FOREIGN DIRECT INVESTMENT AND THE LIVELIHOODS OF LOCAL COMMUNITIES IN TANZANIA: THE CASE OF GEITA GOLD MINE

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN RURAL DEVELOPMENT OF SOKOINE UNIVERSITY OF AGRICULTURE.

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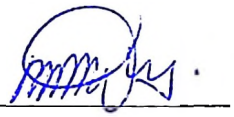
ABSTRACT

This study investigated the effects of GGM contributions to the livelihood of local communities in Geita District. The specific objectives were to identify the planned development programmes meant to improve communities' livelihoods; determine the effects of GGM activities on environmental assets and remedial efforts undertaken; determine the contribution of GGM to household's income and examine the relationship between GGM and local communities. A total of 120 households were involved in the study. Data were collected using checklists, questionnaires, FGDs, personal observations and documentary reviews. Descriptive and inferential statistics were used to describe the results. The findings revealed some contributions from GGM in education sector as 39 classes, 5 teachers' houses and 46 desks and construction of Nyankumbu girls' secondary school. The construction of 2 outpatient buildings and the HIV/AIDS prevention and control programme in the health sector. However, about 95% of the respondents acknowledged minimal direct and indirect socio-economic contribution to their livelihoods. Conversely, 70% of the respondents acknowledged increased incidences of water borne diseases and skin rashes mainly as a result of pollutions emanating from mining activities. This implies that the contribution of GGM was not significant since negative impacts outweighed the positive ones. The study recommends that, the government, investors and other stakeholders should ensure thorough cost benefit analysis on socio-economic and environmental issues to meet the livelihood needs of communities close to mines. This should include a mandatory provision for mining companies to set aside a percentage of their profits for the development of the communities in which they operate. This will help to improve trust among stakeholders and minimize conflicts in most mining sites in Tanzania.

DECLARATION

I, **Willy Maliganya,** do hereby declare to the Senate of Sokoine University of Agriculture that, this dissertation is my own original work and that, it has neither been nor concurrently being submitted for a degree award in any other University.



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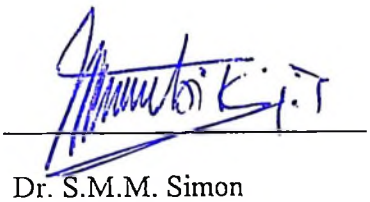

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
AMREF	-	African Medical and Research Foundation
DALDO	-	District Agricultural and Livestock Development Officer
DCDO	-	District Community Development Officer
DHO	-	District Health Officer
EMS	-	Environmental Management System
FDI	-	Foreign direct investment
FGDs	-	Focus Group Discussions
GDP	-	Gross Domestic Product
GGM	-	Geita Gold Mine
HBS	-	Household Budget Survey
HH	-	Households
HIV	-	Human Immunodeficiency Virus
ILFS	-	Integrated Labor Force Survey
ISO	-	International Organization for Standardization
LSMCs	-	Large Scale Mining Companies
MDGs	-	Millennium Development Goals
MEM	-	Ministry of Energy and Minerals
MKUKUTA	-	Mkakati wa Kukuza Uchumi na Kuondoa Umaskini Tanzania (Swahili for the National Strategy for Growth and Reduction of Poverty)
MNMA	-	Mwalimu Nyerere Memorial Academy
NBS	-	National Bureau of Statistics

NGOs	-	Non- Governmental Organizations
PHDR	-	Poverty and Human Development Report
REPOA	-	Research on Poverty Alleviation
SL A	-	Sustainable Livelihood Approach
SNAL	-	Sokoine National Agricultural Library
SML	-	Special Mining License
SPSS	-	Statistical Package for Social Sciences
TB		Tuberculosis
TIC	-	Tanzania Investment Center
UNDP	-	United Nations Development Programme
UNESCO	-	United Nations Education Scientific and Cultural Organization
URT	-	United Republic of Tanzania
USD	-	United States Dollars
VOP	-	Views of the People

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Recent years have seen an increasing interest in attracting foreign direct investment (FDI), especially in developing countries (Fisher, 2007). Due to the efforts made to attract FDIs, the worldwide environment policies have been far more conducive to the growth of foreign direct investment and a number of countries have been adopting significant liberalization measures towards attracting the same investment (Rugumamu, 2005). As a result, the growth of the foreign direct investment in the third world has been extremely rapid (Lange, 2006).

In Africa, FDI inflows reached USD 18 bin in 2004, compared with S 14 bin in the previous year. Much of the FDI has been targeted at Africa's resource rich mining and oil industries which often generate low tax revenues and carry high environmental and social costs (UNCTAD, 2005). Correspondingly in Tanzania, in the past five years, the growth of FDIs has also been increasing, with an average of USD 443.74 million during the period 2001 to 2005. A survey of Private Capital Flows undertaken in 2004 by the Bank of Tanzania in collaboration with the National Bureau of Statistics and the Tanzania Investment Centre revealed that over 72.5 percent of investors were satisfied with the investment environment. FDIs to Tanzania amounted to USD 469.9 million in 2004 compared to USD 526.8 million that was obtained in 2003. The sharp increase in FDIs in 2003 was due to a huge investment in mining projects. In 2005, the FDIs value was estimated to be USD 325. The decline in estimated FDIs value in 2005 was due to the decline in investment in mining sector (URT, 2006).

As a consequence of this increased growth, UNCTAD highlighted Tanzania and Ghana as examples of countries which have experienced a boom in FDIs, particularly in their gold industries, but both Tanzania and Ghana receive as little as 5 percent of the value of their gold exports compared to South Africa and Botswana. The latter have benefited from large scale mining companies (LSMCs) by encouraging them to do more of the value-adding processing of gold domestically rather than sending them abroad (UNCTAD, 2005).

In Tanzania, the central goal of the 1997 national mineral policy was to ensure that the wealth generated from mining supports sustainable economic and social development and minimizes adverse social and environmental impacts of mining activities (URT, 1997a). But, a number of studies indicate that while Tanzania has been praised as having good mining incentives which have been making the country attractive to mining companies, the government has been blamed for doing too little to ensure that the people also benefit equally from the mineral wealth thereby affecting the livelihoods of local communities (Lange, 2007; Kitula, 2006; Rugumamu, 2005; Mwalyosi, 2004; Chachage, 1995). The major negative effects of mining with adverse effects to rural livelihoods are the environmental impacts of mining activities (Frost *et al.*, 2007; Shaxon, 2005).

As a result of this, the costs and benefits of LSMCs to local communities and the evolution of the relationship between mining companies and communities is a subject that has become important (Holden, 2007; Fraser, 2006). Indeed, large scale mining activities are undoubtedly expected to induce development in previously underdeveloped areas and contribute positively to the socio-economic development of the rural areas where mining activities take place. But, for all the positive aspects of mining, surface mining of gold can significantly affect sensitive environments and lifestyles of indigenous people. This can be

responsible for both benefits and damage the existing balance between people and the environment. (Fisher. 2007; Darimani, 2005). This has led in recent times, to a growing public outcry that countries with mineral wealth benefit little from the growing large- scale mining sector. Indeed. hopes that (LSMCs) could be the key to development in Africa have not been realized in efforts to improve the livelihoods of Africa's poorest people. including Tanzania. This could be done through provision of employment and training opportunities, support in health facilities. water supply, education facilities, improving infrastructures and expanded markets for the local populations adjoining the mine. As a result. poverty continues to deepen. especially in the rural areas (UNCTAD, 2005).

Kitula (2006) also revealed that the mining sector has a minimum economic contribution in terms of the resources to the local communities around mining areas and majority of them have been blamed for negatively affecting the community leading to a wide range of conflicts in most mining centers. Examples of existing conflicts may be drawn from cases of North Mara, Buzwagi, Buhemba, Mererani and Geita, a situation which has compelled the Tanzania government to review all mining contracts following accusations that the contracts favor mining companies at the expense of the community.

Similarly, in Geita district, the inception of large scale mining came with large promises to support livelihoods of communities including provision of education facilities, health, water and road networks improvements, however, this has not been dealt with accordingly. This made people living around mining areas to have higher livelihood expectations before mining started. But after the establishment, the situation turned to be complaints with contradicting information from both parties: investors and surrounding communities. This

brought contradicting views on balancing communities' benefits from such investments, a situation in which Geita is of no exception after the opening of the GGM in 2000.

Although GGM acknowledged to have done a lot to improve the livelihoods of the local people, many complaints continued, leading to the government's intervention through a parliamentary committee that probed into the communities' complaints on the loss of their livelihoods with the presence of GGM. Nevertheless, such large scale mining industries have resulted in many negative effects that badly impacted the livelihoods of the communities including polluting water resources, displacement of people from their fertile lands to allow mining operations (Kitula, 2006; Chachage, 1995). In this regard, scientific information was required in creating the basis for the arguments on how to rectify the situation that is persistently on the increase in Tanzania today. This study was therefore an attempt to clear these confusing discussions by investigating the effects of GGM contribution to the livelihoods of local communities in Geita District.

1.2 Problem Statement and Justification of the Study

The mining sector continues to be one of the biggest contributors to the Tanzania national revenue through the payment of mineral royalties, employee income taxes and corporate taxes (URT, 2006). Despite the revenues derived from mining activities, there is a growing resentment with regard to the real benefits accruing to the ordinary Tanzanians in the mining communities and to the country as a whole (Fisher, 2007). It has been also acknowledged that mining activities have had dire consequences on the environment and society and have negatively impacted the social and economic character of mining communities. Mining companies have also been accused of shirking their responsibilities towards the development of the communities in which they operate, thereby increasing the level of poverty and vulnerability in these communities (Darimani, 2005).

As is the case in many other African Countries, the Tanzania Government opened its mining industry to the private sector with expectations that the granting of mining concessions will benefit not only the nation, but also the local communities , especially those adjoining mineral resources (Mwalyosi, 2004). It was envisaged that the mineral sector would contribute significantly towards industrial development, employment creation, social and economic infrastructural development more particularly for the rural areas and income generation (URT, 1997a). To ensure this, the 1997 Tanzania Policy for the mineral sector development was issued to make sure that mining activities are undertaken in a fashion whereby economic contributions are maximized, social conditions are improved, and damages to the environment are minimized (Kitula, 2006).

However, experience has shown that the role of Tanzania mining industry has been a long-term source of resentment due to its minimal socio-economic contribution with serious negative environmental effects especially to the surrounding local communities (Chachage, 1995). As a result of this situation, there have been increasing levels of poverty contrary to peoples' expectations (Semboja, 2007; Kitula, 2006; Mwalyosi, 2004). Similarly, studies by Kitula (2006), Lange (2006), Mwalyosi (2004), Knight (2002) also reported a number of negative impacts resulting from mining activities to community's livelihoods in different areas in Tanzania, including Geita District and recommended a number of actions for considerations to alleviate the problems. Tambwe (2008) added that thousands of villagers in Geita around mining operations, in particular, could be exposed to serious health hazards following reports that environmental pollution in the area could be 900 times beyond the maximum limit level.

However, despite these efforts on studies undertaken, the problems reported are persistently on the increase. This has led to continued communities' complaints on the loss

of livelihoods and unmet promises since the opening of the activities of GGM in 2000. Complaints have been raised from the adjacent communities regarding the minimal socio-economic benefits accrued by the local community from GGM. Consequently, the returns from the promises of GGM to the communities have been minimal to the extent that the company seems to have failed to match with the expectation of the rural communities surrounding its operations. Many complaints continue to be aired to the extent that the government set a parliamentary task force to probe into the problem.

On the other hand, GGM acknowledged to have done a lot to improve the livelihoods of the local people around the mines and beyond in efforts to compensate the disrupted livelihoods of the surrounding communities but also support further in different sectors like health and education facilities, employment opportunities, water supply projects, environmental rehabilitation and encouragement of local businesses through spill over and multiplier effects, and improvements of infrastructures (GGM, 2008).

The only way to clear this confusing discussion was to assess the contribution of GGM with the aim of improving the livelihoods of the people around. This was done by establishing a balance sheet of the livelihoods that have been disrupted by the GGM and seeing how the GGM has extended its support to cushion the negative effects into positive livelihood impacts. The information is necessary in order to find out the mechanisms by which the efforts to restore the livelihoods of the people adjacent to mining areas can be successful and sustainable. As regards this strategy, the proposed study was significant to investigate the effects of the contribution of large-scale mining activities on the livelihoods of local communities in Geita district.

The knowledge and experience generated out of the study will provide a basis to relevant development agencies and policy makers on the need to revisit different approaches used during their interventions in rural communities. This will help for change to better conduct practices and policy in Tanzania and thus, enhancing equitable distribution of obtained rewards from mineral resources. It is equally important to the Ministry of Energy and Minerals to review the current mining contracts in efforts to achieve a win-win situation for the betterment of the public and the neighboring communities.

1.3 Objectives of the Study

1.3.1 General objective

The main objective was to investigate the effects of GGM contributions to the livelihoods of local communities in Geita District.

1.3.2 Specific objectives

Specifically this study aimed:

(i) To identify the planned development programmes meant to improve the communities' livelihoods in the study area.

(ii) To investigate the effects of GGM activities on environmental assets and remedial efforts undertaken for sustainable development.

(iii) To determine the contribution of the GGM to household's income.

(iv) To examine the relationship between GGM and the local communities in the study area.

1.3.3 Research questions

(i) Are there planned development programmes which are meant to improve communities' livelihoods in the study area?

(ii) What are the effects of GGM activities on environmental assets in the study area?

(iii) In which ways does GGM contribute to household's income?

(iv) What is the attitude of the local community members towards the presence of GGM in their area?

1.3.4 The conceptual framework for the study

The conceptual framework which guided this study was developed (created) with a reflection of the DFID sustainable livelihoods framework (SLF) (Ashley *et al.*, 1999; DFID, 2000; Ellis, 2000). It was developed based on the objectives, literature review and the methodology. Fig.1 shows that large-scale mining activities affect the livelihoods of the local communities in different ways depending on the legal requirements guiding their operations, the national policy and other strategies within which they operate.

Large scale mining activities are expected, as part of their social obligations, to significantly contribute towards improved livelihoods of local communities. This can be done through the provision of supports in socio-economic services such as support to education and health facilities, water supply services, roads network services and market structure for locally produced products. In turn, this may lead to quality education, improved health status, reduced distance to water sources, increased employment opportunities, and increased household income thereby contributing to poverty alleviation.

However, large scale mining activities if not well controlled can accelerate environmental degradation. This may have direct negative effects on the livelihoods of adjacent population. The biggest concern regarding large scale mining activities are on the issues of social conflicts, pollutions, land degradation, and de-forestation. In this regard, mining activities account for serious negative consequences to the lives of local communities and the nation at large. In this way, they negatively contribute to the livelihoods assets. This is due to the risks on health and safety, poor crop production, and contamination of water sources leading to poor social relationship. However, the adoption of better environmental management systems and sustainable conservation measures is assumed to positively contribute towards improved livelihood assets of local communities.

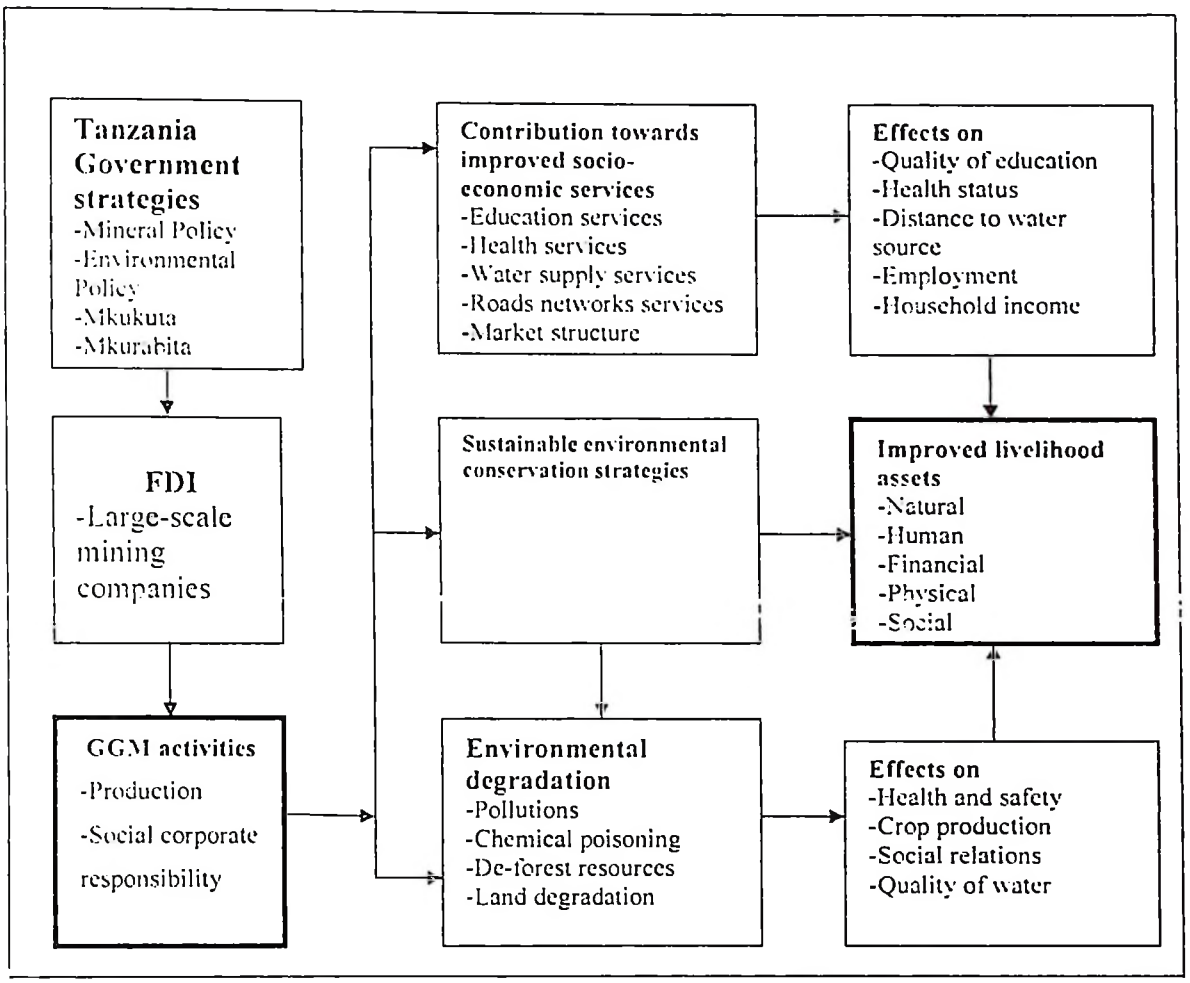


Figure 1: Conceptual framework for the assessment of the influence of GGM on communities' livelihoods

Table 1: Operational definitions of variables for the study

Variable	Operational definition	Indicator
Age	Number of years of birth	Number of years
Sex	Being female or male in biological sense.	Being male or female
Marital status	Being single, married, divorced, separated, widower, widow, underage or cohabiting.	Being in Couples or not
Education level	The level of schooling reached by a person e.g. primary school, secondary school, college or university	Certificate in education
Health services	Availability, accessibility and affordability	Number and capacity of dispensaries and Health centers constructed by Geita gold mine Distance to health service constructed by Geita gold mine Ability to pay on offered services
Water supply services	Availability and accessibility of water	Number of: o Wells' tapes in use o Dams constructed in use o Distance to water source
Education services	Quality of available class rooms, teacher's house and toilets	Number and capacity of: o Class rooms o Furniture
Employment	Quality of Jobs available for the local people	o Types and distribution o Terms of employment o Number of local communities employed
National income	Annual revenue received by the District Government from Geita gold mine.	% Gross Domestic Products (GDP)
Environmental destruction and conservation strategies	Extent of environmental destruction and Steps undertaken by Geita gold mine to restore the environmental destruction due to its operations.	o Number of community capacity building training on environmental conservation conducted o Number of tree nurseries established o Number of trees planted and still alive
Social relationship	Manner of interaction between local communities and foreign investors	o People's perception towards investors (GGM)
Displacement	Settlement displacement due to expansion of gold mine company	o Number of existed cases
Community participation	Inclusion of local communities in and influence over the decision that affects their lives.	Number of times community members were involved in decision making

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 General Overview

The last decade and a half has witnessed a dramatic growth in mining activities in many developing countries. Mineral production forms a major source of foreign and fiscal revenues for most third world economies (Fraser and Lungu, 2006; Darimani, 2005). However, mining in most cases remains important to the economic development of highly industrialized countries such as the United States, Sweden, and Canada in which their development was primarily based on proper use of their natural resources. It is expected that mineral revenues would ultimately provide a base for economic development in developing countries. In practice, however, this has not been the case for most third world countries (Auty, 2001).

The relationship between large scale mining and development appears to be "Contentious" because mining has so often delivered adverse social, environment and economic effects for the many, but only significant gains for the few (Ross, 2008). Mining has also been associated with obviously unsustainable patterns of development and growth. In the coexistence of such divergent feelings about mining and its human and environmental impacts lay the seeds of much conflict (Ross, 2008; Aspinall, 2007; Rosser, 2006).

Some studies have, for example, documented that the history of mining in Africa has been a history of exploitation of Africa's mineral resources to serve the interests of metropolitan countries. Today, in the 21st century, the pattern of mineral resource expropriation, which denies African economies and people's equal benefits as well as clean and diversified

environment, has continued (Hilson, 2008; Darimani, 2005). Despite a huge foreign direct investment in Africa's mining sector, there is still no any significant change that enables the translation of mineral wealth into building the productive capacity of individual African states and the local communities adjoining mineral resources (Fraser and Lungu, 2006; Darimani, 2005). The only fundamental thing that has changed during the last few decades is the legitimacy, given by national governments to increased and accelerated expropriation of Africa's mineral resources through the revision and proliferation of national mining laws that offer protection and incentives for transnational mining companies operating on the shores of Africa (Darimani, 2005).

2.2 Strategic Importance of Africa in Mining

Mining has a long history in the developmental process of many African countries (Darimani, 2005). The continent as a whole holds proportionately high potential reserves of minerals resources such as gold, diamonds, bauxite, manganese, and salt among others (Fraser, 2006; Darimani, 2005). This places the continent in a fortunate position with respect to the geographic distribution and potential of mineral resources. Unfortunately, most African countries have not yet been able to diversify their economies from primary production to generate the needed foreign exchange earnings (Fraser, 2006). Poor technology, lack of skilled personnel and absence of capital have been considered as major obstacles faced by most African countries to fully exploit such resources. This situation has compelled African countries to reform their policies towards attracting FDIs with expectations that they could benefit from the sector. However, the principal beneficiaries of the mineral wealth have largely remained transnational foreign companies (Fraser and Lungu, 2006; Darimani, 2005).

The current process of extensive economic liberalization has contributed to further deepening the imbalance in the distribution of the benefits of mining in favor of transnational foreign mining companies. African governments deregulate and privatize their mining sectors offering further incentives and protection for corporate investments which come with heightened environmental degradation and community concerns. As a result of these incentives, Africa has been the prime destination of multinational mining corporations (Darimani, 2005; Rugumamu, 2005).

2.3 Theoretical Issues on Natural Resources Abundance and Economic Development

There has been an extensive body of theoretical and empirical literature on the contribution of mineral resources in economic development. The schools of thought are divided between those who argue that mineral resources are a pest; others consider mineral resources as a gift that has the potential to drive growth and reduce poverty in developing countries (Auty, 2001). The presence of minerals has been dominated by debates over the "resource curse," a thesis that gained momentum in the early 1990s in an attempt to explain two decades of poor economic performance in mineral-rich countries (Auty, 2008, 2001).

The debate on mining, extraction and development has generated its fair share of catchy terms: "resource curse," "Dutch disease," "greed and grievance." Indeed, it is perhaps because of their potential political resonance that these terms have been challenged. Thus while some speak of "the well-documented 'resource curse'" (Collier and Hoeffler, 2005; 2004), others argue that the evidence for the curse is largely an artifact of indicator choice (Brunnschweiler and Bulte, 2008; Aspinall, 2007). For its part, the industry seeks to

reframe the debate in terms of the "resource endowment" rather than "curse" (ICMM, 2006).

As these debates have unfolded, there appears to have been convergence among the views of critics and boosters. Auty seems to see more scope for escaping the curse (2008; 2001), while Pegg (2006) "accepts the fact that mining is potentially a great source of wealth which could generate tremendous economic benefits for poor countries" (our emphasis). Meanwhile among the proponents of mining, the World Bank publishes material suggesting that "those countries with substantial incomes from mining performed less well than countries with less income from mining" (World Bank, 2005).

Authors who have criticized the idea of the resource curse now conclude that perhaps mining ought not to be promoted everywhere in same way (Davis, 1995). However, the World Bank Group has continued to support programmes that reform investments and mining codes, ease profit repatriation, reduce and fix tax and royalty rates, and support basic geological surveying in order to generate more base data on the basis of which companies can make decisions as to where to invest in more detailed exploration (Hilson and Yakovleva, 2007; Campbell, 2006; 2003; Bury, 2005).

Literature shows further that, poor management of earnings from valuable natural resources results in a syndrome known as Dutch Disease, characterized by real exchange rate appreciation, high labour costs, and structural imbalances in economic development. Dutch Disease undermines long-term economic performance in resource dependent economies resulting in a 'resource curse.' Botswana's experience illustrates the argument. Botswana has not entirely avoided symptoms of Dutch Disease, but has kept them largely

in check despite the fragility of state institutions when diamonds were discovered. A broad and stable political coalition during the first decades of independence encouraged adoption of pro-growth policies and institutions. Rather than lock the country into a persistent development trajectory, these institutions left room for changes in political coalitions. As political coalitions change, economic policies and performance are also likely to change (Poteete, 2009).

Analysis of Dutch Disease and the resource curse have focused on policies (Shaxson, 2005; World Bank, 2005). These are nested explanations: state building accounts for institutions, which in turn account for policies. That the best management of resource booms should occur in countries with well-established state structures and transparent processes is not surprising (Auty, 2001). Yet how can we account for variation in state building? Behind policies, institutions, and state building lay political coalitions. Politicians with narrow and unstable coalitions see entire politics as an attractive coalition building strategy; their responses to this political problem hinder state building. However, institutions do not eliminate the effects of changing political coalitions. As underlying politics change, outcomes can change dramatically even in the context of stable institutions (Poteete, 2009).

One important question one may ask is whether or not valuable natural resources can facilitate economic and political development? Poteete (2009), using the experience from Botswana, argues that the evidence is not promising. Several studies find a negative correlation between natural resource abundance and sustained economic growth known as the resource curse (Auty, 2008). In the perspective of Tanzania, the country is certainly well endowed with a wealth of minerals; gold, copper, zinc, diamonds and tanzanite, and

that the government wants to capitalize on these natural riches in order to contribute to the national economy by increasing the GDP and foreign exchange earnings (Mwalyosi, 2004). A major objective of the mining sector policy in Tanzania is also, to alleviate poverty in the country by creating gainful and secure employment in the mineral sector and provide alternative sources of income particularly for the rural population and to ensure environmental protection and management. However, Tanzania is also yet to realize this objective (Mwalyosi, 2004; URT, 1997a).

For example, there are still socio-economic problems in Tanzania, despite the dramatic increase in the total value of mineral production from approximately US$16m in 1997 to almost US$693 in 2005 and the mining sector's contribution to GDP has steadily increased from 2.1% in 1999 to 2.5% in 2001 and 3.5% in 2005. In addition to that, in 2001 mineral exports accounted for 38.9% of total exports, a figure that had increased to 48.9% by 2005, largely as a result of increased gold production. But the prevalence of income poverty in Tanzania remains high. Poverty remains principally overwhelmingly situated in the rural areas where 87% of the country's poor lives and is most prevalent in households that are dependent on subsistence farming (Semboja *et al.*, 2007; URT, 2005).

2.4 Effects of Large-Scale Mining Activities on the Livelihoods of Local Communities

2.4.1 General effects on African communities

It has been found out that the increased participation of mining companies in Africa's mining sector is characterized by heightened concerns for socio-economic development and environmental degradation, and hence affects the livelihoods of the community (Darimani, 2005; Makweba and Ndonde, 1996). This has resulted into various negative economic, environmental, and social conflicts in which the direct victims have been the

local communities living on the fringes of mining projects and the environment which constitutes the bedrock of their livelihoods. The surface mining activities of the company, in an area that has traditionally lived with the only open pits of mining activities, have created serious negative environmental problems such as vibration from blasting which affect their safety, health, buildings and other properties; noise pollution and dust pollution (Dansereau, 2007).

2.4.2 Effects on socio-economic development

Large-scale mining operations are expected to invest substantially in local community development through provision of training, public services such as education and health; public goods such as clean water, transport, energy and infrastructures such as schools, health centers, water supply systems. It is assumed that all mining can be accompanied by the growth of small and micro-enterprise activities by providing supplies and related services to mining companies, miners and their families leading to generation of substantial further incomes (World Bank, 2005). Also, large mining companies are expected to create employment for the adjacent communities directly in both, the construction and operating phases, and indirectly through input demands, and even more indirectly through the so-called multiplier effects of the demands for goods and services by their employees. Large mines also provide foreign exchange earnings and tax revenues at national, regional and local levels (Holden, 2007).

Studies done by McMahon and Remy (2001) in developed and developing countries of Latin America confirmed that sustainable mining activities are closely related to the local participation of the neighboring communities in the decisions affecting them. The sustainable mining activities through increased participation of the local communities were

present in Canada and less evolved Latin American experiences. Most importantly, the Canadian cases illustrated the importance of the participation of government in the process, and the establishment of a trilateral dialogue. It was critical that the three main stakeholders i.e. the community, company and government all have direct communication with each other, in addition to a formal three-way dialogue where other stakeholders also participate. McMahon and Remy (2001) revealed further that, in the first years of the mining operations, the adjacent local community members filled the lower skilled jobs and provided unsophisticated services to the mine.

However, in many developing countries, this has not been the case. Governments have been formulating their mineral development policies without reference to or consultation with the communities that are likely to be affected. The companies' practices have been to assume that striking a deal with government is enough (Akabzaa, 2000). For instance, a study made in Ghana revealed that, from the inception of Ghana's economic policy changes in 1983 to date, the mining sector has witnessed a considerable investment boom and increased production particularly in the gold sector. However, despite this boom, there is a growing uneasiness with regard to the actual benefits accruing by the adjacent local communities and to the country in general (Akabzaa and Darimani, 2001).

Similarly in Tanzania, it has been revealed that there is a limited institutional capability to manage the social and economic implication of sudden growth of investments in remote areas. In most cases, local income from mining is mainly through auxiliary activities only such as sales of food, operating restaurants and sales of soft drinks (Mwalyosi, 2004). Communities have been the least regarded and historically neglected in policy and other

discussions related to mineral development. They have been considered as being at the receiving end of mineral development.

As a result, negotiations and discussions have been primarily between governments and mining companies and have not involved those whose lives and livelihoods are impacted directly and usually adversely by mining operations (Kitula, 2006; McMahon, 2000). Consequently, this situation over time has resulted in unacceptably high incidences of poverty among rural populations adjoining mineral resources such as gold.

2.4.3 Effects on the environment

Over the past few decades, environmental protection has emerged from a point of obscurity to one of the important issues of our time. Both at the international and national planes, the dominant themes of the environmental protection movement are the achievement of sustainable development (Pallangyo, 2007). However, it has been difficult for the mining sector to be considered as a panacea for economic growth, following its impacts on the environment. At a global level, figures collected by advocacy groups suggest significant environmental impacts, and others note that "the discovery, extraction and processing of mineral resources is widely regarded as one of the most environmentally and socially disruptive activities undertaken by business" (Fisher, 2007; Jenkins and Yakovleva, 2006).

Mining activities have been associated with serious environmental destruction. Although the mining industry occupies a relatively small part of the land surface, it does have significant and often irreversible impacts (Lange, 2006; Knight, 2001). By its nature, mining has permanent environmental impacts since non- renewable natural resources are exhausted (WRM Bulletin, 2003). Environmental degradation can occur during all the

phases of a mining project, exploration, disposal of waste rocks and over burden, ore processing and plant operations, and tailings (processing waste) management (Boocock, 2002).

Some of the environmental problems caused by mining activities include; diversion of rivers, water siltation, landscape degradation, deforestation, and destruction of aquatic life habitat, widespread pollutions, and chemical poisoning. Deforestation for example, is usually intense in the vicinity of mining settlements, which translates into a loss of biodiversity and consequently a change in the nutritional habits of the adjacent local population (Labbone and Gilman, 1999). Mining is also associated with large-scale destruction of agricultural lands and mountains, which leads to severe erosion, siltation, desertification and even flattening of mountains (Tauli- Corpuz, 1997).

Understanding from Tarkwa in Ghana shows that almost all villagers' water sources are polluted due to mining operations. The major pollutants were increased sediments, mining reagents and spent chemicals. Spillages and leakages of hazardous cyanide solution and mineral processing wastewaters have been sources of chemical pollution and contamination of nearby water bodies resulting in skin rashes (Dansereau, 2007; Fisher, 2007; Jones, 2001). Awudi (2002) added that, cyanide and mercury leakage or spillage and improper disposal of mine wastes can be deadly to humans and can poison ground water, farming land and the resources in water bodies on which the livelihood of the majority of adjacent local people depends. Since most of the water resources in mining areas are used as sources of drinking water for inhabitants and livestock, pollution of water sources by cyanide and mercury can be a burden to the women and children who collect it for the households and livestock of adjacent rural communities.

As in most developed countries, experiences from Canada show that there has been a strong trend towards stricter environmental regulations and better environmental performance. In particular, there is a heavy emphasis on mine closure and rehabilitation. Companies usually have to set up environmental funds, especially when tailings must be stored into perpetuity. Comprehensive environmental reviews that include detailed analysis of social and cultural factors must be undertaken and they are generally functioning well. There is also a trend towards cooperative monitoring of environmental management programs, especially in aboriginal areas (Holden, 2007).

Similar observations were revealed by McMahon and Remy (2001) who found out that there were few negative environmental effects in Latin America due to the fact that large scale mining companies were using the same technology that is applicable in their home countries, and they often supersede the local environmental standards and all the mining companies made significant efforts to minimize environmental damage and when minor incidents occurred, the companies responded quickly.

Fraser (2006) also reported that environmental management practices in Bolivia were based on principles of zero discharge and systematic monitoring. The zero discharge principle means that effluents are not discharged from the production process. Ore is crushed, milled and put in solution, then circulated from water tanks to the processing plant and back. Sterile solids from the plant are pumped to the tailings dam where they are separated from liquids by gravity. The water from the dam is recycled back to the plant. In this way, water loss occurs only through evaporation.

However, the study by Awudi (2002) reported that mining companies in Ghana were not using up-to-date environmental practices compared to their home countries. Similar observation was reported in Tanzania by Kitula (2006) who commented that the new mining technology should use fewer chemicals during extraction and processing, and regulate mine waste into a non-harmful form before it is discharged and finally, waste ponds should be developed.

The overall objectives of the Tanzania national environmental policy is to ensure sustainable and equitable use of resources without degrading the environment or risking health or safety; to prevent and control degradation of land, water, vegetation, and air which constitute the essential life support systems in order that all Tanzanians may live in safe, productive and aesthetically pleasing surroundings; to raise public awareness; to promote individual and community participation. However, the environmental problems emanating from mining activities are persistently on the increase, with horrible effects, particularly on local communities adjacent to mining operations (Pallangyo, 2007; URT, 1997a). Consequently, when mining is the topic, the environment is never far behind. In the analysis of any potential mining operation, the question whether benefits are greater than the environmental costs is often the first question asked.

2.4.4 Effects on social-cultural issues

McMahon and Remy (2001) argued that it is not just economic and environmental implications to livelihoods of adjacent communities that pose a concern with respect to mining operations. There are equally grave social and cultural repercussions, particularly when indigenous populations are affected. For instance, high influx of new workers may lead to social problems due to lack of adequate housing and infrastructure, prostitution,

easier access to the area due to road development, and deficient educational and medical facilities.

Moreover, workers from other regions of the country or abroad usually bring different lifestyles and patterns of behavior and arouse local resentments. Usually, the average "imported" worker will be wealthier than the local population and this may increase their importance in the eyes of some local residents. The uneven distribution of benefits and costs from the mines may also upset existing social values and therefore have dramatic cultural consequences. On the other hand, if managed properly, the increased employment, wealth and commerce caused by the mine opening can lead to a cultural revival, especially in a depressed area (McMahon and Remy (2001). Of particular concern is the case where the cultural adaptation of indigenous and non-indigenous local communities may be quite different. While the latter may not find their cultural base threatened by the large mine and welcome its employment opportunities, the indigenous people may believe that they and their culture will be overwhelmed by the arrival of large number of workers and their families (McMahon and Remy, 2001).

2.4.5 Mining companies and the local community relationship

The study by McMahon and Remy (2001) in Bolivia indicated that the mining company and the local communities had bilateral relationship with respect to micro issues that develop in an informal manner. Most community initiatives were led by the companies, often with substantial community involvement. Central governments largely abdicated responsibility on community issues to companies with the exception of Canada. Nevertheless, most fiscal revenues generated by the mine industry went to central (or higher level) governments. The importance of good communication from the company to

the communities cannot be overestimated. Companies should begin early, be open, and give lots of information. It is essential to have a clear mission statement on human resources and environmental policies. However, in most developing countries, this practice has been not the case. Several conflicts have been acknowledged in Mali. Tanzania and Ghana emanating from mining activities to mention just a few (Lange, 2006; Collier and Hoeffler, 2005; Darimani, 2005).

2.4.5.1 Land use conflicts and loss of community farmland

It is assumed that the improvement of social services and livelihoods of the neighboring communities is undoubtedly seen as a pre-requisite for sustainable mining. The expansion of mining in farmland increases environmental destruction risks, especially in areas that are already vulnerable communities which are largely dependent on crop and livestock production for their livelihoods. The long-term implications include accelerated food insecurity, generation of a landless class, increased poverty, and rapid environmental degradation including vegetation and topsoil loss (Dansereau, 2007; Darimani, 2005).

For example, the study done by Darimani (2005) in Mali revealed that the expansion of mining in farmland has constrained the community with their ability to practice their traditional way of shifting cultivation as there is no longer sufficient land significantly leading to land conflicts between the mining companies and local communities adjoining such a mining area.

Experiences from other African countries have also shown that the activities of mining companies have equally resulted in high profile cases of land use conflicts between these companies and local communities as well as economic and social strangulation of local

communities and gross human right abuses such as forced eviction and massacre of communities. As a result of these companies, there has been a poor relationship with the local communities adjoining these companies (Darimani, 2005; Rugumamu, 2005). It is pertinent therefore to note here that land as an asset covers the livelihoods of the local population in rural area that are dependent on subsistence agriculture for their survival.

2.4.5.2 Social cost of mining activities on women

Various studies have documented that large scale mining has gendered impacts (Hill, 2008; Uwoya, 2006; Chan, 2004). The devastating impacts that mining can have on both their local environment and their own lives have been revealed in different ways. It has been shown that when you have environmental damage done to oceans, rivers and jungles, it affects families and because women take on board family issues it is a woman's issue. Women often experience the direct and indirect consequences of mining in different and often more pronounced ways than men do (Hill, 2008). For example, the payment of compensation and royalties to men on behalf of families and communities denies women access to and control over the financial benefits of mining. This encourages women's economic dependence on men, disempowering them and may exacerbate existing inequalities (Hill, 2008).

It has been further shown that displacement and the shift from a traditional subsistence economy to a cash-based economy often lead to the loss of traditional values and ways of life. This can result in the diminishing of women's traditional status in society, particularly where newly created gender roles emphasize on women's work in the domestic sphere only and undermine their productive and leadership roles. The effects of environmental damage can still undermine women's capacity to provide food and clean water for their

families, and subsequently lead to an increase in their workload such as having to walk greater distances to access water, wood, forest products and land to plant food crops (Hill, 2008; WB, 2005; Eggert, 2001; Tauli-Corpuz, 1997; Mutagwaba *et al.*, 1997). For example, women in Papua New Guinea were reluctant to drink the water from boreholes and hand dug wells in their village because they believed that the groundwater has been contaminated by the river, which has been contaminated by the Tolukuma Gold Mine that dumps its waste into the river (Hill, 2008).

According to the study by Chan (2004) in Burma, it was revealed that although the country was rich in mineral resources in Kachin State, there was a significant decrease in the quality of life for women in the northeastern province. On the contrary, unregulated mining has deepened poverty and marginalized many women. Too often the economic benefits of mining are accompanied with vital social, environmental and gender-related impacts. Mining has become an extremely lucrative business in Kachin State at the expense of local people, in particular women.

Chan (2004) also revealed that domestic violence, rape and prostitution all increase with the advent of a cash economy. Women were also at heightened risk of HIV/AIDS and other STD infections from a transient male workforce. The workload of women also increases due to male absenteeism. The mines were perceived as being responsible for shifts in societal roles and a breakdown in values leading to, for example, more single mothers and teen pregnancies. The wealth generated by mining further pushes women into poverty, dispossession and social exclusion. The loss of traditional ways of life, male domination, ethnic discrimination, few opportunities for education, and overall inequalities make life difficult for women caught in mining communities.

In Tanzania, the study by Kitula (2006) in Geita district revealed that mining has also had socio-cultural impacts. These include displacement and unemployment, child labour, accidents, and theft. The opening of the Geita Gold Mine has resulted in high influxes of migrants in search of jobs. This, in turn, has resulted into prostitution, increased incidences of banditry, changes to indigenous lifestyle, and increased competition among local residents for natural resources. Numerous studies have therefore proven that mining, whether small or large scale cannot be factored into a country's long term sustainable development (Hill, 2008; Owusu, 2008; Chan, 2004).

In the light of this study, social and environmental impact assessments must be undertaken. A gender analysis is a key part of the social impact assessment process and a critical part of the planning process. Gender analysis allows project planners to consider the impact of mining projects on women, men, boys and girls, and on the economic and social relations between them. Gender analysis can also ensure that neither women nor men are overlooked or disadvantaged by development projects by involving both women and men and meeting their needs. This offers mining companies an opportunity to contribute to the promotion of gender equality and women's empowerment in affected communities (Hill, 2008; Owusu, 2008).

2.5 Mining Companies and the National Legal Issues

McMahon (2000) once noted that, just as important as what took place is why it took place. Of particular importance are the regulatory frameworks in effect at the time of mining projects development, coupled with the consultative processes followed in the negotiations leading to the opening of the mines, as well as mediation methods for any conflicts which later develop. Final outcomes significantly depend on the clarity and specificity of fiscal

and environmental regulations and standards, as well as who is involved in the negotiations and the "rules of the game." Moreover, the mining companies themselves may have codes of conduct for dealing with environmental issues and local populations. Nongovernmental organizations (NGOs) can also play an important role in the negotiations, especially with regards to environmental and indigenous issues, where they may be better informed than public authorities. The outcomes of negotiations will also be greatly influenced by the existing legal framework (McMahon and Remy, 2001).

2.5.1 Compliance of mining companies to national rules and regulations

Most of the large-scale mining companies comply with national rules and regulations of the mining sector but they are reluctant to go beyond compliance because this is not a legal binding requirement (Mwalyosi, 2004). The mining companies argue that they pay all the required taxes and loyalties to the government and therefore it is the government's responsibility to return some of the mining revenues back to the local communities for development. Thus, little is done to help the surrounding communities despite the fact that they are the most impacted by the mining activities (Mwalyosi, 2004).

For instance in Tanzania, the Mineral Sector Policy is seen to be an important tool for alleviating poverty in the country by creating gainful and secure employment in the mineral sector, by providing alternative sources of income particularly for the rural population and by ensuring environmental protection and management (URT, 1997a). Although there are strategies set to fulfill this goal, mining companies do not want to undertake activities beyond compliance requirements. However, it is obvious that improving the social services and livelihoods of the neighboring communities is a pre-requisite for sustainable mining (Mwalyosi, 2004).

2.6 The Content Analysis

In the 1931s, Alfred R Lindesmith developed a methodology to refute existing hypotheses, which became known as a content analysis technique, and it gained popularity in the 1960s by Glaser and is referred to as the "The Constant Comparative Method of Qualitative Analysis" in an article published in 1964-65 (Babbie, 1990). The method of content analysis enables the researcher to include large amounts of textual information and systematically identify its properties, e.g. the frequencies of most used keywords by detecting the more important structures of its communication content. Yet such amounts of textual information must be categorized analysis, providing at the end a meaningful reading of content under scrutiny. Since the 1980s, content analysis has become an increasingly important tool in the measurement of success in public relations notably media relations programs and the assessment of media profiles. Qualitatively, content analysis can involve any kind of analysis where communication content such as speech, written text, interviews, and images are categorized and classified (Babbie, 1990).

Content analysis is a methodology in the social sciences for studying the content of communication. Earl Babbie defines it as the study of recorded human communications, such as books, websites, paintings and laws. It is most commonly used by researchers in the social sciences to analyze recorded transcripts of interviews with participants. Content analysis is also considered a scholarly methodology in the humanities by which texts are studied as to authorship and authenticity of meaning (Babbie, 1990). Bernard (2004) defined Content Analysis as a research technique for the objective, systematic, and quantitative description of manifest content of communications. It is a research tool focused on the actual content and internal features of media. It is used to determine the presence of certain words, concepts, themes, phrases, characters, or sentences within texts

or sets of texts and to quantify this presence in an objective manner (Bernard, 2004). Texts can be defined broadly as books, book chapters, essays, interviews, discussions, newspaper headlines and articles, historical documents, speeches, conversations, advertising, theater, informal conversation, or really any occurrence of communicative language (Bernard, 2004). To conduct a content analysis on a text, the text is coded or broken down, into manageable categories on variety levels of word, word sense, phrase, sentence, or theme and then examined using one of content analysis' basic methods: conceptual analysis or relational analysis. The results are then used to make inferences about the messages within the text(s), the writer(s), the audience, and even the culture and time of which these are a part. For example, Content Analysis can indicate pertinent features such as comprehensiveness of coverage or the intentions, biases, prejudices, and oversights of authors, publishers, as well as all other persons responsible for the content of materials (Bernard, 2004).

2.7 The Sustainable Livelihood Approach

Conceptually, "livelihoods" connote the means, activities, entitlements and assets by which people make a living. The Brundtland Commission in 1987 introduced SLA in terms of resource ownership and access to basic needs and livelihood security, especially in rural areas. The International Institute for Sustainable Development (IISD) defines sustainable livelihoods as being "concerned with people's capacities to generate and maintain their means of living, enhance their well-being, and that of future generations" The definition used by the UK's Department of Foreign and International Development (DFID) incorporates these sentiments (DFID, 2000). A livelihood comprises the capabilities, assets (including both material and social resources), and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and

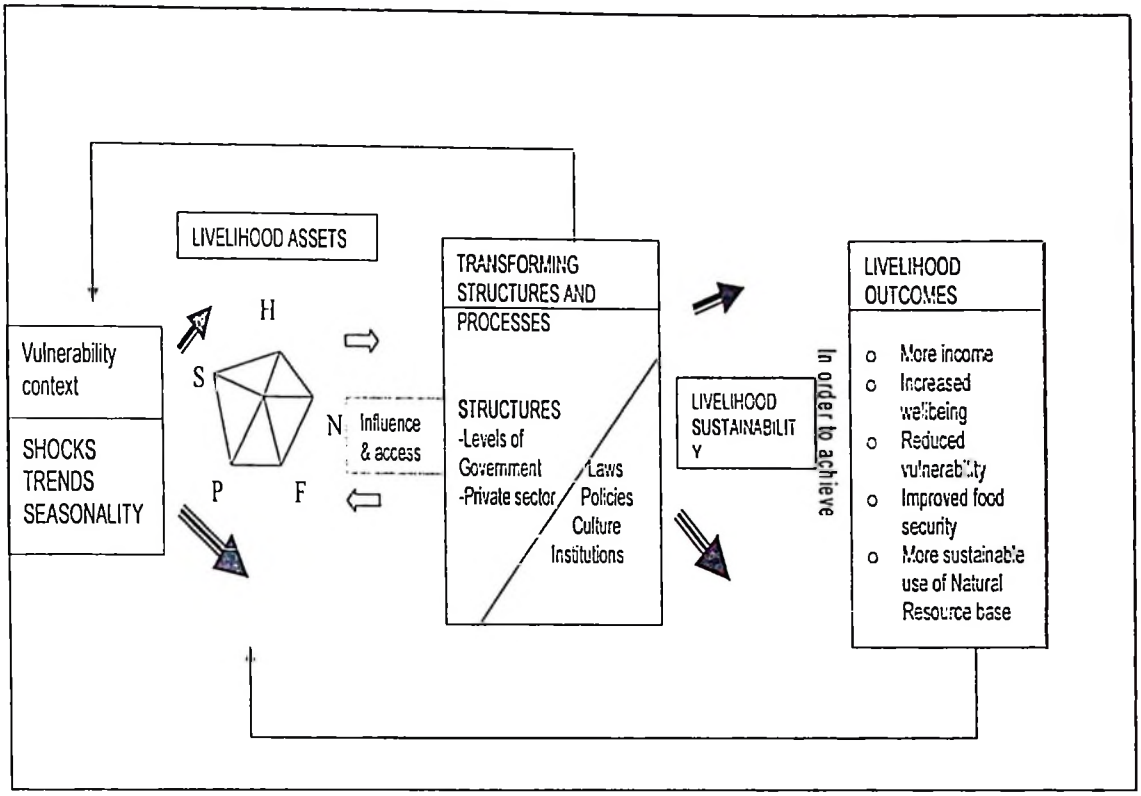
maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. Assets, in this particular context, are defined as not only natural/biological (i.e., land, water, common-property resources, flora, fauna), but also social (i.e., community, family, social networks, participation, empowerment, human (i.e., knowledge, creation by skills) and physical like roads, markets, clinics, schools, bridges (Ellis, 2000).

2.7.1 The sustainable livelihoods framework

The livelihoods framework is a tool to improve our understanding of livelihoods, particularly the livelihoods of the poor. It is a conceptual framework for understanding causes of poverty, analyzing relationships between relevant factors at micro, intermediate macro levels, and prioritizing interventions. The approach explicitly requires going beyond sectoral barriers, to look at more of the context in which people live. The framework is used by a growing number of research and applied development organizations, including the Department for International Development (DFID) of the United Kingdom, the United Nations Development Program (UNDP), as well as non-governmental organizations (NGOs) such as CARE and Oxfam (DFID, 2000; Carney, 1998). While each organization has its own variations on the framework, emphasizing different aspects, there are many common elements.

The livelihoods framework places a lot of emphasis on understanding the household, how households differ from one another, and how they relate to each other. Examining households helps us to understand different ideas about well-being and different levels of vulnerability and resilience. Livelihoods can only be understood if we take account of, and examine, the locally specific contexts in which they occur. So we need, for instance, to

examine the interrelations between the processes, which operate at various scale or levels that impinge on livelihoods. From Fig. 2 shows the DFID livelihoods framework which schematically presents various components of an analytical framework to analyze livelihoods (Carney, 1998; Ellis, 2000). Usually, livelihood analysis begins with the taking stock and specifying the key resources people have at their disposal. Resources are a key component of livelihoods which may be tangible resources (such as land or cattle) but many are non-tangible. For examples, one could think about policies or law as resources around which peoples' livelihoods revolve. Livelihoods analysis needs to take into account the ways in which people use and organize access to resources, deal and negotiate with institutions, and live and work in a particular socio-cultural-economic and historical context, which itself is the product of a particular configuration of global and local processes. The DFID's sustainable livelihoods framework which builds on various concept roots, provides an analytical structure for building an understanding of livelihoods. It encourages users to think about existing livelihood patterns as a basis for planning development activities and spending. Using various existing tools such as social and stakeholder analysis, economic and rapid appraisal methods. this entails analysis of:



(Source: DFID, 2000)

Figure 2: The DFID sustainable livelihood analysis framework

Based on the framework, household members use their resources, capabilities and their assets to carry out activities through which they gain their livelihood. Livelihood opportunities can be enhanced or limited by factors in the external environment. These factors determine the vulnerability context in which households have to operate. The arrows within the framework are used as shorthand to denote a variety of different types of relationships, all of which are highly dynamic. No one of the arrows imply direct causality, though all imply a certain level of influence.

2.7.2 The sustainable livelihood capitals or assets

Assets are considered to be stocks of different types of capital that can be used directly or indirectly to generate livelihoods. They can give rise to a flow of output, possibly becoming depleted as a consequence, or may be accumulated as a surplus to be invested in

future productive activities. Based on the five types of capital identified by the sustainable livelihood framework, five assets are classified into: human capital, e.g. education, formal and informal skills, health; natural capital e.g. natural resources such as farming and grazing land, forests and non timber products, wildlife, and water; physical capital e.g. shelter, infrastructure such as roads and transport, buildings, irrigation systems, and productive assets such as seed, tools, livestock, fishing gear and other farm and processing equipment; financial capital e.g. cash income and remittances, credit, savings in kind and cash; social capital e.g. formal and informal institutions (including markets), associations (e.g. water users and savings and credit associations), extended families, and local mutual support mechanisms. In addition to these five kinds of capital, some suggest adding political capital, which includes citizenship, enfranchisement, and membership in political parties (Ellis, 2000).

The relationships between these assets, what people actually do, how this results in outcomes such as food security, and how all of this is subject to external influences such as outbreak of a civil war or drought. The above diagram shows that the livelihood of a person, household or community is comprised of assets, transformed by activities or strategies into outcomes. This "internal" relationship between assets, activities and outcomes is seen to be circular. All of this is taking place in the context of and influenced by the external environment (vulnerability context and policies, institutions and processes). The diagram also shows that the actions of people, households and communities themselves have an influence on these external forces (URT, 2004; DFID, 2000; Ellis, 2000; 1998; Carney, 1998).

2.7.3 Capabilities and assets

Assets and capabilities are closely linked to household livelihood security. For example, a household may have assets but not have the capability to use them fully. A household may have capabilities to engage in livelihood activities, but not enough assets to use these capabilities fully. The range of assets and entitlements which different households have access to them and show how having access to a wide range of assets is a key factor which contributes to household livelihood security. The capabilities assets enable households to make the best use of their asset base and the factors that limit people's ability to sustain their livelihoods.

2.7.4 The external environment

The livelihood options of a household are enhanced or restricted by factors in the external environment. It looks at the impact of the local context on the household before analyzing the effects of larger forces at provincial, national and global levels. It is necessary to continually monitor the changing external environment to be able to understand the pressures and opportunities that inform household livelihood strategies. When planning with people to help to strengthen their livelihood security, they need to become aware of the links between their local situation and the wider environment.

2.7.5 The vulnerability context

This looks on the changes in the external environment affect individual households and the people within them. It deepens understanding of the concepts of differentiation, relative vulnerability and resilience. It refers to the impacts of changes that take place over time and shows the variety of ways that households try to adapt to their vulnerability context. It is important to have an in-depth understanding of the different elements that make up the

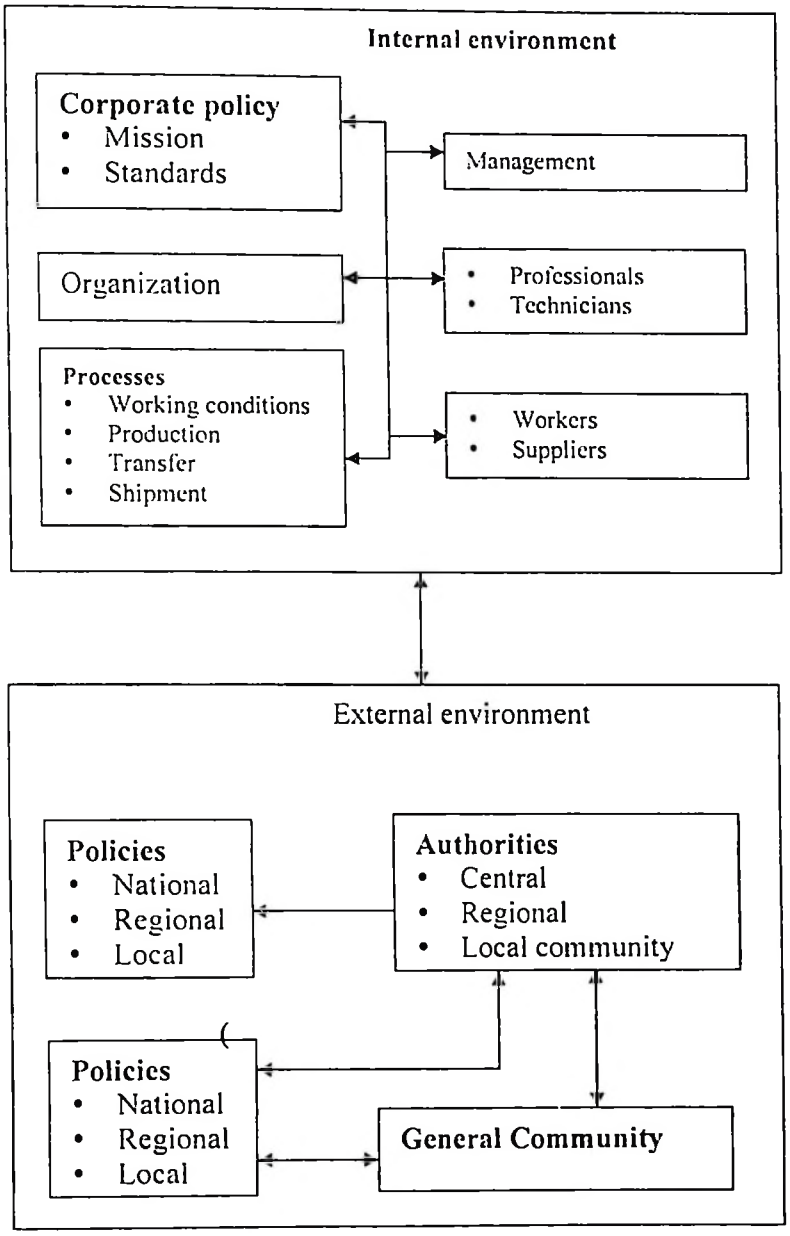
vulnerability context to be able to identify interventions that will have a lasting, positive effect on household livelihood security.

2.7.6 Livelihood outcomes

What are the kinds of livelihood goals that people aspire to achieve and what is the relative emphasis that they place on different livelihood outcomes? For example more income, increased well-being, reduced vulnerability, improved food security, more sustainable use of the natural resource base). What trade-offs or conflicts are there between these different livelihoods outcomes? To what extent do people actually achieve their livelihood goals, and what is preventing people from fully achieving them (DFID, 2000; Ellis, 2000; 1998).

2.8 Conceptual Frameworks used in Livelihood Analysis

The objective of this section is to present other conceptual frameworks used in studying livelihoods in different communities and the variables that were analyzed. These variables are grouped together in the areas of the economy; the environment; as well as social and human development capital, and community-company relationships. Each variable group was used to analyze the relationships between mining projects and local communities. In addition, the section also present the methodology used to organize, and interpret information (Fig. 3).



(Source: McMahon, 2000)

Figure 3: Internal and external environment of the firm

2.8.1 Internal context

The companies' internal realm is composed of a series of institutional relations that comprise a corporate model. It determines the way in which the company defines its corporate policy, organization, and the processes between the different actors within the company. The first component of a company's internal realm is its corporate policy, which is a mental model shared by company representatives and understood as a series of corporate decisions that characterize the institution's culture. This model defines the corporate guidelines for "how things are done." Two important elements of a corporate policy are the mission statement and standards that the company establishes or assumes. The mission statement outlines the company's corporate model and defines its reason for being. It provides the guidelines that are translated into policies and strategies with regards to the company's internal and external realms. Safeties standards help define the quality of the workplace by establishing the correct operating procedures for activities within the company. These standards can be based on international norms, such as ISO 9000 and 14 000, which companies can assume in order to create safe working conditions (McMahon, 2000).

A company's "organization" refers to the definition of functions and the rights and obligations associated with each function. Organization allows companies to establish each person's responsibilities in order to avoid overlap or omissions in certain areas. For example, it is important that the company define which organizational division is in charge of information generation and distribution, both internal and external. A company's "processes" refer to conditions under which work is carried out, production takes place, materials are moved and shipped, etc. The company defines guidelines for how both direct employees and subcontractors should perform these processes. In some cases, companies

put more emphasis on guidelines for direct employees, while subcontractors and suppliers (in the areas of exploration or food service) are not subject to the company's internal guidelines. This can generate inconveniences, especially in terms of community relations. Thus, it is important that everyone associated with the company be held to and understands its guidelines (McMahon. 2000).

2.8.2 External realm

The external realm in which a company operates is often heterogeneous in terms of its organizational characteristics, complexity and level of participation. In such cases, companies must adapt to the structured discourses expressed in national, regional and local policies, but should also incorporate the opinions and impressions held by other, less organized members of the community. Likewise, in terms of organization, companies relate with highly organized social actors such as national, regional, and local political authorities, universities. business associations, workers associations, NGOs, producer confederations, and social organizations as well as with the community in general (McMahon, 2000).

Given the complexity of the external realm, companies should design strategies for optimal relations with each of the distinct social actors. An important element is the information policy toward the community, which determines the level of consultation with and participation of each community actor with respect to the mining project. Another important element is the distribution of benefits within the community, which range from taxes and royalties to sporadic petitions from less organized groups. It is necessary to distinguish between short- and long-term actions that a company can undertake regarding community benefits (McMahon, 2000). Issues such as training, education, health, local

development, and environmental impacts are important in the external realm. Companies should define their role in each of these areas, as well as their corresponding rights and obligations. They should define their level of involvement in each of the aforementioned themes, which can range from a commitment to comply with the applicable laws to full participation in local or regional bodies. The type of commitment made has strong implications for the definition of short- and long-term policies.

2.8.3 Variables analyzed

This section presents the variables analyzed in each case study, which are classified as economic variables; environmental variables; social and human capital variables; and variables in community-company relations.

2.8.3.1 Economic variables

Economic variables quantify the economic impact of the mining project in terms of its contribution to the economic development of the host region, as well as the direct economic benefits that can accrue to the country, such as foreign exchange earnings, employment, investment, trade balance, and technological support.

2.8.3.2 Environmental variables

The environmental policies of the companies in the cases studied allowed identifying the practices they develop as part of the relations they establish with the surrounding area. The safety and quality standards variable refers to the designs, controls, evaluations and actions that companies establish in order to mitigate the impacts of productive processes such as mineral extraction and processing. For this case, it was important to define these standards and identify the potential best practices that the companies employ in this area.

2.8.3.3 Socio-cultural dimension of mining projects

The socio-cultural dimension of a mining project refers to the impact the project has on variables such as health, education and training, work shifts, community relations, communication strategy, and citizen participation. The socio-cultural impact of a mining mega-project on the community has been one of the most relevant issues for environmental authorities, community organizations, and the mining industry. From the exploration stage to the mine's closure and abandonment, there are diverse points of contact and potential conflict between communities and mining interests with regards to social, socioeconomic, and environmental issues (McMahon, 2000).

In northern Chile for example, mining is without a doubt the most important economic activity. The history of mining goes back to the first settlements recorded in the area. This tradition has been a central component of regional identity. The presence of international companies in the first decades of the century had a considerable impact on the region's history. Workers' movements and political parties appeared as early strategies of establishing community counterweights to the presence of mining mega-projects. Thus, there are historical references to the relations between mega-projects and local communities that are present in the collective memory. This long history has produced resistance to the presence of foreign mining companies (McMahon, 2000).

2.8.3.3.1 Health

There are various dimensions to relation between health and mining, which are important to distinguish. An analysis of the issue of health within a mining company requires the identification of company strategies for addressing problems related to worker health, stress management, obesity, alcohol and drug use, sexually transmitted diseases, and

accidents. The common denominator among these strategies is that the company has control over detecting and neutralizing them. There are several phases to the presence of foreign companies: first the Spanish, then the British (both for nitrates), later the North Americans (copper mining) and currently multinational companies (McMahon, 2000). The health and community theme refers to the impact that large mining projects can have on the health of the general population of a specific community. At this level, issues such as prostitution, sexually transmitted diseases, alcoholism and drug use are significant. Another important aspect of the relationships between large mining projects and health is the benefits that mining companies can provide to local communities (McMahon, 2000).

2.8.3.3.2 Education and training

Education and training have become recurring themes within discussions of the modern mining industry. The industry's general shift to clean production technology has produced a strong demand for a skilled, multifunctional work force for its diverse operations. The country's educational centers have not necessarily produced workers who can meet this demand. Faced with this reality, the companies in this study have developed diverse strategies for the formation of the work force their operations require. Companies can organize work shifts in different ways, from a normal work shift in which the worker returns home each day (in cases where the mine is located close to town) to 20 or 10-day stints that oblige the worker to remain in camps adjacent to the mine. There are pros and cons to each of these schemes for the company, workers and their families. In many cases, the mine's remote geographic location requires prolonged stays at the project site in order to maintain continuous exploitation. However, long stays at camp generate a series of problems for workers and their families that are difficult to evaluate (McMahon, 2000).

2.8.4 Community and the company relationship

2.8.4.1 The community's perception

Traditionally, good relations with the local community have not been an important part of the mining culture. For its part, the local community tends to view mining activities as isolated and oriented toward a purely economic end. The community is apprehensive about being excluded from the benefits produced by the mining project and requires information about the status of the project. In turn, the mining industry is conscious that its activities are costly, risky and require huge investments in exploration in order to determine if a deposit is worth exploiting. Given the uncertainty of success, the mining company has little interest in establishing relations with the community until the project is well underway. In this scenario, community relations have traditionally not been a company's first priority. Thus, a situation of fear and mistrust arises from the lack of communication and comprehension between the mining industry and the community. A community's response to mining company interests is shaped by mining's historic legacy. Thus, in areas with a long mining tradition, such as northern Chile, communities' expectations are different from those in areas where this tradition does not exist, such as the extreme southern region of the country (McMahon, 2000).

2.8.4.2 Strategic communication with the community

A company's communication strategy was crucial to understanding certain aspects of its relations with the community. In this study, there was need to examine the ways in which the mining companies approached such communications from the beginning of operations.

2.8.4.2.1 Citizen participation

Citizen participation refers to the degree of involvement by the general public or community organizations in the mining project's development. Participation can vary

depending on the different stages of the mining operation. It is important to understand each company's strategies with respect to citizen participation in order to determine whether it really exists.

2.8.4.2.2 Integration of company employees in the community

Another important variable in community-company relations is the integration of employees and workers in the cities and towns near the mine. The way the company approaches this integration can be a determining factor in how the community perceives the project.

2.8.4.2.3 Community benefits

The variable of community benefits refers to the positive impacts from the mining companies or alliances established with other firms that directly benefit the community (Lange, 2006; McMahon, 2000).

2.9 Methodological Model Adopted for this Study

This study adopted the methodological model used by McMahon (2000) in analyzing the dimensions and variables common to the case understudy. The choice of this model based on the similarity of the variables analyzed in this study. It distinguishes between the corporate context that gives rise to the projects (the internal realm of the companies themselves) and the greater community (the external realm) which is used to systematize mining companies' "best practices" with regards to both the internal and external realms. The study gathered primary information through qualitative techniques and used secondary information taken from other previous studies conducted by public entities, universities, business organizations, and the mining companies themselves. The qualitative primary

information was obtained through in-depth interviews with key informants, such as managers from the three companies, regional mining, labour, and health authorities, Regional Environmental Commission officials, union leaders, NGO and regional association representatives. In particular, the ways in which distinct collectives participate in the conversations are studied, with a view to analyzing their experience and social practice. There was also a focus on the companies' policies and their impacts on the community. Nevertheless, the information generated by various company officials were contrasted with the visions of other relevant actors from the external realm mentioned earlier (Lange, 2006; McMahon, 2000).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

The study employed a cross-sectional design which involved collection of data at a single point in time. The design was appropriate for descriptive purposes and determination of relationship between variables as the study was set to make comparison of the livelihoods of villages close to GGM (Nyakabale and Nyamalembo) and villages away from GGM (Kasamwa and Nyamigota) respectively. Again, the design could allow data collection within the set budget and time limit (Rwegoshora, 2006; Bailey, 1994; Singleton *et al.*, 1993; Babbie, 1990).

3.2 Description of the Study Area

This study was conducted in Geita District- Mwanza Region. The study area was chosen due to the fact that it is one of the most important mining areas in Tanzania due to its large deposits of precious gold. GGM is one of the 25 operations in 11 countries and in 4 continents owned by AngloGold Ashanti, which makes Tanzania the third largest producer in Africa, after South Africa and Ghana respectively (GGM, 2008). As the area is also facing many resentments and resistance from the community, it is expected to act as representative of many other mining areas facing similar cases like North Mara Gold Mine, Bulyanhulu Gold Mine, Mwadui Diamond Mine and others of the kind in Tanzania (Lange, 2006; Uwoya, 2006).

3.2.1 Geographical location and climate of the study area

Geita is one of the administrative districts in Mwanza region, which covers about 7825 km^2 of which, 6775 km^2 is landmasses and 1050km^2 constitute water bodies, largely covered by Lake Victoria (URT, 1997b). Geita District is located North East of Sengerema District, North West of Kagera Region, South East of Kwimba District and South of Shinyanga Region (Figure 1). The district is located on the shore of the Lake Victoria lying between $2^0$28'-$3^0$28' south to 32°-32°45 east. Administratively, Geita District is divided into 7 divisions, 33 wards with 163 villages (URT, 1997b). Geita District is liked by an all weather road from Mwanza town via Sengerema District and connects the road to the Republic of Rwanda via Biharamulo District. The District annual rainfall distribution is bimodal with short rains in October to December, followed by a dry spell in January to February before the long rains set in which last until May, the district experiences an average annual rainfall of 1100mm on the northern part of the district, and 850mm in the southern part. The mean and maximum annual temperatures are 17°C and 29°C respectively.

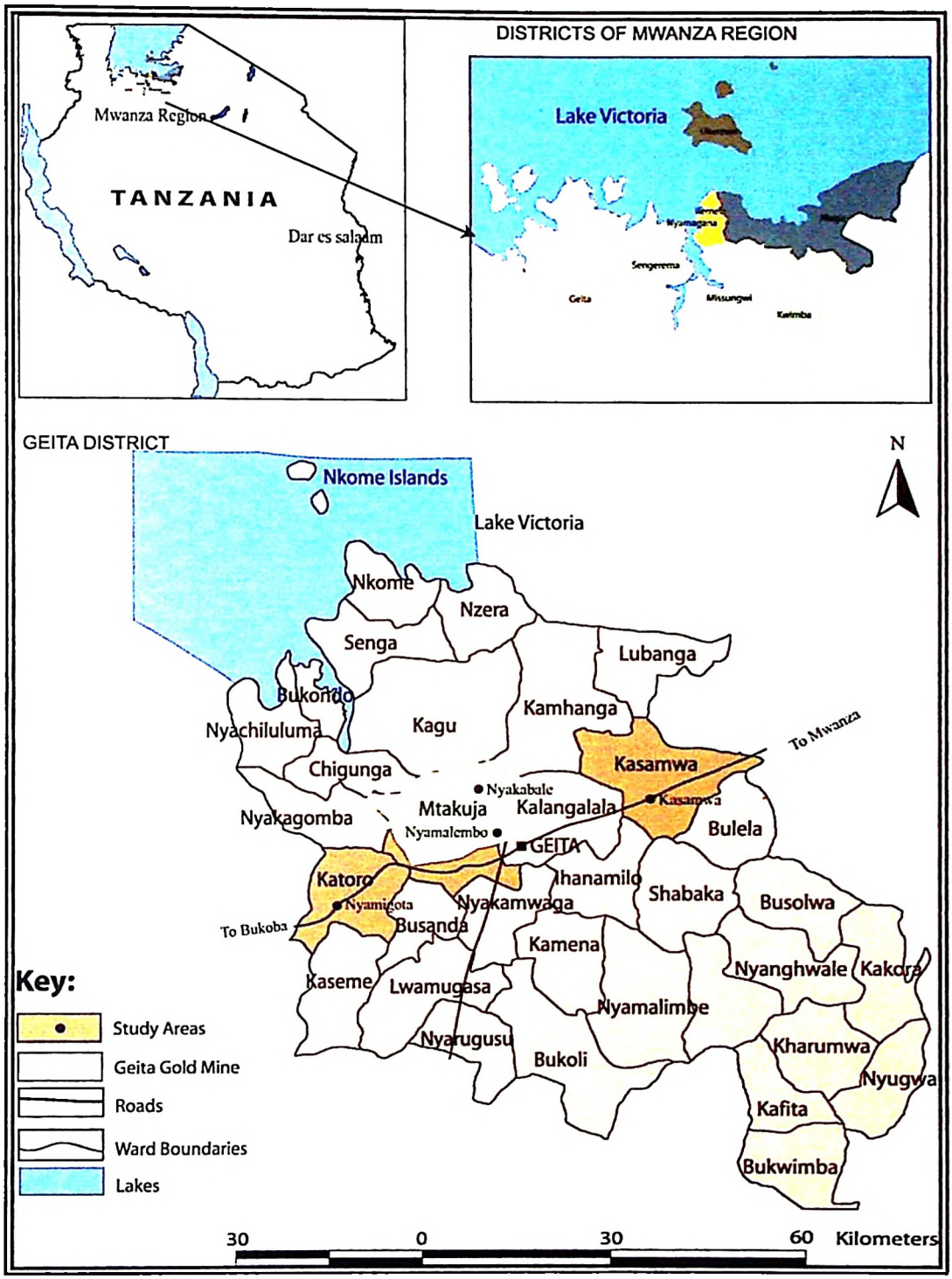
3.2.2 Soils and physical features

Geita District lies on 1300 meters above sea level. The major types of soils found in various topographical associations include shallow stony soils associated with rocky outcrops, red to yellow red gritty sand clay and loam sands, strong brown to pale yellow loam sand with late rite horizon and dark grey to grayish-brown compacted loam sands (GDC, 2006). The Geita Green stone forms the northern arm of the regional Sukumaland Greenstone belt to the south of Lake Victoria.

3.2.3 Population, ethnic groups, and socio-economic activities

With respect to 2002 national census, the population of Geita District was 712 195 people out of which 355 823 were male and 356 372 were female at a growth rate of 3.6 % (URT, 2002). The indigenous tribes in the District are the Sukuma, who are traditionally agro-pastoralists and dominates the population of Geita. Other tribes are the Sumbwa and Rongo, specialized in hunting and black smiths respectively. Economic activities in the area include cultivation, livestock keeping, lumbering, fishing and mining.

The former Ministry of Lands, Natural Resources and Tourism placed Geita District in Zone II that denotes an area of high population with extensive agriculture for cotton, accompanied with overgrazing. Geita has been a traditional area for small-scale farming since the attainment of political independence of Tanzania. The local economy in the district directly and almost fully depends on natural resources because of subsistent farmers who mainly undertake livestock keeping and crop farming.



(Source: GDC, 2006)

Figure 4: Map indicating location of the study area

3.3 Sampling Methods

3.3.1 Sampling unit and procedures

3.3.1.1 Sampling unit

The sampling unit in this study was based on households as impacts were affecting affairs of the household. George (2003) defined a household as the members who live together and share the same values with members recognizing the authority of household heads as the ultimate decision makers for the households.

3.3.1.2 Sampling procedures

The sampling frame included all the households living close and away from the GGM by obtaining names from village registers. Given the nature of this study, both non-probability and probability sampling procedures were employed. The selection of GGM as the study area was done purposively due to its unique influence on the livelihoods of local communities including a wide spread of conflicts with local communities around. One ward (Mtakuja) that was close to GGM was purposively selected for the study as many complaints on environment degradation, water pollutions and displacements were more revealed. Two more wards, that is, Kasamwa and Katoro situated away from GGM were peaked randomly for comparison purposes. Villages within each ward selected were randomly selected for the study. Sampling within village groups was done randomly due to the fact that the populations in the respective areas were homogeneous in nature. A list of villages was obtained from the district office in which lists of four villages were selected. In this regard, Villages falling within 5 to 10 km radius from the mining centers (Nyakabale and Nyamalembo) were earmarked as communities close to GGM and those between 15 and 20 km from the mine centre (Kasamwa and Nyamigota) were considered as communities away from GGM.

3.3.1.3 Respondents' sampling

Systematic simple random sampling technique was applied in the selection of households for formal interviews in each sampled village over issue regarding the contribution of GGM to household income, non-direct benefits accrued and the environmental implications resulting from mining activities to the livelihoods of local communities.

3.3.2 Sample size

The sample size for this study was determined based on a sample size formula by Fisher et al. (1991) as described hereunder. The sample size formula used;

$n= Z^2Pq/d^2$,

Where:-

n= Sample size when population under study is greater than 10 000

Z= Standard normal deviate (z-score set at 1.96, corresponding to a confidence interval of 95%

P= Proportion in the target population estimated to have a particular characteristic; if not known use a proportion of 0.5

q= Is the proportion of the population lacking a particular characteristic of interest

d= Degree of accuracy (significance level) desired, set at 0.05

Therefore the sample size was:

$n= Z^2Pq/d^2, = (1.96)^2 (0.50.0.50)/ (0.05)^2$

$= (3.8416 X 0.25)/ 0.0025$

n= 384

However, due to research budget constraints, the sample size was reduced to 120 in which 30 respondents were randomly selected from each village. This was considered to be a representative of the total population. As supported by Kajembe and Luoga (1996) in Manyika (2000), a sample to be representative of the population, a random sample should not be less than 5% of the total population understudy.

3.4 Data Collection Methods and the Tools

3.4.1 Data collection methods

Both primary and secondary data were collected during the field survey.

3.4.1.1 Primary data collection

Primary data were collected through face-to-face interviews, personal observations, and focus group discussions from key informants. A structured questionnaire was used to collect data from households. Checklist discussions were held to collect information from key informants primarily from district officials namely the District Treasurer (DT), DALDO, District Health Officer (DHO), District Community Development Officer (DCDO) and Mining officials were consulted.

3.4.1.2 Secondary data

Secondary data were collected from various documents such as books, journals and official reports available by visiting both published and unpublished relevant documents from the Sokoine National Agriculture Library (SNAL), University of Dar es Salaam Library, Tanzania Investment Center (TIC), the Ministry of Energy and Minerals, GGM offices and from electronic sources in the internet. These methods were used to identify and determine whether some socio-economic activities in villages understudy are influenced by mining

activities. Suitable information on the influence of mining activities to local community livelihoods from district officials, local people and mining officials were collected in the study area.

3.4.2 Tools of data collection

3.4.2.1 Participant observation

Participant observation as the name implies, is distinguished by the fact that the observer (researcher) becomes part of the situation he or she is studying (Kajembe, 1994) in Manyika (2000). In this study, participant observation provided supplement information obtained from formal surveys on the way mining activities influences socio-economic and impacts of mining on peoples' livelihoods. Participant observation was useful for the researcher to get close to people and enables informants to feel free in giving the relevant information during interviews. Moreover, participant observation was used as a guide to asking questions where informants failed to respond to questions. Bailey (1994) recommended that participant observation builds a relationship between a researcher and the respondents in a new community and put what one has learned into perspectives.

3.4.2.2 Focus group discussions

Discussions were made using a checklist to collect information from key informants who included groups of village executives, district officials and GGM officials. A key informant as cited by Bailey (1994) is an individual who is accessible, willing to talk and has great depth of knowledge about issues in question. However, key informants are not the only members of the clientele but are most often informed outsiders. In this study, mining officials and District officials were consulted as key informants.

3.4.2.3 Questionnaire survey

Both qualitative and quantitative information were collected using a structured questionnaire containing factual questions for such information as years, quantities, and opinion. The household questionnaire was employed to handle all specific objectives and research questions. The final version of the questionnaire was developed after pre-testing of questionnaires which had been tested to check their reliability, based on the ability and likelihood of the interviewees in understanding and answering questions and minimizing possibilities of missing relevant information.

Testing of questionnaires was done to 20 randomly selected households in Nyakabale, Nyamalembo, and Mine mpya villages in wards of Kalangalala and Mtakuja respectively. Modifications were then made from the original questionnaire in order to incorporate mining and socio-economic variables affected by mining activities. Closed and open-ended questions were used to give respondents room to express their opinion on mining activities and their livelihood. Economic, socio-cultural and environmental issues were some of the issues focused in the questionnaire.

3.4.2.4 Measurement of community livelihoods

The conceptual framework which quided this study for livelihoods measurement was the sustainable livelihoods framework (SLF) (Ashley and Carney, 1999; DFID, 2000). In this study, the SLF was used to examine the relationships amongst the communities' human, natural, physical, financial, and social livelihood assets. Each component of livelihood assets was measured using indicators as follows: (1) Human assets: age and education of household head, and health threats of households; (2) Natural assets: agricultural area, land size, number of livestock; (3) Physical assets: value of shelter and building, sufficiency of

household water supply and sanitary, type and value of farm equipment; (4) Financial assets: access to credit, and remittance, value of household assets; and (5) Social assets: membership of water user group, leadership of existing groups, and community networks.

A qualitative scoring system was used to value a household's asset base and to facilitate comparison between the asset bases of different household groups to determine the extent of the effects of foreign direct investment on livelihoods of people around and away from GGM. These scores were given to each household separately. Scores of each indicator under each asset were summed to produce an average for that asset. The individual asset scores were aggregated to give an overall score for each household. The scores of each component of livelihood assets were evaluated and compared by testing for significant differences between groups. Farm households used various assets in their productive activities in order to create income and satisfy their consumption needs, maintain their asset levels, and invest in their future activities. The ways in which they do those activities show the livelihood strategies of farm households. The vulnerability of farm households was examined using indicators, including shocks (e.g., effects of mining activities and conflict over resource use), trends (i.e. variation in several sources of income), and seasonality (i.e. fluctuation of output yields and increased life costs due to presence of GGM, pollutions and its impacts, change in land holdings and its effects on agricultural activities). Percentages of households facing those problems are used to present the indicators. Finally, livelihood outcomes of each household group are presented.

3.5 Data Processing and Analysis

Data collected was first cleaned, edited and then coded before analysis.

3.5.1 Qualitative data analysis

Qualitative data were analyzed using structural-functional and content analysis. The basic idea of content analysis was to reduce total content of qualitative information to a series of variables for some characteristics of research interest. Verbal discussions held with local people, mining officials, and district officials were broken down into smallest meaningful information with the help of content analysis. Structural-function analysis is considered to explain the social facts by the way it related to each other within the social structure and the manner in which they are related to the physical surroundings. This was useful in ascertaining values and attitudes of the respondents (Kajembe and Luoga, 1996) in Manyika (2000).

3.5.2 Quantitative data analysis

Quantitative data were summarized; coded and analyzed using Statistical Package for Social Science (SPSS) computer program. Descriptive statistics such as frequencies and percentages were computed to summarize information on various variables between communities close and away from GGM. Analysis of variance (ANOVA) was used to compare household characteristics from different socio-economic activities. Inferential statistics were derived to determine the relationship between dependent and independent variables. Variable means were compared using t-test and differences between variables were compared using chi-square (χ^2) for testing associations between variables.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-Economic Characteristics of Respondents

4.1.1 Sex of respondents

Table 2 shows that majority of the respondents (90%) from villages away to GGM were male whereas 75% of respondents from villages close to GGM were male. These results indicate that the proportion of male respondents were dominant in both villages away and those who were close to GGM. This was due to the fact that majority of the household heads attended for interviews were male. These findings agree with George (2003) who in his study asserted that, the lower level of female respondents was partly attributed to the fact that, the interviews focused on heads of households randomly selected and in most cases, these were male respondents.

Similarly, URT (1997b) revealed that the proportion of women to men shows a departure from the usual Tanzania pattern. Women in Mwanza region only marginally outnumber men. For all intents and purposes, the ratio was 50:50. Still, this proves that women are numerically a very important segment of the regional community. In rural areas where 82% of women live, the importance of women as producers of wealth is out of proportion to their number. Despite their economic importance, women as a group are more vulnerable to health risks because of gender inequalities in terms of social and economic domains.

4.1.2 Marital status of respondents

Results in Table 2 shows further that, 90% of respondents away and 71.5% close to GGM were married and the rest were distributed among the groups of being single, widowed or separated. These results suggest that, a large proportion of respondents from whom this information was collected were married people, constituting a group of community members permanently settled because they had responsibilities of serving their families. Therefore, this was a group that always engaged in community development issues by either Governmental and/or NGOs.

Table 2: Socio-economic characteristics of respondents

Variable	Villages			
	Close to GGM (N=60)		Away to GGM (N=60)	
	Frequency	Percent	Frequency	Percent
Sex				
Male	45	75.0	54	90.0
Female	15	25.0	6	10.0
Total	60	100.0	60	100.0
Marital status				
Single	8	13.4	5	8.3
Married	43	71.5	54	90
Separated	1	1.7	1	1.7
Widow	8	13.4	0	0.0
Total	60	100.0	60	100.0

4.1.3 Age of respondents

In this study, age was considered as an important variable since it determined various inter households and intra households' characteristics, which include ownership and control of important resources such as land and household assets. Results in Table 3 of this study

show that villages close to GGM had an average of 46.2 years with maximum age of 80 and minimum of 20 years. Villages away from GGM had an average of 41.4 years with a maximum age of 78 and minimum of 22 years. These results suggest that there was a slight difference in peoples' age between close and away from GGM. However, statistical analysis indicated further that there was no significant difference of average years of respondents between close and villages away from GGM at ($P<0.05$).

Table 3: Age of respondents

Variable	Villages		t	Sig
	Close to GGM (N=60)	Away to GGM (N=60)		
Age (years)				
Average	46.2	41.4		
Std. Deviation	13.0	12.3		
Minimum	20.0	22.0	1.435	.157
Maximum	80.0	78.0		

4.1.4 Age category of respondents

Table 4 indicates that majority (70%) of the respondents for both cases were aged between 31- 56 years. Those who were aged between 18-30 years, constituted 21.6% for away and 16.6% for villages close to GGM respectively.

Although there was no significant difference of average years of respondents between close and away villages, there was a slight difference (variation) of age classes for both cases at ($P<0.05$). The results indicate generally that most of the respondents were active and mature who might have been involved in GGM activities and/or experienced the effects of its activities.

Table 4: Age category of respondents in years

	Villages				χ2-value	Sig
	Close to GGM (N=60)		Away to GGM (N=60)			
	Frequency	Percent	Frequency	Percent		
Age category (years)						
<18	0	0.0	0	0.0	13.475	.004
18-30	10	16.6	13	21.6		
31-43	17	28.4	24	40.0		
44-56	25	41.6	18	30.0		
>56	8	13.4	5	8.4		
Total	60	100.0	60	100.0		

4.1.5 Education level of respondents

Results in Table 5 presents a summary of education level of respondents with respect to years spent in school. The results showed that respondents in villages away from GGM spent a maximum of 14 and minimum of 2 years in school compared to a maximum of 11and minimum of 1years spent by respondents who were close to GGM. The average in years spent by respondents away and those close to GGM were 11.7 and 6.4 respectively.

These results indicate that respondents away from GGM had a relatively higher average of years spent in school than those who were close to GGM. This implies that those who were away from GGM had education level beyond secondary school. These were therefore better off compared to respondents close to GGM, who formed a large part of people attained only primary level education. However, there was no significant difference of average years spent in schools between close and away at ($P<0.01$).

From focus group discussions with key informants (village leaders and district officials), the study revealed that the reasons for high level of majority having attained only primary

level education to respondents near GGM was justified by the presence of a few number of pre-primary and primary schools. There was no even a single secondary school compared to respondents situated away from GGM which had a significant number of schools of secondary schools. This was due to the fact that in villages away from GGM, there was involvement of other Non-governmental organizations (NGOs) such as Plan International, World vision International and Copcot Cotton Trading Company. Also, concerted efforts by the government were reported to have positive impact on peoples' developments including education sector. These NGOs were not involved to communities close to GGM because it was believed that the GGM would provide support to such communities.

Table 5: Respondents' education level

Variable	Villages			
	Close to GGM (N=60)	Away to GGM (N=60)	t	Sig
Education level				
Average	6.0	12.0		
Std. Deviation	2.5	3.7		
Minimum	1.0	2.0	5.604	0.00[5]
Maximum	11.0	14.0		

4.1.6 Household size

As shown in Table 6, results of this study indicated that, households close to GGM had a maximum household size of 15 and minimum of 2 people with an average of 8 people. Households away from GGM had maximum household size of 20 and minimum of 1 person with an average of 7 people. These results imply that the average household size in both close and away from GGM were relatively higher when compared to the Tanzanian national average household size of 4.9 (NBS, 2002). This could partly be attributed to high influx of people seeking job opportunities in the mines for villages close to GGM since

they had a larger proportion of 8 compared to 7 members of villages away as indicated earlier in this study. However, the recorded family sizes are comparable to other densely populated areas in the country, such as Lushoto and Iringa rural Districts (Ngailo *et al.*, 2007).

Table 6: Household sizes

Variable	Villages	
	Close to GGM (N=60)	Away to GGM (N=60)
Household size		
Average	8.0	7.0
Std. deviation	7.7	3.4
Minimum	2.0	1.0
Maximum	15.0	20.0

4.1.7 Main occupation of respondents

Looking at the main occupation of respondents as shown in Table 7 below, the study observed that majority of respondents away (80%) and (78.4%) close to GGM were found mainly engaged in farming as their main occupation. This indicated that, despite the presence of large-scale mining, the main occupation of respondents in the study area was Agriculture. It was also noted that the proportion of respondents working on casual labor basis was greater in villages close (13.3%) compared to those away (1.7%) from GGM. This was due to the fact that, GGM was providing such opportunities. This suggests that the influence of GGM was minimal with exception of provision of casual labor activities.

The study further noted that there were 3.3% of respondents from villages close and none from villages away to GGM who were involved in livestock keeping. This was due to the fact that, villages close to GGM had the area that was mentioned suitable for grazing as it

was situated in remote areas far from commercial and local market integration compared to villages away from GGM where most of the respondents were involved in petty businesses (5%) and trading (3.3%) compared to 3.3% and none of respondents close to GGM who were involved in petty businesses and trading activities respectively.

Table 7: Respondent's main occupation

Main occupation	Villages			
	Close to GGM		Away to GGM	
	Frequency	Percent	Frequency	Percent
Farming	47	78.4	48	80.0
Petty business	2	3.3	3	5.0
Casual labor	8	13.3	1	1.7
Employee	1	1.7	6	10.0
Trade	0	0.0	2	3.3
Livestock	2	3.3	0	0.0
Total	**60**	**100.0**	**60**	**100.0**

The results support the findings by Ngailo *et al.* (2007) who asserted that, mining activities had not significantly attracted non-farm activities reflecting the trends in Tanzania and Sub-Sahara Africa in general, where majority of the rural dwellers more than 80% find most of their livelihoods from farming and hence, crop production yields the largest (95%) part of households' income.

4.1.8 Land ownership and means of acquisition

In this study, respondents were asked to mention the ways through which they got their land and seven main ways were identified and used to determine the nature of land acquisition to villages understudy. These were namely cleared new land, given by

relatives, inherited, bought, allocated by village government and renting. Results in Table 8 indicated that, more than half (51.7%) of respondents in villages close to GGM obtained their land through buying compared to 3.3% of respondents away from GGM. It also indicated that, respondents from villages away (48.3%) and close (20%) to GGM got their land by means of inheritance. There were greater numbers of respondents from villages away (35%) compared to 6.6% of respondents close to GGM who got their land from relatives while 11.7% and 1.7% of respondents from villages close and away were allocated by government.

Table 8: Land ownership and means of acquisition

	Villages			
	Close to GGM		Away to GGM	
Land ownership	Frequency	Percent	Frequency	Percent
Cleared new land	3	5.0	6	10.0
Given by relative	4	6.6	21	35.0
Inherited	12	20.0	29	48.3
Bought	31	51.7	2	3.3
Allocated by Village Govnt	7	11.7	1	1.7
Renting	3	5.0	1	1.7
Total	60	100.0	60	100.0

From FGDs with key informants (village leaders and district officials), the study revealed that acquisition of land by inheritance was low for households close to GGM. This was due to the recurring displacement and relocations of people's settlement and farming areas due to expansion of mining operations carried out by GGM. This compelled them to clear or buy new lands from other places far from their permanent settlements.

This was further evidenced by the fact that, respondents who were close to GGM were enclosed under the Special Mining License (SML) in which villagers were not allowed to undertake any activities related to land improvement. These included farming and construction of modern houses. The GGM SML covered areas that included parts of Geita town, Nyakabale and Nyamalembo (GGM, 2008). As indicated in this study, land as an asset, covers the livelihoods of over 80% of the local population in Tanzania, depending on subsistence agriculture for their survival (Ngailo *et al.*, 2007).

4.1.9 Households income

Results in Fig. 5 indicate that average income generated from employment was higher (41.1%) for households away from GGM compared to none for those who were close to GGM. The explanations of this situation may be based on the higher average years spent to school by most of the respondents situated away from GGM. With respect to this, location of villages had some effects on income in a sense that, households located away seemed well off than those close to GGM. This implies that, the impact of mining at the level of households was not that much felt.

However, there was no significant variation regarding other sources of income like casual labor, farming and petty businesses. FGDs revealed that, the most significant attribute of farming and non-farm sources of income in almost all households surveyed was their high contribution to household's income generation in form of cash, and formed the mainstay of their major economic activities. For most households, access to cash was severely limited, despite the fact that mining was expected to be the most significant contributor of economic wealth to communities close to GGM. Majority of the respondents (80%) in the areas surveyed were found engaging mainly in agriculture, casual labor and petty

businesses in different places in the district as their sources of income. A large proportion of household productive activities were therefore just sufficient to support subsistence requirements and that, opportunities for marketed surplus were few during the year. Meeting household cash needs for expenses such as school fees, buying inputs and other family requirements was a constant challenge for most households as summarized below.

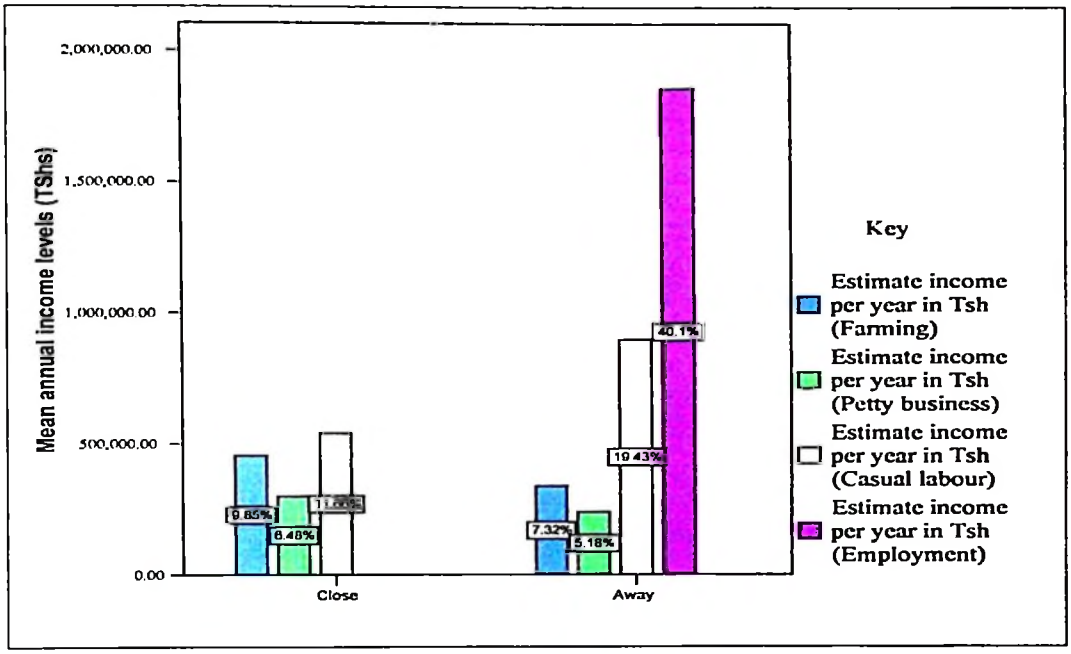


Figure 5: Mean comparison of annual income levels

4.1.10 Assets owned and the wealth status of households

Assets such as land are critical to people's livelihoods and its absence or decline in access to people constitutes an important impoverishing factor (URT, 2007). Ownership of productive assets among households in the area understudy seemed to be low, compromising ability to undertake key activities such as farming. In this study, ownership of assets was used as criteria for estimating the level of household wealth in relation to the influence of GGM to such assets. Information from FGDs indicated that, a household

would be ranked as having high wealth status if it possessed more land, forest reserves and livestock, ox-plough, ox-carts, bicycles, radios, and houses with iron sheet roofs and cement floors. However, ownership of forest reserves and land were found to be with high mean values (44.21%; and 26.54%) for villages close to GGM due to the influence of mining activities with expectations that, any expansion attempt due to GGM operations, could mean compensation for communities around. This was proved to be valid when compared to villages located away from mining activities which recorded low mean values (3.37%; and 13.72%) as shown in Fig. 6.

These results support the findings by Simon (2006), whose study revealed that households were ranked as having high wealth status if they possessed more assets like ox-carts, ox-ploughs, bicycles, radios, houses with iron sheet roofs, cement floors and burnt bricks. Low level of assets ownership was further supported by official data from the HBS 2000/01, which illustrated a slight decrease in the percentage of households that own productive assets since the 1991/92 surveys, in particular agricultural land and livestock.

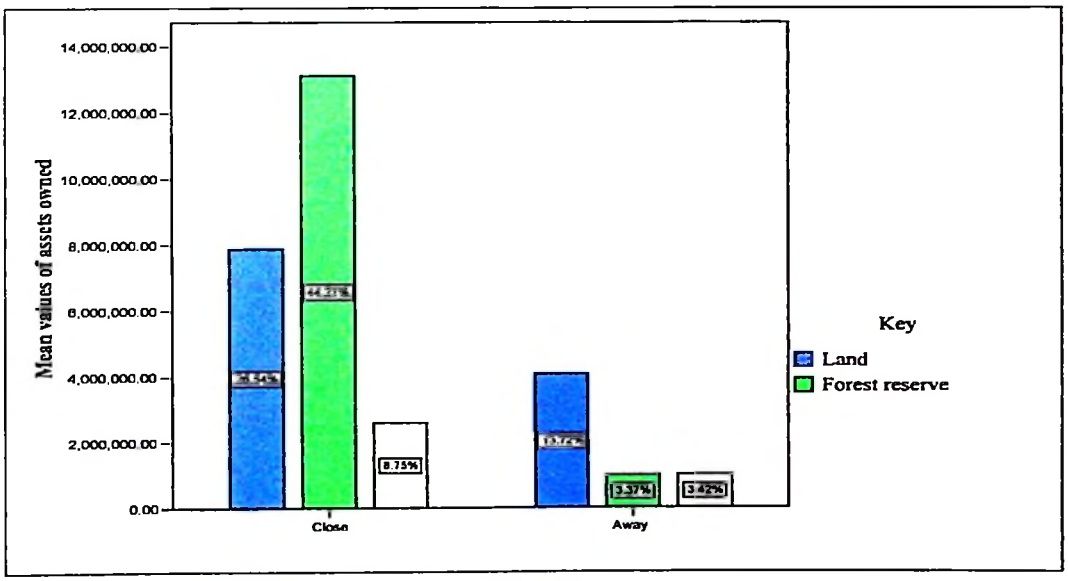


Figure 6: Average value of assets owned (TShs)

This was therefore an indication that, increasing poverty is directly or indirectly associated to asset ownership, and in some cases, the value of the assets being primary (URT, 2004). However, an increased number and range of assets means a lesser amount of susceptibility while fewer assets increase the risk of hardship by diminishing one's social wellbeing.

4.2 The Contribution of GGM to the Livelihoods of Local Communities

4.2.1 The GGM's targets for community development

With respect to the GGM key informants and use of documentary review, the study revealed that GGM have a 10 years plan as from year 2000 -09 in accomplishing goals set for community development. It was further indicated that, the GGM community adheres to Anglo Gold Ashanti's core values one of them being "We strive to form partnerships with host communities, sharing their environments, traditions and values. Communities will be better off for Anglo Gold Ashanti having been there. We will work in an environmentally responsible way" and their twelve safety values; the fifth value also being "the Community must be better off for our having been here". This ensures a surviving ecosystem (GGM, 2008).

Therefore, this sub-section presents a summary of the GGM goals as from year 2000 to 2009 and its accomplishments as by the end of year 2008. This was in efforts to support the improvement of community livelihoods close and away from GGM in various sectors like education, health, water supply and sanitation, roads networks, and environmental management. It was also observed that GGM recognizes that, the host community around was the major stakeholder for GGM's success. The term community was used by GGM to mean all those people who are affected in some ways by the mining activities of GGM (GGM, 2008). In this regard, through FGDs with GGM key informants and documentary

review, the study revealed various goals targeted by GGM to the community in different sectors as discussed below in comparison with the local community perceptions.

4.2.1.1 Education sector

Various studies have documented that the need for support in education has in several cases emerged as a priority concern in recent years in any development agenda (URT, 1997b). Distance to schools and an inadequate number of secondary schools were felt to be more acute in the study area. The driving aim of primary education policy in Tanzania has been to offer every Tanzanian child of school going age (7 years) an opportunity in primary education. Targets for achieving Universal Primary Education (UPE) had been set annually but rarely had been fully realized. The obstacles against target realization had been many and diverse in nature like lack of adequate construction materials and lack of teaching staff (URT, 1997b).

Regarding the discussions with GGM key informants, the study revealed that the main goal targeted by GGM in education sector was to increase enrollment of primary school pupils and meet the accommodation for Secondary schools education in Geita District through construction of classrooms and procurement of educational materials by year 2009. Through this goal as shown in Table 11 GGM has been able to construct 39 classrooms and provision of 46 desks, 4 chairs at Nyakabale primary school; 1Teacher's Office and 3 Classrooms at Nyamalembo primary school; 2 classrooms at Nyawilimwa primary school, 4 classrooms at Nyawmilolelwa primary schools and 8 pit latrines at Mkolani Primary school.

Obviously, GGM has contributed, to some extent, to the community development, despite the aforementioned complaints. In the case of secondary schools, GGM has managed to construct 3 classrooms at kamena secondary school; 4 classrooms and two teachers' houses at Bukwimba Secondary school; 4 classrooms and 1 teacher's house at Katoro secondary school; 6 classrooms at Kamhanga secondary school; 2 classrooms and 2 in 1 teacher's house at Busolwa secondary school; 2 classrooms at kalangalala secondary school; 4 classrooms at Mpomvu secondary school and 2 classrooms, 1 laboratory and 1library for Nyankumbu Girls Secondary school (Table 9).

Table 9: Summary of education facilities supported by GGM as from 2000 to 2008

	Classroom	Teacher's house	Office	Library	Laboratory	Pit latrines	Desks	Table	Chair
Primary School									
Nyakabale	3	-		-	-	-	46	-	4
Nyamalembo	3	-	1	-	-	-	-	-	-
Nyawilimwa	2	-	-	-	-	-	-	-	-
Nyawmilolelwa	4	-	-	-	-	-	-	-	-
Mkolani	-	-	-	-	-	8	-	-	-
Sub-Total	12	-	1	-	-	8	46	-	4
Secondary School									
Kamena	3	-	-	-	-	-	-	-	-
Bukwimba	4	2	-	-	-	-	-	-	-
Katoro	4	1	-	-	-	-	-	-	-
Kamhanga	6		-	-	-	-	-	-	-
Busolwa	2	2	-	-	-	-	-	-	-
Kalangalala	2	-	-	-	-	-	-	-	-
Mpomvu	4	-	-	-	-	-	-	-	-
Nyankumbu	2	-	-	1	1	-	-	-	-
Sub-Total	27	5	-	1		-	-	-	-
Total	39	5	1	1	1	8	46	-	4

4.2.1.2 Health facilities support

People's health status is based on a number of factors, including nutritional status, lifestyle and the cleanliness of the environment (URT, 2007c). In this study, people's overall health status and their perceptions on the availability, quality and costs incurred in accessing basic health services provided either by the state and/or other stakeholders in development preferably GGM were assessed.

As per GGM's key informants and documentary review, the main goal targeted by GGM in health sector was to contribute towards improved health services provision in Geita District. Through this goal, GGM has done the followings: constructed 2 outpatient buildings for Bukoli and Kasamwa health centres, 1operating Theatre at kharumwa health centre; 1 operating Theatre and 1 maternity ward at Geita district hospital, 4 administration blocks to village dispensaries of Katoro, Bukwimba, Kamena and Kamhanga. Rehabilitated 1 mortuary and 1 ward and equipped the operating theatre at Geita district hospital. Also by the end of 2008 about 111 people born with a cleft palate were successfully operated under GGM's sponsorship and in collaboration with Australian specialists from the western Australian Doctors' Mission who performed the operation.

It was revealed further that, GGM has partnership with AMREF/HIV alliance in educating employees and the general community about the HIV/AIDS pandemic. The goal was to provide quality HIV/AIDS services to employees and the community. This was intended to raise awareness on voluntary HIV test to all workers and community at large and providing care and medicines (ARV) work force and families. Through this partnership, free voluntary testing and counseling were offered. However, GGM's report did not show

clearly on the number of people and types of services offered to them. For example, how many people were counseled, tested, and/or given ARVs?

Moreover, through discussions with key informants, the study also revealed that GGM had a goal of implementing internal residual spray to reduce malaria cases in Geita district by 50% and increase awareness of the community and other stakeholders on malaria. However up to the time of this study, GGM has not implemented anything with regard to this goal.

4.2.1.3 Water supply and sanitation

A safe domestic water supply and sanitary conditions are preconditions for health living and avoiding water-borne diseases that kill and incapacitate people. The overall water sector objective is to make available safe, adequate and potable water to all within 400 meters of any household. Although life without water is nearly impossible, life with unsafe water is also very risky. Water borne diseases such as dysentery and cholera can be life threatening. Both these diseases are endemic in the region. Quantity and quality are equally important (URT, 2007c).

According to documentary review and key informants from GGM, the study revealed that there were no goals with regards to water supply and sanitation set by GGM to the community. However, the only information obtained indicated that a 22 kilometer pipeline with 11 off takes freely available to 3 villages along the pipeline has been constructed, 4 holes were drilled in Geita town but only one (1) hole proved successful. Evidences from the study area show serious problems regarding water supply and sanitation. This was due

to the fact that 80% of the study households close to GGM accessed water from traditional water points.

4.2.1.4 Road network services improvement

Transport is an essential service for both economic and non economic activities. Growth in agriculture and industrial production, trade, national political integration, and administrative activities all involve the movement of people, goods and services all of which depend on improved road networks which in turn, facilitate towards improved people's livelihoods (URT, 1997b).

However, in this study, documentary reviews and GGM's key informants revealed that, there were no goals with regards to roads network service set by GGM to the community. The GGM was found working to roads connecting to village around the mines only and influential to its undertakings. That means there are roads connecting GGM activities and not the District Council roads. With this regard, GGM has constructed a 65 kilometers and continues to maintain it to speed up its mining operations.

4.2.1.5 Contribution on household's income

With respect to this aspect, this study discovered that local people were only employed as casual laborers by GGM from villages around. It was observed that, to the time of this research, approximately 150 local people were reported to have been employed by GGM. In addition to that, some agricultural products from communities around were reported to be consumed at the mine site which acted as a market for agricultural products consumed by GGM employees and contractors.

FGDs with GGM key informants indicated further that, household income improvements were also undertaken through 72 economic groups with Poverty Africa, an NGO which operated in Geita district. The NGO turned off for poor misconduct since the community did not participate well and their intentions were to take money from GGM which were not returned. Trainings to Artisanal and Small scale Miners (ASM) through Best Practice Awareness aimed at facilitating best mining activities to ASM so that they could be able to attain a better level of their production goals thus increasing their economic status. However, most of the programmes proposed by GGM were not recognized and appreciated by the community. This indicates that, GGM was not doing enough in its efforts to support the community and/or making the community participate in such projects.

4.2.1.6 Environmental management systems

Field survey discussions with GGM key informants indicated that GGM environmental management was based on the World-class EMS that is in line with ISO 14 001:2004 standards. Under this aspect, t he study revealed that GGM main goal was to ensur e environmental sustainability by rehabilitating the disturbed land through mining activities. To ensure this, GGM was reported to monitor noise and air pollution regularly regarding blasting activities and through blast notice boards available to village around. Also, do conduct water-monitoring activities in collaboration with District government officials to ensure water quality is in standard recommended for use.

The study also observed that rehabilitation has been established by GGM and about 2,326 hectares have been disturbed; most of this in the pits and waste dumps areas. Local communities were reported to be involved in all levels of rehabilitation – from seed collection, seed cleaning and preparation, growing seedlings through to transplantation and

landscape and erosion control. The aim was to promote indigenous trees as an economic resource beyond that of charcoal or timber and to create a sustainable timber industry. Geita supports three local nurseries that produce saplings for transplantation. Two of these nurseries: Bukoli and Geita Town commercial nurseries. The third nursery was developed out of the existing Nyakabale Agro forestry project, which came about as a result of the financial assistance and training provided by the mining company.

4.2.1.7 The GGM and the local community relations

Using documentary review, the study discovered that GGM's aim was to have a positive impact on the people, cultures and communities in which it operates. Accordingly, GGM will be respectful of local and indigenous people, their values, traditions, culture and the environment. It was acknowledged that GGM strived to ensure that surrounding communities are informed on a timely basis about the company's operations and where possible, are involved in developments which affect them, throughout the lifecycle of the operations.

The need to undertake social investment initiatives in the area was essential for a practical and meaningful contribution and this was reported to be among the major concerns by GGM. In particular, the contribution focused on those areas of education and health care which are relevant to the business activities and those most likely to be sustainable once the operations have come to a conclusion in the community.

Furthermore, documentary review and key informants revealed that the company will seek to acquire and use land in a way which promotes the broadest possible consensus among interested people. Where involuntary resettlement is unavoidable, there is a need to abide

by appropriate guidelines for resettlement and the need to work with the local communities in every event is vital for the development of workable plans.

Also, GGM was reported making efforts to contribute to the sustainable economic development of host communities through procurement activities; the contribution of redundant assets to the community; assistance in the establishment and growth of small- to medium-sized sustainable enterprises; and the outsourcing of goods and services from local vendors where appropriate. However, it should be noted here that, most of these good plans were not reflected in the field with exceptions of a few areas like support in education facilities.

4.3 General Assessment of GGM Set Goals for Community Development

In this sub-section, assessment of the GGM goals and its accomplishment has been done to determine the level of contribution made by the GGM to the local communities.

4.3.1 General observation

The goals set by GGM for addressing various community development issues in different sectors as stated earlier in this study were not self- explanatory. This is due to the fact that the goals were not realistic as appeared in activities. For example GGM had a goal of contributing towards improved health status in Geita District, but without definite magnitude as to what extent and time of completion. Realistic goals would be SMART in a sense of being (specific, measurable, attainable, realistic and time bound).

Furthermore, the study also observed that, most of the goals set by GGM for addressing community development issues were on a short-term basis as were annually prepared by

the GGM staff from Community Sustainable Development and Environment Department. This indicates that the GGM was found not that much committed towards improving the livelihoods of the community adjoining the mining.

The study discovered further that, the goals (major activities) were recalled vaguely by the respective key informants interviewed, as those were not available in the GGM documentation. Moreover, the GGM indicated only general activities and not the goals that were measurable (with numbers attached) and accountable (with completion date attached) with some exceptions.

With an exception of education and health sectors in which there were some general goals, for example the main goal targeted by GGM in education sector was to increase enrollment of primary school pupils and meet the accommodation for Secondary schools education in Geita District through construction of classrooms and procurement of educational materials by year 2009 and in health sector, the main goal targeted by GGM was to contribute towards improved health services provision in Geita District. The rest of the sectors of water, roads and environment had no clearly defined goals to support the community.

Even those plans which were set were too vague for one to asses and determine their levels of fulfillment. For example, a good goal and measurable would be: Construction of 200 classrooms, 34 teachers' houses and 50 pit latrines for 6 primary schools in two villages of Nyakabale and Nyamalembo by year 2008.

For example, goal accomplishment would be; Up to the end of 2008, 120 classrooms, 42 teachers' houses and 40 pit latrines have been constructed to completion. 20 classrooms

and 10 pit latrines are on progress. The GGM constructed more teachers' houses due to the fact that, there were additional funds provided by the government on the same activity (or there were high demands of teachers' houses and therefore the decision to allocate funds for construction was taken). Therefore, since some of important elements were missing to enable the researcher assess them; it was not easy for GGM to attain its goals and sustainability as some were not clear and some were not even set as discussed earlier in terms of the magnitude of attainment within a specified time limit.

The measurement and time set to attain such goals could automatically motivate the GGM to struggle in achieving such measurement within a specified time set by the company. In this way, the reputation of GGM would automatically be attained and accepted by the surrounding communities thereby creating good social relationship.

4.3.2 Goals accomplishment and community participation

Through focus group discussion with key informants, (Local Government leaders) the study revealed that, most of the GGM goals were not accomplished despite long time GGM operations in the area. However, one GGM staff interviewed was quoted saying;

"Most of goals have been attained, but we look further to commit ourselves into sustainable projects that are vital for social and economic development not only for Geita residents but our country as well. GGM normally has a 10 years plan in accomplishing goals set for community development; On top of that we adhere to MDGs plan and Tanzania vision 2025".

Based on field survey observation, documentary review and discussions with GGM key informants, the study discovered that most of the goals were not met due to the fact that, such goals required community participation, which was at a very minimal rate and sometimes not available at all. GGM planning processes were found not participatory with the targeted communities or beneficiaries; as a result of this, the entire community was not aware of what GGM was doing. The community seemed not participating to its activities as GGM was implementing activities which appeared not on the top priorities of the community hence, the implication of the importance of participatory approach.

However, with respect to the discussion with GGM key informants, GGM also complained against the acknowledged community's negative perception for what GGM was doing for the community. As one staff from GGM quoted saying that;

"We have a lot committed to do to the community close to us. However, we cannot accomplish every individual need; we work for sustainable projects of which they will be beneficial to the community once the mine is closed. For sure, it is not known to most of local people even educated ones here at Geita what GGM is doing to the community around us. There is high expectation to people around here and everyone needs to either be employed by GGM or GGM give him/her something. Look at the multiplier effect for GGM being here".

Based on this quotation, the question is: why didn't the local community know the works done by the GGM, including the educated ones? The study discovered further that, GGM has adopted the AngloGold Ashanti's core community value, which states that;

"The GGM strives to form partnership with host communities sharing their environments, traditions and values. It wants the community to be better off for GGM having been there. It was reported that, GGM was committed to working in an environmentally responsible way as it tried to promote socio-economic development within its host communities without creating dependence syndrome. This is a three-pronged approach, through engagement, capacity building and partnership building. Through these three pronged the GGM will be able to reach its goal by ensuring that the GGM social license is retained"

However, the community reacted that there were surprise trainings conducted by GGM. GGM seemed to rely mainly on the district, regional and national officials, a situation, which has generated negative relationship between the community and GGM. District officials in collaboration made decisions for the community, which were required to be made between GGM and the community.

Sometime, decisions were made between the village government leaders and GGM on behalf of the community without the community itself being aware. As result, the community remains complaining against GGM without any help. For example the issues related to expansion of GGM operation activities (compensation, loss of land), disposal of waste products (Diseases, water pollution, soil pollution) and noise pollution (cracks in buildings, ears diseases, respiratory diseases) and blasting were among the major problems of concern by the community. This signifies the reality that, to a large extent most of the GGM goals were only on written papers as plans but do not reach the targeted community and if they reached the community, it was through a top-down approach.

These findings agree with Msoka (2007) who asserted that 79% of the respondents were complaining that, the quality of water supply was worse and not safe for human consumption primarily due to GGM mining activities.

4.4 Community Perceptions on the Contribution of GGM to their Livelihoods

4.4.1 Contribution of GGM to socio-economic development of local communities

The socio-economic contributions of GGM to the local communities' livelihoods were determined through water supply and sanitation, education services, health services, and road networks services availability, quality and accessibility as a result of GGM supports.

4.4.1.1 Provision of education facilities

The findings obtained from respondents as shown in Table 10 indicate that, villages away from GGM had maximum number of 4 and minimum of 1pre-primary schools with an average of 1.6 schools compared to a maximum and minimum of 1 pre-primary school with an average of 1 school in villages close to GGM. In case of primary schools, villages away from GGM had maximum of 5 and minimum of 1 with an average of 1.6 schools compared to a maximum and minimum of 1 with an average of 1primary Schools in villages close to GGM.

With regard to secondary schools, both villages away and close to GGM were found with relatively no difference as villages away had a maximum of 2 and minimum of 1 compared to a maximum and minimum of 1secondary schools in villages close to GGM. The implication of these results was that, there was less average number of schools in villages adjoining the GGM compared to those who were away from GGM. However, statistical

analysis indicated further that, there was no significant difference of average number of schools between close and villages away from GGM at (P<0.01).

Table 10: Average number of schools to villages close and away from GGM

Variable	Villages			
	Close to GGM (N=60)	Away to GGM (N=60)	t	Sig
Pre-Primary School				
Average	1	1.6		
Std. deviation	0	1.2		
Minimum	1	1.0	3.956	.000
Maximum	1	4.0		
Primary School				
Average	1	1.6		
Std. deviation	0	1.3		
Minimum	1	1.0	4.245	.000
Maximum	1	5.0		
Secondary School				
Average	1	1.0		
Std. deviation	0	.19		
Minimum	1	1.0	**18.616**	.000
Maximum	1	2.0		

Furthermore, as shown in Table 11 the study revealed that majority of the respondents from villages close to GGM reported that the GGM had not contributed both in pre-primary (95%), primary (85%) and secondary (65%) schools development. It was the same in villages away from GGM as 98.3%, 96.7% and 85% of respondents reported that the GGM had not contributed in pre-primary, primary and secondary schools development respectively.

Table 11: Respondents' opinion on the contribution of GGM in education sector

Opinion	Close to GGM (N=60)		Away to GGM (N=60)	
	Contributed	Not contributed	Contributed	Not contributed
Pre-Primary School	5.0	95.0	1.7	98.3
Primary School	15.0	85.0	3.3	96.7
Secondary School	35.0	65.0	15.0	85.0

These results indicate that, there were fewer supports provided by GGM towards construction of pre- primary, primary and secondary schools for villages close and away from GGM. However, these results were contrary to those of Msoka (2007) who in his study revealed, that there was significant contribution of the GGM in education sector. However, at the same time, he reported that villages like Kalangalala and Bugulula, which were also situated near GGM, did not acknowledge any contribution by GGM in the respective sector.

4.4.1.2 Provision of health facilities

Results in Table 12 shows that, majority (83.3%) of the respondents from villages close to GGM compared to 55% of those who are away from GGM reported to get their health services from government health institutions while 45% of the respondents from villages away and 16.7% close to GGM reported to get their health services from private health institutions and none of respondents from both villages close and away to GGM reported to access their health services from GGM. This implies that the presence of GGM did not contribute significantly on health service provision especially those who were close to the mine. As a result, the local communities were highly dependent on accessing health services from Government institutions. These results support the observations by Msoka (2007) who did a study on the impact of large scale mining on the local communities'

social services revealed that health services supported by GGM in Geita were not satisfying the needs of local communities.

Table 12: Responses on preferences of health institution

	Villages			
	Close to GGM		Away to GGM	
Preferences of health institution	Frequency	Percent	Frequency	Percent
Government health institutions	50	83.3	33	55.0
GGM health centre	0	0.0	0	0.0
Other private health institutions	10	16.7	27	45.0
Total	**60**	**100.0**	**60**	**100.0**

From FGDs with key informants, the study indicated that, although the GGM was having a health center situated within the mines, people could not access it due to rules, regulations and procedures for entering in the mining areas which were not favorable to the local people. Due to this situation, most households opted for governmental health institutions for services. These were mentioned easily reached and the costs were affordable as compared to that of GGM.

However, from FGD the study also revealed that, despite preferences of the people to governmental health institutions, there were challenges of long distance to access such services. The situation was revealed by key informants as more critical especially during emergence. During this time, villagers would often transport the patients on an improvised stretcher ('machela') laid across a bicycle, to the health center often to Geita town with an

estimate of 40 km. This was especially critical for households close to GGM following the blockage of their shortcut way of about 5km to Geita town.

4.4.1.3 Support for water supply and sanitation projects

The obtained findings of this study shows that, majority (80%) of respondents from villages close to GGM were depending on traditional water points as the main sources of water for daily use compared to only 48.4% of respondents away to GGM. About 28.3% and 13.4% of respondents away and close to GGM respectively depended on shallow wells as their main sources of water. 20% of respondents away and none from villages close to GGM were depending on tape water while 3.3% and none of respondents from villages close and away to GGM respectively were accessing water from rivers (Table 13).

Plate 1: A woman close to GGM washing her clothes in a river

These results imply that, households close to GGM were at risk of getting waterborne diseases compared to those who were away from GGM. These results support the findings by the study on the views of the people, which indicated between 80% and 90% of the

respondent's access their drinking water from community or neighbors' water points (URT, 2007d). It was further revealed through FGDs that, water pollution was a serious problem to the extent that, the District authority has warned people in Geita town and all those from households close to GGM (Nyakabale and Nyamalembo) on the use of harvested rain water. This was due to the fact that such water were reported not safe for domestic use like drinking and cooking since there was great possibilities that such water have been contaminated through mining operations undertaken by GGM.

Table 13: Household's main sources of water

Variable	Villages			
	Close to GGM		Away to GGM	
Main sources of water	Frequency	Percent	Frequency	Percent
Traditional wells	48	80.0	29	48.4
Ponds	2	3.3	2	3.3
Rivers	2	3.3	0	0.0
Shallow wells	8	13.4	17	28.3
Tape water	0	0.0	12	20.0
Total	**60**	**100.0**	**60**	**100.0**

The study also revealed that, both respondents from villages away (95%) and close (90%) to GGM were taking time above 30 minutes to collect water for domestic uses. This has an implication on time spent in households' economic activities as more time was spent for collecting water especially in villages away from GGM. It has been reported by URT (2007) that, the appropriate time required for households' members to collect drinking water from improved source is 30 minutes as per MKUKUTA. This is a new dimension to measurement of adequate water coverage. However, respondents from villages close (63.3%) and away (60%) to GGM reported that, regardless of the long distance, the supply

of water was not adequate for daily needs. Both villages close (86.7%) and away (56.7%) were accessing such water from main sources which were not safe for human consumption (Table 14).

Plate 2: A young boy fetching water from a traditional well in Nyamalembo village

Furthermore, the study revealed that less support in water sector has been provided by GGM to the local communities as 95% of respondents from households close and 93.3% respondents away from GGM reported that there was no any water project supported by the GGM. Indeed, from FGDs, the study revealed that, most people saw more deterioration rather than improvement in water supply, safety, and costs incurred for water. This situation becomes even critical during dry season especially for households close to GGM as compared to those households away.

Table 14: Respondents' opinion on access to water supply for domestic uses

Opinion	Responses (%)			
	Villages close to GGM		Villages away from GGM	
	Yes	No	Yes	No
Take 30 minutes to collect water from the source	10.0	90.0	5.0	95.0
The supply of water adequate for daily needs	36.7	63.3	40.0	60.0
Water from the main source safe for human consumption	13.3	86.7	43.3	56.7
Presence of water project supported by GGM	5.0	95.0	4.7	95.3

4.4.1.4 Distance to water sources before and after GGM

Results in Table 15 indicated that majority of the respondents estimated the distance to water sources before GGM and distance covered after GGM investment ranged from a maximum of 4 kilometers for close with an average of 2kilometers. Villages away from GGM constituted maximum of 25 kilometers with an average of 14 kilometer before GGM respectively. Results indicated further that, there was no significant difference of average distance to sources of water before and after GGM investment at $P<0.05$. This implies that, the presence of GGM to both close and away from GGM had not impacted them positively but rather there has been an increase in distance thereby increasing the burden to communities near GGM.

URT (2007d) revealed that distance limit people's access to potential social services, which according to the 2000/01 household Budget Survey, nearly half a million households were estimated to live more than 20 kilometers from the nearest dispensary or

health center. More than 2 million households live further than 6 kilometers from the closest clean water source during the dry season and more than 2 million households live more than 6 kilometers from the nearest primary school (URT, 2004). This statistical information supports the findings of this study.

Table 15: Distance to water sources before and after GGM

Village	Distance (km)			
	Before GGM	After GGM	t	Sg
Close to GGM(N=60)				
Average	1.2	2.2		
Std. deviation	1.1	1.3		
Minimum	0.05	0.15	4.523	.000
Maximum	4.0	4.0		
Away to GGM(N=60)				
Average	14.2	14.1		
Std. deviation	12.2	12.3		
Minimum	0.1	0.1	1.000	.329
Maximum	25.0	25.0		

4.4.1.5 Distance to health services institutions before and after GGM

Under this aspect, respondents were also asked to estimate the distance to health centers before and after GGM investment. The responses indicated increased distance ranging from a minimum of 3 kilometers and maximum of 35 to 45 kilometers with an average of 9 to 13 kilometers before and after GGM to households close to mineral resources. This was due to the fact that the shortcut way to Geita town hospital was blocked by GGM from 5km covered before to 45 kilometers after investment. Households away from GGM had a minimum of 1km before and after and a maximum of 25 kilometers to 31km with an average of 5 to 6 kilometers before and after GGM investment respectively.

Furthermore, the study revealed further that there was no significant difference of average distance to health centers before and after GGM investment at P>0.05 as shown in Table 16. There was none in case of the use of water tapes for villages close to mine and 20.3% for communities away from GGM used water tape partly due to development support given by other non-governmental organizations (NGOs). These were namely World Vision International and Plan International. The trend of these results suggests that, GGM has not significantly contributed to the improvements of local communities' livelihoods. This implied that GGM activities have negative impact to the quality of water sources used by nearby communities.

Table 16: Respondent's distance to health service institutions before and after GGM

Village	Distance (km)			
	Before GGM	After GGM	t	Sig
Close to GGM(N=60)				
Average	9.6	13.8		
Std. deviation	10.6	14.5		
Minimum	3.0	3.0	2.460	.018
Maximum	35.0	45.0		
Away to GGM(N=60)				
Average	5.9	6.9		
Std. deviation	5.7	7.5		
Minimum	1.0	1.0	1.000	.327
Maximum	25.0	31.0		

4.4.1.6 Improvements of road network services

With respect to FGDs with key informants (Village leaders and district officials) the study revealed that, the conditions of roads connecting villages understudy were poor due to lack of maintenance and thus were a major area of concern. In the study area, respondents were

also asked to indicate the main type of roads connecting their villages both close and away to mineral wealth. It was found out that, 100% of roads connecting villages close to mineral resources were solely at the level of gravel while 73.3% for villages away from GGM (Table 17).

Table 17: Type of road connecting villages and the mine

Variable	Villages			
Road type	Close to GGM		Away to GGM	
	Frequency	Percent	Frequency	Percent
Gravel	60	100.0	44	73.3
Tarmac	0	0.0	16	26.7
Total	60	100.0	60	100.0

When respondents were asked to give their opinion on the construction and maintenance of the roads, 78.3% of villages away to mine reported on the Government and 40% for villages close to GGM. Villages close to it by 25% only recognized the support by GGM where as the role of the community was highly appreciated in both, close 35% and away 20% respectively. The findings contained in Table 18 revealed that, improvements of infrastructures connecting mining areas were not meant for the wellbeing of local people but rather to hasten the smooth operations of GGM.

A study by George (2003) supports these results, which reported only 20% of the respondents, acknowledged on the contribution by mining companies to the development of road networks, water supply and school construction. The persistence of this situation could significantly be attributed by the Tanzania mineral policy, which lack clearly defined agreements on the contribution from mining revenues to local communities in terms of infrastructural development by mining companies as part of their social obligations.

Table 18: Support for the construction of gravel roads in villages

Variable	Villages			
Construction support	Close to GGM		Away to GGM	
	Frequency	Percent	Frequency	Percent
Graveled Road				
GGM	15	25.0	1	1.7
Government	24	40.0	47	78.3
Community	21	35.0	12	20.0
Total	**60**	**100.0**	**60**	**100.0**

These findings were also supported by the results contained in the report of the views of the people (URT, 2007c). It revealed that 70% of the rural respondents considered the conditions of the roads a major problem of concern. 47% reported deterioration while 26% reported no change and 28% reported slight improvement. Half of the rural respondents pointed out that due to poor roads; they have difficulties in reaching markets and accessing services in towns, as a result of the poor condition of rural roads, rural economic growth is constrained.

4.4.2 Effects of GGM activities on environmental assets and remedial efforts

With respect to FGDs with key informants (Village leaders and district officials), the study came up with findings which contradicts with the GGM's remedial measures reported earlier in this study. It was for example revealed that, the rehabilitation programmes undertaken by GGM does not relate to the destruction done to their original/natural forests. However, it was difficult for the respondents to estimate the costs incurred due the loss of the natural forests due to mining activities.

FGDs revealed further that, surface mining activities of GGM in an areas that has traditionally lived with only open pits mining activities, have created serious negative environmental problems such as vibration from blasting which affect their safety, health, buildings and other property; noise pollution; dust pollution; and vehicular traffic. In the study area, communities complained on lack of access to farmlands due to the operations undertaken by GGM since the concessions of GGM have taken lands hitherto used for farming operated under open pits.

Through focus group discussion, one respondent was quoted and he said;

"Since the arrival of large mining companies (GGM), individual small scale mining has dramatically declined. Villagers have lost their land, jobs and are now facing issues of overcrowding and conflict with new groups of people flowing into their communities. The social and environmental conditions have deteriorated dramatically since the GGM mining activities started. Indiscriminate logging and illegal activities such as prostitution, and robbery have increased as a result of high influx of foreign people looking for jobs in the district and the living cost have increased tremendously as well".

Plate 3: One of the open pits in which gold is extracted at GGM

Moreover, FGDs of this study indicated that, natural resources degradation in the study area is accelerating and affecting the viability of rural livelihoods in ways that people have not previously experienced. It was also reported to limit their capacity to diversify since alternative rural enterprises tend to depend on local natural capital. In this study, natural capital refers to the land, water, and living things such as pastures and forests that people use to meet their productive and other needs like cooking and building. These are sometimes called environmental resources upon which rural livelihoods depends.

Plate 4: An indication of deforestation due to expansion of GGM mining activities

In a discussion with key informants (Village leaders and district officials), this study revealed further that most of the community members close to GGM suffer adversely from the intensive blasting and activities of the company. Many inhabitants have had their personal and landed properties damaged through blasting and the situation was becoming intolerable.

These findings support the study by Kitula (2006) who reported 52 cases of collapsing of buildings to villages near the mine were reported by local people due to cracking (fractures) and collapsing of houses as a result explosions by mine and Nyakabale and Nyamalembo primary schools were the most victims of all these problems. These results imply that both close and away communities were aware of the seriousness of the problem of deforestation in their respective areas. Based on the findings of this study, Air pollution was reported as more acute problem by 46.7%, and 38.3% for Water pollution (Table 19).

Table 19: Respondents' views on the most polluted areas by GGM

Variable	Villages			
	Close to GGM		Away to GGM	
Polluted area	Frequency	Percent	Frequency	Percent
Air	12	20.0	16	26.7
Land	12	20.0	12	20.0
Water	12	20.0	11	18.3
Noise	13	21.7	11	18.3
Forest resource	11	18.3	10	16.7
Total	**60**	**100.0**	**60**	**100.0**

Similar observation was revealed in the study by Msoka (2007) that, 69% of the respondents acknowledged that, open cast methods used by mining to excavate minerals were severely destroying the forest reserve in the areas close to mines by removing trees during excavation process. Rhett (2007) also revealed similar observation that, large-scale mining operations in Peru, particularly those using open pit mining techniques like GGM, resulted into significant deforestation through forest clearing and construction of roads.

The study by Makweba and Ndonde (1996) indicated further that, the impact of dust pollution to most of miners and local communities adjoining mines is on health issues associated with chest pain and eye problems. This observation is further supported by observation made by Akabzaa (2000) noted that, in many tropical areas, mining was a major cause of deforestation and forest degradation thereby generating a large number of social and environmental impacts. In Zambia, the majority of rural and poor people lack potable water and their most likely water sources are streams and rivers. Heavy metal effluents discharged into rivers on which people depend for drinking water are a risk to both human and animal health (Simutanyi, 2008).

However, it is pertinent to note here that experience from other countries shows a contrary situation. The study by Mcmahon and Remy (2001) reported that environmental management practices in Bolivia were based on principles of zero discharge and systematic monitoring. The zero discharge principle means that effluents are not discharged from the production process. Ore is crushed, milled and put in solution, then circulated from water tanks to the processing plant and back. Sterile solids from the plant are pumped to the tailings dam where they are separated from liquids by gravity.

The water from the dam is recycled back to the plant. In this way, water loss occurs only through evaporation. The effectiveness of this process depends on the stability and impermeability of the tailings dam. The materials used in the dam's construction are the solids that remain after the mining process, and because of this region's climatic and ecological characteristics, these have a high natural capacity for revegetation and regrowth. This implies that, when natural resources are no longer adequate to support ways of making a living, people utilize their assets including human capital, physical and financial

capital to diversify into new income generating activities and poor households are more vulnerable to impoverishment because they lack essential enabling assets (URT, 2007d). Air, water and ground pollution in the areas understudy were affecting peoples' health and livelihoods generally and the significant sources of pollution being mining affluents. Environmental shocks and stresses have been reported to threaten people's health and capacity to sustain their households in which problems like water pollution and deforestation affect harvests and herds respectively.

At the national level, these issues have also been addressed in the 1997 national environmental policy, which identified land degradation, environmental pollution, deterioration of aquatic systems, deforestation, lack of accessible good quality water and loss of wildlife habitats and biodiversity as areas for priority action (URT, 1997a). URT (2007c) indicated that more than 75% of Tanzanian's population lives in rural areas where their livelihoods rely almost entirely on the direct utilization and/or transformation of local natural capital (URT, 2004).

For instance, farmers depend on soil and water to produce crops, livestock keepers use pastures and water to raise herds. The findings of this study revealed that, 61.5% and 77.8% for villages close and away reported that mining operations had resulted in increased incidence of diseases. HIV/AIDS cases were reported by key informants at 100% as the major problem of concern in the study area and skin rashes due to the presence of GGM. In the discussions with key informants, Medical experts indicated that there was a link between the occurrence of these incidences and the presence of mining activities that were taking place in the areas close to GGM.

Plate 5: A person with skin rashes suspected to have been caused by polluted water due to GGM's mining activities

4.4.2.1 Effects on women

Using FGDs with key informants (village leaders and district officials) and documentary review, the study revealed that compensation regimes do not take into account the specific interests of women concerning loss of livelihoods for women. Women were reported to have a responsibility to take care of sick people in families. This relates to care for people living with HIV/AIDS, malaria, respiratory tract diseases and general loss of livelihoods with no alternative land/viable alternative income activities. This leads to worsening poverty in mining communities, and increased school dropout rate in mining communities.

Women key informants reported further that, when you have environmental damage done to oceans, rivers and jungles, it affects families. Women often experience the direct and indirect consequences of mining in different and often more pronounced ways than men do. For example, the payment of compensation and royalties to men 'on behalf of families and communities denies women access to and control over the financial benefits of mining.

This encourages women's economic dependence on men, disempowering them and may exacerbate existing inequalities. The effects of environmental damage can undermine women's capacity to provide food and clean water for their families, and subsequently lead to an increase in their workload such as having to walk greater distances to access water, fuel/wood, forest products and land to plant food crops.

Plate 6: A woman fetching water in traditional well in Nyakabale village

In the study area, women also faced a 1-hour walk and/or more through the jungle to find clean water – alternatively, they use water they do not consider clean and therefore use less with negative consequences for health and hygiene. They also revealed that, when children get sick, due to pollution of water ways or air pollution. It was women who were responsible for their care including travelling long distances to get proper treatment. Taking care of sick children adds to women's workloads. As men gain employment in mines, there have been cases of withdrawal of male labor from traditional subsistence activities. This results in an increased work burden for women, who become exclusively responsible for subsistence activities and providing for families.

Plate 7: Women in a thick forest looking for water in Nyakabale village

Table 20 below summarizes the responses of respondents regarding their comments on people's demands from foreign investors in which cases of compensation was high by 54% to communities near the mine while 56.1% was high for respondents away from GGM demanding quality water supply followed by health services 18.9% and 14.6% close and away communities. 8.1% were in need of more schools for communities close to GGM twice as much of 19.5% of villages away from mines. Statistical test revealed no significant difference between close and away at $P > 0.05$ with values ($t = 1.231$ Sign = 0.246).

The study by Hill (2008) indicated that, due to the decline of traditional mechanisms of social control and the high influx of short-lived male workforce in the mine, social and health problems have become more prevalent in such communities. Such problems were such as prostitution; sexually transmitted infections and HIV/AIDS were on the increase.

Similar observations that were reported in the study by Kitula (2006) in Geita District indicated clearly that, mining has had socio-cultural impacts. These include displacement and unemployment, child labor, accidents, and theft. The opening of the Geita Gold Mine has resulted in high influxes of migrants in search of jobs. This, in turn, has resulted in prostitution, increased incidences of banditry, changes to indigenous lifestyle, and increased competition among local residents for natural resources. Mineral exploitation involves the appropriation of lands from indigenous people and massive displacement of settlements. In rural communities, locals depend on the land as a source of livelihood (Frost *at el.*, 2007). Profound conflicts among mineral stakeholders suggest that there is a weak or inadequate enforcement of natural resources policies in Tanzania. Environmental pollution was identified as a major problem in the mining areas of Geita District.

Table 20: Attitude of respondents on their demands from GGM

Variable	Villages			
	Close to GGM		Away to GGM	
Community Demand	Frequency	Percent	Frequency	Percent
Reduce pollution	6	10.0	1	1.7
Need compensation	15	25.0	8	13.3
Need more schools	5	8.3	10	16.7
Need health services	13	21.7	6	10.0
Improve road network	1	1.7	18	30.0
Clean and safe drinking water	20	33.3	17	28.3
Total	**60**	**100.0**	**60**	**100.0**

4.4.3 Contribution of GGM to household's income generating activities

4.4.3.1 Provision of employment and training opportunities to local people

With regard to this aspect, respondents were asked on whether GGM was contributing towards increased household's income to the local communities. As shown in Table 21 the study revealed that there were insignificant contributions provided by GGM towards increased household income to the adjacent local communities as majority of the respondents close (98.7%) and away (100%) from GGM did not acknowledge the contribution of GGM in terms of full time employment opportunities, and 91.7% of the respondents close and 100% respondents away the GGM reported that there were no casual labor opportunities offered by GGM to the local people.

Furthermore, the study revealed that, although GGM involved itself in providing support to the local community in terms of agricultural implements and emergence relief support, majority of the respondents did not acknowledged such supports as 80% and 76.7% of the respondents close and 99% and 97.6% away did not benefit from agricultural implements and emergence relief support respectively. One of the reasons given was that, the supports provided were negligible and were only to very few people.

The study also observed that, only 5% for those who were close and none for communities away to GGM admitted to receive funds in terms of donation and grants through IGAs such as Nyakabale agroforestry and a microfinance credit scheme granted by GGM. However, trainings on various skills with the aim of improving household's crop production and efficiency provided by GGM to the local people were reported by only 5% of the respondents close and none for villages away to GGM. These results imply that there

were less direct efforts the GGM had made towards improving the households income of the local communities adjacent the mining.

On the other hand, with regard to the Market services, the study revealed that improvement of community livelihoods could also be enhanced through spillover effects due to the presence of GGM. However, this was not the cases since there was a little contribution to household's income in which 42% for close and 36% for communities away from GGM reported that, wages earned by GGM employees were partly spent on goods and services produced by local people thereby contributing to their household's income. For example, FGDs revealed that in the mines in the district, even consumable goods such as vegetables, fruits, meats, milk, and fish were imported from South Africa.

Table 21: Respondents' views on the contribution of GGM to household's income

View	Close to GGM		Away to GGM	
	Yes	No	Yes	No
Full time employment	1.3	98.7	0.0	100.0
Casual labor	8.3	91.7	0.0	100.0
Agricultural inputs and implements	20.0	80.0	1.0	99.0
Emergence relief support	23.3	76.7	2.4	97.6
Provision of donation and grants to IGAs groups	5.0	95.0	0.0	100.0
Provide credit to local people	0.0	100.0	0.0	100.0
Trainings on various skills aimed at improving production at household level	5.0	95.0	1.3	98.7
Market for local people	42	58	36	64.0

4.4.3.2 The economic conditions and food security situation

FGDs of the study found out that, there was an increase in poverty levels among the household adjacent to GGM compared to those who were away. The determinant of this situation was due to the fact that, the numbers of meals received per day were much more less to the households close compared to those away from GGM. This was evidenced by the fact that, about 10% of households close to GGM consumed one meal per day and none of households away from GGM were subject to one meal. About 70% of respondents close to GGM and 58.3% for households away ate two meals per day. The results indicated further that, 41.7% of households away were able to consume three meals per day and only 20% for households close to GGM (Table 22).

Table 22: Household's number of meals taken per day

Variable	Villages			
	Close to GGM		Away to GGM	
Number of meals	Frequency	Percent	Frequency	Percent
1	6	10.0	0	0.0
2	42	70.0	35	58.3
3	12	20.0	25	41.7
Total	**60**	**100.0**	**60**	**100.0**

However, as shown in Table 23 below, there was no significant difference in nutritional and energy consumption level in all compared cases of households (carbohydrate and protein intake) at $P>0.05$.

Table 23: Household's nutritional and energy consumption level taken per day

Variable	Villages			
Food intake per day	Close to GGM (N=60)	Away to GGM (N=60)	t	Sig
Protein				
Average	1.6	11.4		
Std. deviation	0.96	0.7		
Minimum	0.5	0.5	0.84	.405
Maximum	5.0	4.0		
Average household's members	7.0	2.0		
Average protein taken per person per day	0.22	0.20		
Number of meals per day	2.0	2.0		
Carbohydrate intake				
Average	4.0	4.0		
Std. deviation	3.0	3.0		
Minimum	1.0	0.75	0.74	.462
Maximum	20.0	13.0		
Average household's members	7.0	7.0		
Average carbohydrate taken per person per day	0.6	0.6		
Number of meals	2.0	2.0		

According to the results contained in the report on the views of the people indicated that, on a normal basis, three-quarters of Dar es Salaam respondents, 78% ate three meals per day compared to two-thirds, 64% of the respondents in other urban areas and 55% in rural areas (URT, 2007c). This implies that, poverty is not just about whether someone lacks money in his/her pocket, but rather it refers to a lack of material goods such as food and

shelter, and also to ill health, social isolation, insecurity, powerlessness and hopelessness below a socially defined minimum level of wellbeing. Households close to GGM had greater possibility of becoming more vulnerable to the degree that they might be poorer than they were to the time of this study by experiencing a decline in their wellbeing below a minimum level in future.

Plate 8: Life and house status for some households close to GGM

According to the study by Kitula (2006) on small scale mining revealed that, income from agriculture and mining in small scale mining and non mining communities, respectively, average household income from mining was US$361.47 and US$15.04, and US$88.32 and US$358.89 from agriculture in which a complementary relationship existed between agriculture and mining within the study area. The study indicated further that, approximately 66% and 3% of average household income in mining and non-mining communities, respectively, is derived from mining. On the other hand, agriculture contributes 16% and 75% to total household income in surveyed mining and non-mining regions, respectively. The results suggested that while local people employed in mining

obtained direct income as mining wages, non-miners increased their income through different socioeconomic activities, including sales from food crops and menial business activities.

This was generally an indication that, agriculture continues to act as the mainstay of the economy of the rural population (URT, 2006). However, these results are parallel to those from other Artisanal small scale mining regions, such as those within Bolivia, where McMahon and Remy (2001) reported that wages earned by employees at mining operations are spent on goods and services produced by local people, which, in turn, increases the incomes of adjacent local populations.

4.4.4 Social relationship between GGM and adjoining communities

The discussions with GGM key informants indicated that, they work closely with local communities and district authorities in the formulation and implementation of development projects. All development projects rely on the adoption of a participatory approach to ensure sustainability. However, community perception on the existed social relationship between GGM and the community was reported negative by over 95%. This was much more attributed by the negative effects of problems generated by mining activities of GGM.

These were the problems emanating from blasting; land issues and nonpayment of compensation for land; forced evictions leading to displacement of communities and disintegration of families. These were reported as the major problems of concern in all villages understudy especially those who were close to GGM. As a result, these problems

were generally detrimental to peoples' livelihoods, the situation which culminated into the existed negative social relationships.

Using FGDs and documentary review, the study revealed further that, conflicts emanating from mining areas also occurred due to the negative impacts generated by mining activities since mineral prospecting requires access to large areas of land. Field observation indicated that, about 89 families were displaced from *mine mpya* and left without suitable settlements. It was observed that, security and safety had been affected because of fear due to frequent blasting; buildings weakened, and increased incidences of theft cases. Pollution which leads to food stuffs being poisoned, increased cost of living, and lack of health facilities. This was reported more critical for households from Nyakabale and Nyamalembo.

Plate 9: A woman from displaced families due to GGM activities in Geita

These findings support the study by Chan (2004) who also revealed similar observations that, the destruction of the environment will always have some sort of impact on humans. It was revealed further that, the boom of mining has adversely affected and permanently

changed local communities. When gold mining companies arrived, Burmese people from all over the country began moving to Kachin State in search of earning an income, a situation which caused over-crowding, increasing commodities price and shortage of enough food, land disputes, changed behavior among native residents, loss of traditional lifestyles and hence, increased conflicts leading to the existence of a negative social relationship.

She further explained for example that,

"Environmental damage has direct effects on the environment of a series of human rights, such as the right to life, to health, to a satisfactory standard of living ...Conversely, human rights violations ... damage the environment which in turn, creates a negative social relationship."

4.4.4.1 GGM and community participation in development projects

From FGDs with GGM key informants and documentary review, this study revealed that community participation is one of the GGM's key elements in facilitating community sustainable development. However, as one of the key informants was quoted and he said;

"Although community participation is one of our key elements in facilitating community sustainable development but mind you, most of communities within our country do not provide enough contribution to investors. This is from Government level to down level. It is hard to make things happen if the policies within our country do not provide enough room for all people to participate in development.

Talking about Geita community, they don't understand and accept what GGM is doing for community development. Every individual wants him/her self to benefits from the company being here. Mind you, the community participation is very minimal due to the poor perception of community around here. With less they have, we used to give them chances to contribute ideas or anything that will be vital. But awareness done for them is necessary for the implementation of community sustainable Development projects''.

From the above quoted words, it was clear that the participation of the community to development projects set for them by GGM was minimal. This situation was similar to what was observed directly during field survey. It was also evidenced by the observed negative perception and attitude by the community towards the presence of GGM in the district, the situation that was clearly recognized by GGM officials.

CHAPTER FIVE

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The conclusions have been reached based on the findings obtained with respect to the views from GGM staff; FGDs with village leaders; district officials and personal observation. The views were compared with the findings on the perception of the local community regarding GGM development support. Hence, the following conclusions were made from this study. The effects of GGM contributions to the livelihoods of local communities are complex and sometimes unclear as to what precisely were GGM's true benefits to the surrounding communities. This was due to the fact that, there were mixing results or contradicting information from what GGM revealed as its plans for community development and what was perceived to be the actual situation by the community. The GGM's core value to the communities adjacent their operation is for the Community to be better off for GGM having been there. To ensure this, GGM acknowledged to have done a lot to improve the community livelihoods around the mine due to its significant contribution in education and health sectors. These were reported to have been done with the aim of enhancing improved education, health services and ensuring surviving ecosystem through environmental rehabilitation.

However, as observed in the field, the GGM could not have clear, measurable and time bound set goals for addressing issues pertaining to health, education, and environment, water supply and road network improvements which would ultimately lead to improved communities' livelihoods. In this way, the effects of GGM contributions were not that much significant. This was a challenge for GGM due to its minimal contribution especially

when the supports were compared to the time of eight years in operation and what generally had been done so far for the community to completion level as it was planned. It was observed further that, at the inception of GGM there were high livelihood expectations by the community that socio-economic services would be improved with minimal levels of environmental damages. However, these have not fully been realized and instead, the community members were complaining due to the adverse effects experienced to their livelihoods as a result of GGM activities than the period before.

Furthermore, while some of the effects of the mines were positively perceived by the local community, in particular the prospects for employment opportunities; the setting up of the mines also had been associated with a number of consequences that were experienced as negative by most local residents close to the mine. With the presence of GGM, the following were earmarked as the types of resulting negative effects. These included appropriation of land and displacement of villages; a reduction in agricultural and pastoral activities; environmental pollutions leading to increased incidences of diseases such as water borne and skin rashes; housing blockages due to intensive blasting; social change and high cost of living. These had negatively affected the livelihoods of the local community since majority (80%) were predominantly dependent on agriculture. Consequently, these problems affected much more the livelihood of communities living close to GGM than their counterpart who were living far away from mines. This situation created a negative social relationship between GGM and the community. This justifies that, apart from what GGM had contributed, more needs to be done accompanied with effective involvement of the local community because the negative effects outweighed the positive ones.

5.2 Recommendations

To address the effects of large-scale mining activities on the livelihoods of local communities around, the following recommendations can be made from this study:

1. The government needs to ensure that a broader cost-benefit analysis on social and environmental costs and consultations with the affected communities is conducted before granting production licences to large-scale mining companies.

2. To ensure sustainable livelihoods of local communities near mining activities, the Government in alliance with mining companies should ensure that first priority is given in terms of sustainable development projects through the provision of essential skills development, social services and encouragement of local businesses.

3. All issues pertaining to compensations should take into account both the loss of livelihoods and the costs of relocating communities, which include having to construct new housing for the affected communities and provision of other essential social amenities.

4. There is need to ensure strong relationship between mining companies and the surrounding communities which should at least be composed of three major players: the local and regional community, the central government, and the mining company. This will help to offset the present negative social relationship and endless complaints from the communities close to mining activities.

5. Efforts by the government should be made to seriously enforce the mineral policy to ensure that mining companies are bound and held accountable to fulfill their social obligations to communities affected by their activities.

6. There is need to have improved regulations and independent monitoring teams commissioned to intervene before environmental and social problems spiral out of control.

7. Mining companies should work at continuous improvement in creating a safe environment in their areas of operations by minimizing the environmental impacts, building cooperative working relationships with local communities and governments.

8. Mining companies should use modern technology that uses fewer chemicals during extraction and processing, and mine waste should be regulated and turned into a non-harmful form before it is discharged to waste ponds.

9. The government and mining companies should ensure that communities are sensitized to understand what mining companies are doing and communicate the positive and negative effects that mining activities may have and will have on local communities around.

5.3 Recommendation for Further Research

One relevant issue was identified by this study for further research:

1. To find out whether there is a relationship between large scale mining activities and the increased incidences of diseases such as TB and Skin rashes to communities close to the mine.

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APPENDICES

Appendix 1: Questionnaire for village Members

1.0 GENERAL IDENTIFICATION VARIABLES

1. Respondent's name .....

2. Date of interview..... 3. Questionnaire No.....

4. Village.....

5. Ward.....

6. Division.....

7. District.....

2.0 GENERAL HOUSEHOLD HEAD INFORMATION

8. What is your Sex? 1 = Male 2 = Female ( )

9. What is your Age? .....years

10. What is your marital status?

1) Single
2) Married ( )
3) Divorced
4) Separated
5) Widow/widower

11. What is the size of your household?.....

Members

12. Indicate the nutritional and energy consumption level taken in your family as shown in the table below

S/N	Item(s)	Consumption level in kgs / amount taken per day	Estimated cost in Tsh
1	Protein for your family		
2	Flour/rice for your family		
3	Meals taken		

13. How many years did you spend in school? .....years

14. What is the distance of the area where your household is located from GGM.....Km

2.1 CONTRIBUTION OF GGM TO HOUSEHOLD INCOME

15. Indicate the major sources of income for your household and their income estimates in Tsh

S/N	Main Source/Activity	Estimated Income Per Month (Tsh)	Estimated Income Per Year (Tsh)
a	Farming		
b	Livestock keeping		
c	Petty business		
d	Trade		
e	Casual labor		
f	Employee		
g	Mining		

16. Are there members of your family employed by GGM?.....Members

17. If no, give reasons.....

18. What is the main market for your produce? (Tick)

Item	Main market	
	Geita Gold Mine	Others (specify)
Cash crops		
Staple food crops		
Livestock(specify)		
Livestock by products		

19. Which among the following are supported directly to you by GGM?

S/N	Support provided	Tick
a	Trainings	
b	Farm implements	
c	Farm inputs	
d	Livestock	
e	Market for selling items	
f	Wage employments	
g	Others (specify)	

20. Does direct income from geita gold mining activities contribute to the following in your family? (Tick)

Item (s)	YES	NO	Estimated cost-Tsh
Pay school fees			
Buy school facilities for the children			
Health services			
Buy food			
Invest into small business			
Agricultural activities			
Buying livestock			
Construction of house			
Others (specify)			

21. Households wealth (Types of assets present in the house)

Livelihood assets		Types of asset	Number (Quantity)	Value in TSH	Source of funds used (specify)
Natural Assets	1	Land			
	2	Dam			
	3	Forest reserve			
Transportation	1	Motorcar			
	2	Motorbike			
	3	Bicycle			
News media	1	Radio			
	2	TV			
House assets	1	Tables			
	2	Chairs			
	3	Wardrobe			
	4	Softer sets			
Farm implements	1	Tractor			
	2	Ox-plough			
	3	Ox-carts			
	4	Hand hoe			
	5	Bush knives			
Kitchen facilities	1	Local 3 stone stove			
	2	Charcoal			
Livestock	1	Cattle			
	2	Goats			
	3	Sheep			
	4	Donkey			
	5	Chicken			

3.0 CONTRIBUTION TO NON DIRECT BENEFITS IN THE AREA

3.1 Education facilities

22. Do you have any school in your village?

1. Yes 2. No

23. Give the number of the following in your village; ( )

a) Pre- primary schools.....

b) Primary schools.....

c) Secondary schools.....

d) Vocational training centers.....

24. Does GGM participate in construction of schools infrastructure in your area?

1. YES 2. NO ( )

25. If no participation, give reasons?.....

3.2 Water services

26. Do you have any source of water in your village?

1. Yes 2. No ( )

27. Which one among the following is your main source of water?

(1) Traditional wells (2) Ponds ( )

(3) River (4) Shallow wells

(5) Tape water

(6) Others (specify)... .....

28. What is the distance to the source of water?

(i) Before GGM..... (Km) (ii) After GGM..... (Km)

29. Is supply of water from the source adequate for your daily needs?

1. YES 2. NO ( )

30. If no, what alternatives do you think can satisfy your water needs?.....

31. Is the water obtained from your main source safe for human consumption?

1. Yes 2. No ( )

32. If no, give reasons .....

33. Is there any water project which is supported by GGM in your area?

1. Yes 2. No ( )

34. What is the average cost per month do you incur for water .....Tsh

3.3 Health services delivery

35. Do you have health services in your village? 1) Yes 2) No ( )

36. What is the distance to health service centers? (1) Before GGM..... (Km)

(2) After GGM..... (Km)

37. How much do you spend for health services in a year? Tsh.....

38. Which type of health center does your household prefer to go for services? Tick

Institution	(1)Affordability	(2)Accessibility	(3) Good services provided
Government			
Geita Gold mining company			
Community			
Private			

3.4 Roads network and communication services

39. Do you have passable road network connecting your village and the neighboring mine?

1. Yes 2. No ( )

40. Indicate the type of roads connecting your village and the mine (Tick)

Type of road	Tick	Who support construction
Gravel		
Tarmac		

41. Do you think GGM has influence on road improvement in your area in terms of time spent? 1. YES 2. NO ( )

3.5 General economic conditions

42. How did you get the land you own?

S/N	Item(s)	Tick
1	Cleared new land	
2	Given by friend/relative	
3	Inherited	
4	Bought (acres)..... (at Tshs/acre).....	
5	Allocated by village government (paid fee was Tsh).....	
6	Renting in at Tsh.....	

43. Give the total size of land owned by your household before GGM investment.....acres

44. Give the size of the land you own now after GGM investment.....acres

45. What was the cost of the land per acre before GGM investment.....Tsh

46. What is the cost of land per acre after GGM investment.....Tsh

47. Have you ever been displaced from your original land due to mining operations?

1. Yes 2. No ( )

48. If yes, were you compensated?

1. Yes 2. No ( )

49. What was the estimated value of each item listed below during compensation process?

S/N	Name of the item(s)	Number of items	Estimated value for each item	Total value
1	House			
2	Land			
3	Maize			
4	Cassava			
5	Sisal			
6	Bananas			
7	Trees			
8	Paddy			

50. If no, why.....

51. Is this land with the same fertility when compared to the one you owned before GGM?

.....

52. Mention the problems that are associated with loss of land to give room for mining activities.....

53. Have you ever been involved in the mining activities?

1. Yes 2. No ( )

54. What were the reasons for your involvement? .....

55. Are you still involved in mining activities? 1. YES.....2. NO.....

56. If yes, how do you benefit.....Tsh per month

57. If no, give reasons.....

58. Has the cost of living increased as a result of GGM investment? 1. YES NO ( )

59. If yes, how?..... .....

60. Are there diseases that are directly dependent/ associated with GGM?.....

61. Is GGM investment improving your wellbeing? 1. YES 2. NO ( )

4.0 ENVIRONMENTAL EFFECTS OF GGM AND THE REMEDIAL EFFORTS IN PLACE

62. What are the notable environmental problems in your area due to the presence of GGM?.....

63. How do you rank the seriousness of the influence of GGM on environmental destruction? Tick

S/N	POLLUTED AREA	1= No influence	2=Very low	3=Low	4=High	5=Very high
1.	Water					
2.	Air					
3.	Land					
4.	Noise					
5.	Forest resources					

64. What is your opinion regarding the influence of mining activities on deforestation?

.....

65. If the land is deforested, what do you consider to be the major cause? .....

66. How has these environmental destructions affected your livelihood?.....

67. Is there compensation for the degraded environment? 1. YES 2. NO ( )

68. If yes. At.....Tsh per acre

69. If no, what are the reasons?..... .....

70. How do you estimate the loss associated with environmental destruction in your area? .....Tsh

71. Are there any measures undertaken by GGM to conserve the destructed environment? 1. Yes 2. No ( )

72. What are those measures?.....

73. Are there institutions which deal with environmental conservation in your village? 1. Yes 2. No ( )

74. What are those institutions?.....

75. What are your views regarding the relationship between you and GGM?.....

76. What are your comments on how to enhance the contribution of GGM to the neighboring local communities?.....

77. What are your views regarding the contribution of GGM in your district to you?

(Tick)

GEITA GOLD MINE (GGM)	YES	NO
Do you have interest with GGM		
Do GGM contribute to environmental destruction		
Do GGM participate fully in environmental management		
Do GGM support water services to the district		
Do GGM support health services to the community		
Do GGM support education services to the community		
Do GGM support production and other support in agriculture in the district		
Do GGM provides valuable (grants) support to income generating activities in the district (IGAS)		
Does GGM support infrastructural improvements		
Does GGM participate fully in problems like hunger, floods and droughts		
Do GGM participate fully in poverty reduction programs		
Do GGM provide full employment to local people		
Do GGM provide only casual labour		
Do GGM provide market for local products		

77. What are your views regarding the contribution of GGM in your district to you?

(Tick)

GEITA GOLD MINE (GGM)	YES	NO
Do you have interest with GGM		
Do GGM contribute to environmental destruction		
Do GGM participate fully in environmental management		
Do GGM support water services to the district		
Do GGM support health services to the community		
Do GGM support education services to the community		
Do GGM support production and other support in agriculture in the district		
Do GGM provides valuable (grants) support to income generating activities in the district (IGAS)		
Does GGM support infrastructural improvements		
Does GGM participate fully in problems like hunger, floods and droughts		
Do GGM participate fully in poverty reduction programs		
Do GGM provide full employment to local people		
Do GGM provide only casual labour		
Do GGM provide market for local products		

Appendix 2: Interview guide for district officials

INTRODUCTION

The aim of this study is for academic purpose which aims at availing the relationship between mining activities taking place in this area and the livelihoods of local communities in Tanzania. It is expected that, the findings of the study will be useful in decision making for the betterment of the public. I therefore request your cooperation in filling this questionnaire. Please be informed that, all the information will be treated confidentially.

1. In which ways does Geita gold mine (GGM) contributes to household income of local communities near mineral resources?..... .....
2. How much money is paid by GGM to Geita district council for community development projects?.....Tsh per year
3. What is the number of displaced households to give room for GGM mining activities?.....HHs
4. Were the displaced households compensated? .....
5. If no, why?..... .....
6. How long does it take for people to be compensated from the time of displacement? .....months
7. What amount of money has been paid for compensation in the district by GGM since 1998 to 2007?.....Tsh
8. What is the estimated value of each item listed below during compensation process?

S/N	Name of the item(s)	Number of items	Estimated value for each item
1	House		
2	Land		
3	Maize		
4	Cassava		
5	Sisal		
6	Bananas		
7	Trees		
8	Paddy		

9. Which kind of social services are supported by GGM in this district?

.....

10. What are your views regarding the quality of social services supported by GGM?

.....

11. What was the population in Geita district before GGM investment?.....

12. Has the population increased due to GGM investment? 1. YES.....2. NO.....

13. If yes, give the reasons for the increase of population in the district? .....

14. What is the population after GGM investment?.....

15. Are there some diseases that seem to be dependent/associated with the presence of GGM?.....

16. Has the cost of living increased due to the presence of GGM? 1. YES 2. NO .....

17. Give the number of schools and other training institutions present in your district which are supported by GGM as shown in the table below

Type of school	Basic education		Secondary education		Vocational training
	Pre-primary	Primary	O-level	A-level	

18. Indicate the number of classrooms, teachers' houses and school toilets constructed in your district under the support of GGM as shown in the table below;

Name of supported village	Classrooms		Teachers' Houses		Toilets	
	complete	Cost in Tsh	Complete	Cost in Tsh	Complete	Cost in Tsh

19. If no support is given, what are the reasons?.....

20. Indicate the number of shallow wells, dip wells, dams and water taps services constructed in your district donated by GG as shown below;

Name of the village supported	Shallow wells and at Tsh	Dip wells and at Tsh	Water taps system and at Tsh	Dams and at Tsh

21. Give the number of dispensaries and health centers constructed in your district under support of GGM as shown below

Name of supported villages	Dispensaries at Tsh	Health centers at Tsh	Hospitals at Tsh

22. What are the major environmental problems that are directly associated with GGM mining activities in this district?.....

23. How do you rank the seriousness of the following on environmental problems?

S/N	Environmental problems	Level of seriousness (use key)	Its effects to people
3	Emission of Chemicals		
4.	Air pollution		
5.	Water pollution		
7.	Eruption of diseases		
8.	Deforestation		
9.	Noise pollution		

Key: 1. Not serious 2. Serious 3. Very serious

24. Which area in Geita district has been seriously affected by poisonous materials due to GGM mining activities?..... .....

25. If cutting of trees is done due to GGM mining activities, what is the compensation cost per every cut down tree? .....Tsh

26. To what extent does the above problems affected the livelihoods of the people? .....

27. Are there environmental conservation measures undertaken by GGM in your district?..

28. What are your comments regarding people's perception towards GGM investment in the district?.....

29. What can you comment with regard to the existing social relationship between GGM and the neighboring communities?.....

30. What are your views regarding the contribution of GGM in your district as shown below? (Tick)

GEITA GOLD MINE (GGM)	Strongly agree	Agree	Disagree	Strongly disagree
Do you have interest with GGM	4	3	2	1
Do GGM contribute to environmental destruction	4	3	2	1
Do GGM participate fully in environmental management	4	3	2	1
Do GGM support water services to the district	4	3	2	1
Do GGM support health services to the community	4	3	2	1
Do GGM support education services to the community	4	3	2	1
Do GGM support production and other support in agriculture in the district	4	3	2	1
Do GGM provides valuable support to income generating activities in the district	4	3	2	1
Does GGM support infrastructural improvements	4	3	2	1
Does GGM participate fully in problems like hunger, floods and droughts	4	3	2	1
Do GGM participate fully in poverty reduction programs	4	3	2	1

31. What are your comments on how to enhance the contribution of GGM to the neighboring local communities?.....

Appendix 3: Interview schedule for Mining officials

Questionnaire on foreign direct investment and the livelihoods of local communities in Tanzania: The case of Geita gold mine.

1. What were the objectives of GGM in the part of community development?.....

2. What were your intentions in developing the following areas in every year?

Targeted areas	Number	Estimated cost in Tshs.
Dispensaries		
Health centers		
Hospitals		
Roads in km		
Primary schools		
Secondary schools		
Water projects		
Agricultural projects		
HIV/AIDS control programs		
Relief and emergence services		
Financial support		
Others(specify)		

3. What are the socio-economic problems resulting from mining activities to the surrounding community?.....

4. In which ways do you address the above mentioned socio-economic problems?

.....

5. What are the environmental problems resulting from mining activities to the surrounding community?.....

6. Which strategies do you use to address the environmental problems you have mentioned above?.....

7. How do you involve the surrounding communities in addressing serious environmental problems like the emissions of toxic chemicals?.....

8. What has been done to fulfill the intended objectives to the community?

Intended objective(s)	Level of fulfillment	Cost spent

9. What has been done in efforts to conserve the environment?.....

10. What is the cost incurred for environmental management?.....Tsh

11. What are the future plans of the GGM in managing the environment? .....