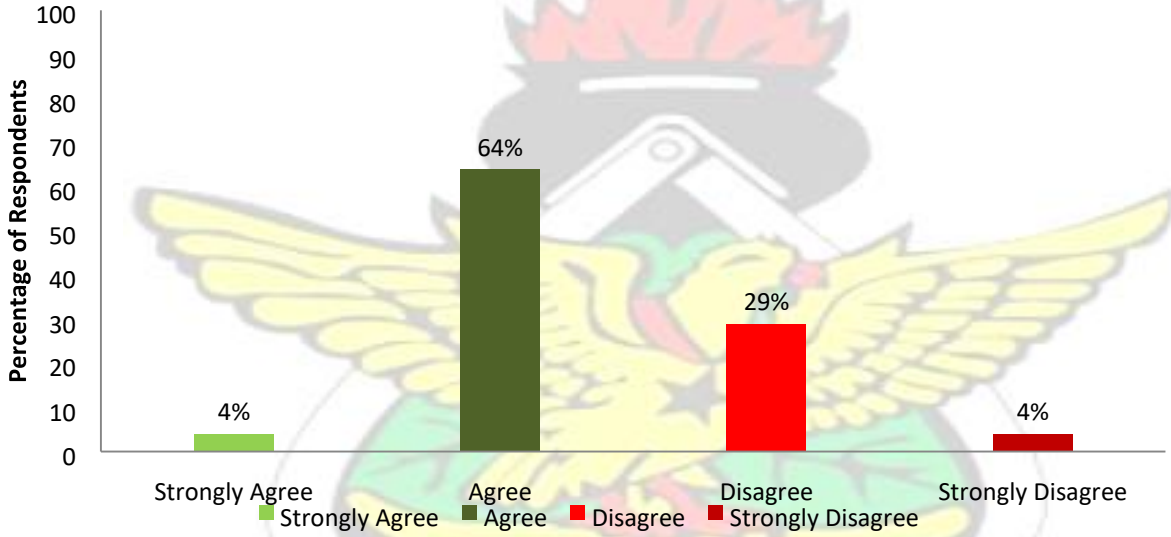
Source: Author's Construct

4.4 AGA LTD COMMUNITY DEVELOPMENT

Mining in the Obuasi Municipality is a major provider and the driver of development as 35% of all employment opportunities directly come from the mining sector. Some stakeholders such as Assembly Members, opinion leaders, traditional leaders however expressed the usual concern that the contribution from the mining sector is not sufficient to propel sustainable development in their communities. About 33% (see figure 4.3) of the respondents are of this particular view.

The data from 11 communities of 105 respondents as displayed in figure (4.4) revealed that 4% of the respondents strongly agreed and 64% actually agreed that AGA Ltd contribute to development of mining communities. Twenty nine percent of the respondents disagreed that AGA Ltd contribute to community development while 4%

strongly disagreed that the company contribute to community development. This implied that 68% of the respondents agreed that AGA Ltd contribute towards economic and social development of the Obuasi Municipality. About 41% of the respondents also agreed that the Mining Company have provided more social services in their communities compare to the Obuasi Municipal Assembly while 59% agreed that the Municipal Assembly lead in the provision of social services in their communities.



Source: Authors Construct Figure.4.2, AGA Ltd Community Development

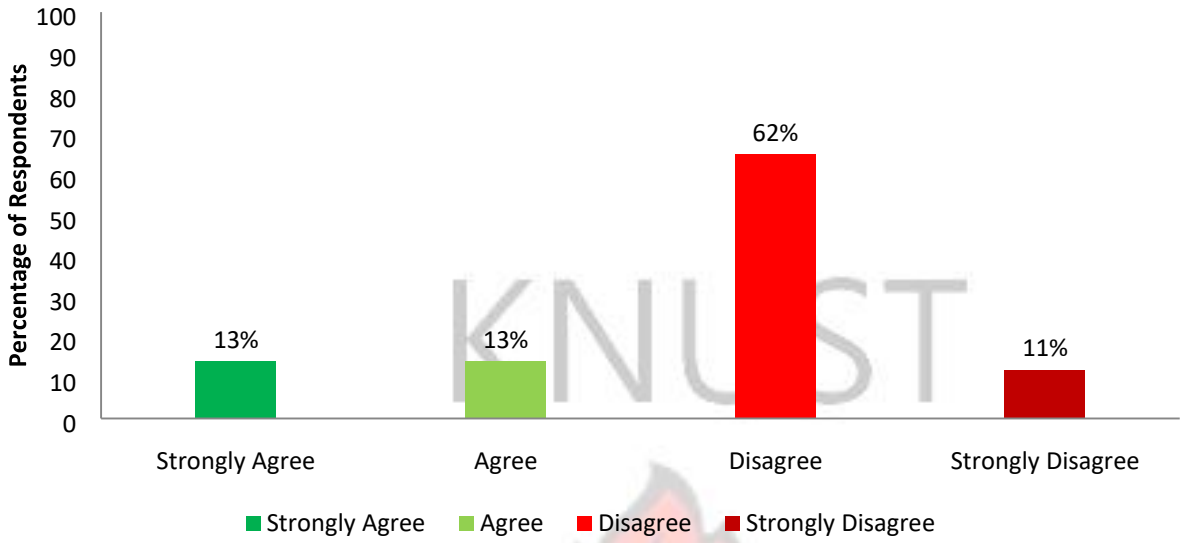
Similarly 41% of the respondents hold the view that it is the role of AGA Ltd to develop the Municipality while 59% of the respondents see the role of development and provision of social services as the mandate of the Municipal Assembly which should only be complimented by the effort from the Mining Company. About 41% of the respondents are of the view that it is role of the mining company to provide the developmental needs of the

mining communities. This partly accounts for the relatively low level rating of the company contributions to community development by some sections of the mining communities.

4.5 COMMUNITIES' PERCEPTION OF MINE CLOSURE

There is strong communities' disagreement with the closure of the mine. Though many of the respondents agreed that mining activities in the Municipality adversely affected them, they will not however support any effort at closing the mines. Respondents (73%) generally agreed that the local economy of the Municipality thrive on mining activities and the likely closure will deprive many people of their livelihoods. This concerns emanated from the high dependency of the Municipality on the continuous operations of mine without much well-thought strategy at diversifying the local economy.

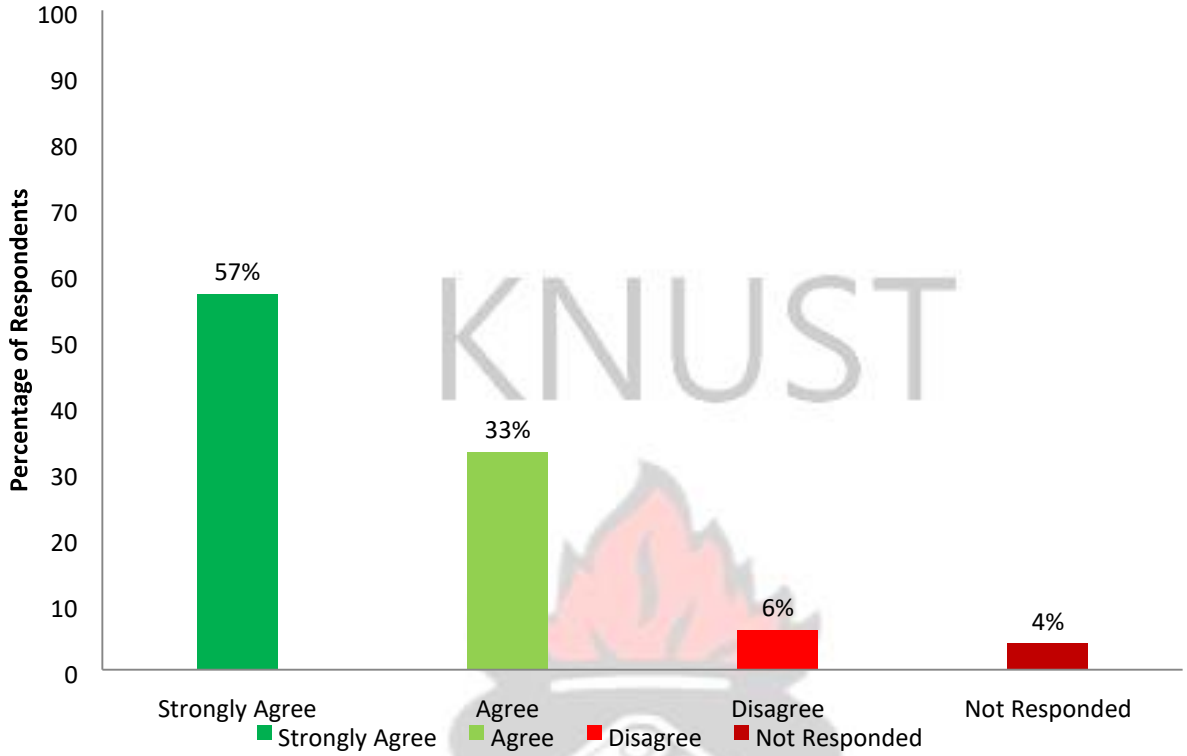
Majority of respondents agreed that the likely closure of the mine will rather worsen the state of economic and social development in the Municipality by depriving local people sources of livelihoods that are derived directly or indirectly from mining activities. As evident in figure (4.4), majority of the people (62%) disagreed and 12% strongly disagreed with the closure of the mine while only 13% agreed and 13% strongly agreed with the closure of the mine. This implies that majority of the respondents (74%) are not in favour of any attempt at the closure of the mine indicating a true reflection of the dependency of the majority of the people on the mining operations in the Municipality.



Source: Author's Construct Figure 4.3: Communities Perception of Mine Closure

4.6 THE ADVERSE IMPACTS OF MINE CLOSURE

Due to the critical economic and social role that mining play in the Obuasi Municipality, majority of the responds agreed that the closure of the mine will have dire repercussions on the local economy of the Obuasi Municipality. The recent retrenchments exercises, have resulted in massive loss of employment and livelihoods to many people who directly or indirectly depended on the operations of AGA Ltd for a living. The study results in figure (4.5) showed that 90% of the respondents agreed that the closure of the mine will adversely affect economic activities as compared to the less than 10% of the respondents who are of the view that the closure of the mine will not have any serious implications. The major direct benefit of mining to majority of the people is the job opportunities created directly and indirectly by the mining activities.



Source: Authors Construct Figure 4.4, Adverse Impacts of Mine Closure

4.7 PERCEPTION OF INCREASE IN POVERTY

The state of poverty in mining communities in Ghana is mostly exacerbated by the influx of immigrants seeking livelihoods in the mining towns. The young male immigrants who are mostly not able to secure employment from mining and non-mining related opportunities resort to illegal mining activities while the young unemployed female immigrants mostly seek their livelihoods mostly in menial jobs or as commercial sex workers. These immigrants who are usually in search of employment opportunities "flood" these mining towns and thereby increasing unemployment and poverty as well as putting pressure on existing social amenities. AGA Ltd is a significant source of employment for the local people within the Municipality and immigrants from other districts and regions of Ghana.

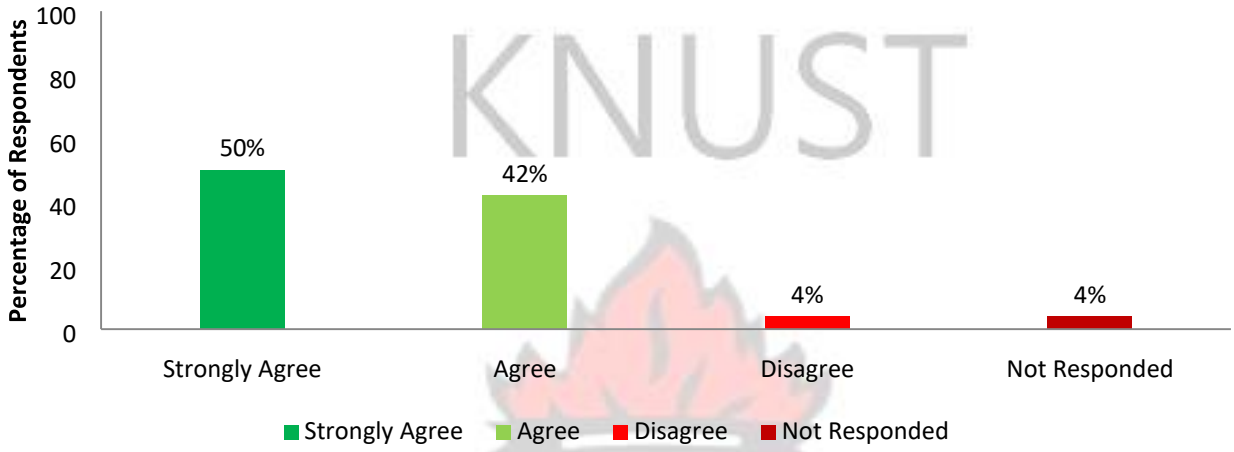
Reductions in spending on the local economy will affect brisk businesses and affect peoples' livelihoods. The study results indicated perceived increase in poverty in the likely closure of the mine. The data showed that 88% of the respondents believed that there will be wide spread increased poverty in the likely closure of the mine in the Municipality while only 12% respondents do not think the closure will worsen poverty situation. Directly or indirectly mining affects educational standard, health delivery, local market, population, food supply and the overall standard of living of residents of the Obuasi Municipality.

4.8 PERCEPTION OF RELOCATION OF BUSINESS ENTERPRISES

The Obuasi Municipality like other mining towns is an attraction of traders and location of small and medium scale businesses due to the brisk businesses that are usually boosted by the mining activities. There is brisk business mostly due to income generated from the mining activities. In the likely closure of the mine, it is expected that businesses will slow down while some traders and business enterprises may relocate to other towns. The study results showed that majority of the respondents believed the closure of the mine will result in the relocation of some traders and business enterprises. The data in figure 4.6 indicates 51% strongly agreed, 42% agreed while only 4% disagreed that businesses will be seriously affected in the likely closure of the mines. Therefore one of the major perceived negative consequence of mine closure is its impact on the local market and businesses as indicated by 93% of the respondents.

The high percentage of respondent's agreement of the obvious impact of a closure on the local market further emphasized the importance of income generated from mining

and the multiplier effect of these incomes on the livelihoods of people in the Obuasi Municipality.



Source: Author's Construct Figure 4.5, Perception of Relocation of Business Enterprises

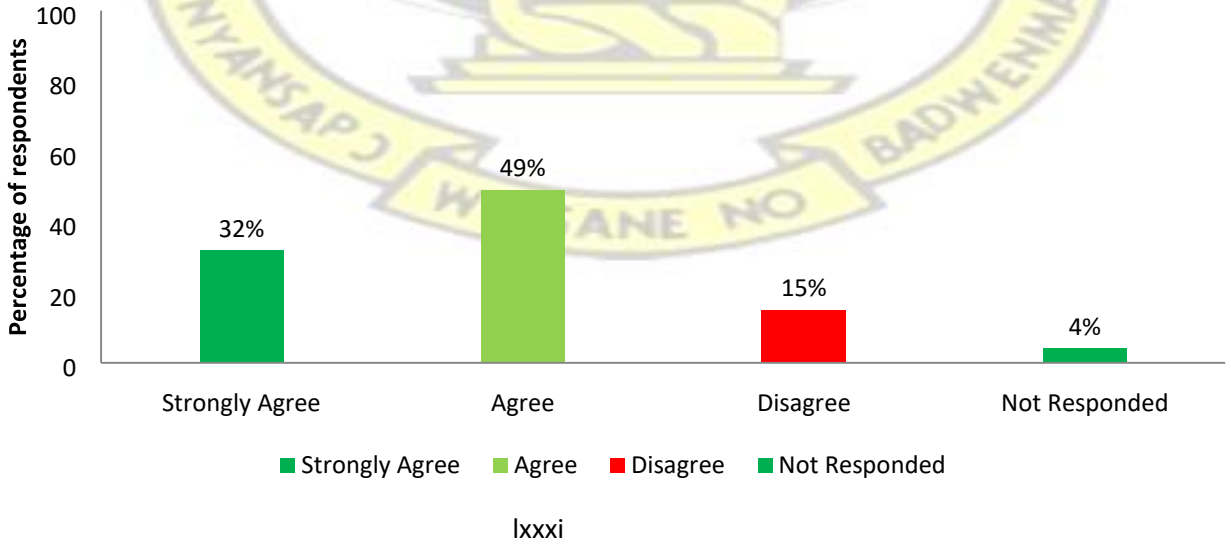
4.9 PERCEPTION OF POPULATION DRIFT

Majority of the people in the Obuasi Municipality are migrants who have been attracted to the booming mining industry in the Municipality. Some of these immigrants have become permanent settlers as they have acquired enough properties to remain comfortably settled in the Municipality. However, a significant number of the residents are temporary settlers who have migrated to the Municipality to seek employment opportunities either directly from the mines or other job opportunities indirectly related to mining activities. The recent mass retrenchment by AGA Ltd have witnessed large numbers of these temporary immigrants leaving the Municipality either to their places of origin or relocating to other towns to seek alternative employment opportunities.

In the likely closure of the mines and the resultant diminishing of employment opportunities, many of the immigrants are expected to follow suit. In the meantime it is not

possible to estimate the exact numbers of people that have left the Municipality as a result of the retrenchment or the exact numbers that might be leaving in the likely closure of the mines but large number of people are expected in the likely closure of the mines. From the analysis in figure (4.7) 32% strongly agreed, and 49% actually agreed that the closure of the mine will result in large number of people leaving the Municipality. Only 15% of the respondents disagreed on emigration of people from the Municipality in the likely closure of the mines. Thus as high as 81% respondents hold the view that many people will leave the Municipality following the closure of the mine.

Demographic size and characteristics are important consideration in the determination of the municipal status as a political jurisdiction in Ghana. The viability of a municipality largely depends on the size of its population and the amount of revenue that it is able to generate internally to support the infrastructural development of the Municipality. It is therefore important to understand how significantly the population size of the Obuasi Municipal will be affected in the closure of the mines. Drastic reduction in the size of the population as a result of mass emigration can affect the viability of the Municipality.



Source: Author's Construct Figure 4.6, Perception of Population Drift in the Closure of the Mine

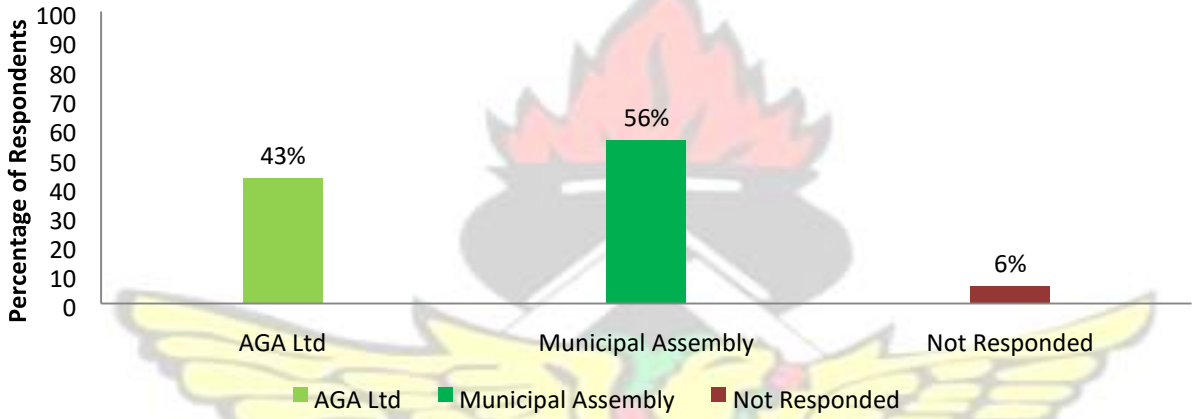
4.10 IMPACT OF MINE CLOSURE ON EMPLOYMENT AND LIVELIHOODS

Mining activities have attracted large numbers of population and business entities to the Obuasi Municipality. Population growth is above the national average and the population is currently estimated to be above 20,000 with household size of 5.8 which is above the national household size of 5.2. As high as 84% of the respondents agreed that majority of people livelihoods will be affected in the likely closure of the mines while only 16% of the respondents disagreed to the loss of livelihoods in the likely closure of the mines. The closure of the mine expected to result in massive loss of employment and livelihoods that are directly and in indirectly associated with the mining operations.

4.11 IMPACTS OF MINE CLOSURE ON PROVISION OF SOCIAL SERVICES

The Mining Company is directly and indirectly a major source of social service for communities in the Obuasi Municipality. AGA Ltd is a key provider of essential social services to many of the communities through its Corporate Social Responsibility and the institution of the Community Development Trust Fund. The Company has invested US$23,763,110 (see appendix A) within its 10 years period of operations (from 2004 to 2013) as Corporate Social Responsibility. These funds were spent on community health, social infrastructure, education and sports, Art, Heritage and Culture. Additionally, AGA Ltd has also paid property taxes of US$ 2,372,721 within the same 10 years period to the Obuasi Municipal Assembly as well as $137,856 to the Amansie Central District

Assembly. (See appendix A). The communities' dependency and reliance on the Mining Company for social service is as a result of lack of capacity of the Municipal Assembly to provide these services for the rapidly increasing numbers in the population of the Municipality. This study's data as indicated in figure (4.8), showed that 41% of the respondents is expected to be much affected in the provision of social services in the likely closure of the mine.



Source: Author's Construct Figure 4.7: Provision of Social Services

4.12 IMPACT OF MINE CLOSURE ON EDUCATION

One of the major contributions of mining in the Municipality is the provision of education and educational infrastructure. The Obuasi Municipal Assembly has expressed concerns of the recent impact of the retrenchment on enrolments rates and performance in the educational sector since there is the concern of the financial capability of some retrenched miners to continue to cater for the educational needs of their children. The study results however indicated majority of the respondents (83%) do not think the likely closure of the mine will seriously affect the provision of education and educational performance in the

Municipality. The number of basic public schools numbers 121 while the basic private schools are 220 in the Municipality. The Ghana Education Service plays a supervisory role in the management of all schools in the country. Moreover, AGA Ltd also offers educational scholarships for the mine workers children and this benefit could equally be affected in the closure of the mines.

4.13 IMPACT OF MINE CLOSURE ON HEALTH CARE

One of the areas of interventions by the mining Company in the Municipality is the provision of health care and health care infrastructure. This is evident in the Municipality as the two major hospitals (the Government Hospital and AGA hospital) were built by the mining company. More significant investment in Preventive Health Care is the introduction of the Malaria Control Program. Moreover, there has been expansion of health care provision in the Municipality especially private health facilities to complement the effort of Government and AGA Ltd.

Therefore the analysis indicated that the likely closure of the mine will not significantly affect the provision of health care in the Municipality. Majority of the respondents (87%) agreed that health care provision will not be affected due to the likely closure of the mine while only 13% of the respondents held the view that health care provision will be affected in the likely closure of the mine. The proximity of the Obuasi Municipality to the regional capital, Kumasi, also makes it possible for medical referral cases to be attended to at the Akomfo Anokye Teaching Hospital. It is very important to indicate here that in the likely closure of the mine, it will be necessary to maintain the standard of facilities at the AGA Ltd Hospital in order to keep up the provision of quality health care in the Municipality as the Hospital is currently being opened to the public.

4.14 IMPACTS OF MINE CLOSURE ON MINE WORKERS

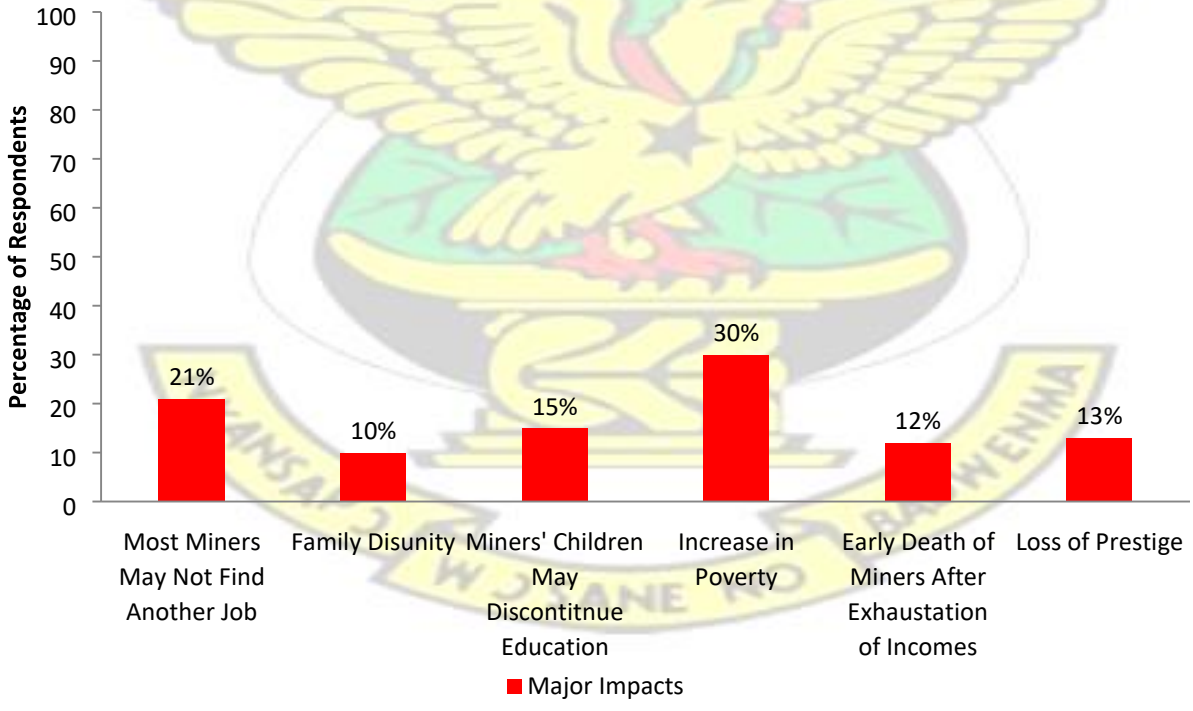
The immediate people that are mostly affected by the closure of a mine are the mine workers and their families as well as other dependents. When the Mining Company is not able to compensate mine workers adequately with good severance package, it usually creates problems not only for the miners but their dependents and the entire society at large. The restructuring and redevelopment of the Obuasi Mines has led to mechanization and automation and less human labor is required in the operations of the mines. In 2014, most of the workers were retrenched. It is therefore possible to determine the consequence of mine closure on the mine workers.

The usually panic and anxiety associated with retrenchments did not characterize the lay-off of miners as extensive consultations were done with the Mine Workers Union and the Management of AGA Ltd and other stakeholders. Some of the effects of mine closure on mine workers identified were increased poverty of some workers and their families, lack of alternative employment opportunities, inability to cater for children educational needs, loss of prestige, early death of miners from poor health status and disorganization of families.

The retrenched miners were asked in the questionnaire to indicate how they are affected in the recent retrenchment. A good number of the miners (30%) indicated that they were going to be poorer and that will affect their abilities to cater for their needs and that of their families and dependents. About 21% of the miners were of the most concern that they might not get alternative employment opportunities due to the rate of unemployment in the country though they claimed of being equipped with some skills while working with AGA Ltd. About 15% of the miners were of the concern that they will not be able to

continue to provide their children good education if they are unable to secure alternative employment.

Some of the miners, (13%) are of the view that once they are unemployed, they may take up menial jobs which might affect their respect/prestige in society. About 12% of the miners indicated that their health status may deteriorate since they might not be getting regular and free health care from the company. This may lead to early deaths of some retrenched miners. Some 10% of the miners also expressed the concerns that the closure of mines or retrenchment creates family disorganization since some miners usually have to take up alternative employment in different but distant towns. It is often not possible to take the entire family along to such distant towns especially at the early stage. The data on the likely impacts of the closure of the mine on mine workers is shown in figure (4.9).



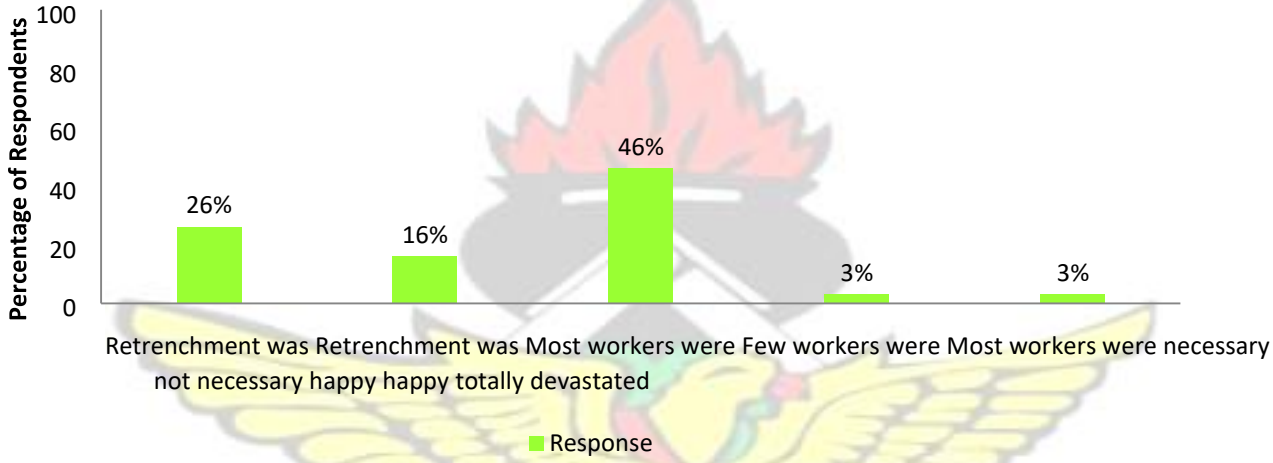
Source: Author's Construct Figure 4.8, Impacts of Mine Closure on Mine Workers

4.15 RETRENCHMENT AND COMPENSATIONS

Most of the retrenched workers that were contacted and interviewed conceded that employees who had worked with the AGA Ltd for the past fifteen years were willing and ready for retrenchment considering the benefits or severance package that came along with the retrenchment. According to AGA Ltd, a retrenched miner severance package depended on the number of years served, multiplied by 25% of one annual salary factor. Additionally, a stipulated handshake depending on salary level and years served, and unpaid leave balance was paid to the miners. According to the Member of Parliament for Obuasi East, the retrenched workers were happy and were ready to go home because they were given good severance package but indicated there were also concerns on how these benefits were going to be well invested". For majority of the workers, the retrenchment improved their income status. The minority of the workers who did not work for a long with AGA Ltd were disappointed as they benefited little from the severance package. Some of the workers revealed they invested their incomes in financial bonds and securities, transport business while others built houses or acquired other properties. According to some of the retrenched workers, the severance package was enough to keep them financially sound if they were able to manage their incomes properly. An estimated amount of $220 million dollars was used to pay off the retrenched workers.

Young but retrenched workers of AGA Ltd who were still exploring and seeking employment opportunities agreed they acquired adequate skills training that make them employable especially in the construction industry. They were however not optimistic of getting well paid jobs. Some of the skills training AGA Ltd provided for the workers were

mechanical engineering in heavy duty and light duty engines, instrumentation engineering, electrical engineering, metal fabrication, pumps engineering and development of managerial skills. Figure (4.10) depicts the retrenched miners' perceptions of the retrenchment by AGA Ltd. The data showed that 46% of the miners were in favour of the retrenchment. The data implied that the severance package offered by AGA Ltd was attractive as many of the workers were psychological ready for the lay-off.



Source: Author's Construct Figure 4.9, Retrenchment and Compensations

4.16 APPRENTERSHIP TRAINING, SKILLS DEVELOPMENT AND ALTERNATIVE LIVELIHOODS

As part of socially responsible mining, AGA Ltd is expected to provide skills training for its workers not only aim at improving their productivity but also to provide training skills to make these workers economically mobile to enable them fit into other sectors of the economy. Majority of the mine workers (59%) agreed they were provided with skills training by the company which can enable them take up employment opportunities beside the mining industry though most of them were not optimistic of securing alternative employment opportunities. Some of the skills acquired as stated earlier included

mechanical engineering, metal fabrications and plumbing, management skills and training in handling heavy duty machines. AGA Ltd instituted two year program to train about 70 artisans each year as electricians, mechanics, welders and fabricators and instrumentation technicians. The program which started in the year 2013 has graduated 175 trainees of which 157 people came from the Obuasi Municipality. An additional 69 people were enrolled in the year 2012/13 of which 66 people were from the Obuasi Communities. An amount of US$ 5,180 is spent on each trainee per year in allowances (AGA Ltd, 2015).

Some of the alternative livelihoods provided by AGA Ltd to communities included soap-making, pastries and confectionery products, beads making and jewelry, piggery project and mushroom farming. Piggery-farms for some 6 selected communities by Obuasi Municipal have been supported by AGA Ltd. Some selected 18 families from the communities of Mampamhwe, Jimisokakraba, Ahasonyewodea, Binsere, Adaase and Sanso have each been provided with 4-room pig sty and three pigs each as well as provision of veterinary services to the pig farmers.

In order to improve upon the local content, AGA's workers 'overall-dresses' were manufactured locally by local business entrepreneur. Over 10,000 'overall-dresses' were produced annually. However, these alternative livelihoods usually involve few groups of people and those trained for alternative employment opportunities are not guaranteed any source of available employment opportunities.

4.17 DEVELOPMENTAL PRINCIPLES OF AGA LTD WITH HOST COMMUNITIES

1. The company strives to build a positive impact on the people, cultures and communities in which it has mine operations. This is pursued by ensuring that there

is respect for the local and indigenous people and their values, traditions, culture and the environment.

2. Deliberate attempts are made at undertaking social investment initiatives in areas of need where the company can make practical and meaningful contributions. Education and health care are particularly being considered as areas of interventions and other areas relevant to the company's business activities especially projects and programs that can be sustained in the event that the mines ceases operations.
3. Consideration is also given in the acquisition and usage of land in a manner that is most acceptable among stakeholders. In the situation of where voluntary resettlement becomes necessary, the company abides by appropriate existing guidelines for resettlement and the company in any situation of resettlement will work with the local communities to develop appropriate and suitable plans for any resettlement.

4. Sustainable economic development of host communities is pursued through procurement that target locally available resources, the release of redundant assets to the host community, providing the necessary assistant to promote the growth of small to medium size sustainable businesses as well as the outsource of goods and services to local enterprises where it is possible and appropriate to do so. (Yeboah, 2008).

4.18 AGA SUSTAINABLE ENVIRONMENTAL APPROACH TO MINING

According to AGA Ltd, the company is committed to ensure that the adverse impacts of mining operations on the environment is reduced or minimized by adopting various modern standard environmental practices. Efforts are directed to making sure there is zero effluent discharge into the environment. The company embarks on backfilling and re-vegetation of all surface-mine areas to restore the land back to its useful form. Waste dumps site are reprofiled and re-vegetated to avert erosion developing gullies on such lands. In addition, liquid waste are treated and recycled while the drainage systems are re-engineered to achieve zero water balance. The company is also signed unto ISO 14001 i.e. a comprehensive Environmental Management System (EMS) which is internationally recognized standards/specifications that provide a framework for managing environmental responsibilities more efficiently and more integrated into the overall successful business operations (AGA Ltd, 2015).

4.19 AGA SOCIO-ECONOMIC APPROACH TO DEVELOPMENT IN OBUASI MUNICIPALITY

It is enshrined in AGA's corporate values to make the host communities better off for the company having been there. In line with the commitment to these values, AGA Ltd strived to create positive socio-economic impact on its areas of operations. In the Obuasi Municipality, the company's socio-economic impact is seen in areas of health care provision, education, infrastructure, water and sanitation, electricity, skills training and provision of alternatives livelihoods. There is investment in areas of community health,

education and youth, social infrastructure, art and cultural heritage and the institution of the Community Trust Fund to achieve sustainable community development.

Opportunities are also provided for local contractors to grow and enhance business locally and retain wealth within the Municipality. There is also continuous engagement and collaboration with key stakeholders i.e. Government, Municipal/District Assemblies, Traditional leaders, NGOs, CBOs, local community leadership and the security. The company supports institutional activities such as Best Farmer Awards, Best Teacher Awards, Best Health Worker Awards and donations in support of traditional events and community development projects.

Due to the downsized of the mines, AGA Ltd has relinquished some of its redundant structures to the Obuasi Municipal for the establishment of a university campus. AngloGold Ashanti indicated it has over the past decade contributed about $577million in corporate taxes, royalties, dividends, custom duties and employee taxes to the Ghanaian economy. In an attempt to assess the likely socio-economic impact of mine closure, it is important to establish the overall contribution of AGA Ltd in socio-economic programs and projects in the Obuasi Municipality. The impact of AGA's Ltd contribution to social and economic development in the Obuasi Municipality is delved into by the findings of this study.

4.19.1 PROVISION OF EDUCATION BY AGA LTD

Education is considered very important and as one of the surest ways through which there can be transformation of natural capital into human capital. The rapid exploitation of natural resources consequently leads to depletion since these resources are often finite and

non-renewable. One strategy of ensuring sustainable use of natural resource is the transfer of natural capital into building human capital through affordable and quality education and skills training. The educational sector is one of the areas of investments by mining companies in Ghana. Mining communities benefit directly from the supply of educational facilities by mining companies that consider the provision of education as part of their Cooperate Social Responsibility.

The company has constructed a perimeter fence wall for New Nsuta Community Cluster of schools, a drainage system and a park for New Bediem School, construction of Anyinam Methodist School Canteen, fence wall and toilet facilities, all located in the Obuasi Municipality. A new school block is constructed for Dokyiwa Village in 2011, as well as Nyamebekyere and Jimisokakraba classroom blocks, Adubrim JHS classroom block and four apartment teachers' quarters at Ayease in 2014. Prior to the merger of AngloGold with the Ashanti Goldfields Company 12 school blocks had been constructed for twelve different communities including a Hostel for KNUST Medical school in Kumasi. Some of the communities that benefit from educational infrastructure are Brahabebome, Sansu, Binsere, Jimisokakraba and Odumasi Len Clay schools all in Obuasi. Other school blocks constructed outside Obuasi Municipality are Ayanfuri Primary School and JHS and water facility in the Upper Denkyira District; Mosikrom Primary School and Manso Afedie Primary School in Amansie West District etc. Bursaries are offered to some children of AGA Ltd employees for Senior High Schools to University level education. An estimated number of 4,000 students benefit annually. The cost of this educational scholarships is an average amount of about $52,000 annually. The study results of public perception showed that investment in education is one of the areas where AGA Ltd has made strides. The data

indicated that 71.4% of respondents agreed that provision of educational facilities is being undertaken in their communities by the Mining Company.

4.19.2 THE OBUASI COMMUNITY TRUST FUND (CTF)

The Obuasi Community Trust Fund (CTF) was launched on September 13, 2012. A start up step was a donation of 125 desk-top computers to selected community schools. In the month of August, 2013, the CTF Board approved four educational projects to be undertaken for the year 2014. The Obuasi Community Trust Fund Secretariat was officially commissioned alongside with sod-cutting ceremonies for the commencement of the four community projects on the 12th of November, 2013. In the month of April, 2014, all four community Trust Fund educational infrastructure projects at Ayease, Hasonyewodea, Jimisokakraba and Nyamebekyere were fully completed. Seven Toyota Hiace mini buses were also donated to the seven Senior High institutions within the Adansi Traditional area. The CTF continuously identify various communities' needs in the areas of education, health and sanitation for the necessary interventions.

4.19.3 HEALTH AND SANITATION

Mining has a lot of health implication especially for the mine workers and the communities which are sited close to the operational site of the mines. Mining activities are associated with land degradation, environmental pollution and contamination of food crops. Tailing storage or the final residue of mining are the materials left after the mineral such as gold is retrieved from the rock bearing ore. Tailing materials are usually contaminated with harmful chemicals such as cyanide and mercury and when not stored properly post risk to human health. Where these tailings materials are deposited on the land, it is not possible to

use the land for any economic activity including farming. Moreover, the spillage of these tailing storage into surface waters or the seepage of the content into underground waters is a common phenomenon in mining communities, creating an immediate and long term health implications on the affected communities.

Health care provision is important in the midst of mining environment that is characterized by mining related ailments such as malaria, respiratory diseases, asthma, and dermatological diseases. As part of AGA's Corporate Social Responsibility, the company has made some significant investment in health and sanitation. Since 2004, the company has constructed two toilets with bio-digester facilities in Ayanfuri in 2004 and in New Bediem in 2011and other toilet facilities to some other communities. Some rivers such as Nyame and Kwabrafo are being de-silted while communities' drains at Anyinam, Hasonyewodea, Anwiem have also been de-silted. The company support clean up campaigns through provision of working tools.

The most significant intervention undoubtedly in health care since 2004 is the introduction of the Integrated Malaria Control Spraying Program which started on a full scale in 2006. Households are fumigated with chemicals on scheduled dates to get rid of mosquitoes. The effectiveness of the Malaria Program has resulted in significant decrease of 75% in the incidence of malaria reported cases at health centers in the Municipality (AGA Ltd, 2015). The Malaria Control Program is currently extended beyond Obuasi to other selected districts in different regions including some districts in the three northern regions of Ghana.

Investment in health and health infrastructure was much significant before the merger of AngloGold and Ashanti Goldfields. AGA Ltd continued to maintain the health

infrastructure and improve upon some of the facilities that were already provided by the Ashanti Goldfields Company. In 1992, the Ramia Hospital was built by the Ashanti Goldfields Company which is now upgraded to Government Hospital for the Obuasi Municipality. The AGA Hospital which was also acquired through the merger is owned and maintained by the company and serves the health needs of mine workers and their families and also serve as a referral center in Obuasi.

The provision of Public Places of Convenience, waste management, regular desilting of rivers and drains, construction of the two main largest hospitals in Obuasi has helped improved sanitation and health care in general in the Municipality. The public perception of investment in Health by AGA Ltd is very positive in the Obuasi Municipality. From the data, 80% of the respondents agreed that health care provision is one of the vital services being provided by AGA Ltd.

4.19.4 MALARIA CONTROL PROGRAM

The Malaria Control Project was started in response to the high incidence of malaria among AGA workers and members of the Obuasi community at the various health centers and hospitals. The Malaria Control Program is in the form of indoor residual fumigation of households. The project has resulted in 75% reduction of malaria incidence rate as recorded at the Obuasi Government Hospital within the first two years of the program implementation.

As a result of this resounding success of the Obuasi Malaria Control Program, the Global Fund provided a grant of USD $130 million to support the program (AGA Ltd, 2015). The program has been scaled up to include 40 districts including the Upper West, Upper East,

Northern and the Western region of Ghana. According to AGA Ltd, it was the first time the Global Fund gave a private organization such an amount of grant. AGA Ltd indicated that the Malaria Control Program is expected to generate over 3800 new jobs and benefit over three (3) million Ghanaians. Its wide spread coverage and associated benefits are acknowledged of which 96.2% of the respondents are of the view that it is one of the best social intervention provided by AGA Ltd in their communities.

4.19.5 PROVISION OF UTILITY SERVICES

AGA Ltd provides alternative source of potable water for communities' whose traditional sources of water are affected by the mining operations of the company. AGA Ltd has indicated that the company out of goodwill and regard for good health also provide boreholes and hand-dug well for some communities whose sources of water are not even affected by AGA's mining operations. Accordingly, 107 boreholes have been provided to 68 communities in the catchment area of operations since 1992-2014. In 2012, all the 107 boreholes provided were redeveloped to improve water yield and quality. Additional 28 new water facilities were provided to meet growing water supply (AGA Ltd, 2015). Some communities such as Anyinam, Kreeky, Hasonyewodea and Anwiam communities are connected to the AGA's mine domestic treated pipe-borne water supply system.

The communities of Anyinam and Sansu are supplied with free electricity from AGA/Volta River Authority (VRA) main grid system. These communities therefore enjoy uninterrupted power supply and it cost the company $80,000 per a month. Attempts to hook the two communities to the Electricity Company of Ghana (ECG) main grid system have been met with stiff oppositions from the beneficiary communities. However, the company

expressed concerns about the sustainability of providing free electricity and would rather prefer channeling the money into different development projects.

The communities in question disagreed and contended that the power supply help provide alternative sources of livelihoods for the youth who have taken advantage of the free power supply to engage in economic ventures such as wielding, barbering, hair dressing, shoemaking, bakery, vehicle mechanics, hairdressers, restaurants, nightclubs, shops etc. The two communities have no access to land since mining operations and housing estate development by the mines have alienated the lands of these communities. Extensive surface mining has resulted in the acquisition of large tracts of land from communities, depriving poor and marginalized communities of land for farming which is the main source of livelihood for rural communities in Ghana. The two communities of Anyinam and Sansu therefore contended that the free power supply is a little compensation for the loss of their landed property and would therefore resist any attempt by the company to deny the communities continuous supply of free power supply.

4.19.6 SOCIAL INFRASTRUCTURE (ROADS, BRIDGES)

One of the challenges that confront mining towns and communities in Ghana is the poor roads infrastructure. Most mining towns (Obuasi, Tarkwa, Prestea, Dunkwa Offin etc) in Ghana where large scale mining operations have lasted for decades are mostly linked with poor and deplorable roads networks. The rail networks which were constructed during colonial era and immediately after independence are broken down and rendered unusable due to lack of maintenance culture.

In Obuasi Municipality, AGA Ltd has undertaken construction of a number of footbridges which include the bridge at Diawuoso, footbridge over Kwabrafo River at Sampsonkrom

and another footbridge at the Pompora Treatment Plant (PTP). A footbridge is also constructed across the Jimi River at Okerekrom to link the community to farmlands while the Sanso Village road is upgraded and the Anwiem access road constructed. The ApitisoApitikoko road is resurfaced and the culverts replaced. All these bridges and roads were constructed from the period of 2004 to 2013. Similar construction of bridges had been done at Akrofuom across River Jimi, and the Oda River pipeline road and the extension of Oda River road to forest concession areas by the mining company.

One of the areas where the company did not do well, in the eyes of the public was in the area of roads constructions. The study data indicated 77% of respondents are of the view that AGA Ltd does not invest in roads infrastructure though the company has constructed some minor steel bridges on walk ways, linking farms and communities. Roads infrastructure development is the mandatory role of the State but public perception is reaped for the mining company to do their bit as heavy duty vehicles used by the mining company is partially blamed for the poor state of road network.

4.19.7 SUPPORT FOR AGRICULTURE

The company supports agriculture through motivation of farmers through attractive awards on farmers' day celebrations. A corn mill machine is donated yearly as the prize for the best farmer for the Obuasi Municipal but now reviewed down to a motor bike due to financial difficulties facing the company. The company donates items for the best farmers' prizes for the Obuasi Municipal and adjoining districts such as Amansie West and Central Districts, Adansi North and South District and Bekwai Municipal Assembly. Agricultural

working tools such as wellington boots, knapsack sprayers, cutlasses and bicycles are donated to the farmers.

4.20 RESETTLEMENT AND COMPENSATIONS

It is common in mining operations to resettle communities to a new site to enable mining operations take place at a designated environment. Communities such as Bediem, Binsere and others were resettled before AngloGold merger with Ashanti Goldfields. The only resettlement completed by AngloGold is the Dokyiwa village in 2011at the cost of $6,000,000 (AGA Ltd, 2014). An estimated 59 farmers out of 150 after resettlement were provided farmlands to start farming. The farmers were provided with starter pack in the form of cutlasses, boots, fertilizers and maize. Resources were also mobilized to pay and close-out all issues of existing legacy compensations. Compensation assessment, valuation and payment periods are reduced from 18 months to 3 months. Accordingly, over 90% of all historical compensations have been settled by the company.

Dokyiwa, a resettled mine-affected community is located north-west of the catchment area of the operations of AGA Ltd. About 150 housing units of different sizes corresponding with the sizes of the old houses at Old Dokyiwa have been built to accommodate about 600 affected local people. According to the community members, the resettlement became necessary mainly due to the construction of a tailing dam by AGA Ltd close to the old community. Community of New Dokyiwa indicated that their new environment or settlement is encountered with several new challenges. One new challenge according to the community is payment of electricity bills. “In Old Dokyiwa we were not connected to source of electricity to our homes and therefore there was no burden of payment of electricity bills but now each month they serve us with electricity bills which

we can hardly pay," one community member lamented. The community also complained about AGA inability to offer them employment opportunities since the resettlement has resulted in loss of livelihoods to community members. Water supply is a problem in the community since one of their boreholes is broken down and several calls on AGA Ltd to repair it has not yielded positive results.

Community members of Dokyiwa complained of loss of livelihoods and other source of income they use to earn at their old settlement. They were disappointed with the meager sum of ₵500 offered to each household as compensation after the resettlement. Residents of the New Dokyiwa conceded their new buildings are better compared to their old houses at Old Dokyiwa, but they also claimed the sizes of the rooms are smaller. They were concern about the durability of the new buildings since only in a relatively short spans of time, some of the buildings had developed cracks. This they blamed squarely on the contractor who was contracted to construct the new houses.

A governance issue that resulted from the resettlement was loss of cultural attachment to the old settlement. Members of the community lamented that they were separated from where they buried their love ones and to make matters worse they had to buy graves from the nearby community of Binsere to enable them bury their dead ones. This, the community said "does not dignify the dead' and it is very alien to their culture". In the wake of the resettlement itself, residents revealed that it created divisions among them since there was no consensus among residents to the resettlement, considering the inconveniences and the less incentive package offered by AGA Ltd. However, the community claimed there was exploration on going for possible mining at their old

settlement and the resettled community intended to put in their request for more compensations once mining operations start.

The community members of Anyinam explained that due to the proximity of their community to AGA Ltd operations, the Anyinam community should have been resettled but the Assembly person hinted that considering the population size of community (about 9,000 people), the feasibility study revealed that, the resettlement would likely mean relocation to an entire different traditional jurisdiction. The community members therefore considered the option of relocation to be too sensitive to discuss or put up for consideration.

Some compensations issues were also identified in Nana Okai Community. According to Nana Okai Community, AGA Ltd mining operations resulted in the destruction of farm crops as well as operating in the community without free prior and consent from the community. In the words of the Assembly member for Nana Okai Electoral area, "we do not know what formula is used by AGA Ltd in arriving at compensations payments and sometimes we reject these compensations, but through under dealings, some compensations are later accepted by some community members. In the view of the community, 'compensations are overly delayed for as long as two years, leaving the affected farmers highly disappointed and in a state of despair'. However, AGA Ltd also complained of "speculative farming" that is local farmers deliberately farming on concessions areas in order to attract compensations from the company. These concerns are however being addressed through the Community Consultative Committee and Community Forums.

Land which is the most important economic resource in the Binsere community is being virtually taken away from the community members as a consequence of surface

mining in the area. According to the affected people, compensations for loss of land is ridiculously low, as low as two hundred to four hundred Ghana cedi paid as compensations for two to four acres of land respectively. The community members bemoaned the fact that compensations were not negotiated with AGA Ltd since the company solely decided what is paid as compensations. Another important governance issue was identified in the Kokoteasua Community. Interactions with the Kokoteasua community indicated that the community was resettled some 40 years ago to their current location without any resettlement packages and alternatives livelihoods. According to the community members they were literally driven away to their current locations, since at that time, it seemed to them it was a government policy and that the issues of resettlement packages and alternative livelihoods were not considerations in obtaining a mining concession. As the Assembly person in the community put it, "even in recent times, some community member's buildings were earmarked for demolishing because the company is claiming is part of their concessions area but the community resisted".

4.21 ADVERSE IMPACT OF MINING ON AGRICULTURAL COMMUNITIES

Nana Okai Community is predominantly a farming community. Interactions with the community members revealed that mining operations affect the community. Some of the effects of mining on the community are loss of agricultural land, destruction of crops, pollution of rivers and increase in social vices. Farming, which is the main occupation of the community is severely affected by AGA Ltd operations thereby denying some local people their main sources of livelihoods. The community members of Nana Okai were of the view that mining does not contribute enough to the development of the community.

Having lost their lands to mining, the community expected many of its members to be employed by AGA Ltd for the loss of livelihoods but that did not materialized.

The main occupation of the local people of Dokyiwa is farming. It is a newly resettled community. Some of the resettled were allotted farms lands after resettlement while others are rendered landless making it difficult for them to get decent sources of livelihoods. The worse affected farmers were those farmers who do not own land but rely on the land tenure arrangement usually term as share cropping for farmlands. One cocoa farmer intimated "we have loss our cocoa farms (our main source of income) due to this resettlement because our farms are far away at old Dokyiwa and it is not possible to visit our farms on daily bases due to the distance".

Another farming community that is affected by mining is the Binsere community. The main source of livelihoods for the community is farming. However, due to extensive surface mining, the farm lands were taken away from the local people in return for pitiful compensations. Akosua Nyamekye, a very elderly woman lamented "my land which has been bequeathed to me by generations through heritage has been taken away from me without compensations" The community members of Binsere said they lost hope and resigned to their faith since AGA Ltd does not listen to their concerns. The community members of Ayinam also indicated that AGA Ltd does not pay compensation for the destruction of food crops such as cassava and that only the chiefs could even get significant compensations for tree crops such as cocoa. A meager sum of ₵10 is paid for each tree of cocoa destroyed by the company.

4.22 IMPACT OF MINING ON COMMUNITIES' LIVELIHOODS

Anyimedukrom community is located in the Obuasi town. There are mining installations and mining equipment in the community. Some of the adverse impacts of mining identified by the community members are loss of farm lands, lack of job opportunities, pollution of streams, skin discoloration and lack of infrastructural development and increase in social services in the community. According to the Assembly Member for Anyimedukrom, it is not possible do any meaningful farming due to the large deposit of tailing materials on the land. When the Assembly Member for the Electoral Area was asked the main occupation of his people, he said, "we do illegal farming (galamsey); there is nothing else we can do to survive except galamsey."

Most of the community members of Anyimedukrom agreed that they were no direct benefits of mining in the community. There were however no serious conflicts between the company and the community but community members felt they were not treated fairly by the company considering the negative externalities that the community had to endure from the operations of AGA Ltd. The community which is part of the Obuasi Township was however concern that the closure of the mine was going to worsen their plight since the local economy of the town largely depended on mining. Some of the effects of an early mine closure identified by the community were increase unemployment, increase in poverty, increase in drop out of school, population drift and decrease in brisk businesses. Sansu and Anyinam Community members indicated loss of livelihoods, noncompensation payment by AGA Ltd and the lack of employment opportunities that has been worsen by the retrenchment. The problems of these two communities are further exacerbated by some negative externalities from the mining operation such as pollution of streams,

dermatological diseases, respiratory diseases and infections, noise pollution which particularly affected teaching and learning in classrooms. According to Amponsah .C. Appiah, the assembly man for the Anyinam Electoral Area, "the youth of Anyinam were idled because the mining contractors that use to provide jobs were no longer given contracts by AGA Ltd".

4.23 IMPACT OF TAILING MATERIALS ON COMMUNITIES

Kokoteasua community is a site of underground mining as well as some installed plants of AGA Ltd are located in the community. There are also heaps of tailing materials as remnants of the many years of mining deposited on the land. The impact of mining in the Kokoteasua community included alienation of land, large deposits of tailing materials, incidence of skin discoloration, increase in theft and social vices and inability to cultivate the land due to contamination by tailing materials. The Assembly person for Kokoteasua intimated "these tailing materials are hazardous and dangerous to the community; for instance, an unfortunate incident resulted when a child playing in the wet tailing materials got stuck and subsequently died in the Kokotesua tailing materials. The family of the victim is too poor to pursue the case and as the Assembly person for this Electoral Area, it is my duty to personally assist the family to get some compensation". Tailing materials are neither covered nor fenced and as such anytime there is torrential rainfall, sections of communities and schools compounds are flooded with these hazardous waste materials". Similarly the installations plants located in the community emit a lot of smoke and the community suspects it is the cause of skin problems that affect community members. Those affected with skin problems intended to sue the company for compensations.

4.24 MINING AND COMMUNITY DEVELOPMENT

The community of Kokoteasua disclosed they benefitted from the AGA Ltd in the form of two boreholes, mechanized water system and foot bridges. Community members suggested and expected that, since their land was alienated without compensations, the company should provide the community with free electricity supply as compensation similar to what pertains in Anyinam and Sansu Communities. Due to the health hazards post by mining to the community, the community also expected AGA Ltd to provide free medical care and also ensured that their dusty streets are tarred by the company. The community of Nana Okai also indicated they benefited from AGA Ltd in the provision of alternative sources of drinking water including boreholes and mechanized water system at the cost of US$16000 and US$13000 respectively, a footbridge, a mini bus for the Akrofuom SHTS and supply of computers through the Community Trust Fund.

Binsere community is located five kilometers away from New Dokyiwa in the north-west of AGA Ltd mines catchment area in the Obuasi Municipality. There is extensive surface mining which is in operations in the Bisere community. Binsere Community can best be described as a very deprived mining community. Most of the buildings are constructed with local building materials such as mud and bamboo sticks. It was hard to believe that gold is being mined in the same community that is so evident with object poverty and misery. In the words of one of the participants, ‘hunger and poverty is the bane of their community’.

There is virtually no social amenities like a clinic, community center, good source of drinking water and places of convenience in Binsere community. The community members recounted their miseries as in pollution of six of their streams, force relocation without compensations, and collapse of their buildings caused by mining operations.

Sansu and Anyinam communities can be said to be the center and pivot around which AGA Ltd mining operations revolved (refer to map 2.2). There is development and establishment of housing schemes such as, Danquah Estate, Precious and Sam Jonah Estate sited at Anyinam which serves as accommodation for officials and workers. The area is also the location of offices, mining installations.

4.25 IMPACT OF MINE RETRENCHMENT ON THE COMMUNITIES

One Aikoh Hannah, a mother of five children complained "our husbands do not work any longer, they sit idled in the house, there is no money for the wives to buy foodstuffs and our children have even stopped going to school; we (the wives) are now taking care of the households through our petty trading activities; there is real hardships now." A participant at the Binsere Community indicated that it is the surface mining that is the cause of all the problems in the Binsere Community but a closure of the mine would make matters worse. "E beye mobo, eno na kuta yen", meaning if the mines closes there will be more suffering because mining is now everything in their lives.

On the recent retrenchment, Dokyiwa community members mostly agreed that few people were affected in their community and that the retrenchment has resulted in worsening poverty, drop out of school children as some of the impacts of the retrenchment in the community. Adu Eward (Unit Community Member) argued "it is not true the

retrenchment have made some mine workers better, the retrenched workers were only a little happy because they were not left with nothing to go home, but even now some are already miserable since the compensations they benefitted are exhausted by some of them". On the likely impact in the closure of the mines, the Assembly man for Anyinam indicated that though the closure will have dire consequences on the whole Obuasi Municipality, the Anyinam people were not perturbed about any closure. The Assembly person explained further that the 'refusal' of AGA Ltd to employ local people of Ayinam and other locals of Obuasi implied that the 'outsiders' or people who are not indigenes of Obuasi (that are preferred by AGA Ltd) were going to leave the Municipality with whatever wealth that they acquired while working with AGA Ltd. The Assembly person cited the recent retrenchment of which he estimated 80% of all the retrenched miners to have left the community with all their incomes that could have helped stimulated economic activities for the local people of Anyinam.

5.0 CHAPTER FIVE

DISCUSSION

5.1 SUSTAINABLE MINING COMMUNITY

Due to the key developmental and Co-operate Social Responsibility role played by AGA Ltd in the Municipality, mining communities have resorted to the mining company to solve their developmental challenges instead of the Obuasi Municipal Assembly. The company is most often blamed for the scarcity of land which is the major economic asset and source of livelihoods for the majority of the local people. The Government and its local authorities are hardly seen as the first point of contact when communities are faced with such challenges as lack of job opportunities and community social services.

Roe and Samuel, (2007) observed that in the absence of innovative and proactive reforms through governance, efficient and effective institutions to ensure sustainable development of mining communities by the Government and local authorities, mining companies will continue to be confronted with expectations to provide public services that are hardly their main responsibility. “These Mining firms will have to device sophisticated communication and social investment strategies to manage the concerns of mining communities or face the risk of disappointing these communities”. In the view of Mensah *et al,* (2014), it is the expectations of mining communities that the mining companies play the role of ‘development agents’ that support communities’ development objectives in the provision of social services and other basic services.

Xavier *et al,* (2015:38) however revealed that mining companies have in the past, limited their mine closure plans to only mine site rehabilitation and decommissioning and that the common practice within the mining industry was to comply with mining laws, pay

taxes and engage in philanthropy and undertake social projects. Mining firms' general belief was that, they were absolved from any other socio-economic impacts brought by the closure of the mine for the local communities and the host country. A Sustainable mining community can be achieved through effective engagement and collaboration with government, the mining communities and the mining company. International and industryrelated initiatives such as the Equator Principles, Planning for Integrated Mine Closure

Toolkit, and the MMSD Mine Closure Report and many other research findings including Kempt *et al* (2008), Digby, (2012) have pointed out the need and relevance of the socioeconomic aspects of mine closure to be integrated with the environmental aspect.

Mining communities in the study area generally agreed that the local economy of Obuasi Municipality depends on mining. The majority (74%) of the respondents therefore disagreed on any attempt at the closure of the Obuasi Mines, citing the critical economic role of mining to the economy of the Municipality. On the closure of the mines, one of the participants remarked 'e beye mobo, eno na kuta yen', meaning, 'there will be real suffering or the situation will be pathetic because mining is now everything in their lives'. The respondents however contended that considering the natural endowment of Obuasi with the precious metal (gold); there is hardly meaningful correlation between the gold wealth and the state of social and economic development of the Municipality.

Sarfo-Mensah, *et al* (2010) cited in Awuah-Nyamekye and Sarfo-Mensah, (2012) however revealed that the local economy of Obuasi depends on AngloGold Ashanti Ltd, citing the AGA's contributions to social services in the form of health facilities, local markets, educational infrastructure, roads and lorry stations which are constructed by the

Municipality with financial support from the mining company. Sarfo-Mensah *et al* (2010) further bemoan the "Socio-economic dependency of mining communities on large mining companies such as AngloGold Ashanti in Ghana which they described as being so pervasive that a reduction in the mining companies' businesses directly and indirectly affects economic activities.

5.2 MINING AND THE OF STATE SOCIO-ECONOMIC DEVELOPMENT OF OBUASI

Roe and Samuel (2007) report that Obuasi was mostly a naturally vegetated land before mining was started in 1897. However, the economic and social developmental potentials embedded in mining operations has catalyzed the rapid growth of Obuasi and its environs around the mines resulting in a rapid population growth of about 150,000 to 200,000 people with some settlements encroachingly established in close proximity to the mine sites. The rapid growth of the population which is mostly attributed to the influx of immigrant has resulted in urban related challenges such as problems in provision of social infrastructure, unemployment and pressure on social amenities. These urban related problems are further compounded by specific environmental, socio-economic, health and safety challenges created by mining operations in the Municipality.

In this study 74% of respondents agreed that the AGA Ltd is not keen or interested in undertaking constructions of road networks in their communities, reflecting one of the areas of communities' dissatisfaction with the company. The major developmental challenges outlined by respondents and stakeholders are the poor state of the road networks and social infrastructure in general which majority of the respondents and some stakeholders claimed do not reflect the natural endowment and the many years (118years)

of gold mining in the Obuasi Municipality. The main road through the town is only being properly constructed and maintained in recent years while most side streets are still either not tarred or are in a bad state due to lack of maintenance culture.

This perception or otherwise reality of lack of social and economic developmental is shared by Roe and Samuel (2007) who observed that because the growth of the Obuasi Municipality is not well planned, most stakeholders argued that it is not a very attractive town and that the Obuasi town does not have the appropriate level development of a successful gold mining town. There is low level of infrastructural development and few edifices to demonstrate that the Obuasi Municipality is a successful mining town, except AGA Ltd's settlements and buildings that have well-planned layout. This view of lack of development in mining towns is shared by Appiah and Buaben (2012) who agreed that "gold mining has not been beneficial to the mining communities in the Western Region of Ghana. This perception manifests through environmental pollution and the associated problems of lack of alternative economic opportunities that mining companies have done little to address. However the development of the mining communities is the primary responsibility of the State.

The influxes of illegal mining operators and other migrants have also been partially blamed for population congestion and the squatters of slums and pressure on social amenities in the Municipality. This view is collaborated by Awuah-Nyamekye and SarfoMensah (2012) who maintained that social, economic, cultural and environmental problems are aggravated by the increasingly number of migrants into Obuasi Township and

its environs in search of employment opportunities. Some of these problems outlined are prevalence of prostitution and HIV/AIDS, illegal mining, and high crime rates.

The study results showed a significant number of people in the Municipality are of the view that socio-economic development of the town should be the responsibility of AGA Ltd since the wealth and welfare of the town generally depends on mining operations. About 41% of the respondents are of the view that it is the responsibility of the AGA Ltd to develop the Obuasi town and the adjacent communities. It is based upon this belief that many people in the Municipality blamed the developmental challenges of the town on the Mining Company. A study by Appiah and Buaben (2012) in the Western Region of Ghana revealed that local people perceived the responsibility of large mining firms as development agents that must partner government to provide social amenities. According to the study, local people believed that gold mining firms equally owe it as a corporate social responsibility, in view of the benefits that large mining companies derive from exploiting local resources and contended that the mining companies have the obligation to ensure that the communities enjoy sustainable livelihoods and live lifestyles of decency that would enhance their human dignity.

It is the responsibilities of the state to put in place the appropriate frameworks and policies that ensure that mining communities benefit from mining operations. Unfortunately, in a quest to attract FDI, the laws that regulate the mining industry do not favour comprehensive development of mining communities or these mining laws are either not deterrent enough to guarantee the health and safety of the public and protection of the environment. Borregaard and Dufey, (2002) cited in Oliveira, (2010) agreed that it is an established fact that environmental regulations in developing countries are not as

stringently enforced as they are in the North. This they attributed to insufficient financial resources, logistics and lack of capacity as the main cause of the poorly enforced environmental laws and regulations. The EPA in Ghana, for instance has attributed its inability to perform effective monitoring to insufficient resources in the form of human and material resources (Awuah-Nyamekye and Sarfo-Mensah, 2012). In some cases, environmental laws have not been enforced at all or are not enforced to the latter.

5.3 IMPACT OF MINING ON ENVIRONMENTAL RESOURCES

This study analysis indicated 77% of the respondents believed streams and rivers which formerly served as the main source of water for human consumption and for domestic purposes have been polluted by mining operation in the Obuasi Municipality. According to the Environmental Protection Agency (EPA) investigation of Environmental Performance ("AKOBEN" RATING) of the large mining companies since 2012, some large mining firms such as AngloGold Ashanti Limited, Goldfields Ghana Limited, Ghana Bauxite Company Limited and Prestea Sankofa Gold Limited are cited as the worst offenders in environmentally responsible mining operations. The ratings of the EPA measure the environmental performance of companies based on their daily operations. Assessment of the mining firms usually starts immediately the mining firms have successfully ungone through a compulsory Environmental Impact Assessments (EIA) before they are granted the necessary mining permits to operate. The EPA reports its final ratings as aggregates of assessment of companies in areas such as Toxics Releases, Hazardous Waste Management, Non-Toxics Releases, Environmental Best Practices,

Monitoring and Reporting, Community Complaints and Corporate Social Responsibility and Legal Issues,

In October 2011, the Centre for Environmental Impact Analysis (CEIA) - an NGO based in Central Region of Ghana - and its partners conducted a study in the Prestea-Huni Valley, Bogoso-Dumasi, Tarkwa Nsuaem and Central Region which revealed the presence of large amount of toxic metallic substances, especially arsenic substances which were contained in food crops, water bodies and boreholes. These contaminations resulted from the release of chemicals from both large and small scale mining activities in these areas. CEIA and Wassa Association of Communities Affected by Mining (WACAM) in a similar research findings revealed that 145 streams and rivers were perceived polluted according to the residents in the Obuasi communities affected by mining. These massive pollution of rivers is directly associated with the operations of mining companies and illegal miners. It was also revealed that all the 117 smaller water bodies such as streams and rivers in the Tarkwa mining area were perceived to be polluted as reported by the same research findings.

A number of research conducted in the Obuasi Municipality raised alarming environmental and health concern of the impact of mining operations and the current and future implications for the Municipality. Notably among such findings is an International NGO (Action Aid) whose research findings in 2006 indicated serious environmental hazards in the Municipality. Research carried out for another NGO-Third World Net Africa (TWN) between 2002 and 2004 indicated water contamination in the Obuasi area was beyond acceptable levels.

The TWN findings indicated that acidic content of waters tested revealed high concentration above the permissible ranges of the EPA and WHO standards. For instance, "arsenic values were between 10 to 38 times higher than acceptable levels by EPA guidelines and over 1,800 times higher than the maximum values set by World Health Organization (WHO). Manganese values range up to 26 times higher than EPA permitted limits while iron values were between 1.7 and 15 times higher than levels allowed by EPA guidelines," 'Action Aid' (2006). Consequently, the use of pipe borne water in the Obuasi Municipality is mostly for washing and other domestic purposes instead of direct human consumptions due to the high levels of metals concentrations.

The alarming trend of these pollutions is an indication of how intransigent mining operators act towards the EPA "AKOBEN" Rating initiative. The EPA therefore need to step up its monitoring and reporting role and enforce punitive measures in order to control mining firms adverse impacts instead of merely naming and shaming offending mining companies. According to Suleman *et al* (2013) the existing legislation on mining and other environmental guidelines in Ghana are riddled with loopholes that are being exploited by mining companies and that a second look at these laws with emphasis on how to mitigate the adverse impacts of mining on the affected communities is necessary in order to protect the well-being of communities affected by mining operations. Moreover, security concerns have also been expressed as the closure of the mine is likely to create the conditions necessary for increased illegal mining activities which may post more serious environmental and security risks in the Municipality.

5.4 IMPACT OF THE MINING SECTOR REFORMS

The mining sector reforms granted generous incentives to the Transnational Mining Companies in Ghana in terms of tax cut and repatriation of profits. These incentives included removal of the Additional Profit Tax or Windfall Profit Tax and retention. Only 25% of minerals revenues are to be retained locally by the Multinational mining firms (Rutherford and Ofori-Mensah, 2011). Furthermore, there is the Stability Agreement enacted to protect the holder of a mineral right for a period of up to 15 years, from any adverse effects of future changes in any law that is capable of imposing huge financial burden on the holder. Some of the mining companies including AGA Ltd pay as low as 3% as royalties which is well below what pertains in some countries and regions.

The idea of attracting Foreign Direct Investment to the country through the mining sector is primarily due to the expected benefits such as creation of employment, inflow of foreign exchange, opening up and development of mining communities. For instance, the Ministerial Forum on Investing in Africa at the African Mining and Indaba Conference held in Cape Town from 3rd to 6th February, 2014 on the theme: "The Challenge of Opportunity of Substantial Development in Mining" and it was disclosed that Ghana attracted significant mining sector investment of some US$13.5 billion over the past two decades. This investments was realized mainly due to the boom experienced in the production of all the major minerals and particularly gold production which increased by 93 per cent from 2.24 million ounces in 2002 to over 4.3 million ounces in 2012.

Veiga *et al* (2002) argued that many of the older and well established mines have faced reduced unemployment, through mechanization and automation and decline world market prices. The Obuasi Mine which is in operation since 1897 and is now a subsidiary

of AngloGold Ashanti Ltd, is currently confronted with similar challenges of reduced unemployment in the form of gradual and massive lay off of workers with predictable repercussions and consequences on the Obuasi Municipality.

Moreover, extreme poverty and lack of socio-economic development has been identified with some of the mining communities where AGA Ltd operates. In the Binsere Community for instance, where AGA Ltd undertakes extensive surface mining operations, is a typical mining community characterized by extreme poverty and misery. In the words of one of the participants: 'hunger and poverty is the bane among the local people in the Binsere Community'. The community attributed the state of poverty and retardation to the surface mining which have deprived them of land, the main economic asset, with no source of alternative economic and social development. Agbesinyale, (2003) is of the view that the mining industry is "bedeviled with weak countervailing and bargaining power on the part of the state and the mining communities, extensive land alienation, environmental degradation, loss of access to land based resources, widespread despicable poverty in the midst of gold wealth, community dislocation, and competition for access and conflicts". The peculiar developmental challenges of developing countries have rendered these countries vulnerable to the Multinationals Mining Corporations that have the much needed financial and technological resources that are desperately being sort by the developing countries.

Mining has become unpopular with most developed countries probably partially due to the environmental and health hazards associated with mining operations and as such the Multinational Mining Corporation might not be able to meet the higher environmental and health standards in developed countries and still be able to break even in their operations. The high level of awareness of the negative consequences of mining may also deter developed countries governments and citizens from readily approving of mining

operations on their environment considering the demand for higher environmental and health standards in these countries. For instance, a survey by Roper Research in the USA ranked the mining industry in 24th place as unpopular industry below tobacco industry (Prager 1997 cited in Veiga *et al* (2001).

In some developing countries however, the influence of the World Bank and the International Monetary Fund have weakened environmental regulations as part of broader economic liberalization policies. For instance, in Colombia, mining operations are now allowed in national parks and other previously protected areas (Oliveira 2010). It is therefore imperative and relevant for the UN, World Bank, ICMM, and IGF and other International organizations to have taken the lead in advocating, persuading, or providing funds for the mining industry to ensure that their operations contribute to sustainable development especially in developing economies.

5.5 ISSUES OF PROPERTY RIGHTS IN THE MINING INDUSTRY

AGA Ltd is met with resistance from some communities who are claiming ownership of the lands on which concessions have rightly been granted. According to AGA Ltd officials, some communities claimed the land is theirs and therefore these communities presume that the gold in the land rightfully belong to the communities and hence the wide spread of illegal mining activities. Therefore one of the findings identified in this study is the issue of property rights. One respondent expressed her sentiments “my land which was bequeathed to me by heritage has been taken away from me without compensations.” Mensah *et al* (2014:) also report that the core of mining communities expectations is premised on the assumption that gold resources belong to the communities and hence any

use of it should bring development and social improvement to the affected communities. This perception of local mining communities learn credence to Agbesinyale's (2003) view that the mining sector in Ghana is characterized with…"ineffective institutional regulatory mechanisms, confused property rights regimes in land and opportunism". The Mining Act 703 of 2006 was therefore enacted to streamline some of these deficiencies in the mining sector in the country.

Moreover, Article 257, Clause 6 of the constitution of Ghana spells out that "Every mineral in its natural state in, under or upon land in Ghana, rivers, streams, water-courses throughout the country, the exclusive economic zone and areas covered by the territorial sea or continental shelf is the property of the Republic and is vested in the President in trust for the people of Ghana". There is therefore a deficit in communities' understanding of how natural resources are owned managed in the country. It is an indication that local communities in Ghana are usually not given sufficient consultation during the promulgation of laws that guide, govern and regulate ownership, management and exploitation of natural resources in the local communities. Similar laws such as the ban on illegal chainsaw operations enacted by parliament have equally faced problems of implementation since the local people who are affected by these laws were not properly consulted and educated before the enactment and subsequent implementation of such laws.

5.6 THE MENACE OF MINING WASTE IN COMMUNITIES

One of the main concerns of the closure of the mine identified in some communities in the Obuasi Municipality was the large deposits of mine waste which have rendered large tracts of land unsuitable for farming and for other economic activities. According to Action-Aid

International, (2006) there are piles of gold mining waste, the nature of some the waste dumps is as huge as the size of small mountains, dotted on the landscape of Obuasi. There are seemingly no alternative sources of employment and livelihoods for these communities affected by these heaps of mining waste. A local representative of the Community of Anyimedukrom concurred "there is nothing we can do to survive except 'galamsey' because the land is covered with these mining waste." The environmental and health hazards resulting from these mining waste borne by mining communities are partially a cause for many agitations and conflicts against large mining companies in the mining communities. Awuah-Nyamekye and Sarfo-Mensah (2012) in their study observed mine waste as one of the major problems that affect mining communities in Ghana. Moreover, the health and environmental problems generated by the mining companies partially results from the use of inappropriate technologies and inappropriate disposal and clean-up of mining waste in the closure of the mine (kitula 2006). The inability of mining companies to appropriately rehabilitate and restore the land to its useful form as well as the loss of biodiversity, have long been identified with mining operations as social cost borne by current and future generations in mining communities (Limpitlaw and Hoadly, 2015). There are virtually no appropriate measures or attempts at clean-up of the waste or mitigation of the impact of the tailing materials in the Municipality.

5.7 MINING AND NATIONAL\COMMUNITY DEVELOPMENT

Mining undoubtedly, has contributed immensely to the overall development of Ghana. There is ample evidence that support the argument that the mining sector has helped sustained the Ghanaian economy for decades in the form of foreign direct investment,

employment generation, revenue generation, foreign exchange earnings and development of mining towns. The positive impact of mining in the mining communities is however perceived to be on the lower scale probably due to the fact that the revenues and foreign exchange earned from the mining sector are usually incorporated in the national budget expenditure while much is not directed towards the development of mining communities.

Most mining towns lack social and economic development mainly due to the fact that there are no deliberate plans to strategically channel proceeds of mining towards the development of these towns. There is an establishment of the Minerals Development Fund (MDF) of which 9% of royalties are to be repatriated to mining communities for development. However, there are many unanswered questions about the appropriate use of the Fund as it is scarce identifying projects associated with the usage of the Fund. According to Roe and Samuel (2007) "the mechanism for redistributing a portion of mining funds (Minerals Development Fund) back to host communities is seemingly not being used for the intended purpose. The mining firms' claim of the economic impact of their very large procurement budgets do not also appear to be benefiting local suppliers as much as expected".

The incomes generated from mining are mostly factored into the National budget expenditure in providing overall development in areas of education, roads, health, infrastructure, energy and so on across the country. Even though mining may have contributed immensely to total national development, there are no usually major programs and projects that sign post this contribution. The ICMM report on Ghana pointed out that some social investment could be directly focused on reduction of poverty and some resettlement projects could have been equally undertaken in a far more better humanly

possible. In an attempt to ensure that mining operations yield sustainable development, the Minerals, Mining and Sustainable Development Report recommended Integrated Mine Closure Planning for adoption and implementation by the mining industry. Mining companies in Ghana provide social services as contribution to development of mining towns as part of their Cooperate Social Responsibility (CSR). As part of the Johannesburg Plan of Implementation of the World Summit on Sustainable Development (2002), the Mining Industry has made strong commitment to operate in a manner that yields sustainable developmental goals especially in developing countries.

5.8 IMPACTS OF MINE CLOSURE

Mining communities and towns respond to the closure of mines, especially where the mining firm or project plays a significant role in the socio-economic lives of the affected communities and towns can be emotional, irrational, or even create baseless anxiety, fear and unnecessary panic (Stacy *et al*, 2012). The likely and expected impact of mine closure on the Obuasi Municipality as indicated by majority of the respondents is its serious repercussions on the local economy. The results showed that 90% of the respondents agreed that the closure will have serious economic and social repercussions on the Obuasi Municipality. Reduction in the spending on the local economy resulting from likely closure of the mine is expected to create problems for small and medium scale businesses (93% of the respondents agreed).

The ICMM findings confirms that "if the Obuasi mine were to close, the impacts on the Obuasi town would be disastrous". Mining constitute 35% of the local economy of the Municipality while service and commences constitute 40% and agriculture only making

25%. It is however obvious that commerce which constitutes greater proportion of the service sector thrives from the incomes mostly generated through mining operations. The service sector such as education, health, financial transactions to some extent are directly and indirectly affected by mining activities.

In the recent retrenchment, most of the workers (59%) who were retrenched agreed they were equipped with some employable skills but they were not optimistic of getting any good alternative employment opportunities. The recent retrenchment and downsized of the mine has therefore reduced employment opportunities significantly in the Municipality. There is the problem of increased unemployment and underemployment with its obvious adverse effects on families and on the Municipality in general. Majority of the respondents (84%) agreed on loss of employment and livelihoods resulting from the retrenchment and in the eventual closure of the mine.

The benefits and incomes earned by mine workers and the multiplier effect of these spending on the local economy reduces or ceases with the retrenchment as many of the workers have migrated out of the Municipality. About 81% of the respondents, perceived high population drift from the Municipality as a result of the retrenchment and in the closure of the mine. The ICMM Report on Ghana roughly estimated the total employment opportunities generated directly and indirectly by the AGA Ltd operation in the Obuasi Mines to be between 29,000 and 72,000, although the report admit a high degree of uncertainty associated with its estimates.

One of the findings of this study is the fact most miners as a result of the relatively higher income are able to afford quality education for their wards which contributed to the standard and quality of education in the Obuasi Municipality. It was then expected that in

the closure of the mines, the trend in the quality and standard of education should to be affected in the Municipality. Health care provision was also expected to be affected since reduction in people incomes might affect the quality of health care they can access. However, the research results showed that 83% of the respondents do not expect significant changes in educational standard from a likely closure of the mine. In a similar situation, 87% of the respondents do not expect health care provision to be much affected in the likely closure of the mine. This could be attributed to the fact that the necessary intervention in education and health care has been undertaken by the mining company, the Government coupled with the many private educational and health institutions in the Municipality. The Community Trust Fund is also established by AGA Ltd to take care of some of the basic needs in education and sanitation in the mining communities.

Many of the retrenched miners who were mostly migrants have also left while many are contemplating to relocate to other towns since they complained of the high cost of living in the Municipality. The study results indicated 96% of the respondents are of the concern that prices of goods and services are relatively higher in the Obuasi Municipality. The World Bank and IFC (2002, cited in Westphalen, 2012) identified higher cost of food and housing among others as the social cost of mining.

Generations of revenue for the Government and the Municipality was reduced drastically as 3500 workers have been retrenched in 2014 alone as the operation of the AGA Ltd was downsized. The emigration of workers and their families to other towns following the retrenchment meant that reduction in population and the associated leakage of incomes from the Municipality and the situation could get worse in the event of complete

closure. In the likely closure of the mine, significant revenue and foreign exchange earnings are expected to be lost to the State and the Obuasi Municipality.

The research findings also point to the fact the AGA Ltd provided the Obuasi town and some communities with social services in the area of education, health, malaria control, roads, footbridges, water, electricity, community infrastructure, alternative livelihoods and many more. These social services and infrastructure were mostly inherited by AGA Ltd due to the merger with Ashanti Goldfields Company. The major infrastructure development that included the two major hospitals, classroom/schools blocks, residential estates, the sports stadium were all established prior to the merger of AngloGold Ltd and Ashanti Goldfield Company. However, the Malaria Control Program and the Community Trust Fund are the major initiatives that are being implemented since 2004 after the merger. There is concern expressed by stakeholders and some mining communities on the impact of mine closure on the continue provision of these social services. The research findings revealed that in the likely closure of the mine, 41% of the respondents expect their communities to be affected in provision of social services.

The Obuasi town has attained the status of a municipality with substantial growth in the commerce and service sector though the Municipal Assembly still derives substantial amount of revenue either directly or indirectly through mining activities in the form of property taxes and other related taxes. Some stakeholders have expressed concerns that the likely closure of mine will affect the generation of revenue as population size is likely to experience much reduction (81% of the respondents agreed) with resultant effect on the viability of the Municipality. On the other hand, some stakeholders disagreed on the impact of mine closure on the viability of the Municipality, citing the fact that there has been

significant growth in the service sector which constitutes 40% of the local economy of the Obuasi Municipality. However, it must be acknowledged here that the service and especially commerce is largely boosted through mining operations in the Municipality.

The main concern of mine closure has been the expected repercussion on the local economy and the loss of employment to the local people. The findings of Sarfo-Mensah *et al* (2010) agreed with this study that the survival of local enterprises in the Obuasi Township is driven mainly by incomes generated from mining. The major benefits of mining have been in the area of employment and revenue to the Obuasi Municipal Assembly in the form of taxes. The closure of the mine therefore implied substantial loss of revenue which might affect the provision of essential social services by the Obuasi Municipality.

5.9 ALTERNATIVE EMPLOYMENT OPPORTUNITIES

A well planned mine closure is expected to generate sustainable development in mining communities and create viable social and economic opportunities in post-mine closure economies in addition to environmental sustainability (ICMM). It is very important for large mining firms to consider how they will be remembered by their footprints left behind when operational activities have come to a close in the mining communities (Veiga *et al,* 2001). Multinational Mining firms operating in developing economies must not just concentrate on or limit their mining operations to the usual business aim at abnormal profit but must also be concern about contributing their quota to "global welfare" in mining communities through poverty reduction and not worsening the plight of the poor and vulnerable communities (WSSD).

The popular thesis of "Resource Curse" in developing countries has brought to the forth, the need to explore avenues through which minerals resource could benefit the respective citizens. According to Hobbs (2005) large mining and Multinationals firms have embraced the idea of sustainable development in mining as a leading practice in the wake of the World Summit on Sustainable Development which culminated in the Johannesburg Plan of Implementation and the Intergovernmental Forum on Mining, Minerals and Metals (IGF), the Minerals Mining and Sustainable Development (MMSD Report). The establishment of the ICMM in 2001 and many more initiatives have equally spurred up the agenda of sustainable development in the mining industry.

Measures and alternative support to maintain growth and stability of post-mine economies and community development should be the focus of the stakeholder engagement during the active mining stage. According to a South African mining leader, Reichardt, cited in Peck *et al* (2005), mining companies closing or winding down of their operations in developing countries are increasingly expected not merely to provide alternative employment opportunities but to also establish retraining or development funds with which to reduce the impact of loss of employment opportunities on the local communities".

The findings of this study point to the fact that alternative employment opportunities provided by AGA Ltd such as women groups in cottage industries and skills training usually involve few groups of people. The measures outlined by the Obuasi Municipal towards diversification of the local economy are not supported with concrete and realistic strategies. They are no real opportunities and sufficient financial support for those provided with skills training to be employed or establish their own enterprises.

Measures adopted in provision of alternative livelihoods and diversification of the local economy are likely not sustainable in the closure of the mine. Most of the respondents were not even aware that such alternatives employment opportunities are being undertaken by AGA Ltd in the mining communities. The study concluded that measures outlined by both AGA Ltd and the Obuasi Municipal Assembly are not sufficient alternatives that could replace mining activities in the closure of the Obuais Mine and the closure of the mine could create serious economic consequences on the Obuasi Municipality**.**

5.10 RETRENCHMENT AND RESTRUCTURING OF THE OBUASI MINES

The merger of AngloGold and Ashanti Goldfields Company was expected to improve the benefits and fortunes of the Obuasi Mine to the country and the mining communities of Obuasi as well (Yeboh, 2008). However, 10 years of operation of AngloGold Ashanti has been characterized with massive lay off of workers and reduced benefits to the mining communities as indicated by the findings of this study. In the recent retrenchment alone, 3500 workers were laid off. Prior to this massive retrenchment, there has been gradual retrenchment of mine workers especially immediately after the merger of AngloGold with Ashanti Goldfields in 2004. The company has also decided to surrender or relinquish 61% of its total concessions area of 475sq.km^2 of the Obuasi Mine to the Minerals Commission as part of the company's restructuring process which aimed at downsizing of the operations of the mines. The remaining 39% of the concession left for operation is isolated from the rest of the communities and as part of footprint reduction effort (AGA LTD, 2015). Additionally, a standard buffer zone is created to reduce the direct impact of AGA Ltd operations on the Obuasi Municipality. There is also ongoing progressive rehabilitation and

remediation which is being undertaken by AGA Ltd at some sites of the mine (AGA LTD, 2015).

Some of the projects and programs that are affected by the temporary closure according to AGA Ltd are the support services, the underground operations, surface operations, medical services, residential housing maintenance and AGA Ltd farms and Forestry. It therefore implied that though the mines is not yet closed, the Obuasi Municipality is not expected to benefit much from the mining operations as it used to benefit in terms of employment, revenue, social services and spending on the local economy. The Obuasi Mines is in a state of Temporary Closure since the massive retrenchment in September 2014 and situation of the mines has currently been worsened by invasions and attacks by gangs of illegal miners resulting in casualties. Accordingly, AGA Ltd is seeking an international arbitration process that is to ensure that the Government of Ghana provides the necessary and right environment for the smooth operations of the Company (AGA LTD, 2015).

The reasons attributed to the retrenchment are given as measures to introduce more technical expertise, reduction of excessive work force, and re-development of the mine. It is also revealed that the Obuasi mine has been operating at several losses and the situation has been worsened by consistent plummet of gold prices for more than 20% since 2012. The company indicated that extensive consultations were done with the relevant stakeholders including the Government of Ghana, the Local Government Authorities, Mining Regulation Bodies, and the Mine Workers Unions. Redundant physical structures, some residential accommodations and offices and workshop structures of the AGA's Ltd north mine have been relinquished to the Obuasi Municipal Assembly.

5.11 MINING AND THE MUNICIPAL ASSEMBLY

The Obuasi Municipal Assembly is the political authority and as part of its mandate is to ensure economic prosperity for the mass of people that dwell in the municipality. The Obuasi Municipality's local economy is closely associated and linked with mining operations. The Municipal Assembly therefore plays an important role in regulating and promoting mining activities within its jurisdiction. The Municipal ensures the maintenance of law and order and protect the mining business from fraudulent gangs. Additionally, bye laws are promulgated to streamline business and create enabling environment for peaceful business climate as well as regulating the movement of mining products. In the recent restructuring exercise by AGA Ltd, the Obuasi Municipal Assembly (OMA) requested the release of some of the redundant facilities to the Municipal Assembly. The Assembly also ensured conclusion of all compensation payment by AGA Ltd and help address issues of potential conflict. The OMA have expressed satisfaction with the company's compliance with its directives and recommendations.

The Municipal Assembly does not wholly agree that the likely closure of the mine will affect the viability of the Municipality. The Obuasi Municipal Assembly believed they are appropriate measures put in place to ensure that economic activities are not totally in disarray in the likely closure of the mine. Some of the measures outlined are the establishment of a university campus using some abundant structures left by AGA Ltd. The youth are also trained in employable skills and are encouraged in entrepreneurship through the National Board for Small Scale Industries (NSSI) and the Business Advisory Centre (BAC) and youth in agriculture program. They are given credit facilities through the

Microfinance and Small Loans Centre (MASLOC) and other financial assistance. But the question remains as to how sufficient and sustainable are these measures in replacing mining activities and ensuring sustainable alternative economic opportunities in the Obuasi Municipality.

6.0 CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 SUMMARY AND CONCLUSIONS

AGA Ltd provided socio-economic projects and programs through Co-operate Social Responsibility as 68% of the respondents agreed. Some of these projects and program included the Malaria Control Program and the Community Trust Fund. The company also contributed to provision of social services through its Corporate Social Responsibility. The provision of these services are evident in areas of education, health, water supply, sanitation, electricity art and culture and so on. The closure of the mine will therefore affect the benefits that mining enjoy from projects, programs and social services as indicated by 90% of the respondents.

However on education, 83% of the respondents did not agree that the closure of the mine will have much impact on the standard of education. Similarly on health, 87% of the respondent did not perceive much impact on the provision of health care in the closure of the mine.

Long term devastating impact of mine closure on mine workers and their dependents is anticipated as one of major consequences of the closure of the mine. In the short term, the adverse effect of the retrenchment was mitigated through good severance packages given to the retrenched miners by AGA Ltd, though some of the miners did not invest their benefits appropriately.

The Company also provided some skills training and some sources of alternative livelihoods to communities affected by their mining operations. Nevertheless, those provided skills training lack employment opportunities. Moreover, only limited number of people were provided with these alternative sources of livelihoods. The Obuasi

Municipality has also outlined some mitigating measures against the likely impact in the closure of the mine. Notwithstanding, the findings of the study on these interventions indicated that only few number of beneficiaries. These alternative livelihoods are therefore insufficient to compensate for the loss of livelihoods resulting from the likely closure of the mines.

The Obuasi Municipality has been sustained for more than a century mainly through gold mining without pragmatic economic interventions to reduce the dependency on mining. This is the bases upon which an early closure of the mine is expected to result in serious adverse effects. Though AGA Ltd mining practices is mostly conformed to international standards, the specific approach to mine closure in the Obuasi Mine project scarcely provided concrete and comprehensive measures towards Integrated Mine Closure Planning. Consequently, the Municipality is not prepared for life after the closure of the mine since they are no viable alternative economic activities that have been developed to replace mining.

MAJOR SOCIO-ECONOMIC PROJECTS AND PROGRAMS IMPLEMENTED BY AGA LTD

First objective is to identify some of the major socio-economic projects and programs which are implemented by AGA Ltd in the Obuasi Municipality and it's environ as a contribution towards sustainable development of the mining communities. The study concluded that AGA Ltd provided socio-economic projects and programs such as the Community Trust Fund, Malaria Control Program and social infrastructural development through its Co-operate Social Responsibility as reported by 68% of the respondents. The

perception of AGA Ltd not providing development by some respondents is therefore premised on the higher expectations of some communities.

- **LIKELY EFFECT OF MINE CLOSURE ON THE PROVISION OF SOCIAL SERVICES**

The second objective is to assess the likely effect of mine closure on the provision of social services in the Obuasi Municipality. The study concluded that although AGA provided social services for the communities affected by mining operations, these social services are woefully inadequate to match the teaming population in the area. The Obuasi Municipality Assembly does not equally have the needed capacity and resources to adequately provide these social services and the closure of the mine is likely to compound the problem of insufficient social services in the Municipality.

- **LIKELY EFFECTS OF MINE CLOSURE ON MINE WORKERS AND THEIR DEPENDENTS**

- The study concluded that though there was no final closure of the Obuasi Mines, almost all the mine workers were retrenched and compensated with Severance packages. Most of the mine workers were compensated sufficiently which helped reduce the immediate impact of the retrenchment on the miners and their dependents. However, some of the beneficiaries were not able to invest their severance packages well which could have long term adverse impact in the future of such miners and their dependents.

 ALTERNATIVE ECONOMIC OPPORTUNITIES AVAILABLE FOR THE MINING COMMUNITIES IN THE CLOSURE OF THE MINES

The fourth objective was to assess the alternative economic opportunities available for the mining communities in the closure of the mines. The study concluded that due to lack of diversification of the local economy, the closure of the mine will affect mining communities since there are scarcely alternative employment opportunities available especially for those communities that are mostly impacted by the mining operations.

Lack of inward investment, reduction in taxes and revenue, increase unemployment, worsening poverty and environmental concerns and other social problems are some of the impacts that currently confront the Municipality due to the temporary closure and retrenchment of mine workers. The study therefore concluded that without the appropriate measures at tackling the problems identified in this study will compound the likely adverse effects of mine closure in the Obuasi Municipality and increase socioeconomic vulnerability in post-mine closure.

6.2 RECOMMENDATION

Mining activities will contribute to sustainable development when there is deliberate policy direction that must be seriously pursued to ensure that mining wealth is retained in the country in the mining communities. The local content policy that is to ensure most outsourcing in the extractive industry is contracted to local contractors must be implemented. The policy if implemented to the latter could ensure sustainable development

especially where efforts are made to manufacture and supply mining inputs and other mining logistics locally as a way of providing alternative employment opportunities.

In mining communities, agriculture and other productive sectors are usually abandoned in favour of mining which offer readily paid wages on monthly bases. This usually culminates in the dependency of mining towns on mining operations with consequence lack of alternative employment opportunities at the eventual closure of the mines. Deliberate measures should be adopted to attract the working population to other sectors of economic development especially in the agricultural sector.

Diversification in the exploitation of other minerals resources in the country is of vital importance to reduce dependency on the traditional minerals export. Minerals exploitation in the country is overly concentrated on the mining of gold which constitute 90% of all minerals export and diamond, manganese and bauxite. However, many other non-traditional minerals such as kaolin, iron ore, salt, limestone, mica, feldspar, clay which are available are not being exploited. Opportunities should be created through industrialization where the local people are encouraged to exploit these materials to be processed into finished products that could go a long way in providing other economic opportunities.

Multinationals Mining firms must conduct their mining operations responsibly, that is they must adopt best principles and practices particularly in developing countries towards realization of the goals of sustainable development. The operations of Transnational Mining Corporations must not worsen the plight and challenges of developing countries. Sustainable mining is no longer limited only to the ecological integrity of the local environment but to also help diversify the economy in to different areas and to consider the long term community sustainability (Robertson and Blackwell 2014; Veiga *et a*l 2001).

The potentials of Small Scale Mining must be harnessed together with expertise that has been acquired by many Ghanaians through many decades of working experiences with the Transnational Mining Corporations in the country. Many Ghanaians have acquired topnotch managerial skills, mining engineering and other expertise in the mining industry. Opportunities should be created to harness the entrepreneurial skills of Ghanaians to establish their own mining firms that could gradually reduce or even replace the expatriate mining firms in the country. As generous incentives are extended to the expatriate mining firms in order to attract Foreign Direct Investment so must special and deliberate policies and incentives be directed towards building the local capacities of local mining firms to enable them grow and subsequently take up majority of the mining concessions in the country.

There have not been implementations of the Draft Mining Policy in the country to help streamline mining operations and the mining industry in general in the country. The Mining Act (703), 2006 was enacted by the legislative arm of Government meant to regulate and guide how mining operations should be conducted in the country.

Notwithstanding, the country has no mining policy which is in operations. The Mining Act (703), 2006 does not provide detail policy directions as to how mining operations could be conducted to yield holistic sustainable development. According to the Minerals Commission of Ghana, the Draft Mining Policy of the country has now being finalized but yet to be adopted into operation. The immediate implementation of the Mining Policy is one of the ways of ensuring socio-economic sustainability of mining communities. As enshrined in the policy are measures to ensure post-closure social and economic viability and environmental sustainability of host mining communities.

Moreover, the principles and practices of Integrated Mine Closure Planning is recommended as part of the MMSD Report and adopted by the WWSD and the International Council on Mining and Minerals and Metals for implementation by mining firms. Integrated Mine Closure Planning practices and principles require mining firms to give equal attention to both environmental and socio-economic aspect of mine closure beginning from the feasibility and exploration stage to final remediation and decommissioning of a mining project. The Ghana Government and its mine related agencies such as the Minerals Commission, EPA, and the Metropolitan, Municipal and District Assemblies (MMDAs) as well as traditional leaders and mining communities who are the main stakeholders must insist that mining operations are guided by the principles and practices of Integrated Mine Closure Planning and effective implementation of such principles and practices in the mining communities.

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APPENDICES

APPENDIX A: Questionnaire

TOPIC: THE PERCEPTIONS OF LIKELY SOCIO-ECONOMIC IMPACT OF AGA LTD'S MINE CLOSURE ON THE OBUASI MUNICIPALITY ASSURANCE: RESPONDENTS ARE HEREBY ASSURED THAT DATA COLLECTED OR ANY INFORMATION PROVIDED WILL BE TREATED WITH STRICT CONFIDENTIALITY AND ANONIMITY AND USED ONLY FOR ACADEMIC PURPOSE.

QUESTIONNAIRES FOR OBUASI COMMUNITIES PERSONAL DATA

1. What is your sex?
   a). male [ ]
   b). female [ ]
   c). others [ ]
2. What is your age range?
   a). 18-25 [ ]
   b). 26-33 [ ]
   c). 34- 41[ ]
   d). 42-49 [ ]
   e). 50-57 [ ]
   f). 58 and above
3. What is your level of education?
   a). basic education [ ]
   c). secondary/Senior High [ ]
   d). HND/Diploma [ ]
   e). first degree [ ]
   f). masters degree [ ]
   g). PhD [ ]
   h). others, specify……
4. What is your religious affiliation?
   a). Christian [ ]
   b). Muslim [ ]
   c). Traditionalist [ ]
   d). Atheist [ ]
   c). others, specify
   ……
   ……
5. Which suburb of Obuasi do you reside?
   .....
6. Are you a native or a settler?

a). native [ ]
b). settler [ ]

7. What is your occupation?
   a). miner [ ]
   b). farmer [ ]
   c). public sector [ ]
   d). private sector [ ]
   e). unemployed [ ]
   f). others, specify
   ……
   ……
8. What is your marital status?
   a). single [ ]
   b). married [ ]
   c). divorced [ ]
   d). widow/widower [ ]
9. What are/is your number of dependents?
   .....
10. How many of the dependents are less than 18 years?
    .....
11. Do you live in your own house or rented one?
    a). own house [ ]
    b). renting [ ]
    c). living with a relative [ ]
    d). government building [ ]
    e). others, specify
    ……..
12. What is your annual income range?
    a). less than 5000 [ ]
    b). 5001-10000 [ ]
    c). 10001-20000 [ ]
    d). 20001-30000 [ ]
    e). 30001-40000 [ ]
    f). 40001-50000 [ ]
    g). 50001 and above [ ]
13. How long have you lived in Obuasi?
14. Are you aware of the existence of AGA Ltd in the Obuasi Municipal? Yes [ ] No [ ]
15. Do you have a relative who works/worked with AGA Ltd Yes [ ] No[ ]

POSITIVE IMPACT OF MINING

16. What are some of the social services provided by AGA Ltd in your community?

a). health facility [ ]
b). educational facility [ ]
c). KVIP [ ]
d) Malaria control [ ]
e). construction of roads [ ]
f). others, specify
……
……

17. AGA Ltd contributes a lot to the development of the mining communities.

a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]

18. Which one of these entities have supplied more community social services/infrastructure in your community?

a). AGA Ltd [ ]
b). Municipal Assembly [ ]
c). NGOs [ ]
d). others, specify
……
……

19. Which one of these should bring more development to communities in Obuasi

a). AGA Ltd [ ]
b). Obuasi Municipal Assembly [ ]
C). NGOs
d). others, specify
……
……

NEGATIVE IMPACT OF MINING

20. What are some of the negative impacts of mining in the Oboasi communities?

a). skin diseases [ ]
b). collapse of building [ ]
c). pollution of river bodies [ ]
d). air pollution
e). noise pollution [ ]
f). abandoned mine pits [ ]

g). others, specify
……
……..
21. What are some of the social problems prevalence in your community?
a). prostitution [ ]
b). arm robbery [ ]
c). murder cases [ ]
d). violence [ ]
e). alcoholism [ ]
f). others, specify
i)……
……..

22. Do you agree that mining activities have encouraged social vices in the Obuasi Municipal?
a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]
23. Do you share the concern that prices of goods and services are relatively higher in Obuasi as a result of mining compared to prices in other towns in the country?
a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]
24. Has mining activities affected livelihoods of people in your community? Yes [ ] No [ ]
A). If yes, what are some of the alternative livelihoods provided by the AGA Ltd to the affected community members? a). rearing of snails [ ]
b). rearing of domestic animals [ ]
c). poultry farms [ ]
d). others, specify
……
……..
25. Is your community resettled by AGA Ltd? Yes [ ] or No [ ] A). If yes, does your community consider the resettlements as very appropriate? Yes [ ] No [ ]
A i). If No, what are some of the reasons for the inappropriateness of the resettlement?
a). settlements are far from town [ ]
b). loss of cultural attachment to old settlement [ ]

c). buildings are not big enough to contain the families [ ]
d). others, specify
……
……

26. Are compensations paid by AGA Ltd mostly acceptable by the affected parties?

a). Yes [ ]
b). No [ ]
c). no idea [ ]

MINE CLOSURE PERCEPTIONS

27. Would you leave the Municipal in case the mine closes? Yes [ ] or No [ ]
28. In the likely closure of the mine, are many people likely to leave Obuasi?

a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]

29. Do you agree that the closure of the mine would have negative repercussions on majority of people in the Obuasi Municipality?

a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]

30. Do you agree that many businesses may relocate to other towns in the likely closure of the mine?

a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]

31. Do you agree that the Obuasi and its environs would be better off without mining activities?

a). strongly agree [ ]
b). agree [ ]
c). disagree [ ]
d). strongly disagree [ ]

32. What are some of the accommodations problems community members face as a result of the recent retrenchment?

a). force eviction by land lords [ ]
b). sudden increase in rent [ ]
c). the need to vacate present accommodation for retrenched miners and their families [ ]

d). non of the of the alternatives [ ]
e) no idea [ ]
f). others, specify

……..

33. What are some of the likely impact of mine closure on the Obuasi Municipality?

a). relocation of businesses to different towns [ ]
b). increase in poverty [ ]
c). reduction in supply of health care [ ]
d). lower educational standards [ ]
e). loss of livelihood [ ]
f). collapse of businesses [ ]
g). others, specify

APPENDIX B: INTERVIEW GUIDE FOR ASSEMBLY PERSON/TRADITIONAL LEADERS/OPINION LEADERS

1. Which electoral area/traditional area do you represent? .....
2. Does mining activities affect the area you represent? Yes or No
   A) If yes, in what ways does mining affect the area? a) Loss of agricultural land b) resettlement of people c) pollution of rivers d) skin diseases e) increase in crime f) destruction of crops h) others
   ……..
3. Has loss of livelihoods resulted from AGA Ltd operations in your Electoral Area/traditional area? YES [ ] No [ ]
   If yes, what are some of the livelihoods that are being lost?
4. What are some of the alternative livelihoods provided by mining company in your area?
5. Are there cases where people affected by mining are compensated in your area by the mining company? Yes or No
6. If yes, what was the nature of the compensations?
7. What were some the reasons that necessitated the compensation?

8. Have there been cases of conflict between your electoral area/traditional area and the mining company? Yes or No
   A). if yes, what are some the causes of the conflicts? a) destruction of farm crops b) loss of farmlands c) loss of other forms of livelihoods d) pollution of rivers e) operating without free ,prior and consent e) non provision of jobs by the company f) lack of infrastructure and social services in the community g) others, specify…….
9. What are the sources of livelihoods to the majority of the people you represent in the area?
10. Do you agree that mining benefit majority of the people you represent? Yes or No
11. A). if yes, what are some of the major contribution of mining to the area you represent?
12. What are some of the likely effects of mine closure on the people you represent? A) increase unemployment b) increase in crime rate c)increase in poverty d) increase in drop out of school e) others, specify
    i)……

APPENDIX C: PROPERTY RATE PAYMENTS BY AGA LTD

BENEFICIARY/ YEAR	OBUSASI MUNICIPAL ASSEMBLY	AMANSIE CENTRAL DISTRICT ASSEMBLY	SUB-TOTAL (US$)
2004	64,239	4,211	68,450
2005	64,240	4,212	68,452
2006	342,252	5,333	347,585
2007	317,806	21,249	339,055
2008	306,847	21,249	328,096
2009	293,717	14,979	308,696
2010	282,548	15,765	298,313
2011	267,375	16,270	283,645

2012	229,965	16,271	246,236
2013	203,732	18,317	222,049
GRAND TOTAL	2,372,721	137,856	2,510,577

Source: AGA Ltd

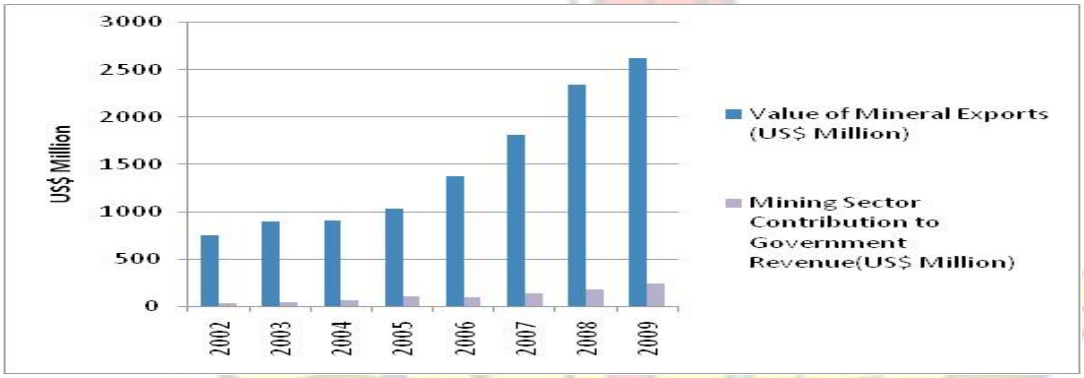
APPENDIX D: CSR- COMMUNITY SOCIAL INVESTMENT SPEND- 2004-2013

SPEND CATEGORY/ YEAR	COMMUNITY HAELTH	SOCIAL INFRAST RUCTURE	EDUCATION, YOUTH & SPORTS	ART, CULTURE & HERITAGE	TOTAL (US$)
2004	3,00,000	285,127	170,668	761	3,456,556
2005	426,000	230,910	2,881	3,042	662,833
2006	1,464,000	276,041	2,935	8,035	1,751,011
2007	1,649,000	273,617	21,958	9,891	1,954,466
2008	1,399,153	730,664	23,005	20,861	2,173,683
2009	1,713,362	545,453	14,934	20,780	2,294,529
2010	1,505,057	568,786	55,988	77,867	2,207,698

2011	1,814,482	584,881	192,131	81,438	2,672,932
2012	1,106,467	848,438	1,079245	68,445	3,102,595
2013	1,710,377	1,122,275	633,346	20,809	3,486,807
TOTAL	15,787898	5,466,192	2,197,091	311,929	23,763,110

Source: AGA Ltd

APPENDIX E: GOVERNMENT REVENUE DATA OBTAINED FROM THE MINERALS COMMISSION (2009) AND EXPORT DATA COMPUTED FROM THE BANK OF GHANA STATISTICAL BULLETIN SERIES



Source: Institute of Economic Affairs (IEA)

APPENDIX F: SUMMARY OF OBUASI SOCIAL INVESTMENT ACTIVITY (2004)

Item Cost in 2004 (US$)	Amount
Power	145,000
Schools	296,000
Apprenticeships	52,000
Health	192,000
Community Donations	9,000
Total	**$694, 000**

Source: ICMM Report, 2007