

THE IMPACT OF LARGE-SCALE MINING ON THE LIVELIHOODS OF ADJACENT COMMUNITIES: THE CASE OF GEITA GOLD MINE, TANZANIA

WILLY MALIGANYA AND RENATUS PAUL



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P.O. Box 33223, Dar es Salaam, Tanzania

157 Migombani Street, Regent Estate

Tel: +255 (0) 22 2700083/2772556

Fax: +255 (0) 22 2775738

Email: repa@repa.or.tz

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ABBREVIATIONS AND ACRONYMS

| | |
|----------------|--|
| AIDS | Acquired Immune Deficiency Syndrome |
| FDI | Foreign Direct Investment |
| FGDs | Focus Group Discussions |
| GDP | Gross Domestic Product |
| GGM | Geita Gold Mine |
| H ₀ | Null Hypothesis |
| H ₁ | Alternative Hypothesis |
| HH | Household(s) |
| HIV | Human Immunodeficiency Virus |
| ICMM | International Council on Mining and Minerals |
| LSMCs | Large-Scale Mining Companies |
| MDGs | Millennium Development Goals |
| MEM | Ministry of Energy and Minerals |
| MKUKUTA | <i>Mkakati wa Kukuza Uchumi na Kupunguza Umaskini</i> Tanzania (Swahili for the National Strategy for Growth and Reduction of Poverty) |
| NGOs | Non-Governmental Organizations |
| REPOA | Research on Poverty Alleviation |
| SLA | Sustainable Livelihood Approach |
| SPSS | Statistical Package for Social Sciences |
| UNDP | United Nations Development Program |
| UNESCO | United Nations Education Scientific and Cultural Organization |
| URT | United Republic of Tanzania |
| USD | United States Dollar(s) |



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ABSTRACT

This study assessed the contribution of Geita Gold Mine (GGM) to the livelihoods of local communities in Geita District. Specifically, it assessed the effectiveness of corporate social responsibility implementation, determined the extent to which GGM has contributed to socio-economic development in the study area, and examined the communities' perceptions of environmental problems associated with mining activities and their impact on community well-being. A cross-sectional research design was employed, in which qualitative and quantitative methods of data collection were used. The sample size comprised 128 households, and data were collected using checklists, questionnaires, FGDs, personal observations, and documentary reviews. Descriptive and inferential statistical analyses were used to obtain the findings. The findings revealed notable contributions to employment, education, health, and markets from GGM, including the construction of Nyankumbu girls' secondary school and the supply of desks to seven schools. GGM also established Moyo wa Huruma Orphanage Centre, constructed Nyakabale clinic, and supported cleft palate surgery, along with the construction of two outpatient buildings. In contrast, the majority reported a 'strong negative influence of GGM activities on water pollution, air pollution, noise, and land degradation in nearby villages, unlike in villages further away from GGM where there was no impact. It was recommended that a bottom-up approach could be of great importance as it would inform the communities and mitigate negative community perceptions of GGM. It would also be useful as it might allow effective functioning of corporate social responsibility by the company in relation to the communities. Similarly, accounting for negative externalities in operation costs would reduce or completely eliminate environmental problems associated with GGM's mining activities, and minimize the existing community dissatisfaction with regard to the environment. In this regard, both GGM and the responsible authorities should put in place the arrangements necessary to support the long-term economic sustainability of communities adjacent to GMM, even when the mines are closed.

1.0 INTRODUCTION AND BACKGROUND

Recent years have seen increasing interest in attracting foreign direct investment (FDI), especially in developing countries (Nyankweli, 2012). Since the early 1980s the policy environment worldwide has been far more conducive to the growth of FDI. A number of countries have been adopting significant liberalization measures aimed at attracting the same investment (Rugumamu, 2005). As a result, the growth of FDI in the Third World has been extremely rapid. In Africa FDI inflows reached USD 18 billion in 2004, compared with USD 14 billion in the previous year.

With regard to this, much of the FDI has been targeted at Africa's resource-rich mining industries in the form of large-scale mining companies (LSMCs) which often generate low tax revenues and carry high environmental and social costs (UNCTAD, 2005). Due to this increased growth of LSMCs, UNCTAD acknowledged Ghana and Tanzania as examples of countries which have experienced a boom in LSMCs, particularly in their gold industries. However, both Ghana and Tanzania have benefitted little from the value of their gold exports, compared to South Africa and Botswana. The latter two countries have benefitted from the mining sector by encouraging companies to do more of the value-adding processing of gold domestically rather than sending raw materials abroad (UNCTAD, 2005).

As part of international corporate social responsibility (CSR), mining in Africa is expected to bring significant benefits to communities, for instance in the form of road construction, health and educational facilities, job creation, and other economic opportunities (ICMM, 2006). For example, social services, including improved healthcare and education, improved infrastructure, improved water supplies, and raised levels of skills in the work force, are among the potential benefits obtained by local communities from the Misima Mine in Papua New Guinea (Davis, 1995).

However, in recent years there has been a growing public outcry that African countries with potential mineral resources benefit little from the growing mining sector. The hopes that LSMCs could play a leading role in African development have not been realized. As a result, poverty in African countries continues to deepen, with the rural population being the most affected (UNCTAD, 2005). For example, despite the positive aspects of mining, surface mining of gold has the possibility of affecting sensitive environment as well as the lifestyles of indigenous people (Darimani, 2005). Some of the environmental effects might be irreversible (Chachage, 1995; Knight, 2001). Worse still, mining takes away large tracts of agricultural land from farmers, but does not provide adequate jobs to offset subsequent unemployment in agriculture, the sector that is the foundation of the rural majority (Fisher, 2007).

In Tanzania, mining companies are also expected to invest in social development (URT, 2011). Although Tanzania has been attracting investors in the mining of gold and other gemstones, especially in Kahama, Tarime, and Geita Districts, less has been documented regarding any socio-economic benefits accrued by local communities. These include the provision of education facilities, employment, water, road network improvements, the provision of soft loans to local people, and health services. Nevertheless, such large-scale mining industries come with some negative environmental effects that impact the livelihoods of the communities, including polluting water resources and displacing people from their fertile lands to allow mining operations. In this way, mining activities account for serious consequences for the local environment (Kitula, 2006). Consequently, this situation increased the occurrences of existing conflicts in mining sites reported from North Mara, Buzwagi, Buhemba, Mererani, and Geita Mines. This situation compelled the Tanzanian government to review all mining contracts (Tambwe, 2008; URT, 2011).

Due to continued persistence of these problems, the 1997 Tanzanian mineral policy was partly designed to address, among other things, the need to raise the contribution of the mineral sector to the national economy significantly, create gainful, secured employment, and provide alternative sources of income, particularly for the rural population, as well as environmental protection and management (URT, 1997a). This leads to contradictory information on the balance sheet about whether communities benefit from such investments. This study set out to determine the effects of large-scale mining on the livelihoods of local communities in Geita District.

1.1 Statement and Significance of the Problem

In the late 1980s, Tanzania made a U-turn in its economic policy and allowed the private sector to participate in mining operations to enhance that sector's potential contribution to the economy (Kulindwa et al., 2003; Lange, 2006). Since then, the gold mining sub-sector has been growing more rapidly than any other FDI-supported sector (UNCTAD, 2005). Such developments in the mining sector led to the establishment of various legislations with the aim of improving revenues from the sector. For example, Tanzania's 1997 mineral policy identifies the creation of employment opportunities in the mineral sector and the sector's role in the diversification of the rural economy as key challenges addressed by the policy (URT, 2009). In addition, the 2010 Mining Act provides for compliance with international standards regarding the protection and rehabilitation of the environment in mining areas. Both the 1997 mineral policy and the 1998 Mining Act seek to secure improved training opportunities, credit facilities,



extension services, and formal regulation, thus enhancing the capacity of the sector to alleviate poverty and improve social and economic development in rural areas.

Despite good explanations given in the policy and the Act regarding enforcement, the situation on the ground is quite different when it comes to implementation. Various studies have shown that mining areas have turned into conflict areas (Lange, 2006; Lugoe, 2012). This situation poses critical questions that remain unanswered. For example, is it because the policies have failed to translate mineral wealth into tangible benefits for the majority of the rural population? The macroeconomic information given by the Tanzania Investment Centre provides a very different picture when looked at from the bottom up. This has led to a growing resentment with regard to the real benefits accrued especially by local communities, and this tension has been accompanied by the notion that most mining contracts are kept secret from the public, and that they have displaced and destroyed livelihoods, leading to poverty due to unfair compensation and forced relocations. This study was therefore intended to explore and generate new information on the extent of socio-economic contributions and the perceived environmental effects associated with large-scale mining in Geita District. This information is important as it will help to discover the appropriate mechanisms to improve livelihoods and address the negative effects of mining operations.

1.2 Objectives of the Study

1.2.1 General Objective

The general objective was to examine the contributions of large-scale mining to the livelihoods of local communities in Geita District, Tanzania.

1.2.2 Specific Objectives

The specific objectives were:

- i. To explore the effectiveness of CSR in the study area;
- ii. To assess the extent to which GGM has contributed to the socio-economic development of local communities in the study area; and
- iii. To examine the communities' perceptions of the influence of GGM's activities on the environment.



1.3 Research Questions and Hypothesis

Research questions and hypotheses were used in this study. The research questions were generally used to collect a mixture of qualitative and quantitative information, in which the latter was addressed by both descriptive and inferential statistics. A non-directional hypothesis (inferential statistics) was applied to discern whether there were any significant changes in annual income earned after GGM investment in nearby villages when compared to distant villages. Under this hypothesis, an alternative hypothesis was tested for this claim among the income groups (poor, medium, and less poor). Using a t-test, a significance level of 5% was employed to represent the maximum level of a failure to reject the test hypothesis (alternative hypothesis) for the changes in annual income. Probability values (p values) of the test for annual income that lay within the selected level of significance were referred as supporting the test hypothesis that postulated significant changes in annual income between the villages.

1.3.1 Research Questions

- 1) To what extent are the GGM goals, as stated in the company's CSR reports, met?
- 2) What are the GGM's contributions to socio-economic development in the community?
- 3) How do adjacent communities perceive the influence of GGM activities on the environment?

1.3.2 Research Hypothesis

H₀: There are no significant differences in annual income among similar income groups between nearby and distant villages.

H₁: There are significant differences in annual income among similar income groups between nearby and distant villages.

1.4 Conceptual Framework for the Study

The conceptual framework that guided this study was developed based on the DFID sustainable livelihoods framework (SLF) (Ellis, 1998, 2000; Ashley and Carney,



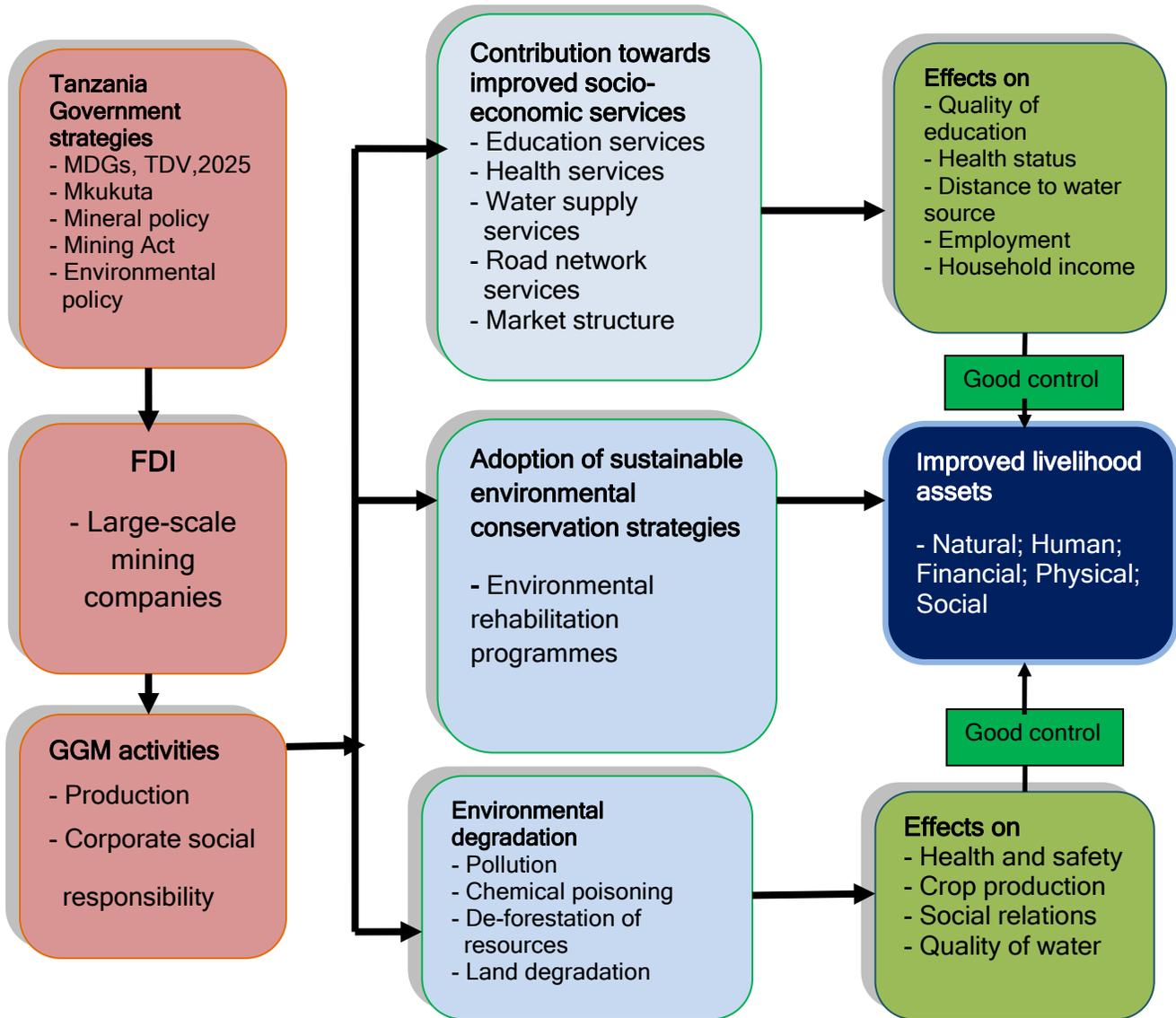
1999; DFID, 2000). It has been argued that a better understanding of the impact that gold mining companies have on local livelihoods can be gained through the livelihood analytical framework. Livelihoods are understood as a collection of activities performed on a daily basis with the aim of meeting basic needs such as food, housing, and securing monetary income. These activities include the production of crops, rearing livestock, making handcrafts, and seasonal and permanent wage labour, as well as remittances.

This framework was developed on the basis of the objectives, a literature review, and the methodology, in order to assess the socio-economic and environmental effects of large-scale mining on communities' livelihoods. Figure 1 illustrates that large-scale mining activities affect the livelihoods of 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 improving the livelihoods of local communities. This can be done via support for education and health facilities, water supply services, road network services, and market structure for locally produced products. In turn, this may lead to better education quality, 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 the adjacent population. The biggest concerns regarding large-scale mining activities relate to the issues of social conflicts, pollution, land degradation, and deforestation. 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 livelihood assets. This is due to the risks to health and safety, poor crop production, and contamination of water sources, leading to poor social relationships. However, the adoption of better environmental management systems and sustainable conservation measures is assumed to contribute positively towards improved livelihood assets of local communities.



Figure 1: Assessment of GGM Influence on Communities' Livelihoods



1.5 The Livelihoods Analytical Framework (LAF)

The livelihood analytical framework used in this study was adopted from a study by Nyankweli (2012). It has been argued that a better understanding of the impact that gold mining companies have on local livelihoods can be gained through the livelihood analytical framework. As previously mentioned, livelihoods are understood as a collection of activities performed on a daily basis with the aim of meeting basic needs such as food, housing, and securing monetary income. These activities include the production of crops, rearing livestock, making handcrafts, and seasonal and permanent wage labour, as well as remittances.

Livelihoods are secured through a set of assets and resources called capital; multiple sources of capital are combined in different strategies, thus generating different types of livelihoods. The actual combination differs per case, but there are several commonly distinguished types of capital, which are human capital (labour, also including skills, experience, creativity), natural capital (land, water, forests, pastures, minerals), physical capital (food, stocks, livestock, equipment, tools, machinery), financial capital (money in a savings account at a bank, loans, credit), and social capital (referring to the quality of relations among people and institutions such as government, NGOs, CBOs, CSOs, and the mining companies).

In the context of the mining companies' operations, this could be done by providing employment opportunities and implementing CSR initiatives. Gold mining companies can enhance communities' access to better health services, education, safe water supplies, and improved infrastructures. This, in turn, improves household income and thus diversifies rural livelihoods. This complex web of assets, access, capacity, and capability offers the households and local institutions layers of resilience that enable them to deal with waves of adversity (Glavovic et al., 2002). Resilience implies the capacity of a system to deal with disturbances, ultimately reorganizing in order to retain the same functions, structure, identity, and feedbacks that were present prior to the disturbance (Walker et al., 2004). In this study on large-scale mining activities and the livelihoods of local communities in Tanzania, we looked at how local livelihoods might be affected by the operations of large-scale mining activities. To achieve this, focus was placed on the socio-economic actors living adjacent to the mines. With the help of the sustainable livelihood approach, we assessed their households' dependence on mineral resources (mining) to see how livelihoods might be affected or influenced by mining operations and policies. This framework allowed for equal consideration of social and cultural issues and economic and political issues.



2.0 LITERATURE REVIEW

2.1 An Overview

The last decade and a half have witnessed a dramatic growth in mining in many developing countries. The relationship between large-scale mining and development appears to be debatable because mining has so often delivered adverse social, environmental, and economic effects to many and significant gains for only a few. On the other hand, mining has also been associated with patterns of development and growth that are obviously unsustainable. The coexistence of such divergent feelings about mining and its human and environmental impacts has resulted into social conflict (Rosser, 2006; Aspinall, 2007; Ross, 2008). On that basis, most of the social science literature on mining 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, 2001; Sachs and Warner, 1995). However, mining remains important to the economic development of highly industrialized countries such as the United States, Sweden, and Canada, where development was primarily based on proper use of their natural resources. It is anticipated 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). Despite huge foreign direct investment in Africa’s mining sector, there has still been no 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 (Darimani, 2005; Fraser, 2006).

2.2 Natural Resources Abundance and Economic Development

There has been an extensive body of theoretical literature on the contribution of mineral resources in economic development. Schools of thought are divided between those who argue that mineral resources are a hindrance, while others consider mineral resources as a gift with the potential to drive growth and reduce poverty in developing countries (Auty, 2001). The debate on mining, extraction, and development has generated its fair share of catchy terms: “resource curse”, “Dutch disease”, and “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, 2004, 2005) others argue that the evidence for the curse is largely an artefact of indicator choice (Aspinall, 2007; Brunnschweiler and Bulte, 2008). 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 supporters. Auty (2001, 2008) seems to see more scope for escaping the curse, while Pegg (2006), argues that mining is potentially a great source of wealth which could generate tremendous economic benefits for poor countries. In this regard, our emphasis is that there is need to develop systematic mechanisms that will ensure that the benefits of mining are extended to local communities living in and affected by mining operations. Meanwhile, among the proponents of mining, the World Bank has published material suggesting that those countries with substantial incomes from mining performed less well than countries with less income from mining (Poteete, 2009). Authors who have criticized the idea of the resource curse now conclude that perhaps mining ought not to be promoted everywhere in the same way (Davis, 1995). However, the World Bank Group has continued to support programmes that reform investment 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 (Campbell, 2003, 2006; Bury, 2005; Hilson and Yakovleva, 2007).

An important question one may ask is whether or not valuable natural resources can facilitate economic and political development. Poteete (2009), using the experience of Botswana, argues that the evidence is not promising. Several studies find a negative correlation between natural resource abundance and sustained economic growth - the resource curse mentioned above (Auty, 2001). Similarly, in Tanzania, although the country is certainly well endowed with mineral resources such as gold, diamonds, and tanzanite, their contribution to the national GDP is still low at 3.2% (Mwalyosi, 2004; URT, 2011). This is contrary to the major objective of the mining sector policy in Tanzania, which aims to alleviate poverty in the country by creating gainful and secure employment in the mineral sector and providing alternative sources of income, particularly for the rural population, and to ensure environmental protection and management. The literature indicates that Tanzania is yet to achieve this objective (Mwalyosi, 2004; URT, 1997a).



2.3 Large-Scale Mining Activities and the Livelihoods of Local Communities

2.3.1 Contributions to Socio-Economic Development

Large-scale mining operations invest substantially in local community development by providing training, public services such as education and health, and public goods such as clean water, transport, energy, and infrastructure like schools, health centres, and water supply systems. It is assumed that all mining will be accompanied by the growth of small and micro-enterprise activities, providing supplies and related services to mining companies, miners, and their families, and leading to substantial income growth (World Bank, 2005). Also, large mining companies are expected to create employment for adjacent communities directly in both the construction and operating phases, indirectly through input demand, 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).

Nevertheless, studies by McMahon and Remy (2001) in the developed countries of Latin America have confirmed that, sustainable mining activities enhance effective participation of neighbouring communities on decisions affecting them. Sustainable mining activities facilitated by increased participation by the local communities were noted in Canada, but were less evolved in Latin American contexts. 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, the company, and government, all had direct communication with each other, in addition to a formal three-way dialogue where other stakeholders also participated. McMahon and Remy (2001) further revealed that in the first years of the mining operations, members of adjacent local communities filled the lower skilled jobs and provided unsophisticated services to the mines.

In many developing countries, however, 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, while company practice has been to assume that striking a deal with government is enough (Akabzaa, 2000). For instance, a study conducted 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. Yet, despite this boom, there is a growing unease with regard to the actual benefits accrued by the adjacent local communities and to the country in general (Akabzaa and Darimani, 2001; Eggert, 2001).



Similarly, in Tanzania there is limited institutional capability to manage the social and economic implications of a sudden growth of investment in remote areas. If there is any local income from mining, it is mainly through auxiliary activities such as the sale of food, operating restaurants, and the sale of soft drinks (Mwalyosi, 2004). Communities have been the most poorly regarded and historically neglected stakeholders in policy and other discussions related to mineral development. They have been seen 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 (McMahon, 2000).

Over time this situation has resulted in unacceptably high incidences of poverty among rural populations adjoining mineral resources such as gold, necessitating the need for further research to assess the effects of large-scale mining activities on the livelihoods of adjacent communities. Some important questions must be answered; it is not well known who is benefitting from the direct, indirect, and multiplier effects of the opening of a large mine. Are there provisions for local and indigenous communities? Are there any commitments to “buy locally”? Are there any attempts to train local residents for skilled or semi-skilled positions? Also, there is a need to know about the general effects on wages and incomes in the local area. Is it likely that the prices of some basic goods will increase dramatically, causing hardship to those community members who are not receiving benefits from the new economic conditions? And/or, are the income distribution effects from the mine likely to be substantial and have potentially serious effects? Last but not least is the issue of taxes and royalties at different levels of government; this is an important factor in determining the geographic and end-use distribution of the benefits and costs of the mine. All these questions necessitate the need for further research in order to determine the effects of large-scale mining activities on the livelihoods of adjacent communities in Geita District.

2.3.2 Effects of Large-Scale Mining Activities on the Environment

Over the past few decades, environmental protection has emerged from obscurity to become one of the most important issues of our time. In both the international and national arenas, the dominant theme of the environmental protection movement is the achievement of sustainable development (Pallangyo, 2007). 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 are widely regarded as the most environmentally and socially disruptive activities undertaken by business (Jenkins and Yakovleva, 2006; Chan, 2004). This is because 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 (Knight, 2001; Lange, 2006). By its nature, mining has a permanent environmental impact, in that as a non-renewable natural resource it becomes exhausted (WRM Bulletin, 2003). Environmental degradation can occur during all the phases of a mining project - exploration, disposal of waste rocks, overburdening ore processing and plant operations, and tailings (processing waste) management (Boocock, 2002).

Similar observations were noted by McMahon and Remy (2001) who found 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 they used in their home countries, and they often supersede the local environmental standards. All the mines made significant efforts to minimize environmental damage, and when minor incidents occurred the companies responded quickly. Fraser (2006) 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. A similar observation was reported in Tanzania by Kitula (2006) who commented that new mining technologies should be developed that use fewer chemicals during extraction and processing and regulate mine waste into a non-harmful form before it is discharged to waste ponds.

The overall objectives of the Tanzania National Environmental Policy are to ensure sustainable and equitable use of resources without degrading the environment or risking health or safety; to prevent and control degradation of the land, water, vegetation, and air which constitute essential life support systems in order that all Tanzanians may live in safe, productive, and aesthetically pleasing surroundings; to raise public awareness; and to promote individual and community participation. But environmental problems emanating from mining activities are still persistently increasing, affecting more, particularly local, communities adjacent to mining operations (URT, 1997a; Pallangyo, 2007). Obviously, when mining is the topic, the environment is never far behind. In the analysis of any potential mining operation, often the first question to be asked is whether the benefits of the mine are greater than the environmental costs. This contradiction needs to be addressed through the generation of new information via this study.

2.3.3 Effects of Large-Scale Mining Activities on Social-Cultural Issues

McMahon and Remy (2001) argued that it is not just socio-economic and environmental implications for livelihoods in adjacent communities that pose a concern with respect to mining operations. There are equally grave social and cultural repercussions of mining operations, particularly when indigenous populations are affected. For instance, a high



influx of new workers may lead to social problems (including prostitution) due to a lack of adequate housing and infrastructure. Moreover, workers from other regions of the country or abroad usually bring different lifestyles and patterns of behaviour and arouse local resentments (Chan, 2004; Hill, 2008). Sometimes large-scale mining companies comply with the national rules and regulations of the mining sector, but they are reluctant to go beyond compliance because there is no legally binding requirement (Mwalyosi, 2004). The mining companies argue that they pay all the required taxes and royalties 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. It is obvious that improving the social services and livelihoods of the neighbouring communities is a pre-requisite for sustainable mining (Mwalyosi, 2004).

2.3.4 The Interaction between Local Communities and the Mining Companies

Traditionally, good relations with the local community have not been an important part of the mining culture in developing countries. For their part, local communities tend to view mining activities as isolated and oriented toward a purely economic end. The communities are apprehensive about being excluded from the benefits produced by the mining project and require 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 understanding between the mining industry and the community (McMahon, 2000; Chan, 2004).



3.0 RESEARCH METHODOLOGY

3.1 Description of the Study Area

This study was conducted in Geita District, Geita Region. Both Geita Region and Geita District were purposively selected because they are potential areas for Geita Gold Mine (GGM) investment. The study area was chosen because it is one of the most important mining areas in Tanzania due to its large deposits of gold. GGM is one of 25 operations in 11 countries and 4 continents where AngloGold Ashanti operates. Tanzania is the fourth largest producer of gold in Africa, after South Africa, Ghana, and the DR Congo (URT, 2011). As the area is also experiencing a good deal of resentment and resistance from local communities due to mining activities, it is expected to be representative of many other mining areas facing similar situations, such as the North Mara Gold Mine, Bulyanhulu Gold Mine, Mwadui Diamond Mine, and others of the same kind in Tanzania.

3.2 Research Design

This study employed a cross-sectional research design which involved the collection of data at a single point in time (Kothari, 2009). This type of study design utilizes different groups of people who differ simultaneously in variables of interest, and who also share other characteristics such as socioeconomic status, educational background, and ethnicity. The design was considered the most appropriate for descriptive purposes and for determining the relationships among variables. This study was designed for comparing the livelihood status between villages close to GGM (Mgusu and Mpomvu) and villages further away from GGM (Ikulwa and Nyabubele).

3.3 Sampling Process and Sample Size Determination

3.3.1 Sampling Techniques

Both non-probability and probability sampling procedures were used. Non-probability (purposive) sampling was used to select Mtakuja Ward due to its proximity to GGM. The reason for this area's selection was because it reportedly experienced some complaints from the community regarding issues of environmental degradation, water pollution, and displacements due to its proximity to the GGM operations. Also, the two other wards, namely Kasamwa and Ihanamilo, were purposively selected for comparison purposes,

because they are situated some distance away from GGM. Probability sampling (simple random sampling) was used to select villages within each study ward.

Moreover, random sampling was also used to select households within each village from the population in the respective areas, which were homogeneous in nature. Lists of village registers from the selected villages were obtained from the district office, from which households were randomly drawn for the study. Random sampling is an appropriate strategy when one wants to generalize from the sample studied to a large population. Non-probability (purposive) sampling was also used to select key informants. This technique is useful when sample elements and locations are chosen to fulfil certain criteria or characteristics or have attributes of interest to the study. In addition, village leaders helped in selecting community members for focus group discussions. Emphasis was given to those community members who could express a range of views regarding how large-scale mining activities impacted their livelihoods as well as the broader environmental and socio-economic conditions. The aim was to uncover hidden issues in the community.

3.3.2 Sample Size Determination

3.3.2.1 Unit of Analysis

Scientific research in Africa often considers the household as the basic unit of social analysis. Households are defined as spatial units characterized by shared residence and daily production, primarily cooking and eating. Madulu (1998) further described the household as a unit comprising a person or group of persons who live together in the same homestead but not necessarily with common housekeeping arrangements, and who answer to the same head of the household. In this study, the sampling unit was a household in the local communities in Geita District. One of the reasons for the choice was the fact that it was the main unit used by the people who might in one way or another be affected by the activities of large-scale mining. It was assumed that mining activities are more likely to affect the livelihoods of individuals in households that are closer to the mining operations.

3.3.2.2 Sample Size

A total of 128 households were randomly sampled for the study. A household survey was conducted in the selected villages. The names of the selected households were drawn from individual village registers which acted as a sampling frame. The sample size (n) was computed depending on the total number of the households (N) in each



village. Boyd et al.'s (1981) formula (see below) was used to determine the study's sample size, as shown in Table 1 below.

$n = C/100 \times N$,
 where C = figure greater than or equal to 5% of the village household population.

N = the total number of households in the village.

n = the number of selected households.

Table 1: Total households surveyed

| Ward | Village | Total hhs (N) | Per cent of hhs surveyed | Number of hhs surveyed (n) |
|-----------|-----------|---------------|--------------------------|----------------------------|
| Mtakuja | Mgusu | 451 | 7.5 | 34 |
| | Mpomvu | 404 | 7.5 | 30 |
| Ihanamilo | Ikulwa | 689 | 5 | 34 |
| Kasamwa | Nyabubele | 394 | 7.5 | 30 |
| Total | | 1938 | 6.6 | 128 |

Source: Geita District Council (GDC), 2006.

However, it should be noted that, due to the large household population in Ikulwa Village compared to other villages, the number of households selected was 5% of the total households. This was less than 7.5% of the total households selected in the other villages (Mgusu, Mpomvu, and Nyabubele). This was due to the need to have equal representation of households in the villages close to GGM (Mgusu and Mpovu) and those situated further away from GGM (Ikulwa and Nyabubele). However, according to Boyd et al. (1981), a random sample should constitute at least 5% of the total population for it to be representative.

3.4 Methods and Data Collection

Different methods were used to collect both primary and secondary data. Method variation helped ensure the validity and reliability, suitability, and adequacy of the data. It was assumed that no single technique would necessarily be superior to any other, while a combination of two or three methods would make data highly reliable. With the use of different methods, the researchers expected to get information about GGM's socio-economic contributions to the neighbouring communities. These included roads built, education and health service support, markets for local produce, support for agriculture, and types of employment offered by GGM to the local people. Other information was collected regarding environmental effects on people's wellbeing due to the mining operations.



3.4.1 Participant Observation

In this method, information was obtained by observing what was really happening and experienced by the people in the study area. It is a technique that involved systematically selecting, observing, and recording the behaviour and characteristics of people or phenomena. In the field, direct observations were made on issues pertaining to the socio-economic and environmental effects of large-scale mining in the areas of interest to the study. Such issues included social development services, land degradation, waste rock-handling, access to housing, child-labour, rates of crime, and others characteristics of the same kind.

3.4.2 Focus Group Discussions

This method involved several interviewees at the same time. It included one group of women and another group of men selected from each village in the study. This means that two groups were obtained from each village, making a total of eight (8) groups that were consulted. This was done to ensure an equal representation and gender balance. Each focus group was composed of ten members for the purpose of effective discussion.

3.4.1 Structured and Semi-Structured Interviews

Interviews of various kinds are prominent data collection strategies in both qualitative and quantitative research (Bryman, 2008). While a structured interview has a formalized and limited set of questions, a semi-structured interview is more flexible. As a result of this, it allowed us to bring up new questions during the interview depending on the way interviewees responded. In every selected village, structured interviews were conducted with household heads, while semi-structured interviews were conducted with key informants. Key informants were primarily obtained from district officials, GGM staff, and village leaders including influential people and elders. Key informants are described as members who are particularly knowledgeable and reliable about factual matters in a community. Key informants not only provided the researcher with practical details related to the research; they also provided some secondary information related to GGM operations for comparative purposes with other sources of information.



3.4.4 Document Review

The assumptions behind the use of this method were to complement the first-hand information obtained through structured and semi-structured interviews and observations. A document review was also used to collect secondary information from reports and other relevant documents such as books, journals, and official reports. The review was carried out by reading both published and unpublished documents from REPOA, the University of Dar es Salaam Library, the Tanzania Investment Centre, the Ministry of Energy and Minerals, GGM, and electronic sources on various websites. The method was very useful especially in determining validity and reliability by comparing with what other methods of data collection had revealed.

3.5 Data Processing and Analysis

3.5.1 Qualitative Data Analysis

Qualitative data were handled via thematic techniques, organized using key themes that emerged from the discussions held with respondents and other stakeholders. The themed data were then analysed using content and structural functional analysis. In this way, the recorded dialogues with respondents were broken down into the smallest meaningful units of information, values, and attitudes. Structural functional analysis was used to explain the way that social facts were related to each other within a social system, and the manner in which they related to the physical environment. Generally, qualitative data provided clear and systematic responses by respondents on key issues of research interest such as change of land use; cost of living; the nature of the employment opportunities offered by the company; crop choices; disease incidences; income disparities; child-labour; prostitution; local governance issues, like community participation; business development services; and environmental control.

3.5.2 Quantitative Data Analysis

Both descriptive and inferential statistics were computed for the quantitative data. The analysis was done using the Statistical Package for Social Sciences (SPSS version 12.0) software. Frequency distribution tables were generated to summarize the data. A t-test was performed to test for any significant differences between villages which were close to and those which were distant from GGM.



3.6 Dissemination of Research Findings

Dissemination of findings has to do with communicating research findings to the concerned people and/or institutions attached to it. There is no value in doing research unless you let people know about it by disseminating your research and its findings/recommendations to as wide an audience as possible. In this study, feedback workshops were conducted at REPOA and at the community level in Geita District. Feedback workshops provided an opportunity for the participants and villagers, with the involvement of researchers, to articulate the key outcomes of the research for achievable policy options to improve the governance of mineral resources in Tanzania. Additional recommendations and information were incorporated into the final report.

3.7 Ethical Considerations

In this study, ethical issues were accorded a high priority in a sense that necessary information was obtained regarding the consent of respondents. The researcher informed the subjects about their expected roles in the study and its benefits.



4.0 RESULTS AND DISCUSSION

4.1 Distribution of Economic Activities by Characteristics of Respondents

4.1.1 Distribution of Economic Activities by Sex

The selected sample for this study comprised 51.6% females and 48.4% males from nearby villages, and 65.6% males and 34.4% females from more distant villages. Based on their sex, respondents seemed to engage in a diversity of economic activities in a year to generate household income diversification. In villages closer to GGM, mining was preferred by males (18.8%) and petty business by females (21.9%). Mining did not exclude the females since 10.9% of them were employed in this activity. In the more distant villages, both males (46.9%) and females (18.8%) preferred farming as the main economic activity. From these results, it can therefore be concluded that mining and farming were the most preferred economic activities by males, while petty business and farming were preferred by females (Table 2).

4.1.2 Distribution of Economic Activities by Age

The results in Table 2 indicate that the age of respondents in nearby villages ranged from 23 to 82 with an average of 47 years. In more distant villages the age of respondents ranged from 22 to 80 with an average of 48 years. In both cases, the dominant age range was 41-60 years among those who were mainly engaged in mining (20.3%) and among those who were mainly engaged in farming (34.4%). None of the respondents employed in mines were below 20 or above 60 years of age. In this regard, one may generalize that mining and small-scale farming was the main economic activities, and they were preferred by most of the villagers in the productive age category (41-60 years).

4.1.3 Distribution of Economic Activities by Marital Status

The majority of the respondents in more distant and nearby villages were married, comprising 71.9% and 57.8% respectively. The results show that married people in nearby villages depended mainly on agriculture and mining (20.3%), while in distant villages married people depended more on agriculture alone (51.6%) as their main

economic activity. This suggests that extended families in the study area would struggle to survive if income contributions from mining and agriculture in nearby villages declined. The same argument would apply if income from agriculture declined in more distant villages.

4.1.4 Distribution of Economic Activities by Education Levels

The majority of the respondents who were influenced by GGM activities had attained a primary level of education, comprising 58.3% in nearby villages and 56.2% in more distant villages. Another group were those who had no formal education, comprising 23.3% in nearby villages and 28.1% in more distant villages. Mining was the most significant economic activity, carried out mainly by STD VII leavers. The results in Table 2 show that activities within mines can be practised by any person regardless of education level, particularly those with STD VII education. Farming is the most favourable economic activity among the majority of STD VII leavers and those with non-formal education. In both cases, individuals with higher levels of education prefer to engage in fewer income strategies; for example, those with levels above primary education were found to engage in only one economic activity. Generally, apart from public service employees, greater financial circulation within the economy in the study area was in favour of those who had no formal education and STD VII individuals.

4.1.5 Distribution of Economic Activities by Household Size

On average, households in more distant villages had 8 members, with the number ranging from 1 to 16, while in nearby villages the average number was 7, ranging from 1 to 29. Both areas were populated with large families of 7 members and above (62.5% for more distant; 46.9% for nearby). Farming was the most preferred economic activity in more distant villages, whereas the most preferred economic activity in nearby villages was mining. This implies that mining and farming are the main economic activities of the communities in the study.



Table 2: Distribution of economic activities by characteristics of respondents

| | Nearby villages | | | | | | More distant villages | | | | | |
|-----------------------|-----------------|-------------|-------------|-------------|-------------|------------|-----------------------|-------------|------------|-------------|-------------|------------|
| | N | Farm | Petty | Casual | Mining | Total % | N | Farm | Livestock | Petty | Casual | Total % |
| Sex | | | | | | | | | | | | |
| Male | 31 | 17.2 | 6.2 | 6.2 | 18.8 | 48.4 | 42 | 46.9 | 6.2 | 4.7 | 7.8 | 65.6 |
| Female | 33 | 14.1 | 21.9 | 4.7 | 10.9 | 51.6 | 22 | 18.8 | 0.0 | 7.8 | 7.8 | 34.4 |
| Total | 64 | 31.2 | 28.1 | 10.9 | 29.7 | 100 | 64 | 65.6 | 6.2 | 12.5 | 15.6 | 100 |
| Age | | | | | | | | | | | | |
| < 20 | - | - | - | - | - | - | - | - | - | - | - | - |
| 20–40 | 18 | 6.2 | 9.4 | 3.1 | 9.4 | 28.1 | 24 | 18.8 | 1.6 | 7.8 | 9.4 | 37.5 |
| 41–60 | 39 | 17.2 | 17.2 | 6.2 | 20.3 | 60.9 | 29 | 34.4 | 3.1 | 4.7 | 3.1 | 45.3 |
| > 60 | 7 | 7.8 | 1.6 | 1.6 | .0 | 10.9 | 11 | 12.5 | 1.6 | 0.0 | 3.1 | 17.2 |
| Total | 64 | 31.2 | 28.1 | 10.9 | 29.7 | 100 | 64 | 65.6 | 6.2 | 12.5 | 15.6 | 100 |
| Marital status | | | | | | | | | | | | |
| Single | 10 | 3.1 | 9.4 | 0.0 | 3.1 | 15.6 | 5 | 3.1 | .0 | 4.7 | 0.0 | 7.8 |
| Married | 37 | 20.3 | 9.4 | 7.8 | 20.3 | 57.8 | 46 | 51.6 | 6.2 | 6.2 | 7.8 | 71.9 |
| Divorced | 1 | 0.0 | 0.0 | 0.0 | 1.6 | 1.6 | 1 | 1.6 | 0.0 | .0 | 0.0 | 1.6 |
| Separated | 6 | 4.7 | 4.7 | 0.0 | 0.0 | 9.4 | 4 | 4.7 | 0.0 | 1.6 | 0.0 | 6.2 |
| Widow | 10 | 3.1 | 4.7 | 3.1 | 4.7 | 15.6 | 8 | 4.7 | 0.0 | 0.0 | 7.8 | 12.5 |
| Total | 64 | 31.2 | 28.1 | 10.9 | 29.7 | 100 | 64 | 65.6 | 6.2 | 12.5 | 15.6 | 100 |
| Education | | | | | | | | | | | | |
| No formal | 14 | 8.3 | 8.3 | 1.7 | 5.0 | 23.3 | 18 | 18.8 | 0.0 | 4.7 | 4.7 | 28.1 |
| STD IV | 9 | 5.0 | 5.0 | 1.7 | 3.3 | 15.0 | 4 | 4.7 | 1.6 | .0 | .0 | 6.2 |
| STD VII | 35 | 15.0 | 16.7 | 6.7 | 20.0 | 58.3 | 36 | 34.4 | 4.7 | 7.8 | 9.4 | 56.2 |
| Form II | 1 | 0.0 | 0.0 | 0.0 | 1.7 | 1.7 | 3 | 3.1 | 0.0 | 0.0 | 1.6 | 4.7 |
| Form IV | - | - | - | - | - | - | 3 | 4.7 | .0 | .0 | .0 | 4.7 |
| Post Sec | 1 | 1.7 | 0.0 | 0.0 | 0.0 | 1.7 | - | - | - | - | - | - |
| Total | 60 | 30 | 30 | 10 | 30 | 100 | 64 | 65.6 | 6.2 | 12.5 | 15.6 | 100 |
| Hh/size | | | | | | | | | | | | |
| 1–3 | 11 | 6.2 | 6.2 | 1.6 | 3.1 | 17.2 | 9 | 7.8 | 0.0 | 1.6 | 4.7 | 14.1 |
| 4–6 | 23 | 6.2 | 10.9 | 4.7 | 14.1 | 35.9 | 15 | 12.5 | 1.6 | 1.6 | 7.8 | 23.4 |
| ≥ 7 | 30 | 18.8 | 10.9 | 4.7 | 12.5 | 46.9 | 40 | 45.3 | 4.7 | 9.4 | 3.1 | 62.5 |
| Total | 64 | 31.2 | 28.1 | 10.9 | 29.7 | 100 | 64 | 65.6 | 6.2 | 12.5 | 15.6 | 100 |

Source: Field survey, 2009

4.2 Distribution of Economic Activities by Income Groups

Apart from assessing the general characteristics of respondents with respect to their livelihood strategies, poverty status based on the poverty line in the year 2009 was also assessed at household level. In both areas there were less poor, medium and poor income groups, which on average generated an annual income of 4153.55 USD, 906.09 USD, and 378.04 USD respectively in the nearby villages, and 3414.57 USD, 1028.07 USD, and 207.74 USD respectively in the more distant villages (see Table 3). With regard to livelihood, this indicates that households in the study areas would generate much more annual income if they invested in and/or improved their farming, mining, and petty business activities.

Table 3: Distribution of economic activities by income groups

| Income groups | Activity | Nearby villages | | More distant villages | |
|---------------|----------------|---------------------|------------|-----------------------|------------|
| | | Annual income (USD) | Per cent | Annual income (USD) | Per cent |
| Less poor | Farming | | - | 4820.57 | 75 |
| | Mining | 2878.95 | 60 | | - |
| | Petty | 5428.14 | 40 | 2008.57 | 25 |
| | Average | 4153.55 | 100 | 3414.57 | 100 |
| Medium | Mining | 897.16 | 42.5 | | - |
| | Farming | 883.77 | 35 | 851 | 50 |
| | Petty | 937.33 | 22.5 | 1205.14 | 50 |
| | Average | 906.09 | 100 | 1028.07 | 100 |
| Poor | Mining | 270.29 | 30.9 | | - |
| | Farming | 357.77 | 25 | 185.03 | 22.3 |
| | Petty | 493.11 | 28.6 | 72.98 | 8.8 |
| | Average | 378.04 | 100 | 207.74 | 100 |

Source: Field survey, 2009

A t-test was used to test the hypothesis that postulated changes in annual income between villages due to GGM investment. The results of the test accepted the claim for the less poor and medium income groups ($p < 0.05$). In less poor groups the results of the t-test (Table 4) indicated that despite of the lack of farming opportunities for households in nearby villages, there were significantly higher earnings of about 8832.76 USD per household, versus more distant villages. This was due to high employment in mining (60%), since this supported a higher (40%) engagement in petty business as

compared to more distant villages (25%). A contrast with nearby villages was deduced in the medium group. The findings indicate that a household earned 1518.18 USD more in more distant villages than in nearby villages, probably because of a higher rate of involvement in petty business (50%) and farming (50%) in the former (Table 3). Although poor households had more income strategies, they did not differ significantly in their average annual earnings ($p > 0.05$), probably due to low differences in the absolute advantage of income-generating activities.

These findings suggest that mining was the most prioritized activity among all income groups in nearby villages; likewise, farming was the most highly prioritized activity in the more distant villages. Last but not least, greater intensification and market analysis in agriculture would help the majority of poor households via increased generation of income, since large percentages were farmers (Table 3).

Table 4: Annual income between villages

| Income groups | T | Sig. (2-tailed) | Mean difference | Std. error difference | 95% CI of the difference | |
|---------------|--------|-----------------|-----------------|-----------------------|--------------------------|---------|
| | | | | | Lower | Upper |
| Poor | -1.185 | 0.240 | -143.84 | 121.4 | -386.12 | 98.43 |
| Medium* | -3.784 | 0.019 | -1518.2 | 401.22 | -2621.7 | -414.63 |
| Less poor* | 2.586 | 0.040 | 8832.76 | 3415.48 | 569.21 | 17096.3 |

Source: Field survey, 2009.

* Indicates significant difference (p-value < 5%)

4.3 Effectiveness of CSR

Field survey observation, documentary review, and discussions with key GGM informants revealed that the GGM Company established goals for community development. In the education sector, the processes aimed to increase the enrolment of primary school pupils and meet accommodation requirements for secondary schools in the district. This was supported by GGM contributions realized by the community (Table 5). However, the company planning and implementation processes were not participatory, since power and decision-making were largely in the hands of the company's development professionals.

This was critically noticed by GGM informants as they acknowledged negative perceptions from the community of what the company was doing in the areas of community development. Despite these contradictions, it can be argued that CSR was effective. However, less support from the community appeared to have been caused by

less knowledge on the part of the beneficiaries about the targeted goals and their time-bound nature. Using a bottom-up approach such negativities would be omitted, and the community members would fully realize what GMM planned to do to develop the community. This might possibly be achieved by involving community members in identifying areas of need for interventions, as well as during designing, planning, implementation, monitoring, and evaluating community projects and/or programmes. This approach will not only create a positive perception of the community towards GGM support, but also increase the level of sustainability of the projects supported by GGM. A top-down approach is only relevant in the implementation of decisions agreed upon with the communities.

4.4 Contribution of GGM to Socio-Economic Development

The findings related to the views of household respondents (Table 5) indicated that about 47.2% of contributions were realized in waged employment, 25% on water services, 15.3% on rural road construction, 4.2% on school construction, and 2.8% on the construction of dispensaries, medical supplies, and influence on local markets. Although most of the services were offered by the company to the nearest villages (Mgusu and Mponvu), the more distant villages also recognized the GGM services, especially in waged employment. Indeed, about 4.2% of households were working in GGM's mines. Local markets within more distant villages were also recognized as having grown due to the presence of GGM in the area. In the education sector, GGM constructed 25 classrooms at Kamena, Bukwimba, Katoro, Kamhanga, Busolwa, Kalangalala, and Mpomvu secondary schools. In addition, the company provided 46 desks those schools. Moreover, GGM also managed to construct one girls' secondary school known as Nyankumbu.

Furthermore, contributions were also recognized with respect to the support provided to Nyakabale clinic, cleft palate surgery and two outpatient buildings for the HIV/malaria control programmes. More evidence were noted with respect to the construction of Moyo wa Huruma Orphanage centre found within the respective district. These findings indicate that GGM offered direct employment, particularly in nearby villages, and indirect employment through market creation in both areas. With regard to poverty alleviation, these findings are supported by the ICMM's (2007) views that the provision of direct employment by large-scale mines initiates multiplier effects that create significant indirect employment, which together help to reduce poverty in the areas in which they operate. It can therefore be argued that GGM activities have contributed significantly to poverty reduction in the surrounding communities by facilitating the growth of other activities, including petty business, as stated in section 4.2 above.



Table 5: GGM Socio-Economic Contributions

| Contributions/Services | Villages | | Total per cent |
|------------------------|-----------------------------|-----------------------------|----------------|
| | Nearby villages (N = 68) | More distant villages (N=4) | |
| Waged employment | 43.1 | 4.2 | 47.2 |
| Water | 25.0 | - | 25.0 |
| Road construction | 15.3 | - | 15.3 |
| Education (schools) | 4.2 | - | 4.2 |
| Health (dispensaries) | 2.8 | - | 2.8 |
| Medical supplies | 2.8 | - | 2.8 |
| Markets | 1.4 | 1.4 | 2.8 |

Source: Field survey, 2009

4.5 Community Perceptions of the Effects of GGM Activities on the Environment

This study assessed the influence of GGM’s activities on the environment; water pollution, air pollution, noise, and land degradation were the main problems identified as having been influenced by the company’s activities. These problems were also identified by earlier studies such as that of Kitula (2006), but this study went further to investigate the community members’ perceptions of the extent to which the company’s activities would be likely to influence problems, so that immediate measures could be directed towards the problems causing the most adverse effects. The results in Table 6 indicate that most of the responses indicated a strong influence of the company activities, especially in nearby villages where water was seen as being highly polluted (70.3%), followed by air (59.4%), noise (45.4%), and land degradation (31.3%). In most cases (60.3%) the company activities were reported to have “no influence” on the more distant villages.

In general, the highlighted types of pollution due to GGM activities were perceived to have a strong impact in the nearby villages. In connection to CSR, GGM activities, as indicated by the community members' views, seemed to deny the significance of the role. This was due to the fact that CSR requires a company’s commitment to minimize negative impacts associated with its business operations and processes, which could affect society and the environment (Colantonio, 2007). Although contributions from GGM were recognized (Section 4.4 above), the impacts could directly or indirectly affect socio-economic development within the nearby communities, since environmental amelioration is one of the pillars for sustainable economic development within a community.

Table 6: Community perceptions of the effects of GGM activities on the environment

| Pollution | Villages | Responses (%) | | |
|------------------|----------|---------------|------|--------|
| | | No influence | Weak | Strong |
| Water pollution | Close | 26.6 | 3.1 | 70.3 |
| | Distant | 60.3 | 6.3 | 33.3 |
| Air pollution | Close | 32.8 | 7.8 | 59.4 |
| | Distant | 58.7 | 11.1 | 30.2 |
| Noise | Close | 37.5 | 17.2 | 45.4 |
| | Distant | 76.1 | 4.8 | 19.0 |
| Land degradation | Close | 48.5 | 20.3 | 31.3 |
| | Distant | 77.8 | 3.2 | 19.0 |

Source: Field survey, 2009

This calls for a thorough and timely environmental and social impact assessment, which would enable the company to account for the costs of such externalities (negative impacts) in operation costs, which in turn will help to reduce or completely eliminate environmental problems.



5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 *Conclusions*

The findings reported above suggest that mining and small-scale agriculture were the most preferred economic activities and contributed a large share of annual income to the households in the study area. GGM seems to have a lot of influence on mining employment, and on indirect employment through market creation. When compared to small-scale farming, these activities generated higher average annual incomes.

Similarly, CSR was being implemented, especially in the education and health sectors. This was also accompanied by the provision of both direct and indirect employment. Equally important, respondents recognized the GGM's support for community health and education. However, there was little information within the community about the targeted goals and their time-bound nature - a situation which led to negative perceptions of the company among community members. In addition, the negatively perceived environmental impacts appeared to outweigh the social services provided by GGM as a response to CSR. As a result, the impacts could either directly or indirectly affect the sustainability of socio-economic development, especially in nearby communities. In light of this, it can therefore be argued in this paper that concerted efforts by the government, GGM, and other stakeholders are vital in order to mitigate the reported environmental problems for sustainable economic development within communities.

5.2 *Recommendations*

5.2.1 *Recommendations for Policy Implications*

Since the majority of the poor in more distant villages depend more on small-scale agriculture and gain less from mining compared to the poor in villages close to GGM, this study recommends the dissemination of more agricultural intensification practices, and come up with a need for market analysis of agricultural products to ensure high income gains for farmers in the area.

To do away with negative community perceptions of GGM and ensure the effective functioning of CSR activities by the company within local communities, a bottom-up approach to planning and decision-making will be of great importance as it will address

communities' needs in a better way. This approach requires full participation by the community and other key stakeholders in the decision-making processes, at all stages of the project and/or the programme cycle. Therefore, the company should set up strategies for effective community engagement as an important part of the sustainable development process within CSR. Clear communication channels at all levels are essential in this regard.

The company should account for negative externalities in operational costs so as to reduce or completely eliminate associated environmental problems. This will help to minimize existing community dissatisfaction with regard to issues pertaining to environmental pollution.

Since there were concerns raised about the sustainability of development projects established by GGM, both the mining company and responsible authorities should make clear arrangements to support the long-term sustainability of development projects to support adjacent communities even when the mines are closed.

5.2.2 Recommendations for Further Research

With respect to this, the present study identified one relevant for further research. It is critical for other researchers to determine if there is a direct relationship between large-scale mining activities and increased incidences of diseases like TB and skin rashes in communities adjacent to mines. During this study many complaints were raised about increased levels of such diseases, but the study was not designed to collect this information.

5.3 Significance of the Study: Conclusions and Recommendations

This study was in line with the Millennium Development Goals numbers 1 and 7, which call for eradicating extreme poverty and hunger and ensuring environmental sustainability. In Tanzania, development is guided by the New Development Vision 2025 which intends to attain high quality livelihoods, in a sense of improving the quality of life for all and achieve high level of human development. While Tanzania's 1997 mineral policy recognizes the need for mining sustainability by integrating environmental and social concerns into mineral development, most of the large-scale mining companies are reluctant to go beyond the compliance level because it is not a legally binding requirement. This has resulted in the current government's agenda of reviewing all its mining contracts with the intention of enhancing a win-win situation. With regard to the



argument above, sustainable mining is seen as an activity which balances protection of the flora and fauna and the natural environment with the need to reduce or eliminate the adverse environmental effects of mining, improve health and safety conditions in mining areas, and address social issues affecting women, children, and local communities in terms of their social and economic development.

5.4 Limitations of the Study

The study focused only on the contributions of GGM to the livelihoods of local communities in Geita District. Therefore, the findings cannot be generalized to all communities around large-scale mining companies operating in Tanzania, as each company has its own policy and approach to addressing CSR issues. Also, community culture and behaviour differ from one place to another.



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