

**RESPONSE OF LARGE-SCALE MINING COMPANIES TO THE SYSTEM OF  
GOVERNANCE FOR IMPROVED LOCAL LIVELIHOODS IN TANZANIA: A  
CASE OF KAHAMA DISTRICT**

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**A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE  
DEGREE OF DOCTOR OF PHILOSOPHY OF SOKOINE UNIVERSITY OF  
AGRICULTURE. MOROGORO, TANZANIA.**

## **EXTENDED ABSTRACT**

This study assesses the response of large scale-mining companies to the system of governance for improved local livelihoods in Tanzania. Specifically, the study analysed the policy enabling environment of the mining sector in Tanzania, examined compliance of large-scale mining companies with regulatory framework, explored community perception on mining companies' practices towards enhancing environmental sustainability and assessed the contribution of mining companies to the local livelihoods in Kahama District. The study employed both the cross-sectional and case study designs in which three mining village communities namely Mwendakulima, Mwime and Chapulwa were involved. The sample size for the study was 215 respondents, and systematic review of literature was used to collect information related to policies and legislation from Tanzania and best practices elsewhere. Additionally, household and key informant interviews with technical personnel from government and mining company officials were contacted to determine the extent to which communities' understood issues of regulatory framework in relation to sustainable mining practices for improved local livelihoods. A five-point Likert scale with alternative answers from strongly disagree to strongly agree attitudes with statements implying disliking and liking the system of governance to the mode of mining operations was used as part from a questionnaire which was used for the household survey in this study. Data on policy review were analysed using content analysis from sources of information captured in various documents to portray the policy enabling environment of the mining sector in Tanzania. The whole mining operations in relation to attributes of compliance, sustainable environmental practices and livelihoods from community perspectives were handled by adopting exploratory factor analysis (EFA) using the Statistical Package for Social Sciences (SPSS) software to explore inter-relationships with a reflection in the national

regulatory framework. The study findings show that Tanzania has taken serious measures towards exploiting opportunities by creating a policy enabling environment. However, the measures have not that much achieved the expected results to its desired level due to the persistence of targeted challenges in the sector. The persisting challenges are reflected in the form of lack of expected benefits and failure to develop policy options for making the investment environment supportive for all actors in the sector, hence failure to use mineral wealth sustainably for growth and poverty reduction for the benefit of all. In terms of compliance for sustainable mining practices, results show that consultation for views on issues, publication of anticipated effects and benefits in communities were positively attained by the mining company. However, it was also evident that the mining companies' operations largely affected the qualities of water, soil and air within operation areas. There was also less compliance with better practice on issues of noise reduction and employment of a work force from the local communities. While the community perceived a positive response on social accountability measures, the community response showed less compliance regarding the degree of achievement in practice. Additionally, the practices towards the restoration of degraded land were also negatively explained. Consequently, this created negative attitude in the community on informed ultimate goal for enhanced sustainability. While in some instances these challenges were attributed to the mining company's less compliance practices to the system of governance, in some cases they were associated with government's inability to effectively implement, monitor and enforce the existing regulatory framework. The study concludes that key aspects for assured sustainability in areas with large mining operations should be determined in legally responsible and socially equitable ways for secured community livelihoods resources in areas affected by mining operations even after mine closure. Consequently, the study calls for improvement of large-scale mining companies' compliance with respect to policy, legal and regulatory frameworks particularly where policy gaps have resulted

into poor practices in terms of accommodating not only the country's interests but, also communities' in areas with large-scale mining operations. Therefore, the critical contribution of this study is the ability to add on to the existing literature knowledge with regard to the state of compliance of large-mining companies to the regulatory framework for improved local livelihoods on the basis of local community perspectives in the Tanzania's mining sector using Buzwagi gold mine as a case study. This is especially important towards realization of the efforts underway by the fifth phase government of Tanzania (2015-2025) which are aimed at increasing the contribution of the sector to the country.

## DECLARATION

**I, WILLY MALIGANYA**, do hereby declare to the Senate of Sokoine University of Agriculture that this thesis is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

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Willy Maliganya  
**(PhD Candidate)**

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Date

The above declaration is confirmed by;

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Prof. Kenneth M. K. Bengesi  
**(Supervisor)**

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Date

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## **DEDICATION**

This work is dedicated to my parents; my Father the late Sabaganga Mlamjih Mabuga (Rest in Eternal Peace) and my Mother Sarah Bulamile Ludigija for laying the foundation of my education.

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## LIST OF ABBREVIATIONS AND ACRONYMS

ASSM	Artisanal and Small Scale Miners
BOT	Bank of Tanzania
CBOs	Community Based Organizations
CFA	Confirmatory Factor Analysis
CSR	Corporate Social Responsibility
CT	Capability Theory
DFID	Department for International Development
DRC	Democratic Republic of Congo
EFA	Exploratory Factor Analysis
EIA	Environmental Impact Assessment
EIs	Extractive Industries
EITI	Extractive Industries Transparency Initiative
EMA	Environmental Management Act
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GOT	Government of Tanzania
HRs	Human Rights
ICMM	International Council on Mining and Metals
ILO	International Labour Organizations
ITA	Income Tax Act
IT	Institutional Theory
LSM	Large Scale Mining
MDAs	Mining Development Agreements
MEM	Ministry of Energy and Minerals
MIGA	Multilateral Investment Guarantee Agency
MNCs	Multinational Corporations
MNMA	Mwalimu Nyerere Memorial Academy
NBS	National Bureau of Statistics
NEMC	National Environmental Management Council
NEP	National Environmental Policy
NGO	Non-Governmental Organizations
NRGI	Natural Resource Governance Institute
PCA	Principal Component Analysis
SDGs	Sustainable Development Goals
SLF	Sustainable Livelihood Framework
SLO	Social License to Operate
SPSS	Statistical Package for Social Science
STAMICO	State Mining Corporations
ST	Stakeholder Theory

SUA	Sokoine University of Agriculture
TIC	Tanzania Investment Centre
TRA	Tanzania Revenue Authority
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Programme
URT	United Republic of Tanzania
USA	United States of America
WB	World Bank

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background Information

In recent years, mining has been one of the major economic activities in developing countries including Tanzania (UNDP, 2011; Lange, 2006). The literature indicates that 42% of the world's share of bauxite, 38% of uranium, 42% of gold, 73% of its platinum and 88% of diamonds are found in Africa (Moyo, 2011; Bennett, 2010; Bush, 2008). With respect to this, Martin and Taylor (2012) argue that mining has a huge potential contribution to the livelihoods and poverty reduction of local populations. According to Jenkins and Yakovleva (2006), mining industries are expected to influence societies in areas in which they operate. Moreover, Mabhena and Moyo (2014) observed that mineral resources can be harnessed to contribute to the socio-economic well-being of communities in the area of their operation. This could be reflected with respect to aspects of infrastructure, health, education and the stimulation of the local economy.

While mining, especially large scale, is expected to contribute significantly to socio-economic development and help lift millions of people out of poverty, there have been concerns that the benefits of the resource boom are not widely shared and do not always translate into local socio-economic development (Frederiksen, 2017; Lange, 2013; Hilson, 2012; Semboja *et al.*, 2007). Subsequently, large scale mining investments have not always led to the generation of local employment opportunities, nor have they contributed significantly to poverty alleviation.

The above mentioned situation leaves local communities feeling excluded from the benefits and the wealth created by extractive industries including the mining sector in this



regard. However, several studies have demonstrated that where there is appropriate governance, the exploitation of mineral resources can have the potential to generate large revenues that are needed to significantly boost economic growth and reduce poverty (Slack, 2012; Campbell, 2010; 2009; Fisher, 2007; Lederman and Maloney, 2007). Equally important, UNCTAD (2014) argues that, with good and transparent governance of the sector, the exploitation of mineral resources can foster economic growth hence, reduce poverty. This experience has been demonstrated in some countries such as the United States, Canada and Australia which are known for the role played by mineral resources in the transformation of their economies (Leveille, 2009; ICMM, 2007; Campbell, 2006). According to Connell and Dolan (2011), African countries such as South Africa, Ghana and Botswana are also increasingly seen as models of successful management of natural resources for social and economic development.

Generally, the success of countries in relation to their own socio-economic development due to the extractive industries has been due to their commitment to high standards of accountability and transparency in the governance of the sector and mineral resources in particular (Bryan and Hofman, 2007; Black *et al.*, 2006; ICMM, 2006). Therefore, natural resources ought to be utilized for the realization of the benefits of the people in the country in which they are found. However, this has not been the case for most African Countries. In practice, it has been difficult to convert such resources into broad based improvements in terms of poverty reduction, especially in communities where such resources are being extracted (URT, 2018; 2015; 2014; Hilson, 2012; Campbell, 2006).

This comes with a wide range of negative environmental and social impacts, especially at the local levels such as loss of livelihood and disturbance of traditional lifestyles of indigenous people (UNDP, 2016; Kwasie *et al.*, 2014; Darimani *et al.*, 2013; Knight,

2002). In some countries, development approaches and outcomes have been government-centred, with little participation of stakeholders, including local communities affected by the exploitation of mineral resources. Where mining has contributed to better development outcomes, as it is the case for Botswana, Morocco, Namibia and South Africa, success could be linked to sound management of the sector; good governance; respect for the rule of the law; good infrastructure; and an overall favourable environment for business development (URT, 2013b; Darimani, 2009).

Despite the high growth rates recorded in some countries such as Botswana, in recent years, many countries in Africa have failed to turn resource wealth into inclusive economic development. If anything, resource wealth has in many cases resulted in increased income inequality and even triggered social and political instability as it is the case in the Democratic Republic of Congo (DRC), Sierra Leone, and South Sudan, a situation described as the resource curse (Lange, 2011; Collier, 2010). However, evidence increasingly indicates that enhanced practices of good governance has been associated with sustainable development outcomes as the experience of a few resource endowed countries in Africa such as Botswana, Namibia, Ghana and Mozambique. These countries have been using their resource-wealth to stimulate high growth, create strong private sector with additional jobs and in transforming their development paths towards achieving sustainable development (Kaufmann, 2012; Griddle, 2004). On the contrary, the Democratic Republic of Congo, Sierra Leone and Liberia have not seized this opportunities due to corruption, conflict and mismanagement of resources that failed them to mainstream mineral wealth into growth and poverty reduction in their Countries (UNCTAD, 2014; Mason, 2014; Kitula, 2006; De Echave, 2005).

Accordingly, Mzembe and Meaton (2014) in reference to Malawi acknowledge that existence of weak regulatory frameworks were largely taken for an advantage by powerful and connected multi-national corporations and that the drive for Corporate Social Responsibility (CSR) has not always been a local concern. Therefore, instead of being beneficial, the expansion of mineral activities in developing countries drains and causes a damaging effect on local communities. Affected communities complain continuously that they do not accrue the benefits of mineral exploitation and that they are deprived of considerable portions of their land to the benefit of large-scale mineral companies without fair compensation. Arguably, the exclusion of affected communities from the decision-making process has been regarded as one of the major reasons explaining why the mineral sector has failed to bring about economic development at the local level.

In Tanzania, the country is well endowed with a wide range of mineral resources which have the potential to play an important role in promoting her socio-economic growth and development (URT, 2014). In all these resources, the mining sector continues to be one of the biggest contributors to the national revenue through payment of royalties, employees' income taxes and corporate taxes (URT, 2014). Tanzania's economy grew by 7% per annum during the late 2000s and early 2010s (2002-2012) whereby the contribution of the mining sector to the GDP slightly increased from 1.4% in 1998 to 3.0% in 2008; 3.3% in 2013; 4.8% in 2018 and 5% in 2019 (URT, 2018; Makene *et al.*, 2012). However, despite its vast natural resources base and economic growth, the mining sector's contribution towards improved local livelihoods remains minimal particularly, among the local people (URT, 2014). Consequently, there has been a growing resentment with regard to the real benefits accrued from the mining sector by ordinary Tanzanians.

While there is agreement on the mineral potential in the country; there is much disagreement about the importance of the contribution of mining to local economic

development (Lange, 2011, 2006; Kitula, 2006). The debate has been even more intense with respect to the contribution of mining activities to local livelihoods. Particularly, those impacted by mining activities, where poverty is pervasive (Hilson, 2012; Akabzaa, 2009). For example, in Kahama District, since the inception of large-scale mining (LSM), community expectations have been high over the benefits from the sector such as provision of education facilities, health and water as well as road networks improvements. However, benefits derived from the sector are not equally felt (URT, 2008). This shows that the issue of benefits sharing has not been dealt with accordingly (Maliganya and Bengesi, 2018; Lange and Kinyondo, 2016; Kabote and Niboye, 2013; Nyankweli, 2012; Kitula, 2006). Conversely, even the stakeholders' perception of what constitutes mineral benefits also differs. Consequently, due to failure to manage the divergence in expectations, it could possibly lead to conflicts and tension between stakeholders involved in the mining sector and in some cases, this has been against investors (Mzembe and Downs, 2014; Lugoe, 2012).

With due consideration on this situation, the need for an effective system of governance becomes imperative. It is assumed that governance might be able to reconcile these interests through a responsive regulatory framework for the mining industry. Moreover, governance is about how people share decision-making and how this affects their abilities to empower themselves and others. While it is not so clear as to why things are not working well in the mining sector, there is a growing consensus that unless resource-rich developing countries improve their systems of governance, growing exploitation of mineral, oil and gas resources may result in long-term adverse developmental outcomes associated with the resource curse (Grindle, 2011; ICMM, 2006). On this basis, it is essential that we understand the institutions and policy processes shaping mining

development on Africa if we are to tackle the diverse development challenges facing the mining sector for inclusive development in the continent.

While there has been evidence of the usefulness of mining investments in many countries rich in mineral resources, questions on their contribution to local populations remain. For example, are the large scale mining strategies responding to the system of governance and appropriate for increasing local livelihood options for poverty reduction? If they are, which strategies are more effective in the context of poverty reduction and sustained development at the local level? The above questions constituted the main subject matter regarding the need to conduct the study. Although some studies have been done on this topic such as by Lange and Kinyondo (2016); Kahyarara (2015); Kabote and Niboye (2013); Nyankweli (2012); Kitula (2006), but they have only highlighted issues regarding the potential of the sector towards poverty reduction but, most have been general, and they have been carried out in different geographical locations. Therefore, much remains unknown in relation to the extent to which large scale mining responds to the system of governance and how such response has enabled improvement of local livelihoods for sustainable development in Tanzania. Therefore, this study intended to bridge the existing information gap as problems pertaining to Tanzania's mining sector still persist and the reasons for the persistence are not clearly documented with regard to communities' surrounding large scale mining operations.

## **1.2 Problem Statement**

The extractive industry, especially mining, has been regarded as one of the major economic activities expected to contribute to the development among developing countries. This happens in the form of generated income and general improvement in the social services for countries like Tanzania (Frederiksen, 2017; Pedro, 2012; Moyo, 2011;

Darimani *et al.*, 2013). However, one among the key challenges has been how to develop effective governance mechanisms to enhance the contribution of mining to the economy and to the local communities' general wellbeing in terms of essential services. Essentially, the mining sector is expected to benefit the majority, however, this reality has been reflected in only few countries which have been able to accrue benefits for local communities (Stephen *et al.*, 2018; Bryan and Hofman, 2007; Mwalyosi, 2004). Like Botswana, Tanzania is also well endowed with a wide range of natural resources especially, mineral resources coupled with oil and gas which have the potential of promoting the country's socio-economic growth and sustainable development (URT, 2018; 2014; 2009).

Despite its vast natural resources base, Tanzania remains one of the countries benefiting marginally from the sector and the situation is not improving among rural communities where such resources are extracted. As a result, the mining sector has increasingly been one of the highly criticized sectors for its failure to provide essential services to local communities. While there is evidence of the usefulness of mining investments in many countries rich in mineral resources, questions on their contributions to the local populations remain unanswered, necessitating the need for further research on the topic.

Furthermore, there is increased debate in Tanzania with respect to the performance of the mining sector towards improved services and general living standards of people (Kinyondo and Lange, 2016; Kahyarara, 2015; Kabote and Niboye, 2013). Whereas the mining companies and local communities have been regarded as the major actors in the sector, experience shows that the mining companies have been dominating the sector for many years. Although the regulations governing the mining sector have been considered open in principle to all players towards meeting the conditions for exploitation of such

resources, they are often complicated in terms of realizing shared benefits for local communities adjacent to such resources. While the local communities are essentially considered as one among the immediate beneficiaries in this regard, the picture on the ground does not reflect this reality (URT, 2018; Mwalyosi, 2004).

Consequently, it has been difficult to sufficiently ascertain as to how and to what extent the mining sector in the form of LSM has been contributing towards improved livelihoods. This is expected to happen in terms of income and improved social services such as education and health as part of the mining companies' corporate social responsibility. This has caused a lot of public debates and discontents on whether or not the government and local communities receive fair shares from mining deals in terms of income and other related benefits accrued from the sector including Kahama District (Mia *et al.*, 2018; Kabote and Niboye, 2013). Although Kahama is one among the districts rich in mineral resources and one of the most important mining districts in Tanzania, poverty incidence is widely evident among the communities surrounding the mines (URT, 2018; 2014).

While there has been a series of studies conducted so far such as by Maliganya and Renatus (2017); Lange and Kinyondo (2016); Kahyarara (2015); Kabote and Niboye (2013); Nyankweli (2012) and Kitula (2006) on the general contribution of the sector, communities' complaints continues on the same. Moreover, the reasons as to why this situation persists remain unclear. One possibility is that LSM companies are not adequately responding to the system of governance for improved local livelihoods largely through corporate social responsibility (CSR). In addition, it is not clear as to what extent the large scale mining companies respond to the system of governance in terms of abiding by the regulatory framework, and the extent to which such a response has been affecting

local livelihoods in their areas of operation is also not known. It was, therefore, imperative to undertake this study to assess the response of LSM companies to the system of governance for improved local livelihoods in Kahama District.

The system of governance as per this study has been referred to structures and processes designed by the government to ensure responsiveness, accountability, transparency, and broad-based participation of mining companies for improved local livelihoods in areas adjacent to their operations. In this regard, the study was developed to assess the extent to which large-scale mining companies with a focus on Buzwagi gold mine, respond to communities' needs with adherence to policy guidelines, also; provisions stipulated in the legal and regulatory frameworks of the Tanzania's mining sector. Therefore, the study focused on wide spectrum of compliance in terms of pollution mitigation, compensation and resettlement, social responsiveness as well as sustainable environmental management systems.

Nevertheless, the study went further into assessing on how the community perceive the practices attained in treating pollution and wave disturbances induced by mining operations, preservation of genetic resources for plant and animals and also restoration of the disturbed natural environment. In essence to livelihood, the study boarded much on how the mining company was remarked to have secured the community from habitat displacements, economic development, healthy services, education, and food availability in off-set areas left for operations. Consequently, the study was done in a two-way approach such that; mining responsiveness over the community through national instruments, also; government over the mining company in the window of policy assurance for a suitable enabling environment to boost investment of the mining sector in Tanzania.



The purpose was to add knowledge on the existing literature and improve understanding among development planners, policy and decision makers, researchers and other stakeholders in the sector for future interventions. The study was also timely to generate empirical information to complement the efforts underway by the fifth phase government of Tanzania (2015-2025) to increase the contribution of the mining sector to the socio-economic well-being of the country. The efforts which are being carried out are well aligned towards reforming the mining sector for improved contribution of the sector not only to the country's socio-economic well-being generally but also specifically to the socio-economic well-being of communities where such resources are being exploited.

### **1.3 Justification of the Study**

Despite Tanzania's huge potential for mining sector the national economy, its contribution to the local population in terms of improved livelihoods remains limited, and its effects are not felt at the micro level in terms of poverty reduction. While policies and efforts have been made towards the development of the sector in Tanzania, however, less attention has been paid to explore the nexus between LSM and how it enhances local community livelihoods. Consequently, questions on how mining practices enhance local livelihoods become critical in this regard. More widely, there are few empirical studies that have specifically examined the development impacts of mining companies in terms of livelihoods security in Tanzania.

In spite of the impressive endowment of mineral resources in Kahama District, the sector is still largely faced with a number of challenges that hinder realization of the expected contribution to ordinary Tanzanians in terms of accrued benefits. Existing policy documents such as the Tanzania Development Vision 2025, National Five Year Development Plan II 2016/17-2020/21, East Africa Community Vision 2050, African

Development Agenda 2063 and Global Agenda 2030 on sustainable development goals, all emphasize on the need to promote effective governance in the mining sector. Although these policy documents are meant to allow for effective communities' participation in the sector for equity in the distribution of benefits, less is known about the extent to which these aspirations are realized in practice.

As a result of this, failure to manage the divergence in expectations has led, in some instances, to conflicts and tensions among stakeholders involved in the sector which undoubtedly warrant the need to fill in the existing knowledge gap. In view of this, the study on which this thesis is based intended to bridge the existing information gap since the problems pertaining to the realization of accrued benefits still persists in Tanzania's mining sector. Moreover, the above has led to immediate response of the fifth phase government in addressing the situation for maximizing benefits from the sector. Considering these contradictions, the study findings contribute to the body of knowledge on the existing literature and provide insights on the ways to effectively address the identified challenges.

Furthermore, information generated from this study improves the understanding among development planners, policy and decision makers as well as other stakeholders in the mining sector. The study could lead to the development of appropriate strategies to manage challenges faced particularly in the context of rural mining communities in Tanzania. Considering the needs of the current national and global policy documents, the study is well aligned with Tanzania's mining sector policy of 2009 which among others, aims to address poverty reduction by creating gainful and secure employment in the mineral sector and provide alternative sources of income for the rural population. The

study is further aligned to the efforts enshrined in Tanzania's Development Vision 2025 of transforming Tanzania into a middle income country by 2025.

At the global level, the generated information is correspondingly sheds light on the efforts towards the attainment of the Sustainable Development Goals (SDGs), particularly goal number one, two, three, four, six and ten which address key poverty issues with the aim of ending extreme poverty in all forms by 2030 for the general well-being of all people. These goals have been accompanied by goal number twelve which also emphasises on responsible consumption and production patterns. In addition, goal number fifteen captures key aspects regarding life on land aiming at protecting, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests and halt biodiversity loss among others. Goal number sixteen intends to promote peaceful and inclusive societies, build effective, accountable and inclusive institutions at all levels for sustainable development. These policy issues which are well addressed in the sustainable development goals constitutes the subject matter which the study has seen important for informing policy changes among African countries Tanzania included.

## **1.4 Objectives**

### **1.4.1 Overall objective**

The overall objective of the study was to assess the response of large-scale mining companies to the system of governance for improved local livelihoods in Kahama District.

### **1.4.2 Specific objectives**

Specifically, the study aimed to:

- i. analyse policy enabling environment of mining sector in Tanzania,

- ii. examine compliance of mining companies on regulatory frameworks,
- iii. explore community perception on mining companies' practices towards enhancing environmental sustainability and
- iv. assess the contribution of mining companies to the local livelihoods.

### **1.5 Research Questions**

1. How does the enabling policy environment support the mining sector in Tanzania?
2. Do mining companies observe sustainable mining practices in terms of abiding by the existing regulatory framework in the mining sector?
3. How does the community perceive mining companies' practices in terms of abiding by Tanzania's regulations for enhancing environmental sustainability?
4. Do large-scale mining companies contribute to local livelihoods improvement in the study area?

### **1.6 Theoretical Review**

This section presents the study's theoretical framework reviewed in an attempt to link theories and the actual practice on the ground. In this review, numerous theories such as the sustainable livelihoods framework, capability theory, stakeholder and institutional theories have been brought forward on the subject of governance and livelihoods in the context of large-scale mining (Jenkins and Yakovleva, 2006; Jenkins, 2004). These theories have been considered important to capture issues on how natural resource exploitation can well be aligned towards improved local livelihoods thus, poverty reduction. These theories include the sustainable livelihood framework which has been addressed in the context of capability and stakeholder and institutional theories. The theories have been considered useful in examining the response of LSM companies to the

system of governance and their implications on local livelihoods positive change as a result of mining activities (Owen and Kemp, 2015; Kemp, 2009; Carney, 2003).

### **1.6.1 The sustainable livelihood framework**

The use of Sustainable Livelihood Framework (SLF) has been regarded as an important for studies related to livelihoods of local communities. Given its significance, a number of agencies such as the UNDP and FAO have adopted a livelihoods approach and made use of livelihood frameworks. With the use of the SLF, some of the main villagers' livelihood assets were determined which included education level, financial security, infrastructure development as well as food security. Primarily, community development projects established by mining companies are expected to have a general impact on the communities' livelihoods by creating options for the villagers to improve their livelihood strategies. Available literature indicates that the approach (SLA) presented by DFID is a feasible theoretical instrument to understand the livelihoods of the rural population. The SLF presents the main assets influencing the communities' livelihoods. In this regard, no single asset is sufficient for rural households to develop sustainable livelihood strategies; livelihood strategies will most likely depend on an interrelation between assets from the five capitals: natural, financial, physical, human and social. Altogether, access to these assets determines the vulnerability of the individual household to shocks, trends and seasonality (Ashley and Carney, 1999).

The SLF posits that households possess different levels of resource endowment and capabilities, endure different scales of exposure to the institutions and policies that condition the environment in which they operate, and the interaction of these factors determine their livelihood choices and the consequent differences in welfare outcomes. Therefore, in the different applications of the SLF, considerable emphasis has been placed

on the core issue of individual and household endowments. In the different uses and adaptations of the framework, vulnerability of the poor in society was identified as the core challenge in the design and implementation of development interventions such as those implemented by mining companies.

In so doing, the SLF identifies five broad categories of resources from which individuals may determine their production possibilities, especially within the context of the shocks, trends and seasonality of their livelihoods and in the light of the institutional structures and processes that they confront. These resource groups are natural resources including soil, water, biodiversity as well as their environmental services; social capital, which embodies social networks and claims, affiliations, etc.; human capital such as labour resources, skills and knowledge-base; physical capital including infrastructure and production equipment; and financial capital, encompassing cash, credit and debt, savings and economic assets. Depending on the level of endowment in these resource groups, individuals construct and identify possible livelihood strategies that would yield optimal returns in welfare outcomes such as increased income and well-being, reduced vulnerability to economic shocks and natural disasters, improved food security and sustained use of available natural resources. However, decisions on such choices of livelihood strategies are not independent of the institutional processes and structures that dictate the order of economic interactions. Some of these include formal laws and social expectations, cultural and societal sensitivities, legislative regimes and rules of economic exchange (Katega and Lifuliro, 2014).

One of the major achievements of the framework is its contribution to engendering a significant shift in development thinking towards greater focus on poverty reduction through direct investment in improving household welfare. This paradigm has helped

prioritize people as the focal subjects of any policy plan and design thus, creating a better scope for large scale poverty reduction strategies. The SLF is credited as underpinning the success of major national and multi-national development approaches and research methodology (Ashley and Carney, 1999). With the use of the SLF, some of the main villagers' livelihood assets were determined in terms of education security, habitat security, economic security, health security, infrastructure, insurance against shocks and food security. In this way, the SLF was useful in determining how livelihoods are carved out through livelihood strategies and coping mechanisms as reflected in livelihood outcomes.

### **1.6.2 The capability theory**

The conceptual context of the study was also guided by the Capability Theory (CT) which mainly assesses human well-being. Basically, the model is about the ability of people to have freedom to do the things that bring happiness and satisfaction to their lives (Sen, 1980). The core concept of this approach is achievement, which relates to living conditions and capability which also relates to freedom in the positive sense (Robeyns, 2003). With reference to the Capability theory, the study believes that gold mining can enhance or retard community development, given the capabilities or otherwise of the inhabitants of the mining areas. The theory has been regarded as important towards understanding the implications of mining activities on local communities' livelihood security (Kalinga *et al.*, 2019; Chambers, 1989; Nussbaum, 1988; Sen, 1980). Livelihood has been explained as the capabilities, assets and activities required in order to make a living. And the same could be sustainable and resilient when it can cope with and recover from shocks and stresses, and maintain or enhance its capabilities and assets, including the natural resource base both currently and in the future (Tengstam and Bigten, 2011; Kallonga *et al.*, 2003; Chambers and Conway, 1992).

According to the CT, sustainable livelihoods start with people at the grassroots levels, and it considers where they are and what resources they have. In this study, sustainable livelihood security has been viewed to include ownership of and access to capital assets as defined by the people, equity and participation, meeting of basic needs, resource management and utilization with long term view. Sustainable livelihood security ought to satisfy the basic needs of the people. Emphasis is usually placed on small and medium development projects. As a result, the link between rural livelihoods and natural resources governance for poverty reduction has become a fundamental undertaking among development practitioners. While a number of global and natural resources policies and strategies essentially recognize this link, natural resources use and conservation issues in mining affected communities have so far not been effectively incorporated in practice for local impact (Chambers and Conway, 1992).

Taking the above in the context of the CT, this study is based on the notion that gold mining can enhance or retard community development in Tanzania, given the capabilities or otherwise of the inhabitants of the mining areas thereby enhancing their capabilities to improve their living conditions. The CT assumes that a well-developed and improved mining sector has the potential of becoming a major growth centre. Consequently, this leads to the development of the country as a whole and the mining communities in particular (Chambers and Conway, 1992).

The CT further underscores that, adequate and sustainable access to income and resources are important to meet basic needs including adequate access to food, potable water, health facilities, educational opportunities, housing as well as time for community participation and social integration. With this framework, livelihoods can be made up of a range of on-farm and off-farm activities which together provide a variety of procurement strategies for



food and cash. Thus, each household can have several possible sources of entitlement which constitute its livelihood. These entitlements are based on the household's endowments and its position in the legal, political and social fabric of society (Drinkwater and McEwan, 1994). According to this theory, the risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional insecurity. It is, therefore, argued that the livelihoods are considered secure in terms of capability when households have secure ownership of or access to resources and income earning activities, including reserves and assets to offset risks, ease shocks and meet contingencies (Chambers and Conway, 1992).

### **1.6.3 The stakeholder theory**

Over the years, the rationale behind companies practising governance and subsequently undertaking sustainability initiatives can be understood through the Stakeholder Theory (ST) (Obalola, 2008). According to the ST, companies have a social responsibility that requires them to consider the interests of all parties affected by their actions (Branco and Rodrigues, 2008; Black *et al.*, 2006). In its focus, the stakeholders theory uses six internationally accepted key governance principles of discipline, transparency, accountability, independence, fairness and social responsibility and argues that these should be for all stakeholders not only shareholders (Fernandez-Feijoo *et al.*, 2013).

Based on the ST's assumptions, the relevance and practicality of the stakeholder theory for the study is that it provides a framework upon which the mining companies under study are judged in terms of the value they place on governance, corporate social responsibility and sustainability practices. Therefore, since this study looks into the influence of LSM on local community's livelihoods, the use of the stakeholder theory

provides a better understanding of how mining activities affect their livelihoods based on governance principles.

#### **1.6.4 The institutional theory**

In efforts to better understand how LSM companies comply with the regulatory framework for sustainable mining practices, the use of Institutional Theory (IT) was regarded as essential framework for this study. The IT, was reviewed in the context of social sustainability. Generally, the IT addresses processes by which social and political structures including rules, norms and routines become established as authoritative guidelines for behaviour that governs interactions in society. The IT asserts that authoritative guidelines for behaviour are created and adopted over a given period of time (Scott, 1995). Therefore, for organizations such as mining companies to survive and thrive, they must conform to the rules and belief systems prevailing in the environment. Kraft and Furlong (2017) contend that the IT is a policy making mechanism that emphasizes that formal and legal aspects of government directives should be followed or complied with. Viewed in the context of this study, this theory is ideal as most of what is happening in the mining sector in Tanzania is regulated, survives and thrives under the rules, norms and values of the country.

Undeniably, the policy framework of the mining sector in which these actors operate is defined by both national legal framework and corporate practices which establish norms pertaining to accountability measures, revenue sharing, and local employment and investment requirements as well as social and environmental safeguards. On the other hand, Rasouli and Kumarasuriyar (2016) argue that social sustainability occurs when the formal and informal processes, systems, structures and relationships actively support the capacity of current and future generations to create healthy and liveable communities. For

the purpose of the study, the IT was considered relevant given the strength it offers in explaining why institutional practices may be expected to respond to certain institutional conditions such as laws and regulations as the case for the players in the mining sector. For example, as multinationals operate across environments with diverse resources and institutional pressures, the institutional theory also provides a foundation for considering adoption of a more contextual dimension of how the mining companies, government and community nexus can sustainably work together, especially if the multinational corporations have to acquire legitimacy and social license to operate in specific geographical mining locations (Meyer and Peng, 2015; Kannan *et al.*, 2014; McKenzie, 2004).

### **1.7 Conceptual Framework for the Study**

The study's conceptual framework (Figure 1.2) is anchored on the theoretical foundations based on the integration of governance mechanisms in the context of sustainability, limited to economic performance, environmental performance and enhanced community benefits. The framework is, therefore, framed around three key concepts of system of governance, LSM and sustainability elements. In this regard, the conceptual framework has been developed to enable assessment of the response of LSM companies on system of governance in terms of abiding by the regulatory framework for enhanced local livelihoods in Tanzania. Principally, the operations of LSM companies are governed by the policy, legal and regulatory frameworks which provide directives on how to accommodate the interests of the host countries as well as for the local communities affected by such operations. Governance in the context of the mining sector has been regarded as an area of serious concern throughout because of the conflicts among stakeholders of diverse interests who seem to lack an agreeable platform for decision making (URT, 2019; Muthuri *et al.*, 2012; Lugoe, 2012).

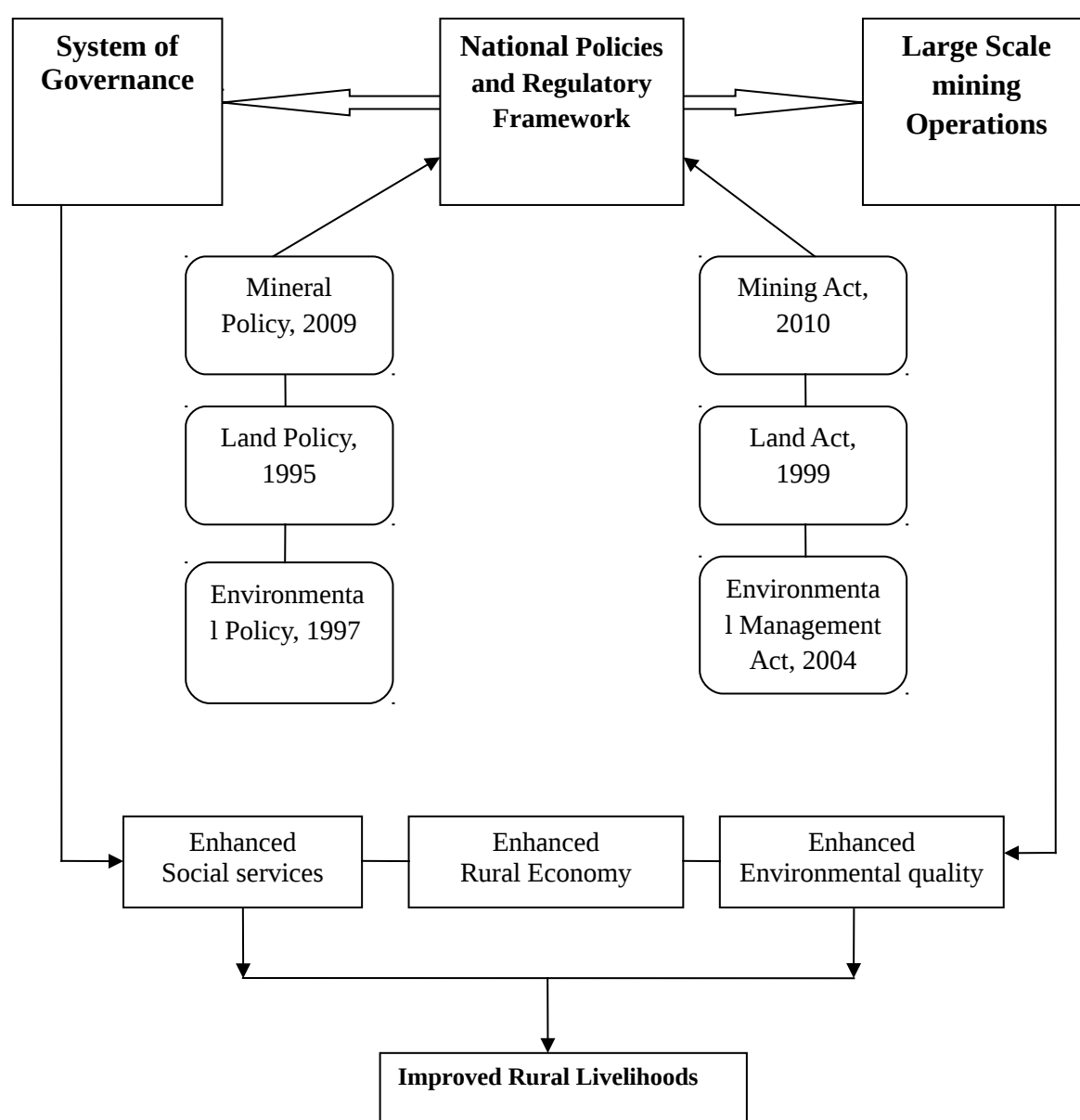
Consequently, the system of governance in the mining processes could maintain stability and alleviate dangers among differing interests among stakeholders including the local communities surrounding the mines. The assumption made here is that an effective system of governance in the mining sector could see this gift of nature turned into a veritable productive sector instead of becoming a “curse” as has occurred in many developing countries (Lugoe, 2012). While the sector stakeholders are considered the same everywhere and consist of government, miners (both large and small) and communities living around the mines, yet they have a variety of interests and are all affected differently by mining production. Conversely, communities in areas where mining takes place need long-term jobs and community services that can be derived from the mines. With this happening in the sector, the need for an effective system of governance to regulate these relationships and ensure that the interests of either group are protected by regulations becomes imperative.

The governance of natural resources is especially important to control over the benefits from local natural resources (Grindle, 2011). Many resource-rich and resource-dependent African countries are characterized by disappointing growth rates, high inequality, widespread impoverishment, bad governance, and an increased risk of civil violence (Mabhena and Moyo, 2014; Gisselquist, 2012; Thomas, 2010). The challenges posed by managing natural resources have been characterized as the ‘natural resource curse’ or paradox of plenty (UNDP, 2011; Humphreys *et al.*, 2007). However, the experiences of countries such as Norway, Botswana, Thailand, and Malaysia give hope that the ‘natural resource curse’ can be avoided if there are strong institutions as well as strategic policies to govern the sector (Mwaikenda and Wambua, 2014; UNCTAD, 2014).

Broadly defined, governance is the manner in which public officials and institutions acquire and exercise the authority to shape public policy and provide public goods and services (Thomas, 2010; World Bank, 2007). Reflecting on the assumptions made, governance of mineral resources implies the orientation of the income generated from the exploitation of mineral resources towards broad-based growth and the fight against poverty. Although empirical evidence currently confirms the legal and regulatory frameworks for resource extraction in developing countries are often designed to maximize benefits in the form of employment, local investment or monetary compensation to local population, the returns from such resources have not usually matched the expectations (Acuna, 2015; Ross, 2012; Tsui, 2011; Ogundiye, 2010). Consequently, concerns have increasingly been raised that wealth from extractive resources has not been sufficiently transformative in African countries thus, leading to little progress in overall development and welfare (Africa Progress Panel, 2013; Lungu, 2009; Jenkins and Yakovleva, 2006).

Based on the above arguments, the study's conceptual framework (Fig. 1.2) shows that LSM activities affect the livelihoods of the local communities in different ways, depending on the legal and regulatory requirements guiding their operations, the national policy and other strategies within which they operate. Generally, LSM companies are expected, as part of their social obligations, to contribute towards improved livelihoods of local communities. This can be done by providing support on social services such as support to education and health facilities, water supply services, road-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 reduction efforts on one hand.

On the other hand, LSM activities, if not well controlled in terms of enforcing the system of governance and in terms of the regulatory frameworks governing the sector, can lead to modest benefits and possibly accelerate environmental degradation. If this happens, it may cause direct negative effects on the livelihoods of adjacent population. However, if these managed properly, gold mining could generate the revenues, infrastructure and employment necessary for sustainable development within the country. When it is not managed properly, gold mining could present yet another form of exploitation and conflict thus exacerbating poverty rather than alleviating it.



**Figure 1.1: Conceptual Framework**

## 1.8 General Methodology

### 1.8.1 Description of the study area

The study on which this thesis is based was conducted in Kahama District, Shinyanga Region (Fig. 1.3). The district was chosen for the study because it is one of the most important mining districts in Tanzania. The district is located in Northwest Tanzania between Latitudes  $3^{\circ}15'S$  and  $4^{\circ}30'S$  and between Longitudes  $31^{\circ}00'E$  and  $33^{\circ}00'E$ , and it borders with Shinyanga and Nzega Districts to the East, with Geita District to the North, with Bukombe District to the West and with Tabora District to the South (URT, 2012a).

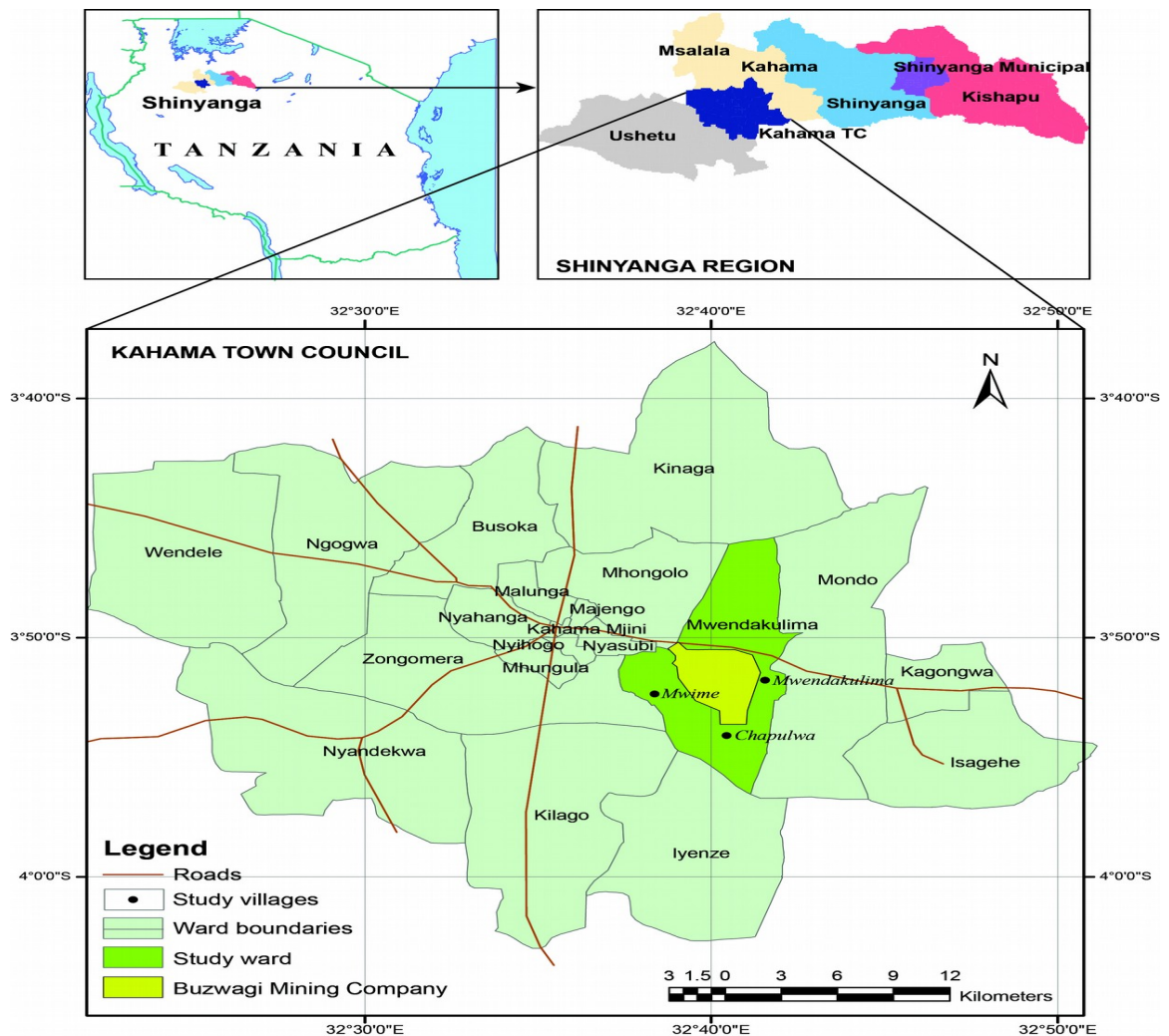


Figure 1.2: Map Showing Study Area in Tanzania

Source: URT (2013).

### **1.8.2 Population and mineral potential of the study area**

According to the 2012 population census, Kahama District had a population of 596 456 people (300 878 female and 295 578 male) with an annual growth rate of 3.7%. However, only 497 734 people were active and potential for economic growth in terms of having ability to provide labour force while the rest were dependants. Land is mainly used for crop and livestock production. Unlike many other mining districts, in Kahama, an incidence of poverty is widely evident. Likewise, the mining industry has been one of the most highly criticized industries for its failure to transfer the benefits of the business to the local communities in which it operates (URT, 2013a; 2012a).

The geology of Kahama District is formed by the Nyanzian greenstone belts within the Lake Victoria Goldfields basin divided into two parts, the Eastern “outer arc” of the Sukumaland Greenstone Belt; and the Western part of the Rwamagaza Greenstone near the largest gold producer in Tanzania, and the Bulyanhulu Gold Mine that is located to the North-West of Kahama. The gold mineral ore at Bulyanhulu is associated with major quartz vein systems at the contact between mafic-intermediate flows and felsic pyroclastics, locally with lenses of Argillite. Economic gold mineralisation in the Tanzanian Craton is principally associated with the greenstone belts of the Nyanzian System. The study area covered two wards of Lunguya and Segese, which fall under the Greenstone Belt and are located near the main Bulyanhulu Gold Mine (URT, 2013a; 2012b).

### **1.8.3 Economic activities**

According to the Kahama District Agricultural Department (2009), the economic activities are mainly agriculture and livestock production. About 483 320 ha form arable land, which is put under either crop cultivation or livestock grazing. There are five major



income earning crops, namely cotton, paddy, tobacco, maize and chickpea. These crops contribute more than 40% of the district's economy. Agriculture and livestock employ more than 80% of the district's population. Forestland occupies 211 000 ha. Mining is another important economic activity, which is carried out in two official mines in operation: Kahama Gold Mines (underground mining) and Buzwagi Gold Mines (open ground mining). Besides, there is artisanal gold mining, which is commonly done in Segese, Lunguya, Bugarama, Isaka, Kahama Town and Chela wards (URT, 2014; 2013c; 2013d).

#### **1.8.4 Research design**

The study used a mixed methods approach whereby both qualitative and quantitative data were collected. The rationale of using this approach was to utilize the strengths of both qualitative and quantitative research approaches. The purpose was to meet the needs of the study which focused on assessing the response of LSM companies on system of governance for enhanced local livelihoods in Kahama District. In this regard, the key issues in this study are the perceptions and experiences of local communities among others. The qualitative philosophy considers meanings, perceptions and action of an actor are located in a socio-cultural context of the actor and that reality is complex, subjective and socially constructed (Bryman, 2008). Therefore, qualitative approach was considered vital for such type of data. However, since some data were more quantifiable including livelihoods issues such as assets, the use of quantitative approach was equally crucial. Consequently, quantitative approach was also used to measure relationships between variables regarding the response of Buzwagi Gold Mining Company in terms of compliance to the system of governance for enhanced local livelihoods.

Therefore, the study employed both cross-sectional and case study designs. While a cross-sectional design was applied since data were collected once at a time, case study design was also considered useful as it involved reviewing the social and environmental impacts

of the Buzwagi gold mining company; and therefore, made a generalization that limited to the context of the study area. The study was conducted in three mining village communities, namely; Mwendakulima, Mwime and Chapulwa in Kahama District, Western part of Tanzania.

### **1.8.5 Sampling procedures and sample size**

Sampling is regarded as the statistical procedure dealing with a subset of cases from a chosen sample frame or entire population of individuals intended to yield some knowledge about the population of interest (Bengesi, 2013). In this regard, two broad types of sampling procedure were identified in this study namely the probability and non-probability sampling procedure. In view of this, different scholars (Bengesi, 2013; Wilson, 2010; Kothari, 2004) provides for different procedures on how to determine sample size.

According to Blumberg *et al.* (2008), sample size can be dictated by considering the cost implied to collect data, greater accuracy and the speed required for data collection. Likewise, Sekaran (1992) point out that the sample size is governed by the extent of precision and confidence desired but, concludes that the eventual choice is usually a tradeoff between confidence and precision. Bengesi (2013); Cooper and Schindler (2011) argue that since researchers can never be 100 percent sure that a sample reflect its population, they must decide how much precision they need. In making this decision, they must consider at least four factors such as the confidence needed in data, the margin of error that can be tolerated, the types of analysis to be performed and the level of variability in the population on the characteristic of interest.

In this study, the sample was selected purposively and randomly. For purposive sampling three villages were selected based on the researcher's judgment and on information obtained from district official during the pre-survey phase. Therefore, three villages

namely Mwime, Mwendakulima and Chapulwa were desirably selected to provide the required information as these were close and highly affiliated to mining operations. The utilization of large sample size was important in this study as it focused on the description of variability for potential factors of legal provisions in the mining sector over the community. Given the nature of this study, Bengesi (2013); Field (2009) concluded that 300 cases could be adequate for studies that employ the analysis of potential factors, however, Pallant (2007) suggests a minimum of 150+ cases.

Since this research was largely documentary by which most of work involved a pre-analysis of legal documents that contain information about the interaction of mining operations and local communities, then Bailey's (1994) method of sampling was adopted. A documentary research method is used when exploring and categorizing physical sources, most commonly written documents, whether in the public or private sphere (Payne and Payne, 2004). According to Bailey (1994), a sample of at least five percent could have an adequate representative of the community in social studies.

Given this combination of methods and the requirement for the analysis, the study drew up nine percentages of households in each of the study villages as representative cases for the general findings. However, to omit biasness of households in selected villages, a simple random sampling procedure was further used to obtain a representative household as shown in Table 1.1.

**Table 1.1: Sample Size Distribution by Villages**

<b>Village</b>	<b>Number of households</b>	<b>Sampling percentage</b>	<b>Random Sampled households in village</b>
Mwime	1404	9.3	131
Mwendakulima	686	9.3	64
Chapulwa	214	9.3	20
Total	2304		215

In view of the above, 131, 64 and 20 households were obtained from Mwime, Mwendakulima and Chapulwa villages respectively, hence a total sample of 215 out of the 2304 households was obtained.

### **1.8.6 Methods of data collection**

Both primary and secondary data were collected. In order to capture issues of environmental sustainability, community engagement and the ways mining companies adhered to rules and regulations related to mining including social responsibility, questionnaire method was used. The key informants were district health officers, water engineer, education officers, agricultural officers and agricultural extension officers, mining officers, community development officers and village leaders particularly Ward Executive Officer (WEO), Village Executive officers (VEOs) and Village Chairperson. As part of the household survey, a five-point Likert scale questionnaire with alternative answers from strongly disagree to strongly agree reflecting attitudes against various attributes was used to collect data on governance versus the mode of mining operations as part of the questionnaire that was used for data collection using in-depth interviews, focus group discussions (FGDs) for primary data and documentary reviews for secondary data.

In-depth interviews were used to generate information about the extent to which communities understood issues of environmental sustainability, community engagement and social responsibility in areas where mining operations were being undertaken. Members of households were selected purposively focusing on those who have lived in

the village for at least five years. It was believed that villagers who have spent many years in village were likely to have rich knowledge and experience of what was taking place in the community. The selection of individuals to take part in the interviews was done in assistance from the village chairpersons.

Focus Group Discussions (FGDs) were conducted. This focused on how the mining company and government engaged with local communities and whether they demonstrated willingness and interest in implementing social inclusion policies in relation to mining operations in the area. The emphasis was placed on learning about community experiences about the companies' responses on the needs and concerns of local communities in the area. The community members' participants in FGDs were villagers and community leaders including village chairpersons, village and ward executive officers, community health officers as well as agricultural extension officers.

FGDs were composed of between 6 and 10 people in size for effective discussions. Participants in the FGDs were purposively based on their experience (at least one who have lived in the village for not less than five years) and had knowledge about mining activities in the area. The selection of individuals to take part in the interviews was done with assistance from the village chairpersons. In each study village, three (3) FGDs were conducted, one for women, another for men and lastly, with village leaders, community health officers, agricultural extension officers. Grouping of women and men separately was intended to allow more freedom to talk. In the study area, women were more freely to talk when they are with fellow women. In this regard, it was important to observe this cultural element.

In addition to primary data, extensive systematic review of literature on the topic was also conducted. Systematic review of literature was used for policies and legislation from Tanzania and best practices elsewhere. This involved desk review of books, journal articles, electronic sources, policy documents and legislations. It was essentially based on evaluating relevant literature on legal and regulatory framework with regard to the mining sector in Tanzania. The analysis was done in relation to the perspectives of how the policy environment plays a role in the governance of the mining sector in Tanzania. In view of this, review of literature was used for policies and legislation from Tanzania and best practices elsewhere as a starting point in order to capture needed information (Muhanga and Malungo, 2019; Muhanga, 2019; Wilcox, 2015; Walker and Myrick, 2006). Some of the documents which were considered useful in this review included the Mining Policy of 2009; Mining Act No. 14 of 2010; Environmental Management Act No. 20 of 2004; written laws (Miscellaneous Amendments Acts) Act No. 1, 2 and 3 of 2017; Land Policy; Environmental Management Policy, Gas Policy, Water Policy and other related literature (URT, 1995; 1997; 1998; 1999; 2002; 2004; 2009; 2010; 2013d; 2017).

#### **1.8.7 Data analysis**

With regard to data analysis, quantitative data on the aspects of mining operations in relation to attributes of compliance, sustainable environmental practices and livelihoods from community perspectives were handled by adopting Exploratory Factor Analysis (EFA). The analysis was used to explore the inter-relationship among the mining-governance attributes as reflected in the regulatory framework and reduce them into fewer factors using Statistical Package for Social Science (SPSS) software. Principal components method was used in the analysis such that components with Eigene values of 1 and above were extracted together with underlying variables to form a specific factor.

The study went further into understanding the level of perception, particularly on sustainable environmental practices by which descriptive Statistics analysis was employed. Before running EFA, the adequacy of sample population and correlation of variables were first tested following Kaiser-Meyer-Olkin (KMO) and Bartlett's test respectively. Then, validity of the research instruments and consistence of attributes was drawn under reliability analysis using Cronbach's Alpha measurement. According to Chen and Popovich (2002), a Cronbach's Alpha ( $\alpha$ ) is used as a measurement value to draw internal consistence of variables; an alpha value greater than 0.7 for dominant factors, was regarded to have high consistence of underlying variables. Therefore, the following relation was used to generate the Cronbach's Alpha value at this stage:

$$\text{Cronbach's alpha } (\alpha) = \frac{N * \bar{a}}{\bar{u} + (N-1) * \bar{a}}$$

Where:

N = the number of items,

$\bar{a}$  = the average inter-item covariance among the items, and

$\bar{u}$  = the average variance.

Content analysis was used to analyze data obtained from key informant's interviews and FGDs. Data were recorded and transcribed prior to data analysis. Transcription was carefully done in order to maintain the original meaning of the information. Thereafter, data were coded to assist with the identification of themes and sub-themes related to extent to which communities understood issues of environmental sustainability, community engagement and social responsibility. On the basis of the objectives, these were compared and contrasted based on each piece of data with the rest in order to see whether there were similarities and differences on how people perceived mining companies' operations in the area. The essence of this approach was to have an understanding of common patterns within human experience. The aim was to process interpretation in order to capture people's opinions and judgment.

In addition, in order to analyse documents related to the policy environment of the mining sector in Tanzania, a content analysis technique was also employed to analyse information captured in various documents. This involves several stages namely, reading the data (literature), coding the data (organizing the material into chunks or segments), identify themes or categories, compare different themes to see their similarities and differences and finally make interpretations of different themes.

#### **1.8.8 Ethical considerations**

Ethics in research are considered as self-regulatory guidelines for making decisions and defining professions. By establishing ethical codes, professional organizations maintain the integrity of the profession, define the expected conduct of members, and protect the welfare of subjects and clients (Resnik, 2012; Creswell, 2009; Shamoo and Resnik, 2009; Kothari, 2004). In light of this, researchers must remain mindful of their ethical responsibilities to participants. Consequently, as much as the social science research involves collecting data from and about people, it has to adhere to ethical and professional codes of conduct to safeguard the rights of the participants and enhance trustworthiness of the findings.

Ethical issues may arise in the process of soliciting, recording and using data from respondents. These include obtaining permission to access the organization that one intends to research, ensuring voluntary participation, informed consent, confidentiality and anonymity (Kvale and Brinkmann, 2009). In this study, ethical issues were conferred high priority in the sense that needed information was obtained on the consent of respondents. With regard to obtaining permission to access the areas of study, the researcher ensured that a research clearance letter was obtained from Sokoine University of Agriculture. This was very much supportive in speeding up the release of permission



letters from the responsible authorities in the study areas. The researcher also informed the subjects about their expected roles in the study and its benefits. More importantly, during field work, the researcher and his assistants were also needed to ask the people to participate in the study voluntarily.

Respondents were given clear explanation as to why the study was being carried out. This was regarded as an important step in establishing confidence to the respondents on how the information to be provided would be used. In addition, privacy and anonymity of individual respondents were highly taken into consideration to ensure that they were free to give their opinions and feelings. In addition, each instrument provided ethical information to ensure that nobody was forced to respond to the questions pertaining to the study. It was also important to ensure that after the study is finished, the researcher had to ensure that feedback to the stakeholders with complete details about the study outcomes is provided. Feedback meetings were conducted to give feedback about the findings of the study.

#### **1.8.9 Limitations of the study methodology**

In the course of undertaking this study, a number of challenges were encountered. Some of the limitations include timing of the study, in which the study was conducted during the rainy season with farming activities dominating during this period. As a result, obtaining the respondents was a bit cumbersome. However, this challenge was addressed by visiting respondents in the respective areas where farming was taking place in some cases. Another challenge was related to unwillingness of some respondents to participate in interviews. This took the form of the respondents claiming that many researchers had gone to the area for the same purpose but once they finished data collection, they never went back to the community for feedback to the participants. They therefore demanded

serious note on this for the researcher to ensure that after the study is finished, the researcher should ensure that feedback is given to the stakeholders with complete details about the study outcomes. This challenge was addressed by ensuring the respondents that feedback will be given upon completion of the study in form of produced research reports and where necessary conducting meetings with community members in the respective villages where this study was conducted.

Another important observation in this regard was the complicated process of obtaining research permission to conduct interviews with the mining officials from Buzwagi. The researcher was compelled to use a lot of efforts to ensure that this limitation was overcome. After a lot of discussions with the Kahama Town Executive Director, the permission was finally granted by Buzwagi Gold Mining Company.

Since this study was conducted in Kahama District and Buzwagi Gold Mining Company, the findings of this study may therefore not necessarily be feasible for generalization in the mining sector elsewhere in Tanzania due to cultural differences. However, despite these shortcomings, this study therefore contributes to the body of knowledge due to the insights and lessons learnt on the relationships between effective system of governance in terms of abiding by the regulatory framework and its influence towards improving community livelihoods in areas affected by large scale mining operations based on community perspectives.

### **1.9 Organization of the Thesis**

This thesis consists of six main chapters which are organized on SUA's publishable manuscripts format. In its first chapter, a number of key aspects for this study have been presented ranging from the extended background information, statement of the problem,

justification of the study, objectives and research questions, theoretical review, conceptual framework, methodology used for this study, ethical considerations and limitations of the study.

Chapter two examines and discusses the policy issues based on the current debates pertaining to the governance of the mining sector and the extractive sector in general. Some of the key issues analysed under this review include issues related to the opportunities and challenges in the mining sector, specifically, on policy environment. The chapter also highlights issues in relation to favourable investment environment and the challenges related to local content, land acquisition and resettlement as well as on the potential of artisanal and small-scale miners. The chapter finally discusses the experience of the regulatory environment in other contexts benefiting from the mining sector that can be extrapolated to Tanzania. A review of this nature is worthwhile to help policy makers and organizations to be more committed to the development of the mining sector focusing more on the most useful practical strategies for enhanced benefits.

Chapter three assesses compliance of large mining companies on regulatory framework for sustainable mining in Tanzania. Under this aspect, the key factors captured have been aligned to compliance of mining companies towards pollution control; social accountability; compensation and resettlements of local communities as reflected in the governance of the mining sector in Tanzania and best practices elsewhere.

Chapter four of the thesis presents the third manuscript which is about the perceived implications of mining companies' practices for enhanced environmental sustainability in the mining sector. Some of the key factors explored under this manuscript include practices towards pollution and waste distortion and environmental restoration measures.

Chapter five of the thesis dwells on the contribution of mining companies on local livelihoods. This has been underscored in terms how these companies have been responding to the regulatory framework for improved local livelihoods security in Tanzania. In this chapter, the livelihood securities of local communities are captured in terms of habitat security; economic security and health security. These factors were considered relevant in terms of capturing this aspect in relation to how large mining companies' operations disrupt local livelihoods either positively or negatively for sustainable development outcomes. This was done in relation to the assumption that these outcomes could be achieved especially when large-scale mining investments are legally made accountable towards accommodating people's livelihoods affected due to induced displacement.

Lastly, chapter six presents the summary of key findings obtained in this study for policy implications in Tanzania. The chapter also provides the overall conclusions, recommendations for practical implications, theoretical reflections as well as areas for further research.

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## CHAPTER TWO

### 2.0 Policy Enabling Environment of Mining Sector in Tanzania: A Review of Opportunities and Challenges

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#### 2.1 Abstract

Mining has increasingly become an important contributor to the economy of developing countries' economies, Tanzania included. Since independence, Tanzania has been making efforts to address the challenges in the mining sector to enhance its contribution to socio-economic development but, the efforts have not been successful in addressing the persisting challenges. These include lack of expected benefits, failure to develop policy options for making the investment environment supportive for all actors in the sector hence, failure to use mineral wealth sustainably. The reasons for the persistence of these challenges are not well documented especially in relation to the policy framework. While some scholars attribute these challenges to bad deals with mining companies, others blame the government for its failure to effectively implement, monitor and enforce the existing regulatory framework. This paper reviews the policy enabling environment of the mining sector in Tanzania. The results indicate that Tanzania has taken measures to create some opportunities through policy enabling environment. However, the measures have not

been able to achieve the expected results due to the persistence of targeted challenges in the sector. In view of this, improvement of the policy framework is particularly needed to curb the poor practices currently going unchecked.

**Keywords:** investment incentives, land policy; mining policy; mining sector, regulatory framework

## 2.2 Introduction

Mining is one among the important sectors of many developing countries' economies Tanzania included. It is also one of the areas where environmental concerns have frequently been voiced (Ndulo, 2013; Pedro, 2012). However, one of the key challenges has been to develop policy options for making investments in the mining sector which are supportive to sustainable development. While it is not clear whether mining companies contribute to sustainable development, preliminary evidence suggests that under appropriate legal frameworks, investments in mining might have higher economic returns (Cambell, 2010; Jenkins and Yokovleva, 2006).

Available literature shows that the vast endowment of Africa with mineral resources has raised hope that the people living in the continent would experience rapid economic growth and attain development if appropriately exploited (Pedro, 2012). However, despite presence of such a huge amount of mineral reserves, the contribution of this sector to the national economy and community development does not meet peoples' expectations compared to other sectors of the economy. This gives some credence to the 'resource curse theory' which suggests that resource-rich countries tend to perform more poorly in terms of sustainable economic growth than resource-poor countries (Elbra, 2014; Kronenberg, 2004; Mikesell, 1998).

In view of the above, the situation of local communities within the vicinity of large-mining projects is particularly alarming. Instead of being beneficial, the expansion of mining activities in developing countries drains and causes a damaging effect on local communities (Magai and Marquez, 2011). Consequently, it has been common in most mining sites that affected communities complain continuously that they do not access the benefits of mineral exploitation and that they are deprived of considerable portions of their land to the benefit of large-scale mining companies without fair compensation (Kahyarara, 2015; Lugoe, 2012; Kitula, 2006). Although the premise of mineral-led development does not find acceptance with all scholars (Sachs and Warner, 1999), several studies have demonstrated that where there is effective governance, the exploitation of mineral resources can generate large revenues that are needed for economic growth and poverty reduction (Lederman and Maloney, 2007; World Bank, 2009).

While countries such as the United States, Chile, Peru, Canada and Australia are known for the role played by mineral resources in the transformation of their economies, the situation is contrary to some African Countries Tanzania included (Magai and Marquez, 2011; Leveille, 2009). Tanzania is one of the countries blessed with a huge reserve of mineral resources (URT, 2011; 2013). Mining has become a major part of the country's economy and has been considered responsible for the recent high rates of development (URT, 2013). As a result, the economy grew by 7% per annum over a ten years period (2002 to 2012).

Although the mining policy of 1996 and the mining Act of 1997 laid down a 20 – 30 years vision that would see the sector's contribution to GDP grow from 1.5% in 1996 to 10% in 2025, this increase in its contribution to GDP is still low especially when compared to other countries rich in mineral resources such as Botswana, Malawi, Namibia and

Zambia. For example, Botswana's mining sector, dominated by diamonds, has been the largest contributor to the country's GDP for about 35% to 40% for several decades. This makes Botswana as the World's leading diamond producer in terms of output value (Wilcox, 2015; World Bank, 2009). In Malawi, mining contributed less than 3% to GDP until 2006 when it increased to over 10% by 2010. With this increase, the mining sector has become a focal point for the Malawian government (Malunga and Phalira, 2015; Shauna, 2014).

In light of the above, the role of the mining sector has been perceived important to the economy as a whole. However, despite the impressive growth of the mineral sector in Tanzania in the last ten years, some critics argue that the sector has failed to deliver the expected windfalls to the rest of the economy, in particular, its contribution to the development of the wider community (Kahyarara, 2015; Lugoe, 2012). It is also argued that the environmental and social impacts associated with large-scale mining (LSM), including planning for mine closure have not been appropriately accounted for and effectively addressed (Darimani *et al.*, 2013; Sosovele, 2013; Jenkins, 2004). It is further argued that decisions on mineral projects have been taken with little and sometimes with no consultation with local communities who are negatively affected in terms of their livelihoods.

Although Tanzania has, since the 1980s, embarked on comprehensive social and economic reforms aimed at improving the policy and legal frameworks with respect to mineral resources management, there is still evidence of inadequacies of the policies (Kahyarara, 2015). The mining policy of 2009 aimed among other things to promote the exploration and development of mining activities, enhance the local content, to improve artisanal and small scale miners, to reduce poverty, to enhance the social and economic

infrastructure, to increase foreign currency earnings and government revenue and encourage environmental safety and protection (URT, 2009). However, the practice towards achieving these policy objectives has remained a challenge in the governance of mineral resources and maximization of gains from the sector.

Indeed, the ongoing public debates on whether the state receives a fair share from the mining sector deals are one of the indicators necessitated the need to conduct this review. For example, of late, there have been more discoveries of the country's resource deposits such as natural gas which have the potential to significantly contribute to the economic growth and development thereby supporting the diversification of the economy into high value adding activities thus, improvement of the living standards of Tanzanian citizens. Nevertheless, this has remained a critical challenge in terms of realizing this potential due to weak linkages between mining activities and the local economies (Kahyarara, 2015; Muganyizi, 2012; Lugoe, 2012). Since this linkage is missing, the management of wealth from the extractive sector has recently raised more concerns following its recent disappointing results towards achieving sustainable development.

Previous studies related to the mining sector have not given the attention it deserves and most of them have covered little on issues related to the policy enabling environment in the mining sector (Lange and Kinyondo, 2016; Kabote and Niboye, 2013; Lange, 2011). While some have focused on the general contribution of the sector to socio-economic development and environmental protection in the country, a few have tried to focus specifically on analyzing the policy enabling environment of the mining sector in Tanzania and hence, little is known specifically on the opportunities and challenges in respect to local content, land acquisition, resettlement, artisanal and small-scale miners as among the persisting policy challenges in the sector; the experience of the regulatory

environment in other context benefiting from mining sector and whether there are any lessons learned from other context. This raises concerns which necessitate the need to conduct this study to analyze whether there is a favorable policy enabling environment in Tanzania's mining sector.

In this regard, this paper responds to the following questions; what are the opportunities and challenges in Tanzania's mining sector? What is the experience of the regulatory environment in context communities benefiting from the mining sector? Are there any lessons learned from other contexts/areas that can be extrapolated to Tanzania? Thus, this paper makes a useful contribution in demonstrating how the regulatory framework could contribute towards sustainable management of the mining sector and promote equitable benefit sharing. Moreover, Tanzania is currently undertaking serious policy and legal reforms in the sector; this paper is timely as it will provide policy options on the best practice to contribute to the process. Therefore, the rest of the paper is organized into the following sections. Section 2.3, presents the theoretical review, section 2.4 presents the methodology used for this review and section 2.5 results and discussion. Lastly, section 2.6 gives the conclusions and policy recommendations in response to addressing the challenges identified in this review.

## **2.3 Theoretical Framework**

### **2.3.1 The institutional theory**

The study was guided by the institutional theory in the context of social sustainability. This is a theory that predicts processes by which social and political structures including rules, norms and routines become established as an authoritative guideline for behaviour that governs interactions in society. The theory asserts that authoritative guidelines for behaviour are created and adopted over time (Scott, 1995). This implies that in order for



organizations such as mining companies to survive and thrive, they must conform to the rules and belief systems prevailing in the environment. Kraft and Furlong (2017) contend that institutional theory is a policy making mechanism that emphasizes that formal and legal aspects of government directives to be followed or complied with. Viewed in the context of this paper, this theory is ideal as most of what is happening in the mining sector in any country of the World is regulated, surviving and thriving under the rules, norms and values of a given country.

Indeed, the policy framework of the mining sector in which these actors operates is defined by both national legal framework and corporate practices which establish norms pertaining to accountability measures, revenue sharing, local employment and investment requirements as well as social and environmental safeguards. On the other hand, McKenzie (2004) argues that social sustainability occurs when the formal and informal processes, systems, structures and relationships actively support the capacity of current and future generations to create healthy and liveable communities. In view of the above, the concept of social sustainability will mainly be applied to the interaction of actors/stakeholders in the mining sector in relation to its effects on the actors such a LSM, artisanal and small scale miners as well as local communities.

In this paper, institutional theory is assumed relevant given the strength it offers in explaining why institutional practices may be expected to respond to certain institutional conditions such as laws and regulations as the case for the players in the mining sector. For example, as multinationals operate across environments with diverse resources and institutional pressures, institutional theory also provides a foundation for considering for an adoption of a more contextual dimension and how the mining companies, government and community nexus can sustainably work together especially if the multinationals

corporations have to acquire legitimacy and social license to operate in specific geographical mining locations (ICMM, 2006; Meyer and Peng, 2015).

### **2.3.2 Definition of Key Terms**

#### **2.3.2.1 Policy environment**

This is used in this paper to include open and responsive state institutions, effective policy and legal framework for participation as well as structures, procedures and opportunities that allows the public to engage in the conduct of public affairs (Darimani, 2009). The rights of these actors must be protected by law both as a right and as a principle of governance in terms of being open, responsive, transparent and accountable to the public.

#### **2.3.2.2 Policy enabling environment**

This has been explained as a set of interrelated conditions such as legal, organizational, fiscal, informational, political and cultural that impact on the capacity of development of actors such as community social organizations to engage in development processes in a sustained and effective manner (Wilcox, 2015).

## **2.4 Methodology**

### **2.4.1 Systematic review of literature**

The study involved a desk review of books, journal articles, electronic sources, policy documents and legislations. This was done by reviewing extensive literature on the topic related to policies and legislation from Tanzania and best practices elsewhere. It was essentially based on evaluating relevant literature on legal and regulatory framework with regard to the mining sector in Tanzania. The analysis was done in relation to the perspectives of how the policy environment plays a role in the governance of the mining sector in Tanzania (Muhanga and Malungo, 2019; Muhanga, 2019; Wilcox, 2015). Some

of the documents which were considered useful in this review included the Mining Policy; Mining Act No. 14 of 2010; Environmental Management Act No. 20 of 2004; written laws (Miscellaneous Amendments Acts) Act No. 1, 2 and 3 of 2017; Land Policy; Environmental Management Policy, Gas Policy, Water Policy and other related literature (URT, 1995; 1997; 1998; 1999; 2002; 2004; 2009; 2010; 2013d; 2017) (Table 2.1).

**Table 2.1: Summary of Policies and Acts Reviewed**

S/N	Theme	Year
1	The Written Laws (Miscellaneous Amendments Acts No 1,2 & 3	2017
2	The National Gas Policy	2013
3	The Mining Act No 14	2010
4	The Mineral Policy	2009
5	The Environmental Management Act No 20	2004
6	The National Water Policy	2002
7	The Land Act No 4 and Village Land Act No 5	1999
8	The National Forest Policy	1998
9	The National Land Policy	1995
10	The National Environmental Policy	1997

#### 2.4.2 Data analysis

In order to analyse documents related to policy enabling environment of the mining sector in Tanzania, content analysis technique was employed to analyse information captured in various documents. This involved several stages, namely reading the data (literature), coding the data (organizing the material into chunks or segments), identifying themes or categories, comparing different themes to find their similarities and differences and finally making interpretations of different themes to generate the results.

#### 2.5 Results and Discussion

This paper attempts to answer four research questions as follows; what are the opportunities and challenges in the Tanzania's mining sector? What is the experience of the regulatory environment in the context of communities benefiting from the mining

sector? Are there any lessons learned from other context areas that can be extrapolated to Tanzania? In its subsequent sections, the paper provides a critical review of existing opportunities and challenges of mining sector in Tanzania, explores best practices in the regulatory environment from others contexts and draw lessons for commendations on how best Tanzania can improve the existing regulatory framework.

### **2.5.1 Opportunities in the mining sector**

While it is true that the development of the Tanzania mining sector will partly depend on the extent to which the challenges facing the sector will be addressed, it is also important to understand the existing opportunities to allow the government to create an enabling environment to support investment initiatives in the sector. Therefore, this section attempts to highlights issues such as political stability of the country and the country's abundant natural resource base, investment incentives, existence of the legal framework and the role of bilateral investment treaties to ensure a secure investment environment.

#### **2.5.1.1 Political stability of the country and abundant natural resource base**

Experience has shown that one among the most important factors considered by investors as they decide on investment location is the political climate and natural resource base of the country (Kinda, 2010; James, 2010). According to Bengesi (2018), political instability affects growth because it increases policy uncertainty, which has negative effects on productive economic decisions such as investment and saving. A high probability of a change of government implies uncertain future policies; consequently, the risk-averse economic agents may wait to take productive economic initiatives or might even "exit" the economy by investing abroad. Similarly, foreign investors are likely to prefer a stable political environment.

This review indicates that the presence of political stability and abundant natural resources in Tanzania offers a wide range of investors' opportunities. The investment environment in Tanzania has been stable in that the current political environment is deemed conducive for investors. Additionally, this review further shows that Tanzania's untapped natural resources offer an extensive range of investments opportunities potential. Consequently, Tanzania has become a destination for potential investors from all over the world given the stability of the political environment that ensure stable enabling environment (Mbowe *et al.*, 2016).

#### **2.5.1.2 Investment incentives**

The desire to attract and retain more investors has compelled most governments especially in developing nations to make extensive use of investment incentives in efforts to attract investments. Incentives in this paper are defined as the measures designed to influence to size, location or industry of Foreign Direct Investment (FDI) investments projects by affecting its relative cost by altering the risk attached to it through inducements that are available to comparable domestic investors. Increasingly, this has prompted governments to provide incentives of various kinds to foreign investors in order to attract investments usually in form of foreign direct investment (Jaiswal, 2017). Investment incentives are measurable economic advantages that governments provide to specific enterprises or groups of enterprises, with a goal of steering investments into favourable sectors. These benefits can be fiscal such as with tax concessions or non-fiscal as with grants, loans to support business development. In this context, tax and non-tax incentives have both been widely used to promote investments (Moyo, 2011; James, 2010; Zee *et al.*, 2002).

In Tanzania, the government is also providing a wide range of incentives in general and tax incentives in particular (URT, 2008; Lissu and Curtis, 2008; Muganyizi, 2012). All

these measures were aimed at attracting and retaining greater levels of FDIs into the country preferably in the mining sector. In respect to the mining sector, mining companies are given various tax incentives and exemptions. Other incentives include individual Mining Development Agreements which the government has signed with them. The incentives offered in respect to the mining sector include zero rated duty on capital goods, spare parts, vehicles and supplies until first production anniversary, thereafter reverts to 5%; zero rated VAT on all capital goods; zero rated capital gains tax; capital allowance 100% with an addition of 15% capital allowance; indefinite carryover of losses; corporate tax 30% and withholding tax on management 3% (Curtis and Ngowi, 2017; URT, 2019; 2008).

While the above are considered as constituting the opportunities to be exploited by both local and foreign investors, the findings of the review show that, investment incentives which target for or give preferential treatment to foreign investors are by nature discriminatory. While much has been written about the desirability of using incentives to attract new investments, empirical evidence on the cost effectiveness of using them to increase investment is inconclusive. Although it is known that tax incentives lead to revenue losses, countries in developing countries Tanzania included are continuously being tempted to increase investment incentives in general and tax incentives in particular in order to attract and retain more FDIs.

As a result, studies have confirmed that such tax incentives are leading to large revenue losses. With tax incentives, this implies that the money that could be collected as taxes is not collected. In its extreme case, lack of transparency on the extent of tax incentives has long prevented the public to adequately scrutinize them. As a result, the beneficiaries of tax incentives and exemptions in Tanzania have been a small group of foreign investors due

to substantive losses on part of the public and the country in general. Therefore, this tendency suggests that the disadvantages of tax incentives vastly outweigh the advantages, which is contrary to the intention of the policy objective.

#### **2.5.1.3 Incentives in the regulatory framework and bilateral investment treaties**

The aim of policies for investments is to provide investors with an environment in which they can conduct their business profitably and without incurring unnecessary risk. One of the important factors to ensure this is the presence of a predictable regulatory environment (Mbowe *et al.*, 2016). In Tanzania, the investment system in Tanzania is generally regulated under the 1997 Tanzania investment Act, which set up the Tanzania Investment Center (TIC). This investment law provides a one stop shop mechanism through which local and foreign investors can obtain the approvals necessary for the undertaking of investment (URT, 1997). In achieving these, the legal framework provides support to this focus on the private sector through establishing a variety of incentives that could encourage sustainable investments. However, the incentives provided by the framework are sometimes not well coordinated and have resulted in some cases in competing rather than complementary incentives. This review indicates that while the law has provided a strong foundation on which to facilitate sustainable activities, implementation has proved to be difficult due to ambiguities in the law, weak or absent implementing regulations and/or lack of supporting incentives altogether.

On the other hand, bilateral investment protection agreements/treaties (BITs) have as well obtained common usage because countries prefer to negotiate them directly in order to secure preferential treatment for their companies and protect their investments (UNCTAD, 2014; Rutaiwa and Simwela, 2012). Under Tanzania law, bilateral investment agreements are given superior treatments. In light of the above, in recognition that private

property and protection against any non-commercial risks, Tanzania is an active member of Multilateral Investment Guarantee Agency (MIGA). Conversely, Tanzania is also a member of the International Center for Settlement of investment Disputes (ICSID) to ensure secure investment environment (Curtis and Ngowi, 2017; URT, 2008).

In this way, investors have unrestricted rights to international arbitration in case of disputes with the government. As a result of this, Tanzania's investment Act point out that in the event of a dispute occurring concerning a company whose government of domicile is part to a bilateral investment treaty, the bilateral investment treaty will be the basis of dispute settlement. On that basis, Tanzania Investment Act of 1997 provides the backbone of the legal investment regime by making provisions related to the establishment of enterprises; investment benefits; dispute settlement and employment of foreign staff. The 1997 Act also established the TIC to provide information about land acquisition, taxes, and investment incentives in priority sectors, and spearhead investment promotion and facilitation efforts in the country (URT, 1997).

### **2.5.2 The challenges in the Tanzania's mining sector**

While Tanzania's mining policy does present some opportunities to be realized, its ability to ensure achievement of the desired opportunities remain limited. There are a number of challenges that still exist in the sector which need attention if the mining sector is to contribute sustainably for the wider society. Therefore, this section seeks to highlight the challenges with greater emphasis on aspects related to local content, land acquisition and resettlement as well as on the potential of artisanal and small scale miners.



### **2.5.2.1 Challenges for local content in the mining sector**

Many governments are increasingly becoming eager to ensure that resource-based investments lead to broad based economic growth through local content strategies, legislation and regulatory instruments (Nwapi, 2016; Mpelumbe, 2012). In this regard, local content is increasingly becoming an important component of the government's strategy to ensure that the mining sector is substantially contributes to long term sustainable development. In the context of Tanzania, the mineral policy 2009 lays the foundation for creating an enabling environment to stakeholders and potential investors. For example, Sections 34(1) (f); 41(4) (g) and 49 (2) (h) of the mining Act 2010, requires mining companies to locally procure goods and services and the government to support and promote Tanzanians to supply quality goods and services to the mining industry (URT, 2009). However, to the time of writing this paper, it was not clear how effective these instruments have been.

While Tanzania has recently taken some serious measures to improve its local content policies, in practice this has not been achieved. Although the government has established a local content policy for the nascent oil and gas sector, a local content policy in the mining sector is still underdeveloped since there is no specific local content policy/legislation properly governing mining investments. In this way, the country is not benefiting as much as it could from foreign investment in this respect.

Despite the fact that the local content provisions are covered in the policy document, it is surprisingly not fully elaborated in the mining Act. This argument has been supported by Shivji (2007) who argues that the Act does not impose any conditions related to development objectives such as training and employment of Tanzanians, sourcing of local goods and services. In light of this, Tanzania's local content policies are considered weak

especially in the mining sector due to a lack of plans and strategies for implementation on the ground and mechanisms for monitoring compliance in achieving the targets (Curtis and Ngowi, 2017).

For example, experience in countries such as Australia show that, local content policies in the mining sector are defined at the national as well as at the state level for public interests (Frederiksen, 2017). The key principle in Australian policies is to offer full, fair and reasonable access to employment and tendering opportunities to Australian firms and individuals. Alongside this is a relatively soft requirement for firms to implement the requirements. In all these cases, there is a strong reporting requirement on the measures taken to recruit and procure locally. Together with this, the monitoring, component of Australia's policies is also considered essential to ensuring public accountability.

In other countries such as Botswana, Ghana and Zambia where the mining sector has performed well, local content policies are developed and implemented with the objective of capturing more benefits from the sector (Nwapi, 2016; Wilcox, 2015; World Bank, 2009). Due to the potential benefits accrued by local people, it has been necessary for countries rich in mineral resources to include local content provisions in their policies and laws as the case in Tanzania. Therefore, a need to improve this situation becomes crucial because participation of local citizens in the sector's activities is important for the integration into local economies and hence for poverty reduction in this regard.

#### **2.5.2.2 Challenges for land acquisition and resettlement**

The 1977 constitution of the United Republic of Tanzania is the fundamental law in Tanzania, overriding all other legislation. Article 24 of the constitution guarantees the right to own property and to protect it in accordance with the law (URT, 1997). There is

thus, full recognition of private property and protection against any commercial risks. The Tanzania investment Act, No 26 of 1997, under section 22(1) also guarantees mining business as against nationalization or appropriation by pointing out that no business enterprise shall be nationalized or appropriated by the government. It is further stated under section (2) of the same provision that there shall not be any acquisition, whether wholly or in part of a business enterprise to which this Act applies by the state unless the acquisition is under the due process of the law which makes provision for fair payment and adequate and prompt compensation. Indeed, subsection (2) of the same article stipulates clearly that it shall be unlawful for any person to be deprived of his property without the authority of law which makes provisions for fair and adequate compensation (URT, 1997).

Despite these legal provisions, land acquisition and ownership has been reported as one of the problematic situation of the mining industry under which land occupiers prior to mineral discovery lose their land without compensation or inadequately compensated. While land acquisition is legally justifiable in the context of Tanzania, this goes contrary with the right to adequate and prompt compensation to the affected as provided in the provisions of Land Act, No 4 of 1999 and Village Land Act No 5 of 1999. As a result, land laws do not provide adequate protection to rural communities affected by mining operations due to weak tenure rights over the land. This paper argues that land compensation should conform to and not violate the right to own property as granted by article 24 of the 1997 constitution of the united republic of Tanzania.

Previous studies have also shown that there have been cases where the government and mining companies forcibly remove artisanal and small scale-miners as well as local communities to give way for mining operations without providing them with adequate

compensation as provided by the law (Bengesi *et al.*, 2009; Kabote and Niboye, 2013). In most cases, communities who are forced off their land are normally not consulted. Lissu and Curtis (2008) have demonstrated this in relation to the cases which happened at Bulyanhulu Gold Mining. This suggests that displacement and resettlement programmes are conducted without prior informed consent and some communities find themselves in worse situations after re-location.

This has been the motive force for the persistent conflicts between local communities and LSM companies and/or investors in the country (URT, 2017; Acuna, 2015; Akabzaa, 2009; URT, 2008). Moreover, a study by Ange (2014) shows that in the Kenyan constitution, Article 69 urges the state to manage natural resources in an equitable way for the benefit of all Kenyans. However, communities including those in Nguluku have been voicing their concern about the Titanium mining project that has led to loss of land, displacement and environmental degradation. In Botswana where the mining sector has performed better, the country has relied on enhancing strong institutions that are transparent, participatory, effective and efficient based on the rule of law.

The results imply that there was a mismatch between policy statements, legal provisions and reality on the practical experience on the ground. For example, Tanzania's regulatory framework does not clearly stipulate the criteria for compensation to those communities affected by LSM operations. This suggests that establishment of initiatives to share benefits from mining investments with local communities are a major step towards a comprehensive and systematic approach to addressing the challenges in mining areas that take into consideration the interests of various stakeholders. Kahyarara (2015) argues that despite increased opportunities available in the mining industry, oil and gas, unless a

strategic approach is adopted, Tanzania might not be able to effectively maximize gains from the resources for the benefits of all people.

### **2.5.2.3 Challenges for artisanal and small-scale miners**

The Artisanal and Small-Scale Miners (ASM) sub-sector is an important source of livelihoods especially in rural areas (Ange, 2014). As a result, efforts to formalize the sector have increasingly become important including registering and organizing unregulated and bring Artisanal and Small-Scale Miners (ASM) into the formal economy (Ange, 2014; URT, 2009). While Tanzania's 2009 mineral policy strongly stresses on the need to set out strategies for rationalizing artisanal and small-scale mining into organized and efficient operations in order to ensure gainful employment and poverty reduction, the investment environment for ASM has been one of the areas with persistent challenges.

The policy further shows that the government has made efforts since 1997 to formalize ASM into small scale miners and provide extension services but, these efforts have not been able to enhance its contribution to the economy. If well implemented, these measures would make ASM activities more sustainable and would possibly channel benefits to miners at the bottom of the production chain. Although artisanal and small-scale mining activities are widespread in Africa Tanzania included and employ a large number of people, the regulatory framework that could facilitate the development of ASM operations has largely been absent.

Indeed, the regulatory environment in some incidences has tended to give large-scale investors largely foreign firms more avenues to operate in the sector. While the Tanzanian government has made efforts to establish a small-scale section under the organization of the Ministry of Energy and Minerals (MEM), there has been lack of clear legal and policy

framework to support and facilitate sustainability of ASM in Tanzania. This has been associated by complaints raised by those who either occupy or own the land on which minerals are found of inadequate compensation whenever they are asked to give way for the establishment of mining activities especially by LSM companies.

According to the 1998 mining Act and the 1999 Land Act, all land in Tanzania is formerly owned by the state and that any relocation practice, must adhere to the stipulated provisions. However, forced relocation has remained a highly contested issue since many people lack formal rights to the land from which they are displaced. It is estimated that development projects cause the displacement of about 15 million people globally each year and many of these people end up impoverished (URT, 2015; Ange, 2014; Kannan *et al.*, 2014). A number of studies have equally documented those national frameworks seldom provide sufficient protection or compensation to people whose land is appropriated. This is especially true because only a limited range of physical assets are compensated and valuation methods do not capture either market value or the true costs of replacing lost assets (Owen and Kemp, 2015; Kabote and Niboye, 2013; Lange, 2013).

One effect of this has been to exacerbate tensions between the large-scale and small-scale sectors, resulting in conflict over land and other key livelihood resources. The need has therefore arisen to formalize the ASM sector, including through registering and organizing unregulated mining, bringing ASM into the formal economy. Furthermore, while LSM; ASM are the two sub-sectors covered in the policy, the artisanal and small-scale mining sub-sector is being excluded in most cases. In light of this, although the policy environment in the sector does not sufficiently addresses the needs of all actors in the sector, there is a possibility Tanzania can exploit the opportunity to ensure the sector becomes beneficial to all actors sustainably.

### **2.5.3 The experience of the regulatory environment in other contexts**

Many Sub Saharan Africa (SSA) economies are largely dependent on mineral resources (Fessehaie *et al.*, 2016). While SSA record of resource based growth has largely been disappointing in some countries such as Tanzania, the historical experience of other resource rich countries elsewhere for example Botswana, Zambia, South Africa and Ghana has shown that the mining sector can be leveraged into broader socio-economic development. Important factors underlying these successful experiences include effective policy frameworks and institutions. In Botswana for example, the mining policy has been characterized by remarkably ambitious goals, coherent design and effective implementation. However, in Tanzania, the situation is contrary whereby the mining sector has been associated with disappointing results.

In Mozambique, as the size of the extractive industry expanded, the country has been involved in strengthening the legal frameworks and fiscal regimes for the mining sector by increasing transparency in operations and reporting. For example, in 2009, Mozambique applied to the extractive industry transparency initiative and was declared fully compliant with EITI rules in 2012 with its second report covering 2010. Mozambique also endorsed the Global Partnership for Social Accountability in 2012, which aimed to improve development results by supporting enhanced citizen participation and feedback (Clement and Peiris, 2008). As a result, Mozambique has been among the fastest growing economies in Sub Saharan Africa over the last 20 years, with an average of annual real Gross Domestic Product (GDP) growth of 7.4%. This strong performance was aided by the determined implementation of credible macroeconomic policies and structural reforms, a favourable external environment, donor support and in recent years, the discovery and exploitation of natural resources. In this regard, Mozambique have been

performing better on governance with improvement in key areas such as government effectiveness, regulatory quality and the rule of law (World Bank, 2009).

However, Namibia, as one of the resource driven development economy differs from the above-mentioned countries experience in the superiority of its governance structures and institutional arrangements. For example, Namibia's constitution declares that all natural resources belong to the state. The mineral prospecting and mining Act of 1992 provides that all rights and control over minerals rest with the state (Global Witness, 2010). Moreover, the Namibian government has developed its mineral policy to ensure development of the mining industry. The policy is designed to attract both foreign and local investment in mining. The policy also seeks to provide opportunities for the Namibian people so that they benefit from their country's mineral resources in line with the government's policy of improving socio-economic conditions for all citizens (Malunga and Phalira, 2015; Wilcox, 2015; Mikesell, 1998).

It is generally said that Namibia's policy document is remarkably clear in its intent and it allows for greater state participation in mining production to secure direct benefit from mineral production for Namibians. As a result, Namibian mining sector performance has been impressive recording a GDP share of 12% from mining by the year 2012. As regards Tanzanian, the contribution of mining to the Gross Domestic Product (GDP) is still low when compared to Namibia and Botswana. However, such contribution has slightly increased from 3.7% in 2014 to 4.0% in 2015 and 4.8% in 2016, respectively (URT, 2019; 2018; BOT, 2017; Poncian and George, 2015; NBS, 2011). In this regard, Namibia and Botswana are regarded as role models for Sub-Saharan African Countries as they have expanded their economic development by strengthening their mining sectors (Collier and Hoffer, 2002).



#### **2.5.4 Lessons drawn from other contexts in the mining sector**

The discoveries of the country's resource deposit, especially natural gas, have the potential to significantly contribute to the economic growth and development thereby supporting the diversification of the economy into high value adding activities and thus, improve the living standards of citizens in Tanzania. However, this has been a challenge for quite some time in terms of realizing this potential partly due to weak linkages between mining activities and the local economies. It is equally revealed that the weaknesses reflected in the regulatory environment contribute greatly to the minimal contribution of the sector (Fessehaie *et al.*, 2016; Kahyarara, 2015; Muganyizi, 2012; Lugoe, 2012). In this regard, Tanzania has the opportunity to learn from the experiences drawn from other successful countries with respect to the mining sector.

In view of the above, Tanzania can learn from the experience drawn from other successful countries by embracing on effective application of regulatory framework and institutional capacities to ensure that there is coordination towards enforcement and maintain coherence with other sectoral policies. This analysis validates the thesis that resource based growth is possible through the development of requisite skills, increasing domestic technological capabilities, appropriate designed and implemented policies and strong institutional capabilities. In this regard, successful countries in the context of the mining sector have shared features. They all have well-established mining sectors and in all these contexts, policies have played a critical role in opening up or closing down the opportunities for resource based growth and inclusive development. Additionally, the respective governments played a key role in fostering development linkages.

Viewed from Tanzania's context, there is an important role for government to play in the linkage development trajectory of resource rich countries. Left to market forces alone,

these linkages industries may not take off or may take off with limited value addition. Tanzania can also learn that when well-managed, the mining sector can create jobs, stimulate the transfer of technologies and knowledge and generate valuable foreign exchange earnings, thus providing governments a financial base for the development of infrastructure and the provision of social services. This paper demonstrates therefore that the success or failure of a 'resource based growth and development' is country specific requiring the development of different and appropriately designed policy instruments.

## **2.6 Conclusions and Recommendations**

### **2.6.1 Conclusions**

This paper has examined the opportunities and challenges with respect to the policy environment of the Tanzania's mining sector. The findings show that Tanzania's mining sector has undergone some major reforms geared towards the achievement of sustainable management of the sector. Based on the discussion made in this review, the main findings of this paper show that although the existing mining regulations address many of the stipulated policy objectives. However, in practice, there are a number of key issues that should be incorporated which are vital to ensuring that there is a well-functioning regulatory enabling environment of Tanzania's mining sector. This will be made possible when aligned with measures to improve the policy framework which is particularly needed in areas where the policy gaps have allowed for the persistence of poor practices.

In this regard, this paper makes useful contribution to the institutional theory. While the theory put more emphasis on the need to conform with the rules and regulations in relation to the management and use of mineral resources benefits, this paper provides avenues for theoretical and practical improvements as there are still existing gaps between formulated policy, rules and regulations and their actual practice on the ground especially at the local level due to the disparities that still exists in terms of accessing accrued benefits.

### **2.6.2 Recommendations**

Informed by various experiences from other contexts and practices in the mining sector in different parts of the world, the following recommendations are made from this review;

The government should improve the existing regulatory framework to enhance transparency and accountability in the management of mineral resources as reflected in the lessons from other successful countries in the sector.

The study also recommends that the government should design clearly defined a regulatory and institutional framework with effective implementation and enforcement of laws and regulations for local content compliance in the mining sector.

It is recommended further that the government should design a clearly defined legal framework with effective implementation and enforcement of laws and regulations geared towards formalizing the sub-sector.

Although the issue of compliance of companies to the regulatory framework is pertinent to the success of the mining sector, this was beyond the scope of this paper. In this view, this paper recommends further studies to look into the aspects of compliances to the regulatory framework in the mining sector.

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## CHAPTER THREE

### **3.0 Compliance of Large-Scale Mining Companies to Regulatory Framework for Sustainable Mining: A Case of Buzwagi Gold Mine, Kahama District, Tanzania**

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#### **3.1 Abstract**

The mining sector in most developing countries including Tanzania has become an important sector for the economy. However, the sector still faces many challenges to realize its full potential. This paper assesses whether mining companies complied with the regulatory framework of the mining sector based on community perspectives in Kahama District. Both cross-sectional and case study designs were used for the study. A total of 215 households were sampled for the study based on Bailey's method using a sampling per cent of 9.3%. Within villages, respondents were selected using simple random sampling technique. Data were collected using questionnaire, focus group discussions, observations and document reviews. While content analysis was used to analyse primary qualitative data, factor analysis was employed to reduce variables which were then analysed to find extent of compliance of large-scale mining companies with regulatory framework for sustainable mining, and documentary review was used to analyse secondary data. The findings show that the factors for compliance were very inherent to

the community environment as they captured a very high recognition of 0.848 to 0.916 Cronbach's value. The findings show that consultation for views on issues, publication of anticipated effects and benefits in communities were positively attained by the mining companies. However, it is also evident that the mining companies' operations to a large extent have negatively affected the qualities of water, soil, air and use of the available resources within operation areas. In addition, there was also less compliance with better practice on issues of noise reduction, purchase of locally produced goods, and employment of manpower from around the mine. The paper concludes that although large mining companies are required in Tanzania, addressing the existing challenges would lead to achieving sustainable mining practices. This is especially crucial with respect to the delivery of benefits to the nearby communities and the country at large for sustainable development outcomes.

**Keywords:** Mining policy; regulatory framework; mining companies; mining sector; local communities;

### 3.2 Introduction

The developing regions of Latin America, Asia and Africa are abundantly endowed with mineral resources that are essential for modern production and consumption worldwide (Besada *et al.*, 2015). Africa, for example, hosts over two-thirds of the world's reserves of platinum which is essential in the electronic industry; Latin America accounts for over half of the global production of copper; and Asia accounts for over half of the world's coal and more than a third of global iron-ore deposits used for energy and steel production (Besada *et al.*, 2015). Africa also accounts for about 12% of the world's oil reserves, 40% of gold, 80% to 90% of the chromium and platinum group of metals, 85% of phosphate reserves, more than half of cobalt and one-third of bauxite (African Development Bank,

2013; UNECA and AU Commission, 2012). African Progress Panel (2013) estimates also show that Africa expanded its metal and minerals extraction by 78% between 2010 and 2017. In this regard, richness in terms of natural resources, the mining and extractive industry constitutes a major share of exports and tax revenues for countries in the Global South and holds enormous potential to finance rapid economic development for poverty reduction.

Despite the expected advantages, harnessing these benefits remains problematic as many countries do not reap the full potential of their resource endowments. Rather than providing for broad-based and sustainable economic growth, resource revenues often end up benefiting only a small segment of local elites and foreign investors partly due to lack of compliance and/or weaknesses in the legal frameworks. While a number of studies (Lange and Kinyondo, 2016; Poncian, 2015; Kahyarara, 2015; Kabote and Niboye, 2013 and Lange, 2008) have been carried out in relation to the general contribution of the sector to the economy; studies on the compliance of mining companies in the context of the legal framework, especially in the perspectives of local communities remain limited. While the reasons for the prevalence of this situation are many and varied, literature suggests that the situation has greatly been attributed to the unsatisfactory state of affairs due to non-compliance of foreign investors with the national regulations, coupled with lack of companies' compliance with stated legal frameworks for effective governance in the host countries. Consequently, failure to manage national resources properly has given rise to the troubling questions on how the continent can be so rich in natural resources, yet so poor in terms of human development (Besada and Martin, 2015; Adjei, 2007).

In Tanzania, despite a remarkable history of its mineral endowments, the country has not succeeded in translating its mineral wealth into overall economic development. Factors

such as lack of transparency and accountability for the realization of economic, social and environmental aspects in the sector have allowed for the vast imbalances between the wealth created through resource exploitation and poor human and economic development especially among the local population. Governance related issues such as lack of transparency and accountability pertaining to various payments and royalties made by multinational corporations to governments have for some time not been fairly aligned to host countries' demands (Maliganya and Bengesi, 2018; Kahyarara, 2015; Mwaikenda and Wambua, 2014; Lugoe, 2012).

However, efforts undertaken by the Tanzania's fifth phase government (2015- 2025) are essentially well placed towards realization of a natural resources growth-based economy. Moreover, since the 1980s, Tanzania was preoccupied with regulations which essentially were meant to attract foreign mining investment. Currently, the country has taken serious steps towards improving accountability in the extractive companies; these efforts have been accelerated with significant amendments of the Mining Act in 2017 and 2018 with a purpose of gaining greater control over and value from Tanzania's natural resources extraction (Markel and Foubert, 2019). Consequently, these efforts have become well aligned with the need for an effectively monitored legal and regulatory framework which is important for the country, which is rich in natural resources.

While some governments have recognized the potential role the mining sector could play towards economic growth and development, there have been numerous resource conflicts between communities, government and private companies (Lugoe, 2012; Collier, 2010; Lange, 2008; Collier, 2007). More importantly, recent new discoveries of natural resources such as natural gas and oil, along with the rise of local and global environmental, economic and human rights activism have led to increased demands for

the government to respond to the needs of Tanzanian citizens. The predominance of public discontent against natural resource investors has been witnessed in different areas such as in Mtwara, Mara and Geita, to mention a few. As a consequence, the Tanzanian population in general, not only those directly affected by mining operations, is extremely resentful of large scale mining (Venables, 2016; African Progress Panel, 2013; Lange, 2011; Collier and Hoeffler, 2005).

Furthermore, the net impact of the mining sector for Tanzania's development has remained limited. Interestingly, this fact has been recognized by the government and is also manifested through increased public discontent towards the sector's unsatisfactory performance (Lange and Kinyondo, 2016; Poncian, 2015; Kahyarara, 2015; Kabote and Niboye, 2013). While the potential benefits of large mining operations have been widely acknowledged, few studies have attempted to assess how and the extent to which mining companies respond to the regulatory frameworks for local impacts. The questions on whether large mining companies respond accordingly to the existing regulatory framework for sustainable development outcomes remain unanswered. This paper attempts to assess compliance of mining companies to the available regulatory framework for sustainable mining practices in Tanzania.

If this situation is not well addressed, it may lead to a far reaching impact not only at the national level but, also on community's context with proximity to large-scale mining operations. On the basis of the above, this paper examines large-scale mining (LSM) company's compliance with the Tanzania's regulatory framework using the case of Kahama District. The paper illustrates the mining sector's challenges by assessing the response of mining companies to Tanzania's mining regulatory framework. In addition; the paper suggests some practical recommendations for policy options on how Tanzania



could best implement sound and well monitored mining regulations for sustainable development outcomes. In light of this, the paper essentially sheds light on previous and current efforts towards sustainable exploitation of resources in the respective sectors for realization of sustainable development goals as stipulated in the national legal documents. In view of the above, section 3.3 presents the theoretical review. Section 3.4 presents the methodology used for this paper, section 3.5 presents the findings and discussion. Lastly, section 3.6 presents the conclusions and policy recommendations.

### **3.3 Theoretical Review and Compliance Practices to the Regulatory Frameworks**

#### **3.3.1 The institutional theory**

This study is guided by the Institutional Theory that predicts processes by which social and political structures including rules, norms and routines become established as an authoritative guideline for behaviour that governs interactions in society. The theory asserts that authoritative guidelines for behaviour are created and adopted over time (Scott, 1995). This implies that for organizations including mining companies to survive and thrive, they must conform to the rules and belief systems prevailing in the environment. Kraft and Furlong (2017) contend that the institutional theory is a policy making mechanism which emphasizes on the importance of formal and legal aspects of government directives be complied to.

Viewed in the context of this paper, the theory is ideal as most of what happens in the mining sector of any country Tanzania included is regulated, allowed to survive and thrive under the countries' rules, norms and values. Indeed, the policy framework of the mining sector in which these actors operate is defined by both a national legal framework and corporate practices which establish norms pertaining to accountability measures, revenue sharing, and local employment and investment requirements as well as social and

environmental safeguards. This theory is useful in that it helps one to assess what is the idea and what is really happening on the ground.

### **3.3.2 Compliance practices to the regulatory frameworks in developing countries**

Since the 1980s, Peru, Chile and Mexico were pioneers in developing the Latin American Mining Law Model (Noras, 2016). The model emphasizes on reduced discretion in granting rights, greater security of title and tenure and freedom to transfer rights and use them as collateral and distinction between maintenance obligations and operating obligations. Proven success factors of the model involve an enabling investment environment and modernization of the country's mining sector (Noras, 2016; Kaufmann, 2012; Grindle, 2004). Countries such as Bolivia, Ecuador and Mongolia all possess extensive natural resource bases that can play key roles in their economic growth and poverty reduction. However, development of the mining sector in these countries has suffered from unstable regulatory regimes and a lack of administrative capacity.

In Mozambique, as the size of the extractive industry expanded, the country strengthened the legal frameworks and fiscal regimes for the mining sector by increasing transparency in operations and reporting. For example, in 2009, Mozambique applied to the Extractive Industry Transparency Initiative (EITI) and was declared fully compliant with EITI rules in 2012. Mozambique also endorsed the Global Partnership for Social Accountability in 2012, which aimed at improving development results by supporting enhanced citizen participation and feedback (Clement and Peiris, 2008). As a result, Mozambique became one of the fastest growing economies in Sub-Saharan Africa over a period of 20 years, with an average growth of 7.4%. This strong performance was aided by the determined implementation of credible macro-economic policies and structural reforms, a favourable external environment, donor support and, in recent years, discovery and exploitation of

natural resources. In this regard, Mozambique has been performing better on governance with improvement in key areas such as government effectiveness, regulatory quality and the rule of law (Poncian and George, 2015).

Experience from Namibia, as one of the resource driven development economies, differs from the above-mentioned countries' experience in the superiority of its governance structures and institutional arrangements. In addition, Namibia's constitution states that all natural resources belong to the state. Moreover, Namibia's Mineral Prospecting and Mining Act of 1992 entrusts all rights and control over minerals to the state. The Namibian Government has developed its mineral policy to ensure development of the mining industry. Nonetheless, the policy is designed to attract both foreign and local investments in mining (Amupadhi, 2017). In addition, the policy also seeks to provide opportunities for the Namibians to benefit from their country's mineral resources in line with the government's policy of improving socio-economic conditions for all citizens. It is generally said that Namibia's policy document is remarkably clear in its intent and allows for greater state participation in mining production to secure direct benefits from mineral production for Namibians. As a result, the Namibian mining sector performed impressively, recording a GDP share of 12% from mining by the year 2012. Generally, Namibia has been regarded as one of the role models for Sub-Saharan African countries as she has expanded her economic development by strengthening the mining sector (UNECA and African Union Commission, 2012; UNECA, 2012; Global Witness, 2010).

The above indicates that, when well-managed, the mining sector can create jobs and generate valuable foreign exchange earnings thus, providing governments a financial base for the development of infrastructure and the provision of social services. However, many governments have mismanaged their mining revenues; consequently, they have suffered to

varying degrees in relation to the resource curse whereby poor policy choices, coupled with corruption, have exacerbated the cycles of poverty and conflicts. It is increasingly becoming clear that good mining sector governance begins with sound management and transparency along the full spectrum of the chain of environmental governance, from the awarding of contracts to the monitoring of operations, to the collection of taxes, to sound distribution of revenues and finally to the achievement of sustainable development for the economy as a whole (Woodroffe *et al.*, 2017; Simon, 2016; Venables, 2003; Collier and Hoeffler, 2002).

In Tanzania, the Mining Act No. 14 of 2010 is the main legislation so far that governs all mining and mineral activities from exploration to extraction (URT, 2013; 2009). The act regulates all activities related to mineral prospecting, processing and payment of royalties to the government by the mining companies. However, apart from other provisions on the regulation of the mining sector such as mineral rights and payment of royalties to the government, the law is silent on the operations of multinational corporations. Although a body of literature indicates that a successful legal and regulatory framework for natural resource extraction, that is, one that effectively translates natural resource wealth into broad-based economic development (Collier and Venables, 2011), a systematic assessment on how mining companies comply with regulatory frameworks of host countries for sustainable mining practices remains unclear.

Furthermore, in the case of Tanzania, the general effects of large mining operations have been widely acknowledged (Makene *et al.*, 2012). However, little evidence exists on how and the extent to which mining companies comply with specific provisions stipulated in the regulatory frameworks. It is on this background that this study was conducted in order

to assess the compliance of mining companies to the regulatory framework of the mining sector in Tanzania.

### **3.4 Methodology**

#### **3.4.1 Research design and sampling procedures**

The study employed the cross-sectional and case study designs. While a cross-sectional design was applied to collect data at a single point in time, case study design involved a thorough look into the social and environmental fulfilment of the mining company (Buzwagi Gold Mine) to the community. Furthermore, a review with regard to legislation pertaining to mining and community setting was done in this study.

In this study the sample was selected purposively and randomly. For purposive sampling, three villages were selected based on the researcher's judgment based on information obtained from district officials during the pre-survey phase. Therefore, three villages namely Mwime, Mwendakulima and Chapulwa were desirably selected to provide the required information as these were close and highly affected by mining operations of Buzwagi Gold mine.

The utilization of large sample size was important in this study as it focused on the description of variability for potential factors of legal provisions in the mining sector over the community. Given the nature of this study, Bengesi (2013) and Field (2009) concluded that 300 cases could be adequate for studies that employ the analysis of potential factors; yet, Pallant (2007) suggests a minimum of 150+ cases.

Since this research was largely documentary by which most of work involved a pre-analysis of legal documents that contained information about the interaction of mining

operations and societies, then Bailey (1994) method of sampling was adopted. A documentary research method is used when exploring and categorizing physical sources, most commonly written documents, whether in the public or private sphere (Payne and Payne, 2004). According to Bailey (1994), a sample of at least five percent could have an adequate representative of the community in social studies. Given this combination of methods and the requirement for the analysis, this research drew up to nine percent of households in each of the study villages as representative cases for the general findings. However, to omit biasness of households in selected villages, a simple random sampling procedure was further used to obtain a representative household as shown in Table 3.1 below.

**Table 3.1: Sample Size Distribution by Villages (n = 215)**

<b>Village</b>	<b>Number of households</b>	<b>Sampling percentage</b>	<b>Random Sampled households in village</b>
Mwime	1404	9.3	131
Mwendakulima	686	9.3	64
Chapulwa	214	9.3	20
<b>Total</b>	<b>2304</b>		<b>215</b>

### **3.4.2 Methods of data collection and analysis**

Systematic review of literature was done to gather information from policies and legislation in Tanzania and best practices elsewhere. Household survey and key informant interviews with technical personnel from government and mining company officials were also conducted to determine the extent at which communities understood issues of compliance and social responsibility in areas where mining operations were being undertaken. In addition, FGDs were used to gather information on how the Buzwagi gold mining company and the government engaged with local communities, and whether they demonstrated willingness and interest in implementing social inclusion policies in relation

to mining operations in the area. In each study village, three (3) FGDs comprising both male and female participants were conducted with 10 members to capture a wide range of perceptions.

With respect to data analysis, exploratory factor analysis was used to reduce the attributes assessed against compliance to dominant factors explaining the phenomena by using principal components. A statistic was tested to assess the adequacy of sample population and correlation of compliance variables following Kaiser-Meyer-Olkin (KMO) and Bartlett's test respectively. Reliability analysis was further performed to draw validity of the research instruments and consistence of variables used to assess compliance of the mining company. Under this stage, a Cronbach's Alpha ( $\alpha$ ) was used as a measurement value to draw consistence of variables such that, a value greater than 0.7 for dominant factors, was regarded as denoting higher consistence of underlying variables on compliance (Chen and Popovich, 2002). Moreover, literature shows that Cronbach's alpha is a statistic commonly used to measure internal consistency or a set of scale or test items of the measurement instrument (Bengesi and Le Roux, 2014a; Bengesi and Le Roux, 2014b; Bengesi, 2013; Kaiser, 1970). Therefore, the analysis was given by the following relation:

$$\alpha = N * x / (\bar{u} + (N-1) * x)$$

Where

$\alpha$  = Value for a Cronbach's measure (Cronbach's alpha),

$N$  = the number of variables,

$x$  = the average inter-item covariance among variables, and

$\bar{u}$  = the average variance.

Content analysis was used to analyse data obtained from key informant interviews and FGDs. Data were recorded and transcribed prior to data analysis. Transcription was

carefully done in order to maintain the original meaning of the information. Thereafter, data were coded to help identify themes and sub-themes related to extents to which communities understood issues of environmental sustainability, community engagement and social responsibility. On the basis of the objectives, these were compared and contrasted based on each piece of data with the rest in order to find whether there were similarities and differences in how people perceived mining companies' operations in the area. The essence of this approach was to have an understanding of common patterns within human experience. The aim was to interpret the findings in order to capture people's opinions and judgment.

In addition, in order to analyse documents related to the policy environment of the mining sector in Tanzania, content analysis technique was also employed to analyse information captured in various documents. This involved several stages, namely reading the data (literature), coding the data (organizing the material into chunks or segments), identifying themes or categories, comparing different themes to see their similarities and differences and finally making interpretations of different themes.

### **3.5 Results and Discussion**

The study on which the paper is based assessed the response of LSM companies to the regulatory framework for improved local livelihoods in Kahama District. The aim was to explore the perceptions of communities living in and around mining areas to ascertain how mining companies comply with the Tanzania's regulatory framework. Using factor analysis, the results are presented in the following sections.



### 3.5.1 Sampling adequacy

Compliance score based on pre-stated system of governance in the national legal and regulatory frameworks was drawn using exploratory factor analysis (EFA). Under this, the Kaiser-Meyer-Olkin test resulted in a maximum value of 0.77 indicating an adequate sampling adequacy employed in the Factor analysis that is beyond the cut-off point of 0.5 (Field, 2009; Kaiser, 1970). In addition, there was a significant correction of attributes in the measure of compliance items ( $p\text{-value} < 0.01$ ) given by Bartlett's Test of Sphericity that the null hypothesis for original correlation matrix assumes no correlation exists between test attributes (Field, 2009). In order for factor analysis to work, there must exist in some relationships between test items (Pallant, 2011). Since results yielded a significant value, it shows that the original correlation matrix of attributes was significantly different from an identity matrix. Therefore, suiting the data collected for factors analysis.

**Table 3.2: KMO and Bartlett's Test**

Statistical test		Test value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.771
Bartlett's Test of Sphericity	Approx. Chi-Square	2.237E3
	Df	171
	Sig.	0.000

### 3.5.2 Initial extraction of compliance attributes

The amount of variance explained by each compliance test attribute was initially used to determine its suitability subject to a reduction process in factor analysis. Attributes that rated below 0.3 were suppressed for further analysis (Pallant, 2007; Thompson, 2004). Based on this procedure, it was found that all compliance attributes subjected to respondents were suitable and explained from 0.483 to 0.865 of variances (Table 3.3).

**Table 3.3: Communalities (n = 215)**

Attributes	Initial	Extraction
------------	---------	------------

- The mining company consulted for views on issues	1.000	0.865
- Publicity of anticipated effects and benefits before project	1.000	0.847
- Public meetings were held with the affected parties and communities to explain the effects before mining operations began	1.000	0.817
- Mining operations affect the quality of water in our area	1.000	0.705
- Mining operations affect the quality of air in our area	1.000	0.734
- Mining operations have induced noise and vibration pollution in our area	1.000	0.633
- Mining operations affect the quality of soil in our area	1.000	0.723
- Mining operations affect light in our area	1.000	0.719
- Mining operations interfere with radio waves	1.000	0.583
- The mining company abides by the conservation of plants and animals in surrounding areas	1.000	0.747
- The mining company uses the available natural resources sustainably	1.000	0.804
- Mining activities have resulted in a release of modified organisms	1.000	0.636
- The mining company abides to the conditions to rehabilitate degraded land after operations	1.000	0.788
- The mining company abides by the restoration of the environment for affected living organisms (plants and animals) in and out operation areas	1.000	0.801
- The mining company offers relocation areas to people affected by mining project operations within the mining areas	1.000	0.730
- The mining company offers compensation to people affected by mining project operations within the mining areas	1.000	0.734
- The mining company procures goods and services available in your area	1.000	0.483
- The mining company offers employment to local people from the community	1.000	0.529
- The mining company keeps demarcated mining area to avoid conflict	1.000	0.664

Extraction Method: Principal Component Analysis

### 3.5.3 Strength of correlation among compliance attributes

The strength of correlation was deployed through the correlation matrix among attributes.

The aim of this analysis was to find strong attributes that are fit into further processes of factors analysis; such that the attribute that rated a correlation of below 0.3 in relation to other attributes was excluded in the factor analysis (Bengesi, 2013; Field and Miles, 2010). Table 3.4 below shows the attributes excluded from factor analysis.

**Table 3.4: Attributes Excluded from Factor Analysis**

Attribute No	Attribute -Total Correlation	Description of Attribute
C1	0.480	The mining company consulted for views on issues

C2	0.413	Before the start of the project, the mining company publicized its anticipated effects and benefits by posting posters in strategic public areas
C3	0.488	Public meetings were held with the affected parties and communities to explain the effects before mining operations began
C4	0.445	Mining operations affect the quality of water in our area
C5	0.443	Mining operations affect the quality of air in our area
C6	0.448	Mining operations have induced noise and vibration pollution in our area
C7**	0.266	Mining operations affect the quality of soil in our area
C8**	0.250	Mining operations affect light in our area
C9**	0.234	Mining operations interfere with radio waves
C10**	0.235	Mining company abides to conservation of plants and animals in surrounding areas
C11**	0.273	The mining company uses the available natural resources sustainably
C12**	0.211	Mining activities have resulted into release of modified organisms
C13**	0.093	The mining company abides to the conditions to rehabilitate degraded land after operations
C14**	0.141	The mining company abides to restoration of the environment for affected living organisms (plants and animals) in and out operation areas
C15	0.366	Mining company offers relocation areas to people affected by mining project operations within the mining areas
C16	0.439	Mining company offers compensation to people affected by mining project operations within the mining areas
C17**	0.166	Mining company procures goods and services available in your area
C18	0.351	Mining company offers employment to local people from the community
C19	0.457	Mining company keeps demarcated mining area to avoid conflict

\*\* Indicates attributes excluded after Factor analysis

From the analysis (Table 3.4 above), nine out of 19 of the screened compliance attributes were excluded for further processes of factor analysis due to weak correlations with other attributes.

### 3.5.4 Extraction of factors

Principal component analysis was adopted during the extraction process of factor analysis using variances explained by response attributes; such that, dominant factors were those with Eigen values above 1.0 (Bengesi and Le Roux, 2014b; Pallant, 2011). From the analysis, 3 factors were extracted, and they explained 75.7% of the total variance; factors

factor, 1, 2 and 3 explained 38.0%, 22.5% and 15.2% respectively of the variance (Table 3.5).

**Table 3.5:** Total Variance for Compliance Factors (n = 215)

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.805	38.048	38.048	3.522	35.222	35.222	2.394	23.940	23.940
2	2.250	22.498	60.546	1.911	19.107	54.329	2.250	22.504	46.444
3	1.518	15.184	75.730	1.261	12.611	66.940	2.050	20.496	66.940
4	0.673	6.726	82.455						
5	0.481	4.812	87.267						
6	0.399	3.988	91.254						
7	0.269	2.688	93.942						
8	0.256	2.556	96.498						
9	0.207	2.073	98.571						
10	0.143	1.429	100.000						

### 3.5.5 Factor rotation

Rotation of factors was achieved by Oblimin method (Oblique) with Kaiser Normalization in the hypothesis that the factors extracted were related. Respective values of variances, after rotation, are presented in the Rotation Sums of Squared Loadings column (Table 3.6). Rotation tends to optimize the structure of dominant factors so that they are relatively equalized. Results show that, before rotation, factor 1 had relatively higher variance explained (38 %), but after rotation it decreased to 23.9%. Consequently, factors 2 and 3 had relatively lower variances of 22.5% and 15.2% but, after rotation they normalized to 22.5% and 20.5% respectively.

### 3.5.6 Pattern and structure matrices after oblique rotation

Pattern matrix and structure matrix were presented to show whether there is a definitive factor structure; and, approve if there exists any correlation among compliance attributes after oblique rotation (Field and Miles, 2010). Results of the Pattern matrix (Table 3.6)

show a similar pattern of loadings for dominant factors. Also, according to author's existence of double loadings in the structure matrix confirm the presence of correlation among factors.

**Table 3.6: Pattern Matrix**

Attributes	Component		
	1	2	3
- The mining company consulted for views on issues	0.927		
- Before the start of the project, the mining company publicized its anticipated effects and benefits by posting posters in strategic public areas	0.938		
- Public meetings were held with the affected parties and communities to explain the effects before mining operations began	0.878		
- Mining operations affect the quality of water in our area			0.869
- Mining operations affect the quality of air in our area			0.919
- Mining operations have induced noise and vibration pollution in our area			0.821
- Mining company offers relocation areas to people affected by mining project operations within the mining areas		0.899	
- Mining company offers compensation to people affected by mining project operations within the mining areas		0.875	
- Mining company offers employment to local people from the community		0.686	
- Mining company keeps demarcated mining area to avoid conflict		0.729	

Extraction Method: Principal Component Analysis

Rotation Method: Oblimin with Kaiser Normalization

**Table 3.7: Structure Matrix**

Attribute	Component		
	1	2	3
- The mining company consulted for views on issues	0.939		0.346
- Before the start of the project, the mining company publicized its anticipated effects and benefits by posting posters in strategic public areas	0.929		
- Public meetings were held with the affected parties and communities to explain the effects before mining operations began	0.900		0.324
- Mining operations affect the quality of water in our area			0.863
- Mining operations affect the quality of air in our area	0.308		0.924
- Mining operations have induced noise and vibration pollution in our area	0.311		0.837
- Mining company offers relocation areas to people affected by mining project operations within the mining areas		0.871	
- Mining company offers compensation to people affected by mining project operations within the mining areas		0.872	
- Mining company offers employment to local people from the community		0.684	
- Mining company keeps demarcated mining area to avoid conflict	0.446	0.795	

Extraction Method: Principal Component Analysis

Rotation Method: Oblimin with Kaiser Normalization

### **3.5.7 Reliability of factors**

The reliability output was done to show whether the data used to assess compliance was credible. At this stage Cronbach's alpha was computed and used to study the internal reliability of data. Under normal circumstances, a Cronbach's alpha value above 0.8 represents an acceptable level of internal reliability (Matotola and Bengesi, 2019; Bryman and Bell, 2007; Thompson, 2004). In some cases, a Cronbach's alpha value of 0.70 or greater is desirable (Taber, 2017; Le Roux and Bengesi, 2014; Gorsuch, 1983). Results (Table 3.8) show that the factors of compliance measured a range of Cronbach's alpha value of .848 to 0.916 that was above 0.8. In that case, it is concluded that the research instrument employed in this study satisfied the measure of compliance perceived upon the mining company in the community.

**Table 3.8: Statistics for Reliability Test**

Factor Statistics	Factors		
	1	2	3
Number of Attributes converged	3	4	3
Variance explained (%)	38.05	22.50	15.18
Mean	3.941	3.535	3.637
Cronbach's alpha	0.916	0.822	0.848
Eigen value	3.805	2.250	1.518

Based on Pattern matrix, the factors (Table 3.9) were then summarized into collective themes that according to the study were named as Social Accountability (Factor 1), Compensation and Resettlement (Factor 2) and Pollution Control (Factor 3).

**Table 3.9: Compliance Factors and Attributes (n = 215)**

S/N	Factor	Loading	Attributes
1	Social Accountability	0.927	The mining company consulted for views on issues
		0.938	Before the start of the project, the mining company publicized its anticipated effects and benefits by posting posters in strategic public areas
		0.878	Public meetings were held with the affected parties and communities to explain the effects before mining operations began
2	Compensation and Resettlement	0.899	Mining company offers relocation areas to people affected by mining project operations within the mining areas
		0.875	Mining company offers compensation to people affected by mining project operations within the mining areas
		0.686	Mining company offers employment to local people from the community
		0.729	Mining company keeps demarcated mining area to avoid conflict
3	Pollution Control	0.869	Mining operations affect the quality of water in our area
		0.919	Mining operations affect the quality of air in our area
		0.821	Mining operations have induced noise and vibration pollution in our area

### 3.5.8 Compliance on social accountability

Social accountability was one of the components perceived important for compliance by mining companies in the Tanzania's regulatory framework. A localised social

accountability is regarded crucial especially if the mining companies are to behave in a socially responsible manner. This entails creating an enabling environment that enables local communities to practise their role in it (Rutenge, 2016; Natural Resource Institute, 2014). In light of this, mining companies were perceived as legally bound to be socially responsible in compliance with various aspects which were affecting the local communities in the study areas. As per the study findings, social accountability was positively explained on the involvement for views in decision making on issues related to the mining company from the community. The case was closely connected to when the company started to address missions as it kept the society aware of the benefits and negative effects anticipated during operations through public meetings and by use of posters in strategic public areas. In addition, a positive realization of social accountability was highly observed in areas with higher likelihood of effects whereby several public meetings were held to explain the effects before mining operations began.

However, positive accountability was more realized at the initial stage of the planning process of the mining company. Nevertheless, in practice the accountability was not realized by the community surrounding the mining company in response to enhancing social accountability. For example, the local authorities were perceived to have less power to act on behalf of the local communities in pursuing their interests with the mining companies especially on the compensation process. This was pointed out in one of the FGDs as cited below:

*“...We are not happy with the village government and District Council. They are not on our side because they side with the investor. This is affecting our rights which are supposed to be protected. The government is supposed to make a balance between the interests of the investor and the villagers. But, this is not happening in our village. That’s why even the compensation we receive is very small”* (FGD, Mwendakulima Village, March, 2017).



This scenario has; therefore, put the mining companies to wield lots of power hence, not coming on to complying with legal requirements in response to contributing to the communities' priority needs. According to Kessy *et al.* (2017), building positive relationships between investors, government and local communities has been regarded as a fundamental aspect of natural resource management. Evidence shows that poor management of community expectations can contribute to social unrest and even civil conflicts as it has been witnessed in the Democratic Republic of Congo, South Sudan to mention a few (Rutenge, 2016).

### **3.5.9 Compliance on compensation and resettlement of local communities**

One of the basic gains of mining operations in any area are the compensations and financial flows of revenue from the mining company that in essence act as a catalyst for change and poverty reduction on the nearby communities (Venables, 2016; Kumi, 2014). People who get resettled to make way for large-scale infrastructure development are widely acknowledged as vulnerable to a range of impoverishment risks in the field of development-caused displacement and resettlement. Global policy safeguards and standards aim to protect affected populations by requiring project developers to avoid displacement where possible, mitigate and manage harm through resettlement (Keenan *et al.*, 2016). However, depending on a country's practice, mining contracts may contain basic obligations that companies must comply with in relation to issues such as resettlement plans, environmental requirements, mine closure, community development and employment of locals.

In Tanzania, the Mining Act No. 14 of 2010 is regarded as the major framework for the management of all mining activities including compensation in the country (URT, 2009). In this Act, relocation and compensation have been aligned with the requirements of the

Land Act No. 4 of 1999. This requires provision of fair and prompt compensation before local communities are relocated by a mining project, in accordance with Section 14 (4d) of the Land Act No. 4 of 1999. The aim of the Mining Act is to ensure that involuntary resettlement is avoided and where it cannot be avoided, to ensure that locals in the area secure sufficient investment resources to be able to share in the project (URT, 2009).

According to the findings (Table 3.8), compensation and resettlement were positively reported in different ways to the attendance of households affected by mining operations on resource compensation. In the meantime of operation, the company tended to offer relocation areas to people affected by mining project operations within the mining areas. Likewise, compensation to people affected by mining project operations was offered by the company. However, in some cases, distortions of household income due to displacement were compensated by offering direct employment to local people of the affected community. In addition, to avoid any conflicts that would impose insecurity, the company made clear demarcations from local settlements. This was one of the key aspects that were considered by the local communities and was fulfilled by the mining company in the study area.

However, despite such recognition of compliance on some of the aspects as indicated by the study's findings, field observations show that there were a lot of complaints about inadequate recognition of traditional land uses, compensation for loss of land resources and access rights which constituted major grievances within communities. Community responses indicated that some of the property items were not compensated for, such as crops. Even those which were compensated for were inadequately considered for in terms of packages provided. The results further show that some of the property items which were to be offered as payment for destructed assets, such as houses and land, were

regarded by the mining company as part of the compensation process due to lack of close monitoring by the government, local authorities and lack of awareness among local communities. The above was confirmed during one of the FGDs as shown below:

*“... In this village there are many complaints about the way compensation was done. First, it was not participatory in a sense that people were not given clear explanations on how they would be compensated. As a result, people received very little compensation compared to the value of the property they had. For example, some people were supposed to leave their farms and some of them had not yet harvested their crops. Second, the compensation exercise was not done on time. Therefore, this was not fair”* (FGD, Mwime Village, April, 2017).

With respect to environmental management and social concerns, the mining policy of Tanzania recognises that LSM could lead to relocation of communities and disruption of their livelihoods. It also recognises that where relocation is inevitable, the government is considered responsible for valuing the land and property items of the affected communities, while the investor would be responsible for payment of compensation, relocation and resettlement (URT, 2009). Despite these guidelines by the policy and thus, the legal framework, there is a need to ensure that there is transparency in compensation procedures, proper valuations of land and other property items, adequate compensation rates and prompt payment of compensation (Maliganya and Bengesi, 2018; Bengesi, 2014; Bengesi *et al.*, 2009).

According to Kumi (2014), the nature of compensation to which an owner or lawful occupier may be entitled to may include, without limitation to the cost of resettlement, the annual land rent, and work the holder has carried out on the land and improvement. However, many concerns were being raised that the provision failed to consider livelihood restoration of caretakers or squatters in the project area of the land, who are considered to

be normally hard hit by the project impacts. According to the World Bank (2009, 2004) people living in squatters are generally among the poorest people, and that resettlement programmes should direct special attention and support to them, to prevent further impoverishment. It is further argued that performance standard stipulates that there should be consultation and informed participation of affected persons and communities in decision-making processes related to resettlement or compensation. In view of the above, it was generally perceived that the impacted people have no capacity to achieve a win-win negotiation outcomes or adequate compensation (IFC, 2012; World Bank, 2004). The World Bank (2009) equally observed that indigenous local people lack the skills to negotiate their interests effectively and as such bear the high cost of the depletion of their natural resources without the benefits of economic development thus, threatening their lives and livelihoods.

#### **3.5.10 Compliance on pollution control**

The regulatory framework governing the mining sector in section 4 (1) of the Environmental Management Act No. 20 of 2004, provides for the right to clean, and ensure safe and a healthy environment. Section 7(1) provides further for the principles of environmental management, enhancement, promotion, protection, conservation and management of the environment. Section 106 (1) provides for pollution prevention and control (Muza, 2018; Odeku, 2017; URT, 2009). Despite these elaborate provisions in the regulatory framework, the study findings show that the environment was highly interfered with mining activities that led to a failure of control in different ways. According to Table 3.8 the environment was positively impacted with pollution, highly on deteriorations of quality of water and air. Findings further show that human inaudibility was reported to have been resulting highly from noise and vibrations due to blasting activities.

Further to the above, findings from, key informant interviews and observations also showed that mining activities had far reaching environmental impacts that affected the livelihoods and health of communities due to pollution, especially on water sources. The effects were felt more in the adjacent communities such as Mwendakulima village and those residing some distances from the mine due to noise and air pollution. This was also reported by one of the key informants that:

*“I do not oppose the idea of having mining companies in our community. However, my concern is that, there are no measures so far taken to control environmental pollution resulting from mining operations. Every person in this village is aware of noise, dusts and chemicals discharged in the river”* (Key informant, Mwendakulima Village, March, 2017).

Similarly, there was more emphasis by another key informant that:

*“... The water in this river is polluted. One does not need to be told, just go down to the river you will see the polluted river even the colour of water is showing the situation. If you ask livestock keepers reveal about animal diseases resulting from the use of water from the river they will tell you of the effect. This situation did not exist before the experienced establishment of Buzwagi Gold mining company. Moreover, the area was covered by a natural forest. This is what has been making us unhappy with mining in this village”* (Key informant, Mwendakulima Village, March, 2017).

Overall, the findings of this study show that, despite the indications that the mining company was complying on some aspects, community responses were largely not in agreement with this due to the environmental problems which resulted from mining

operations that were mostly noted in relation to water, noise, air pollution, waste management and land degradation.

In Mara Region, a study by Bitala *et al.* (2009) showed that contamination of water from River Tighite and Nyabigena and sediments soil and the environment in the vicinity of North Mara Gold Mine between Kwimanga and Kwinyinyi was due to the presence of chemical contents of heavy metals and cyanide leakages from large-scale mining operations. The study further revealed that the levels of heavy metals and cyanide in water and sediments of River Tighite were found higher than they were in 2002. The levels of Ni rose 260 times, Pb was 168 times and Cr 14 times posing both environmental and health problems to humans and their livestock. Consequently, this was considered beyond the maximum permissible concentrations as a pollution of environment. Likewise, the presence of gaseous materials such as Sulphur Dioxide, Carbon Monoxide, Carbon Dioxide whose concentrations were then compared to standards by WHO, Tanzania and US Environmental Protection Agency (EPA) were found to be higher for people's health and sustainability of the ecosystem in the respective areas. This was an indication of non-compliance as a result of the on-going gold mining in the respective areas.

Likewise, in Zimbabwe, Chaumba's (2017) study which was conducted at Shurugwi Mine operations indicated that contamination of river water and underground water reserves was due to chemicals from mining activities. According to the study, the situation had resulted in the death of livestock and chemical effects to fish and children. However, for all the livestock that died as a result of such poisonous water, the owners were not adequately compensated. In this situation, waste management was one of the key drivers of negative environmental effects of mining activities in the areas under study. In the same way, Maliganya and Renatus (2017) also came up with similar observations in a study

conducted in Geita District in the villages of Nyakabale and Nyamalembo in which the communities had dug open wells near the mining operations while most of the boreholes were downstream.

### **3.6 Conclusions and Recommendations**

#### **3.6.1 Conclusions**

The study on which this paper is based was conducted in order to assess compliance of large-scale mining companies with Tanzania's national regulatory frameworks in Kahama District, Tanzania. Based on the study findings, it may be argued that large-scale mining companies are important for Tanzania's sustainable economic development. However, exiting challenges, especially on the need to ensure a balance needs to be revisited on the basis of existing interventions. While in some cases mining operations and programmes were complying with some pertinent issues such as compensation and resettlement, social accountability and pollution control more particularly at the beginning phase, failure with compliance was encountered on issues regarding management and control of both aerial and terrestrial pollutants and sustainable environmental management systems of the mining area.

Since this paper was designed to assess whether large scale-mining companies comply with the regulatory framework for sustainable mining practices, the paper makes useful contribution to the institutional theory. The theory puts more emphasis on the need for mining companies to conform to the rules and regulations in relation to the management and use of mineral resources benefits. In this regard, the study provides an avenue for theoretical and practical improvements, as there are still existing gaps between formulated policies, rules and regulations and their actual practice on the ground.

### **3.6.2 Recommendations**

This paper has explored how mining companies comply with the regulatory framework for sustainable mining practices in Tanzania. Based on the study's findings and conclusions, the following are recommended:

Since it was evident that some strength in the mining operations existed with regard to the policy and legal framework, this paper recommends to the government to conduct a periodic evaluation of the extent to which the mining companies abide by the regulatory framework so as to enhance the monitoring system of operations.

In order to reduce negative outcomes, including prolonged decline of natural resources induced by unsustainable conservation practices of animals and plants, it is recommended that the government should put in place a checking system for restructuring all issues pertaining to sustainable environmental management system within the operational mining areas programme.

In addition, given a number of cases reported on failures in response to the mitigation of pollution, this paper recommends further analysis on the extent of impacts with associated levels of pollution raised in the study villages is recommended.

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## CHAPTER FOUR

### **4.0 Perceived Implications of Large-Scale Mining on Environmental Sustainability in Kahama District, Tanzania**

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#### **4.1 Abstract**

Mining activities have important environmental and social implications not only at the global scale but also at local levels. While such activities have been considered useful for economic growth, they are still largely regarded as a threat to the natural surroundings due to resulting impacts on the environment, especially when they are not well managed. This paper examines the perceived implications of mining companies' practices on environmental sustainability in Tanzania. Both cross-sectional and case study designs were used in this study. A total of 215 respondents were randomly selected based on Bailey's methods. Data were collected using questionnaire, focus group discussions, observations and document reviews. Exploratory Factor Analysis using principal component analysis was employed as a data reduction procedure to obtain dominant factors with particular underlying variables reported over sustainable mining practices by the community. Although the results revealed that the community perceived a positive

response on measures taken with regards to both terrestrial and aerial pollution, including distortion in sound and light waves, nevertheless, the degree of achievement in practice was less observed. Worse still, the practice towards restoration of degraded land was negatively attained thereby creating a negative attitude in the community on informed ultimate goal for enhanced sustainability. Therefore, it is recommended that environmental sustainability in areas with large mining operations should not just be determined ecologically but, also through socially equitable ways of natural resources use.

**Keywords:** Regulatory framework; large scale mining; environment; sustainable environmental practices

## 4.2 Introduction

Mining activities have important economic, environmental and social implications not only at the global scale but, also at local levels. While such activities are considered useful for economic growth, they are still largely regarded as a threat to the natural surroundings, with devastating environmental effects on the air, water and soils, especially when they are not well managed as per regulatory frameworks of host countries (Maliganya and Bengesi, 2018; Darimani *et al.*, 2013; Escanciano and Velasco, 2010). Some of the prominent environmental problems emerging in this regard include land degradation, heavy metals overloading and acid mine drainage as some cases illustrate (Hilson and Nayee, 2002).

Considering the severity of the environmental impact resulting from mining operations in recent years, there has been renewed interest on how mining activities can be managed to achieve sustainable mining practices. Consequently, this has led to public concern about the current state of environmental degradation of the environment, especially in areas

where large-scale mining (LSM) operations take place (Mudd, 2010; Hilson and Murck, 2000). With this happening, it has been difficult for the mining sector to clearly demonstrate how much it is contributing towards the enhancement of the welfare and general well-being of the current generation without compromising the quality of life of future generations (Kessy *et al.*, 2017; Kabambe, 2014; Azapagic, 2004).

Given the prevalence of these contradictions, the topic of environmental sustainability in areas with large-scale operations has gained importance. This has come about with great understanding that large-scale mining operations in some instances cause significant damages to the natural environment, pose threats to the livelihoods of local communities and public health and consequently violation of human rights (Kessy *et al.*, 2017; Rutenge, 2016; Dashwood, 2013). Evidence suggests that, for a long time, these concerns have been neglected as they have not been given the attention they deserve for realization of sustainable mining.

Furthermore, sustainable mining has been regarded as an objective as well as a tool for balancing economic, social and environmental considerations for sustainable development. In view of this, when mining activities are not adequately managed, the results have in most cases been associated with degradation of soils, water, biodiversity and forest resources which are crucial to the subsistence of communities close to the mining sites. Equally, when contamination is not controlled, its cost is further transferred to affect other economic activities such as agriculture and these are subsequently transferred to the food chain and ultimately impacting on people's health (Venables, 2016; Dashwood, 2013).

While the Tanzania's 1997 Environmental Policy and Environmental Management Act No. 20 of 2004 clearly lay the foundations for control of the same, environmental management practices undertaken by mining companies in Tanzania have raised many concerns due to weaknesses in the ways enforcement of regulations in the mining sector is conducted (URT, 2012; 2009; 2004; 1997). Consequently, there have been cases of mining sites where the tailings dam runs freely into the pastures and fields used by local communities. For example, cases in respect to this include those in Geita District, North Mara where heaps of tailings were observed, dust and noise pollutions due to vibrations caused by blasting and forest clearance (Maliganya and Renatus, 2017; URT, 2013; 2008; Kitula, 2006).

Based on the above, environmental aspects in the rubric of large-scale mining have consequently proven to be controversial (Lange, 2011). As a result, the contribution of LSM companies to preserving the environment and their ability to limit the damages caused by mining operations has been questionable thus, needing attention and carefully exploration. Although mining companies might put in place and indeed are required by the law to undertake measures to ensure that they do minimum harm in their operations yet, specific legislations coupled with strong institutions for enforcement and continuous monitoring might be needed to enhance compliance to the stipulated provisions for sustainable mining. In the context of Tanzania and Kahama in particular, little evidence exists on how community members perceive the implications of LSM practices on environmental sustainability. This paper explores the implications of LSM on environmental sustainability in Kahama District. The study on which this paper is based was done with an assumption that mining companies are legally bound to respond positively to the challenges associated with their activities, especially at the local level where such operations take place. In addition, they are equally expected to have strategies

to attend these in line with the regulatory requirements of the host country (Claver *et al.*, 2007). This contradiction raises one important question for consideration in this paper: What are the community perceptions regarding the companies' practices for improved environmental sustainability in the study district?

The paper also contributes to the understanding of the social and environmental effects relating to the mining sector in Kahama district. In this regard, the paper focuses on the micro-level which examines the mining sector from the community's perspectives. Therefore, the paper complements existing literature and studies focusing on the sustainability of mining projects in terms of responding to the environmental challenges especially in areas with LSM operations. In section 4.3, the paper introduces the theoretical review in relation to the current discussions on sustainability in the mining sector. Section 4.4 presents the study's methodology, and section 4.5 results and discussions, and 4.6.1 presents the conclusions. Lastly, section 4.6.2 provides recommendations for policy options for sustainable environmental management practices in the mining sector of Tanzania.

### **4.3 Theoretical Review and the Concept of Environmental Sustainability**

#### **4.3.1 Theoretical review**

This paper is guided by the institutional and stakeholder theories. On one hand, the institutional theory (IT) is a theory that explains processes by which social and political structures including rules, norms and routines become established as an authoritative guideline for behaviour that governs interactions in society. According to this theory, authoritative guidelines for behaviour are created and adopted over time (Scott, 1995). This implies that in order for organizations including mining companies to survive and thrive they must conform to the rules and belief systems prevailing in a particular country

community so as to enhance sustainable mining. According to Kraft and Furlong (2017), the IT is regarded as a policy making mechanism that requires formal and legal aspects of government directives to be complied with.

In the context of the paper, the IT was considered ideal since most of what is happening in Tanzania's mining sector is regulated, survives and thrives under the rules, norms and values of the country. Consequently, the policy framework of the mining sector in which these actors operate is defined by both national legal framework and corporate practices which establish norms pertaining to accountability measures for revenue sharing, employment of local people as well as social and environmental safeguards.

On the other hand, the basic premise of the stakeholders' theory (ST) lies on the argument that the company's success is dependent upon successful management of all the relationships with its stakeholders. Therefore, without the support of stakeholders, the company would cease to exist. The ST has been regarded as one of the key approaches and the most commonly used theory in social, environmental and sustainability research (Mbewe, 2017), which this paper is about. In this regard, stakeholders include, among others, shareholders, local communities, government and local authorities (Harrison and Wicks, 2013).

The ST also emphasizes on the need for mining companies to abide by the legal frameworks for social accountability with respect to their operations. One of the elements to enhance this is to ensure that stakeholders are well informed on what is happening in the environment through increased environmental disclosure and public participation (Freeman *et al.*, 2010). In Tanzania, stakeholder participation is required for effective compliance in relation to section 89 of the Environmental Management Act No. 20 of

2004 and the Environmental Impact Assessment and Audit Regulations 17. Article 17 of the Tanzania Environmental Impact Assessment Law outlines the requirements for public participation (URT, 2009).

#### **4.3.2 The concept of environmental sustainability**

Environmental sustainability requires adoption of a wide variety of practices such as rehabilitation of mining sites and voluntary environmental management systems and life cycle assessment (URT, 2009). Sustainability has been defined as the ability of a system to maintain life in the long term (Moldan *et al.*, 2012; Ekins, 2011). In the context of environmental sustainability, it is a balance between societal demands on environment and social well-being of present and future generations. According to literature, environmental sustainability is the basis of all other forms of sustainability as it hinges on three interconnected elements of economic, environmental and social (Moldan, 2012; Ekins, 2011; Claver *et al.*, 2007). In view of this, evidence suggests that no sustainable development is achievable without the interaction of all the three elements.

In the context of the mining sector, balancing economic and societal demands on the environment is essentially important for long term sustainability of the mining business. This is especially important when one considers the implications of environmental degradation on public health concerns and generally on food security due to disturbances on livelihoods since the environment provides ecosystem services such as natural resources. In view of this, environmental sustainability refers to the ability of the environment to sustain life, renewable resources and absorption of waste (Ekins, 2011). However, in order to ensure proper functioning of these complex relationships, effectiveness of regulations and institutions governing the sector becomes necessary since human activities have been the main culprits of environmental degradation thus,



sustainability challenges (Chumbula and Massawe, 2018; Ekins, 2011; World Bank, 2004).

According to Murombo (2013), sustainability in the mining sector implies that companies in the sector work in good faith with the local communities to enable mining contribute to social, economic and environmental needs. This can be in the form of infrastructure development (development of schools through building schools, roads, maintaining the landscape) and entering into partnerships with local community trusts to leave a legacy of wealth. Through this, it remains to be seen whether the local community trust will benefit the future generations.

In Tanzania, the mining Act No. 14 of 2010 is regarded as the principal legislation that deals with all mining and mineral issues from exploration to extraction (URT, 2009). The Act regulates all issues related to mineral prospecting, processing and payment of royalties to the government by the mining companies (URT, 2010; 2009). The priority actions have been directed to the monitoring and regular review of policies, plans, and programmes 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 (URT, 2015; Mwalyosi, 2004). While a framework has been generally provided for legal and institutional arrangements and coordination to achieve these aspirations, the main challenge has been to ensure that all sectors and interested groups take priority actions in a mutually supportive manner necessitating the need for further research. In this regard, the paper examines perceived implications of large mining companies' practices on environmental sustainability in Tanzania.

## **4.4 Methodology**

### **4.4.1 Research design, study area and sampling procedures**

The study on which the paper is based employed both cross-sectional and case study designs whereby data were collected once from Kahama District as a case study. The case study design was considered useful as it involved reviewing the social and environmental impacts of large-scale mining therefore, the generalization is limited to the study area. The study was conducted in three mining village communities, namely Mwendakulima, Mwime and Chapulwa in Kahama District, Western part of Tanzania.

Purposive sampling was used to select the three villages based on their proximity to Buzwagi Gold mine and information obtained from district officials were used as a source of information during the pre-resurvey phase. Therefore, three villages namely Mwime, Mwendakulima and Chapulwa that were highly affiliated to mining operations were selected. Consideration of sample size was important in this study as it focused on the description of variability for potential factors of legal provisions in the mining sector over the community. Given the nature of this study, Bengesi (2013) and Field (2009) concluded that 300 cases could be adequate for studies that employ the analysis of potential factors; However, Pallant (2007) suggests a minimum of 150+ cases. Since this research was largely documentary by which method most of work involved a pre-analysis of legal documents that contained information about the interaction of mining operations and societies, Bailey (1994) method of sampling was adopted.

A documentary research method is used when exploring and categorizing physical sources, most commonly written documents, whether in the public or private sphere (Payne and Payne, 2004). According to Bailey (1994), a sample of at least five percent could have an adequate representation of the community in social studies. Given this

combination of methods and the requirement for analysis, this research drew up nine percent of households in each of the study villages as representative cases for the general findings on environmental sustainability. However, to avoid biasness in selecting households, a simple random sampling procedure was further used to obtain representative households as shown in Table 4.1.

**Table 4.1: Sample Size Distribution by Villages**

<b>Village</b>	<b>Number of households</b>	<b>Sampling percentage</b>	<b>Random Sampled households in village</b>
Mwime	1404	9.3	131
Mwendakulima	686	9.3	64
Chapulwa	214	9.3	20
<b>Total</b>	<b>2304</b>		<b>215</b>

Following the above sampling procedure, 131, 64 and 20 households were obtained from Mwime, Mwendakulima and Chapulwa villages respectively, making an adequate sample of 215 households out of a population of 2,304 households.

#### **4.4.2 Methods of data collection and analysis**

Data for this paper were collected using various methods. Systematic review of literature was used for policies and legislation from Tanzania and best practices achieved elsewhere. Household surveys were conducted to explore the extent to which communities understood the issues of environmental sustainable management practices in line with mining operations. A questionnaire with a five-point Likert scale was used to capture the sustainability of the environment in such a way that a respondent had to agree or disagree on whether the practices adopted were viable. In addition, focus group discussions (FGDs) of 10 participants each were conducted to determine how Buzwagi gold mining company and the government engaged local communities in implementing practices that can sustain the environment in the study area.

The information obtained from the questionnaires was analysed using the Statistical Package of Social Science (SPSS) software. The adequacy of sample population and correlation of variables were tested using Kaiser-Meyer-Olkin (KMO) and Bartlett's tests respectively.

Exploratory factor analysis (EFA) was used to investigate the attributes that explained well the constructs and reduce them into fewer factors using principal component analysis; attributes with Eigen values of 1 and above were then extracted together with underlying variables explaining environmental sustainability measures.

Reliability analysis was performed to draw the validity of the research instruments and consistence of variables used to assess the perceived implications of LSM practices on the sustainability of the environment by the community. Therefore, a Cronbach's Alpha ( $\alpha$ ) was used at this stage (Chen and Popovich, 2002). Literature show further that Cronbach's alpha is a statistic commonly used to measure internal consistency or a set of scale or test items of a measurement instrument (Matotola and Bengesi, 2019; Taber, 2017; Pallant, 2011; Pallant, 2007; Kaiser, 1970). The analysis was based on the following relation:

$$\alpha = N * x / (\bar{u} + (N-1) * x)$$

Where:

$\alpha$  = Value for a Cronbach's measure (Cronbach's alpha),

$N$  = the number of variables,

$x$  = the average inter-item covariance among variables, and

$\bar{u}$  = the average variance.

Content analysis was used to analyse data obtained from key informant interviews and FGDs. Data were recorded and transcribed prior to data analysis. Transcription was carefully done in order to maintain the original meaning of the information. Thereafter, data were coded to help identify themes and sub-themes related to extent to which

communities understood issues of environmental sustainability, community engagement and social responsibility. On the basis of the objectives, these were compared and contrasted based on each piece of data with the rest in order to find whether there were similarities and differences on how people perceived mining companies' operations in the area. The essence of this approach was to have an understanding of common patterns within human experience. The aim was to process interpretation in order to capture people's opinions and judgment.

In addition, in order to analyse documents related to the policy environment of the mining sector in Tanzania, content analysis technique was employed to analyse information captured in various documents. This involved several stages, namely reading the data (literature), coding the data (organizing the material into chunks or segments), identifying themes or categories, comparing different themes to find their similarities and differences and finally interpreting different themes.

## **4.5 Results and Discussion**

The paper explores the relevance of the measure subjected to draw the perception of the community with regard to practices undertaken by the mining company on sustainability of the environment. Under this context, the adequacy of sampled households and reliability of variables were tested to gain the confidence that allowed further discussion as shown in the following sections.

### **4.5.1 Sampling adequacy**

The Kaiser-Meyer-Olkin test yielded a value of 0.763 indicating an adequate measure of sampling design employed in this study as per Field (2009) and Kaiser (1970) who argue that a statistical minimum value of 0.7 is seen as acceptable. The analysis indicated a

significant correction of attributes used to assess the practices towards sustainability of the environment (p-value <0.01), hence further supporting the analytical processes of attributes into Exploratory Factor Analysis.

**Table 4.2: KMO and Bartlett's Test**

<b>Measure</b>		<b>Test Statistic</b>
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.763
Approx. Chi-Square		997.156
Bartlett's Test of Sphericity	df	45
	Sig.	0.000

#### 4.5.2 Initial extractions of attributes

The results in Table 4.3 show the variance explained against each attribute to determine the suitability of attributes for factor analysis. Attributes that loaded below 0.3 were suppressed for further analysis (Pallant, 2007; Thompson, 2004). Based on this procedure, it was found that all compliance attributes subjected to respondents in the initial stage were suitable and explained within .558 to .852 of variance.

**Table 4.3: Communalities (n=215)**

<b>Attributes</b>	<b>Initial Extraction</b>	
- Mining company offers control practice over water pollution	1.000	0.687
- Mining company offers control practice over air pollution	1.000	0.706
- Mining company offers control practice over land vibrations	1.000	0.726
- Mining company offers control practice over noise pollution	1.000	0.687
- Mining company offers control practice over soil pollution	1.000	0.640
- Mining company offers control practice over light distortion	1.000	0.558
- The mining company undertakes measures to conserve plants and animals in surrounding areas	1.000	0.712
- The mining company Mining activities have resulted into release of modified organisms	1.000	0.738
- The mining company rehabilitates degraded land after operations	1.000	0.835
- The mining company restores the environment for affected living organisms (plants and animals) in and out operation areas.	1.000	0.852

Extraction Method: Principal Component Analysis.

### 4.5.3 Strength of correlation among livelihood attributes

Analysis made from correlation matrix was used to indicate the strength of attributes; so as to find strong attributes that fit into further stages of Exploratory Factors Analysis. Attribute that recorded a correlation below 0.3 with other attributes was excluded in factor analysis (Field and Miles, 2010). The analysis (Table 4.3) shows that two environmental factors related to measures of conservation for plants and animals (E7) and the release of modified organisms (E8) were excluded due to weak correlation with other attributes.

**Table 4.4: Attributes Excluded from Factor Analysis**

Attribute Name	Attribute -Total Correlation	Description of Attribute
E1	0.600	Mining company offers control practice over water pollution
E2	0.643	Mining company offers control practice over air pollution
E3	0.617	Mining company offers control practice over land vibrations
E4	0.484	Mining company offers control practice over noise pollution
E5	0.595	Mining company offers control practice over soil pollution
E6	0.495	Mining company offers control practice over light distortion
E7	0.234**	The mining company undertakes measures to conserve plants and animals in surrounding areas
E8	0.282**	The mining company Mining activities have resulted into release of modified organisms
E9	0.431	The mining company rehabilitates degraded land after operations
E10	0.403	The mining company restores the environment for affected living organisms (plants and animals) in and out operation areas.

\*\* Indicates attributes excluded after Factor analysis

### 4.5.4 Extractions of factors

Exploratory Factor Analysis (EFA) reduced the attributes into two dominant factors generated Eigen values above 1.0 (Pallant, 2011). The principal component method of the EFA procedure was applied, and generated about 69.2% the variances (Table 4.5).

**Table 4.5:** Total Variance Explained (n=215)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.855	48.183	48.183	3.855	48.183	48.183	3.684	46.052	46.052
2	1.685	21.057	69.240	1.685	21.057	69.240	1.855	23.187	69.240
3	0.887	11.083	80.322						
4	0.454	5.672	85.994						
5	0.347	4.334	90.329						
6	0.308	3.850	94.179						
7	0.244	3.048	97.226						
8	0.222	2.774	100.000						

Extraction Method: Principal Component Analysis

#### 4.5.5 Factor rotation

The oblique rotation method with Kaiser Normalization for the hypothesis that the factors extracted were related was performed to optimize the structure of dominant factors so that are relatively equalized. The changes of variances values after rotation are presented in the Rotation Sums of Squared Loadings column Table 4.5.

#### 4.5.6 Pattern and structure matrices

The results in Table 4.6 and 4.7 present a pattern matrix and structure matrix which shows whether there is a definitive factor structure; and, approve if there exists any correlation among compliance attributes after oblique rotation (Field and Miles, 2010). The results of the Pattern matrix (Table 4.6) show some similar patterns of loadings for dominant factors, indicating credible factors structures with related attributes. The structure of pattern matrix was used to generate themes of factors loaded with attributes. In that scenario Factor 1 constituted practices related to pollution and wave distortion, and Factor 2 practices related to environmental restoration.



**Table 4.6: Pattern Matrix**

Attribute	Component	
	1	2
Mining company offers control practice over water pollution	0.794	
Mining company offers control practice over air pollution	0.795	
Mining company offers control practice over land vibrations	0.803	
Mining company offers control practice over noise pollution	0.830	
Mining company offers control practice over soil pollution	0.787	
Mining company offers control practice over light distortion	0.691	
The mining company rehabilitates degraded land after operations		0.923
The mining company restores the environment for affected living organisms (plants and animals) in and out operation areas.		0.931

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization

**Table 4.7: Structure Matrix**

Attribute	Component	
	1	2
Mining company offers control practice over water pollution	0.809	
Mining company offers control practice over air pollution	0.817	
Mining company offers control practice over land vibrations	0.823	
Mining company offers control practice over noise pollution	0.789	
Mining company offers control practice over soil pollution	0.791	
Mining company offers control practice over light distortion	0.682	
The mining company rehabilitates degraded land after operations		0.928
The mining company restores the environment for affected living organisms (plants and animals) in and out operation areas.		0.933

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization

#### 4.5.7 Reliability of factors

The reliability depicted whether the data used to assess measures on the environment was credible. Cronbach's alpha was computed and used to study the internal reliability of data. According to studies, a Cronbach's alpha value above 0.8 represents an acceptable level of internal reliability (Bengesi and Le Roux, 2014a, 2014b; Bryman and Bell, 2007). In some cases, a Cronbach's alpha value of 0.70 or greater is desirable (Taber, 2017). Results (Table 4.8) show that Cronbach's alpha value of .876 and .864 were scored against Factor 1 and 2 respectively. Since the scores are above the minimum level, it then draws

that, the research instrument employed in this study satisfied the measure of practices stated in regulations on the environment in areas with mining operations.

**Table 4.8: Statistics for Reliability Test**

Factor Statistics	Factors	
	1	2
Number of Attributes converged	6	2
Variance explained (%)	48.183	21.057
Mean	2.297	2.635
Cronbach's alpha	0.876	0.864
Eigen value	3.855	1.685

On the basis of the Pattern matrix, the factors (Table 4.8) were then summarized into two collective themes that according to the study were named as Pollution and Wave distortion measures (Factor 1, as well as Environmental restoration measures (Factor 2).

**Table 4.9: Environmental Measures (n=215)**

S/N	Factor measure	Loading	Attributes
1	Pollution and wave distortion measures	0.794	Mining company offers control practice over water pollution
		0.795	Mining company offers control practice over air pollution
		0.803	Mining company offers control practice over land vibrations
		0.830	Mining company offers control practice over noise pollution
		0.787	Mining company offers control practice over soil pollution
		0.691	Mining company offers control practice over light distortion
2	Environmental restoration measures	0.923	The mining company rehabilitates degraded land after operations
		0.931	The mining company restores the environment for affected living organisms (plants and animals) in and out operation areas.

#### 4.5.8 Pollution and wave distortion measures

In recent times, sound management of the natural environment has increasingly become an area of major concern of economies worldwide for sustainable development and for ensuring harmony between the social and natural system (Karan *et al.*, 2018; World Bank, 2010; Kelly, 1998). In this respect, environmental management entails all processes

involving the protection, conservation and sustainable use of various elements of the environment (URT, 2004).

Based on the study findings (Table 4.8), factor 1 explored the constructs on the sustainability of the environment related to pollution and waste distortion practices. The results show that there were positive loadings of the perceived practices by the community indicating good management plans, particularly on water, air and soil pollution. Likewise, it was found that shaking and cracking of buildings and other structures were initially noticed on land associated with annoying noise during mining operations but, these have been observed to decrease with time. Based on the views of the community, the company was said to perform better in this area of sustainable practices in terms of planning. However, the extent to which these were implemented and attained was not clearly appreciated by the community due to lack of their involvement. One key informant said:

*“It is important to engage the community members from onset of the project so that they are aware, and this would reduce complaints from the community members. Normally, community members like to be involved in projects like this. Yes I agree that we were told about the project and some of us received compensation. But, with regard to environment management, we were not involved in planning and discussing what to be done to improve or restore the environment. We just occasionally see the company doing some activities related to restoration of the environment but, we don’t have a big picture of what is supposed to be done. If community members had been involved in this, they would have provided their ideas on what aspects of the environment could be improved”* (Key informant, Mwime Village, April, 2017).

This indicates that community members were highly involved at the initial planning process but, less commitment was devoted by the company towards the actual implementation of the planned programme, and therefore, community dissatisfaction on the mining company's responsibilities. According to McMahon and Remy (2001), sustainable mining practices are equally directly proportionate to the level of participation of concerned parties to the respective activities. In South Africa, as is the case in many other African countries, empirical evidence shows that while the government has sufficient legislative frameworks to govern the sector in its operations, the sector's consciousness towards enhancing the livelihoods of local communities for sustainable development outcomes has been considered poor (Maliganya and Bengesi, 2018; Saul and Bond, 2014; Kabambe, 2014). According to Maconachie *et al.* (2015), the perception of various stakeholders, particularly local communities regarding the activities of LSM companies, might have significant impact on how companies should handle these issues.

#### **4.5.9 The environmental restoration measures**

Recent decades have witnessed a global push in research on post-mining landscape restoration, yielding a suite of techniques including physical, biological and combinations. In view of the above, restoration of mine wastelands has become a subject of greater researchers' attention worldwide (Chaumba, 2017; Koelmel *et al.*, 2015; Society for Ecological Restoration Science, 2002). The restoration of the environment has been termed as the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed (Seabrook *et al.*, 2011). In this paper, the terms restoration, rehabilitation, reclamation and remediation are used interchangeably. In the context of Africa, despite its long history of mining, there has been lack of systematic review in response to addressing the challenges associated after mining disturbance (Kangwa, 2008).

Regarding this component, the findings of this study, a high positive loading was obtained on the rehabilitation of the degraded land in areas which were previously affected after mining operations. The same case was observed on restoration of the environment for affected living organisms (plants and animals) in and out of the operational areas (Table 4.8). Moreover, the community noticed failure to the restoration of degraded areas due to open cast mining as a means of avoiding further soil erosion. Therefore, the ultimate goal of the reclaimed land was not clearly known by the community largely due to lack of involvement in such programmes. Furthermore, a review made in the mining regulatory framework showed that it lacked a highlight regarding a holistic management for the usefulness of the reclaimed land; when referred to the previous resources of environmental effects. According to community perceptions, there were less efforts and willingness to fulfil this responsibility by the mining company. One of the FGDs pointed out that:

*“...In this village, the company normally makes very little effort to restore the destructed environment. For example, in some areas they did not even replant trees; instead they covered the pit holes and planted some grasses. Basically, most of the areas in which mining has taken place are never restored into their original states. For a long time, we have been demanding improvement of the environment but, very little have been made” (FGD, Chapulwa Village, May, 2017).*

The interpretation here is that, while Tanzania has currently made considerable efforts towards improved governance of her mining sector and mining activities, efforts to restore the destructed environment have been much more reflected on paper when it comes to their impact at the community level. As a consequence, little exists in practice on the

ground especially in relation to enhancing the accommodation of local peoples' concerns (Woodroffe *et al.*, 2017). According to Harrison and Wicks (2013), stakeholders' participation has been perceived important since it measures the overall satisfaction from an organization's environmental performance, financial returns, general impacts on the community and environment.

Moreover, literature shows that mining companies which balance the different stakeholders concerns in the decision-making process may also be more prepared to address the long term reputation problems (Jesse and Bengesi, 2018; Natural Resource Governance Institute, 2014). Therefore, there is a need for an integrated approach in relation to the framework that could sustain the environment to provide directives for further uses by the community in this regard.

In view of the above, contrasting the results for laws and actual practices on the ground, the resource governance index (2017), estimated that *“26 out of the 28 countries assessed performed better when it comes to legislated rules than practices”*. According to this report, this gap was much wider in sub-Saharan Africa than in any other region. Based on this observation, better practice towards governance of the mining sector would increase trust between and among stakeholders thereby minimizing conflicts and possibly ensuring equitable sharing of benefits (Woodroffe *et al.*, 2017; McMahon and Remy, 2001).

#### **4.6 Conclusions and Recommendations**

This paper explored issues around the implications of large mining practices towards environmental sustainability as perceived by local communities in Kahama District. This was in response to the provisions stipulated in the regulatory framework of the mining sector in Tanzania.

#### **4.6.1 Conclusions**

Based on the study's findings, it is concluded that despite mining being an important activity its exploitation has the potential of generating environmental and social adverse impacts. Moreover, despite large mining operations being legally bound by regulations, field observations indicate that the environmental management practices for sustainable mining in adjacent areas are partly hindered by inadequate regulatory protection due to lack of enforcement and monitoring system. Consequently, these were among issues which were highly contested by the community in the study area. This paper argues, therefore, that adoption of environmentally responsible practices becomes crucial if all mining companies are to sustainably achieve the social license to operate in the respective areas.

#### **4.6.2 Recommendations**

Based on the study findings and conclusions, the following are recommended:

Since Tanzania to the time of this research had been taking serious measures to ensure that the mining sector contributes sustainably not only to the general economy but also to local communities close to mining sites, the study recommends that the government should ensure that the measures undertaken such as community participation should be premised on the principles of sustainable development. These may enhance oversight mechanisms at the local levels for improved sustainability. This will be useful in addressing the social and environmental concerns affecting the contribution of the sector to the majority of local community members.

It is also recommended that the government, in collaboration with local communities, should ensure that an independent body is formed sufficient to undertake biodiversity studies before the start of any mining operations in order to provide guidelines of

resources available during restoration of previously existing resources in the areas affected by mining activities for sustainability of genetic resources.

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## CHAPTER FIVE

### **5.0 Response of Large-Scale Mining Companies on Regulatory Framework for Improved Local Livelihoods: A Case of Buzwagi Gold Mine, Kahama District, Tanzania**

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#### **5.1 Abstract**

Although large scale mining activities are regulated to ensure that they play a significant role towards improving socio-economic conditions of local people in areas of operations, little evidence exists to suggest livelihoods of local communities have been improving. The paper assesses whether the operations of large-scale mining companies in Tanzania are aligned to the regulatory framework for improved local livelihoods based on the community's perspective in Kahama District. Both cross-sectional and case study designs were used for the study. A total of 215 households were sampled for the study based on Bailey's methods. The respondents were selected using simple random sampling technique. Data were collected using a questionnaire, focus group discussions, observations and document reviews. While content analysis was used to analyse



qualitative data, factor analysis of the SPSS software was used to generate livelihood components from the community's perspective to determine the extent to which Buzwagi Gold Mine Company has affected the rural set up. The community revealed greater recognition of the mining company's commitment in response to some of human development outcomes such as habitat related issues. However, while these components were realized to positive in impact on the affected community's livelihoods, observation indicated that key aspects related to education and sanitary services were perceived negatively. Despite some positive changes that were realized towards improved local livelihoods, more efforts is required to enhance the local livelihoods especially after mining closure in the respective operational areas. Based on the findings, this paper recommends that concerted effort is required to put more attention on community involvement for secure livelihoods resources governance by designing alternative livelihoods based approaches for sustainable community livelihoods in affected areas even after mine closure.

**Keywords:** Regulatory framework; large mining practices; community perspectives; local livelihoods.

## 5.2 Introduction

In recent years, many governments in developing countries particularly those in Africa, are preoccupied with addressing development challenges through policies that foster development which strikes a balance between current and future development goals. One of the sectors which are of interest in response to the realization of these goals has been the extractive sector (URT, 2016). Consequently, since the 1980s, the mining sub-sector has become one of the most important economic activities in most countries endowed with natural resources (Atta, 2018). However, one of the big challenges has been how to

align exploitation of these resources and improvement of the livelihoods of communities for inclusive and sustainable development (Aha and Ayitey, 2017; Agyei, 2016; Dobb *et al.*, 2013; Adjei, 2007). Equally important, the Southern African Development Community's (SADC) mining vision for which Tanzania is a member also emphasizes on the need to optimize the benefits from mineral extraction through extended mineral beneficiation and strong economic linkages between the mining sector and other economic sectors for wider impacts (Shakela, 2017).

A number of countries have managed to come up with policies that increasingly demonstrate a move towards addressing poverty issues aligned with sustainable exploitation of mineral resources. However, in practice, this does not suggest any evidence in attainment of local level impacts largely due to associated costs and benefits. As a response to this, the costs and benefits of large-scale mining (LSM) operations to local communities and the relationship between mining companies and affected communities have become an important subject in both developed and developing countries alike (Nwapi, 2016; Twereofu *et al.*, 2015; Twereofu, 2009; Ashley *et al.*, 2003). To date, however, there has been a dearth of comprehensive studies on the same.

While local participation in the governance of mineral resources has widely been regarded as one of the core principles for sustainable development, there remains a gap between regulatory framework guidance and practice on the ground especially, in areas affected by such operations. According to Nwapi (2016), across Africa, mineral producing countries have been responding to this increased pressure to review existing policies and laws to enhance the effectiveness of regulatory institutions for maximized benefits. This trend has been witnessed perhaps most boldly in Kenya, Tanzania and Ghana, to mention a few, where the governments recently enacted new mining, oil and gas legislations with

provisions intended to ensure that they obtain a fair share of revenues from multinational companies.

Historically, mining has been at the heart of Africa's economy. In 2015, Africa hosted about 30% of the world's mineral resources (Lane *et al.*, 2015). In some African countries, recent statistics show that mining contributes in excess of 10% of the National Domestic Product (GDP) in Zimbabwe, Botswana and Namibia. In so doing, the sector is significantly embedded in local economies, contributing to export revenues, employment as well as downstream and upstream industry (Turok and Smith, 2017). While this has been happening in some African countries, the situation in Tanzania has been different with the sector only contributing about 4.8% of the GDP (URT, 2016).

Furthermore, there is a significant body of literature that associates the continent's mineral wealth as 'a curse' rather than 'a blessing' (Bugri and Kumi, 2018; Bugri and Younayet, 2016; Morris *et al.*, 2012; Lange, 2011; 2008). According to a report by the World Bank (2015), almost 80% of countries whose economic prosperity has been tied to resources, have below average levels of per capita income. Coupled with this, the performance of African states on policy formulation and implementation in relation to mineral based industrialization has generally been too poor to ensure that its impact extends to the wider community (Turok and Smith, 2017; Fessehaie *et al.*, 2016). Eunomix (2015) adds that reliance on tax increases and fiscal linkages has led to failure in efforts to reap the benefits of mining on the basis of inclusive development for sustainable development.

While many African states still largely view the mining sector as merely a source of royalties and taxes, others such as Zambia have been considered progressive. This has been possible due to diversification through enforcing local procurement aligned with

improved mining sector governance frameworks with priority for a local impact. Although Tanzania's Mining Act No. 14 of 2010, among others, calls for promotion of localisation and economic linkages for a wider impact on the affected people, this goal has not fairly been achieved in practice. According to URT (2016), the Tanzania Development Vision 2025 foresees the mining sector to contribute about 10% of GDP in 2025 whilst also contributing to economic diversification and industrialization. However, such efforts have been slow at the local level whereby the emphasis has been more on fiscal benefits (Morris, 2012).

Based on the above, it is hoped, that the enactment of the new legislation in 2017, which puts more emphasis on local content provisions, environmental and community protection, increased royalties and demanded state equity at 16% of mining operations would probably enhance the desired changes (Woodroffe *et al.*, 2017). Although mining has largely been regarded as a major economic activity in many developing countries Tanzania included, its operations, be it small or large scale, are inherently disruptive to the environment thus, the livelihoods of local communities (Futa *et al.*, 2016; Kitula, 2006; Noronha, 2001). Consequently, sustainable management of mineral resources has become a major global challenge to be addressed by mining companies and institutions involved in mining operations for a more positive local impact.

Although some previous studies (Kessy *et al.*, 2017; Maliganya and Renatus, 2017; Lange and Kinyondo, 2016; Kahyarara, 2015; Kabote and Niboye, 2013; Lange, 2011; Kitula, 2006) have tried to highlight the general contribution of resource extraction in terms of job creation, infrastructure development and poverty reduction, yet, very few have linked the mining operations to livelihoods security of local communities. Therefore, there is an urgent need to assess the sector in terms its contribution to GDP and local economic

development. Although many countries Tanzania included have been committed to prioritize the mining sector in their development agenda, the situation remains less focused on empowering local communities especially where such resources are being extracted (Turok and Smith, 2017; Venables, 2016; Collier and Venables, 2011; Carney, 2003).

Furthermore, despite the widespread documentation of the general impact of mining operations on the general socio-economic impacts and the environment, little has been documented in Tanzania regarding the same on the local communities' livelihood security in the context of the country's existing regulatory framework. In this regard, one key question arises which needs to be explored further. The question is: How do mining companies abide by the regulatory framework in their practice for enhanced local livelihoods? This paper, therefore, examines how mining companies contributes to the local livelihoods in Kahama district as provided by in the regulatory framework.

The paper contributes to the body of knowledge on the current debate on the potential of the mining sector and its impact on people's livelihoods in developing countries using Buzwagi gold mine in Kahama district, Tanzania as a case study. Furthermore, the paper is relevant for informed decision making, especially with respect to sustainable use and management of mineral resources. Since the paper is also meant to provide site-specific mining information, it is equally expected to assist planning authorities and decision makers in the governance of the mining sector and could be handfull in future policy changes for improved livelihoods sustainability in communities affected by mining activities. After the introduction, section 5.3 presents a theoretical review of the capability theory (CT) as applied in the mining sector, section 5.4 presents the study's methodology and section 5.5 justification of improved rural analysis, section 5.6 results and discussion.

Lastly, section 5.11 presents the paper's conclusions and recommendations based on the study's findings.

### **5.3 Theoretical Review**

This paper is guided by the capability theory to understand the implications of mining activities on local livelihood security (Kalinga *et al.*, 2019; Nussbaum, 2000). Livelihood has been explained as the capabilities, assets and activities required in order to make a living. It is said to be sustainable and resilient when it can cope with and recover from shocks and stresses, and maintain or enhance its capabilities and assets, including the natural resource base both currently and in the future (Chambers and Conway, 1992). According to the theory, a sustainable livelihood starts with people at the grassroots level and considers where they are and what resources they have.

In this paper, sustainable livelihood security includes ownership of and access to capital assets as defined by the people, equity and participation, meeting of basic needs, resource management and utilization with a long-term view. Sustainable livelihood security ought to satisfy the basic needs of the people. Emphasis is usually placed on small and medium development projects. The link between rural livelihoods and natural resources governance for poverty reduction has become a fundamental undertaking among development practitioners (Ellis, 2000a; 2000b; 1998). While a number of global and natural resources policies and strategies essentially recognize this link, natural resources use and conservation issues in mining affected communities have so far not been effectively incorporated in practice for local impact assessment.

The capability theory essentially assesses human well-being. It is about the ability of people to have freedom to do the activities that bring happiness and satisfaction to their

lives. The core aspect of this approach is achievement which relates to the living conditions and capability which also relates to freedom in the positive sense (Appiah and Aning, 2012; Robeyns, 2003). Taking this in the context of this theory, the paper assumes large-scale gold mining can enhance or retard community development in Tanzania, given the capabilities or otherwise of the inhabitants of the mining areas thereby enhancing their capabilities to improve their living conditions. It is also assumed that a well-developed and improved mining sector has the potential of becoming a major growth centre. Hence, this leads to the development of the country as a whole and the mining communities in particular.

The capability theory further underscores that adequate and sustainable access to income and resources are important to meet basic needs including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration. With this framework, livelihoods can be made up of a range of on-farm and off-farm activities which together provide a variety of procurement strategies for food and cash. Thus, each household can have several possible sources of entitlement which constitute its livelihood. These entitlements are based on the household's endowments and their positions in the legal, political and social fabric of society (Hilson and Banchirigah, 2009; Grindle, 2004; Hilson, 2004; 2002; Drinkwater and McEwan, 1994). According to the theory, the risk of livelihood failure determines the level of vulnerability of a household to income, food, health and nutritional insecurity. It is, therefore, argued that livelihoods are considered secure in terms of capability when households have secure ownership of or access to resources and income earnings activities, including reserves and assets to offset risks, ease shocks and meet contingencies (Chambers and Conway, 1992).

While these are regarded as essential opportunities for the local populations, large mining activities also have the likelihood to cause disturbances in areas of operations which interfere with the environment. When this happens, it usually leads to the loss of livelihoods especially of communities dependent on such resources. When there is loss of livelihood, access to activities and assets that determine the standards of living is denied, leading to alienation from income sources among communities. Considering the existence of these contradictions in terms of the theoretical framework and reality on the ground necessitates further exploration especially, on how livelihood security of local communities is enhanced in Kahama, Tanzania. The paper contributes to the existing body of knowledge on the current mining operations and future prospects for sustainable mining in Tanzania and Africa in general. In this regard, the paper sheds light on the potential challenges that have prevented practical attainment of implemented initiatives in the socio-economic lives of local communities within which mining activities take place.

## **5.4 Methodology**

### **5.4.1 Research design and sampling procedures**

The study employed cross-sectional and case study designs. While a cross-sectional design was applied to collect data at a single point in time, case study design involved a thorough look into the social, economic and environmental fulfilment of Buzwagi Gold Mine to the community. Furthermore, a review with regard to legislation pertaining to mining and community setting was done.

The current study employed both purposive and random sampling. Kothari (2004) defines purposive sampling as the intentional seeking or selecting of individuals or situations likely to yield a greater understating of the phenomenon of interest. For this case, purposive sampling was used to select three villages based on the researcher's judgment.



Also, district officials were a source of information during the pre-resurvey phase. In addition, this was based on their proximity to Buzwagi Gold Mine (within approximately 4 kilometres). Therefore, three villages; namely Mwime, Mwendakulima and Chapulwa; were selected to provide the required sites as these were close and highly affected by Buzwagi gold mining operations.

The use of a large sample size, 215 households, was important in this study as it focused on the description of variability for potential factors of legal provisions in the mining sector over the community. Given the nature of this study, Bengesi (2013) and Field (2009) argue that 300 cases could be adequate for studies that employ the analysis of potential factors. However, Pallant (2007) suggests a minimum of 150+ cases.

Since this research was largely documentary by which design most of work involved a pre-analysis of legal documents that contained information about the critical legal provisions of mining companies to societies in terms of livelihoods, then Bailey's (1994) method of sampling was adopted. A documentary research method is used when exploring and categorizing physical sources, most commonly written documents, whether in the public or private sphere (Payne and Payne, 2004). According to Bailey (1994), a sample of at least five percent could adequately be representative of the community in social studies. Given this combination of methods and the requirements for the analysis, this research drew up nine percent of households in each of the study villages as representative cases for the general findings. However, to omit biasness of households in selected villages, simple random sampling was further used to obtain the representative households as shown in Table 5.1.

**Table 5.1:** Sample Size Distribution by Villages (n = 215)

<b>Village</b>	<b>Number of households</b>	<b>Sampling percentage</b>	<b>Random Sampled households in village</b>
Mwime	1404	9.3	131
Mwendakulima	686	9.3	64
Chapulwa	214	9.3	20
<b>Total</b>	<b>2304</b>		<b>215</b>

#### 5.4.2 Methods of data collection and analysis

Systematic review of literature was done to gather information from policies and legislations in Tanzania and best practices elsewhere. Household survey and key informant interviews with technical personnel from government and Buzwagi Gold Mine officials were also conducted to determine the extent to which communities understood issues of compliance and social responsibility in areas where mining operations were being undertaken. Focus group discussions (FGDs) were also used to obtain more information on how the company and government engaged local communities, and whether they demonstrated willingness and interest in implementing social inclusion policies in relation to mining operations in the area (Creswell, 2014; 2009). In each study village, three (3) FGDs were conducted comprising a gender-sensitive setting with 10 members who were used to capture a wide range of perceptions.

The information obtained from the questionnaire copies was analysed using the Statistical Package for Social Science (SPSS) software. The adequacy of sample population and correlation of variables were tested using Kaiser-Meyer-Olkin (KMO) and Bartlett's test respectively.

Exploratory factor analysis (EFA) was used to investigate the attributes that explained well the constructs and reduced them into fewer factors using the principal component analysis; attributes with Eigen values of 1 and above were then extracted together with underlying variables explaining livelihood parameters.

Reliability analysis was also performed to determine the validity of the research instruments and consistence of variables used to assess the livelihood variables. Therefore, a Cronbach's Alpha ( $\alpha$ ) was used as a measurement value to draw internal consistence of variables; an alpha value greater than 0.7 for dominant factors, was regarded as an indicator of high consistence of underlying variables (Chen and Popovich, 2002). The following relation was used to draw the Cronbach's Alpha value:

$$\text{Cronbach's alpha } (\alpha) = \frac{N * \bar{a}}{\bar{u} + (N-1) * \bar{a}}$$

Where:

N = the number of items,

$\bar{a}$  = the average inter-item covariance among the items, and

$\bar{u}$  = the average variance.

Content analysis was used to analyse data obtained from key informant interviews and FGDs. Data were recorded and transcribed prior to data analysis. Transcription was carefully done in order to maintain the original meaning of the information. Thereafter, data were coded to help identify themes and sub-themes related to extent to which communities understood issues of community engagement and social responsibility. On the basis of the objectives of this paper, these were compared and contrasted based on each piece of data with the rest in order to find whether there were similarities and differences on how people perceived mining companies' operations in the area. The essence of this approach was to have an understanding of common patterns within human experience. The aim was to process interpretation in order to capture people's opinions and judgment.

In addition, in order to analyse documents related to the policy environment of the mining sector in Tanzania, a content analysis technique was also employed to analyse information captured in various documents. The analysis involved several stages, namely reading the data (literature), coding the data (organizing the material into chunks or segments), identifying themes or categories, comparing different themes to find their similarities and differences and finally interpreting the different themes.

### **5.5 Justification of Improved Rural Livelihood Analysis**

In analysing implications of LSM practices on people's livelihoods security, this paper considers that this concept has narrowly been captured in terms of how the mining companies respond to meeting people's expectations and the extent to which the local communities are actively engaged (Assa and Mohammed, 2018). This implies that despite the guidance by the regulatory framework, without ensuring meaningful and inclusive local ownership of natural resources governance programmes, responsible public officials and companies may not be accountable and responsive enough to the needs of the people, thus lack of public trust. In view of this, before going into the insights as to explore the implications of mining operations on people's livelihoods, justification for the analysis and outputs generated in the data reduction procedure (Factor analysis) has been provided. The adequacy and reliability of variables used to measure livelihood were further extracted as dominant and suitable for discussion.

## **5.6 Results and Discussion**

### **5.6.1 Sampling adequacy and reliability of variables**

The Kaiser-Meyer-Olkin test gave a value of 0.708 which is above 0.5. This indicates that the sample size was good enough for drawing conclusions on issues pertaining to livelihoods in the villages that were affiliated to mining operations (Kaiser, 1970).

Furthermore, a significant association ( $p\text{-value} < 0.01$ ,  $df\ 55$ ) was portrayed with a Chi-Square value of 714.687, indicating that measures of livelihood were fit for the method employed in the analysis of the study.

**Table 5.2: KMO and Bartlett's Test (n=215)**

<b>Measure</b>		<b>Test statistic</b>
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.708
Approx. Chi-Square		714.687
Bartlett's Test of Sphericity	df	55
	Sig.	0.000

### 5.6.2 Initial extraction of livelihood attributes

The results in Table 5.4 show the variance explained against each attribute to determine the suitability of attributes for factor analysis. Attributes that rated below 0.3 were suppressed for further analysis (Pallant, 2007; Thompson, 2004). Based on this procedure, it was found that all compliance attributes subjected to respondents in the initial stage were suitable and explained a variance of 0.62 to 0.814.

**Table 5.3: Communalities (n=215)**

<b>Livelihood Variables</b>	<b>Initial</b>	<b>Extraction</b>
- Displacement affected our children's schooling	1.000	0.814
- Houses destroyed during displacement were compensated for	1.000	0.650
- Alternative land was given as compensation for former lands	1.000	0.771
- Crops in the field were compensated for at the best market value	1.000	0.768
- Compensated land had the same quality in terms of productivity as the old one	1.000	0.663
- Health services have improved due to the presence of the mining company	1.000	0.763
- Water services have improved due to the presence of the mining company	1.000	0.769
- The presence of the mining company has improved education services in this area	1.000	0.645
- Transport costs have decreased significantly due to roads construction by the mining company	1.000	0.730
- Access to market for goods and services has improved significantly due to the presence of mining operations	1.000	0.736
- Development projects established by mining companies have created many jobs for the local community members	1.000	0.620

Extraction Method: Principal Component Analysis

### 5.6.3 Strength of correlation among livelihood attributes

Correlation matrix was used to portray the strength of attributes. The intention of the analysis was to find strong attributes suitable for further stages of the Exploratory Factors Analysis. In this case, attributes that recorded a correlation below 0.3 with other attributes were excluded in the factor analysis (Field and Miles, 2010). The analysis results (Table 5.4) show that one factor that assessed the effect of schooling for respondent's children due to displacement was discarded out of the 11 attributes of Livelihood as it scored a weak correlation (L1). Therefore, the data reduction procedure worked with 10 attributes in subsequent stages.

**Table 5.4: Livelihood Attributes Excluded from Factor Analysis**

<b>Attribute Name</b>	<b>Attribute -Total Correlation</b>	<b>Description of Attribute</b>
L1	-0.004**	Displacement affected schooling for our children
L2	0.609	Houses destroyed during displacement were compensated to new ones
L3	0.453	Alternative land was given as compensation for our former lands
L4	0.403	Crops in the field were compensated at the best market value
L5	0.616	Compensated land had the same quality in terms of productivity as the old one
L6	0.302	Health services have improved due to the presence of mining company
L7	0.340	Water services have improved due to the presence of the mining company
L8	0.548	The presence of the mining company has improved education services in this area
L9	0.453	Transport costs have decreased significantly due to roads construction by the mining company
L10	0.369	Access to market for goods and services have improved significantly due to the presence of mining operations
L11	0.549	Development projects established by mining companies have created many jobs for the local community members

\*\* Indicates attribute excluded after Factor analysis

#### 5.6.4 Extraction of livelihood factors

The extraction stage by Principal component method yielded dominant factors that, according to Le Roux and Bengesi (2014) and Pallant (2011) were the ones with Eigen values above 1.0. The results in Table 5.5 show that three factors out of 10 were extracted with a cumulative contribution to the variance of about 50.1%. The variances for these factors are labelled as Factor 1 (36.1%), Factor 2 (15.9%) and Factor 3 (11.9%).

**Table 5.5: Total Variance for Livelihood Factors (n=215)**

Factor	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.613	36.128	36.128	2.016	20.161	20.161
2	1.586	15.865	51.993	1.900	18.997	39.158
3	1.191	11.908	63.901	1.091	10.913	50.071
4	0.942	9.418	73.319			
5	0.688	6.884	80.203			
6	0.580	5.797	86.000			
7	0.451	4.506	90.506			
8	0.379	3.793	94.299			
9	0.291	2.908	97.208			
10	0.279	2.792	100.000			

#### 5.6.5 Factor rotation

Oblique rotation method with Kaiser Normalization for the hypothesis that the factors extracted were related was performed to optimize the structure of dominant factors so that they were relatively equalized. The values of variances after rotation are presented in the Rotation Sums of Squared Loadings column with a change of 34.2 % to 16.3% (Factor 1), 15.9% to 19% (Factor 2) and 11.9% to 10.9% (Factor 3) Table 5.5.

#### 5.6.6 Pattern and structure matrices

Tables 5.7 and 5.8 present pattern a matrix and a structure matrix respectively showing whether there was a definitive factor structure, and find whether there existed any correlation among compliance attributes after oblique rotation (Field and Miles, 2010). Results of the Pattern matrix (Table 5.6) show some similar pattern of loadings for dominant factors. Also, double loadings in the structure matrix indicated significant correlation of attributes.



**Table 5.6: Pattern Matrix**

Attribute	Factor		
	1	2	3
Houses destroyed during displacement were compensated to new ones		0.639	
Alternative land was given as compensation for our former lands		0.851	
Crops in the field were compensated at the best market value		0.559	
Compensated land had the same quality in terms of productivity as the old one		0.684	
Health services have improved due to the presence of mining company			0.879
Water services have improved due to the presence of the mining company			0.382
The presence of the mining company has improved education services in this area	0.575		
Transport costs have decreased significantly due to roads construction by the mining company	0.750		
Access to market for goods and services have improved significantly due to the presence of mining operations	0.705		
Development projects established by mining companies have created many jobs for the local community members	0.561		

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization

**Table 5.7: Structure Matrix**

Attribute	Factor		
	1	2	3
Houses destroyed during displacement were compensated to new ones	0.381	0.721	0.365
Alternative land was given as compensation for our former lands		0.791	
Crops in the field were compensated at the best market value		0.554	
Compensated land had the same quality in terms of productivity as the old one	0.409	0.749	
Health services have improved due to the presence of mining company			0.848
Water services have improved due to the presence of the mining company			0.441
The presence of the mining company has improved education services in this area	0.665	0.337	0.439
Transport costs have decreased significantly due to roads construction by the mining company	0.729		
Access to market for goods and services have improved significantly due to the presence of mining operations	0.686		
Development projects established by mining companies have created many jobs for the local community members	0.628	0.401	

### 5.6.7 Reliability of factors

Reliability analysis was done to determine whether the data used to assess the livelihood attributes were credible. Cronbach's alpha was computed and used to study the internal consistence of data. According to studies, a Cronbach's alpha value above 0.8 represents an acceptable level of internal reliability (Bryman and Bell, 2007; Thompson, 2004; Gorsuch, 1983). In some cases, a Cronbach's alpha value of 0.70 or greater is desirable (Taber, 2017). The results in Table 5.8 show Cronbach's alpha values of 0.771, 0.790 and 0.728 scored against Factors 1, 2 and 3 respectively. It can be seen that the scores are above the minimum level as suggested by authors; therefore, the research instrument employed in this study satisfied the assessment of livelihood parameter against the mining company.

**Table 5.8: Statistics for Reliability Test**

Factor Statistics	Factors		
	1	2	3
Number of Attributes converged	4	4	2
Variance explained (%)	36.128	15.865	11.908
Mean	3.076	2.785	2.928
Cronbach's alpha	0.771	0.790	0.728
Eigen value	3.613	1.586	1.191

The structure of pattern matrix helps to develop construct themes based on attributes associated. In view of that, Factor 1 constructed a collective theme (Table 5.9) related to Economic security, consequently, Habitat security (Factor 2) and Health security (Factor 3).

**Table 5.9: Livelihood Factors and Attributes (n = 215)**

S/N	Factor	Loading	Attributes
1	Economic security	0.575	The presence of the mining company has improved education services in this area
		0.750	Transport costs have decreased significantly due to roads construction by the mining company
		0.705	Access to market for goods and services have improved significantly due to the presence of mining operations
		0.561	Development projects established by mining companies have created many jobs for the local community members
2	Habitat security	0.639	Houses destroyed during displacement were compensated to new ones
		0.851	Alternative land was given as compensation for our former lands
		0.559	Crops in the field were compensated at the best market value
		0.684	Compensated land had the same quality in terms of productivity as the old one
3	Health security	0.879	Health services have improved due to the presence of mining company
		0.382	Water services have improved due to the presence of the mining company

### 5.7 Background for Discussion

Currently, exploitation of mineral resources for sustainable development has become a major challenge worldwide both for mining companies and institutions engaged in mining governance (Mapira, 2017; Venables, 2016; Noronha, 2001). In response to this demand, the Tanzanian government is seriously committed to making several amendments in the regulatory framework governing the extractive sectors. These efforts aim to ensure that the extraction of natural resources especially oil, gas and minerals benefits the majority of the population. Consequently, on 3<sup>rd</sup> and 4<sup>th</sup> July 2017, Tanzania's parliament passed three pieces of legislation that if effectively implemented are expected to make significant changes to the legal and institutional frameworks governing the oil, gas and mineral extraction (URT, 2017; Woodroffe *et al.*, 2017).

Based on the above, Tanzania now has Act No. 1 of 2017 (Amendment Act), the Natural Wealth and Resources (Permanent Sovereignty) Act No. 2 of 2017 (Sovereignty Act) and the Natural Wealth and Resources (Review and Re-negotiation of Unconscionable Terms) Act No. 3 of 2017 (Commonly known as the Contract Review Act (URT, 2017). Evidence suggests that progress towards more sustainable resources use can be made when governance system is developed that provides a balance between economic development on one hand and preservation of the environment on the other hand for enhanced livelihoods (Twerefou, 2009; Mwalyosi, 2004; Kajembe *et al.*, 2003).

#### **5.7.1 Economic security**

Economic security in the context of mining operations has been one of the components that need to be protected for sustainable development. With respect to this aspect, existing evidence suggests that mining can be an engine for economic development, given the presence of good institutional capacity and sound policy interventions that connect mining operations to the wider context of the economy (Anderson and Ostrom, 2015; Natural Resource Governance Institute, 2014; Andersen, 2012; Collier, 2010; Perez, 2010). In this regard, the role of institutions in managing natural wealth has been considered important for the attainment of sustainable economic development from a distributional perspective (Acemoglu and Robinson, 2012).

Based on the study findings, livelihood security regarding the rural economy was also positively reported among other components by the community. The findings (Table 5.9) show that, among the social services offered by the mining company, the company offered some services such as reading books which in turn was reported to have improved children's education in the study area. There were noticeable decreases in costs of transport to market centres due to newly constructed roads in the areas surrounding

mining areas. This supported with improved access to market for goods and services due to the presence of mining operations. Nevertheless, development projects established by mining companies created many jobs for the local community members including security guards.

### **5.7.2 Habitat security**

In Tanzania, there have been several types of legislation that have been enacted as a means to govern the operations of large mining and their associated impact on the environment which form the basis for local livelihoods. In this regard, this provides an enabling environment for sustainable development (Adeola, 2017; Zvarivadza, 2015; Petersen and Pedersen, 2010). The current reforms in the regulatory framework emphasises on the need to achieve sustainable extraction of natural resources. This implies possession of the qualities such as social responsibility and economic viability (Kamga, 2018; Owen and Kemp, 2015). According to Soyka (2013), sustainable extraction of resources in mining means mining operations that enhance responsibility to social concerns, thereby contributing positively towards realizing the economic gains not only for the country but, also for the local people affected by such practices.

The study findings (Table 5.9) show that habitat security in the context of housing and productive environment were positively realized by the community following re-location to allow the mining company to establish operations. The community realized a positive treatment in terms of consultations during compensation of demolished houses by the mining company. Similarly, alternative land, as well as crops land in the field was compensated for. The main measure taken to compensate for the land was the quality of land in terms of productivity as ascertained by the affected community. According to the natural governance charter, effective governance of resources requires minimizing the

costs for affected communities while enhancing the benefits (Woodroffe *et al.*, 2017; Poncian and George, 2015; USAID, 2006). In addition, where these costs can be eliminated, the government should then arrange for adequate compensation for those affected.

As a general rule, the aim of compensation should be to improve the livelihoods security of those most adversely affected by mining induced displacement in this regard. Despite the extensive elaborations of the regulatory requirements, concerns were raised since the compensation process could not meet the best market value. In Ghana, one of the critical issues which faced the mining sector and affected communities was compensation for loss of land rights due to mining activities. While the practice was regulated to maintain involvement and fairness, yet adequacy and prompt payment for compensation was difficult to achieve in practice, and the process largely rested on the mining companies (Bugri and Kumi, 2018; Twerefou *et al.*, 2015).

### **5.7.3 Health security**

With respect to this aspect, the findings indicated some improvements in terms of access to health services. The findings (Table 5.9) show that the health centre that was constructed by Buzwagi Gold mine at Mwendakulima Village, led to a high improvement compared to other health facilities as well as social amenities during the onset of mining operations in the study area. A similar case was realized on water; there was more provision of water services in the community compared to before start of the LSM operations. Despite this, field observation still confirmed that, disparities existed in terms of limited access across regions and socio-economic groups and weak health systems as among the critical impediments to the realization of better health outcomes. In the context of mining operations, literature indicates further that by their nature, mining practices

contribute largely to land disturbance, tailing disposal and pollution that adversely affected human health as well, especially in operational areas (Eshun and Okyere, 2017; Mbewe, 2017; Ayelazuno, 2014; World Bank, 2013).

Furthermore, Mkandawile and Oakes (2015) emphasize that extraction of resources in the mining industry must not be at the expense of environmental and social concerns that have negative implications on human health. While the opportunities for improved management of resources often exist but, factors such as weak governance have always been associated to prevent the attainment of positive outcomes for sustainable development (Shakela, 2017; URT, 2018, 2013, 2009). Reality is increasingly shows that achieving poverty reduction and thus, economic development in Africa and Tanzania in particular based on sustainable utilization of the continent's rich natural resources remains an unresolved challenge so far. Instead, natural resources use in Africa has largely been characterised by unsustainable use patterns with poor benefits to the least from such resources (World Bank, 2015; 2013; Adjei, 2007).

## **5.8 Conclusions and Recommendations**

This paper attempted to assess the response of mining companies on regulatory framework for improved livelihood security of local communities in Tanzania. Involving a number of actors in the extractive sector including the government, civil society organizations, mining companies and local communities has become important for effective governance of the sector to overcome the persisting challenges for sustainable development outcomes.

### **5.8.1 Conclusions**

Based on the study findings, the following conclusions are made. While the efforts to ensure that the mining sector makes significant contributions towards the well-being of the local people are underway in the fifth phase government of Tanzania, concerted measures are still needed especially in relation to enforcement of specific regulations to achieve the desired development outcomes at the local level. These outcomes could be realized especially when investments are made accountable in relation to the legal framework that accommodates people's livelihoods. This may be useful in avoiding dissatisfaction with compensation for the loss of livelihoods through a mutual agreement between affected individuals and the investors. This case was highly evident when the study evaluated the economic and health security of the rural habitats during mining operations.

However, the recent regulatory amendments of 2017 are expected to have positive impacts towards the governance of the sector. In this context, the use of capability theory has generally been useful as it has been able to link the activities of the mining companies with the local human and environmental change. Drawing on the case study of Buzwagi Gold Mining Company's activities, this paper offers new insights into the role of corporations in shaping social and ecological changes in the context of developing countries like Tanzania.

### **5.8.2 Recommendations**

Based on the study's conclusions, the following are recommended.

The study recommend that the government should ensure that specific regulatory framework provisions are in place that fully empower the local authorities to undertake an



oversight role for effective engagement in the design of alternative livelihoods projects prior to project commencement.

It is also recommended that mining companies should be bound by regulations to commit themselves to the highest social and economic standards aligned to attaining sustainable livelihoods of affected communities during and after mine closure.

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## **CHAPTER SIX**

### **6.0 Summary, Conclusions and Recommendations**

This chapter presents a summary of the study's major findings, overall conclusions, theoretical reflections and recommendations. The chapter finally highlights the key areas suggested for further research and the contribution of the study to the body of knowledge.

### **6.1 Summary of the Major Findings**

The general objective of the study was to assess the response of large-scale mining companies to the system of governance for improved local livelihoods in Tanzania using Buzwagi gold mine in Kahama district as a case study. This was captured in terms of how Buzwagi gold mine has been responding to the system of governance in terms of abiding by the existing regulatory framework for improved local livelihoods. Specifically, the study analysed the policy enabling environment of Tanzania's mining sector, examined compliance of Buzwagi gold mine on the regulatory framework, explored community perception on mining companies' practices towards enhancing environmental sustainability and assessed contribution of mining companies to the local livelihoods.

#### **6.1.1 Policy enabling environment of mining sector in Tanzania**

With regard to the major findings based on the policy enabling environment of the mining sector in Tanzania, the major results have been presented in line with the key aspects on the opportunities and challenges in the mining sector, the experience of the regulatory environment in other context benefiting from the mining sector, and the lessons learned from other context that can be extrapolated to Tanzania.

On the opportunities in the mining sector, the results show that the presence of political stability and abundant natural resources in Tanzania offers a wide range of opportunities

which the country can exploit in response to attracting investors in Tanzania. Accordingly, the findings further show that Tanzania's untapped natural resource offers an extensive range of investment opportunities. Consequently, these opportunities make Tanzania a destination for potential investors from all over the world, given the stability of the political environment that ensures a stable enabling environment for investors.

Associated with this, findings on the other aspects related to attracting foreign direct investment such as the use of investment incentives in the form of taxes and regulatory frameworks, the results suggest that care should be considered when offering these to investors. While much has been written about the desirability of using incentives to attract new investments, empirical evidence on the cost effectiveness of using them to increase investment is still inconclusive. This suggests that although it is known that tax incentives lead to revenue losses, countries in developing countries including Tanzania are continuously being tempted to increase investment incentives in general and tax incentives in particular in order to attract and retain more foreign direct investments. According to the study findings, such incentives have generally led to revenue losses on the side of the government.

On the part of the challenges in the mining sector policy environment, the key issues that have been captured are aligned to the local content, land acquisition, resettlement, artisanal and small-scale miners (ASSM). On the local content aspect, the study findings show that despite the emphasis of the regulatory framework, it was not clear how effective these instruments were. While Tanzania has recently taken some serious measures to improve its local content policies, in practice this has not been observed on the ground. As a result, Tanzania's local content policies are considered weak especially in the mining sector since there is lack of plans and strategies for implementation, monitoring and evaluation of intended outcomes on the ground for achieving the set targets.

Regarding the challenges for land acquisition and resettlement, the study findings show that despite the presence of regulatory provisions, land acquisition as well as ownership was seen as one of the challenging situations in the mining sector under which land occupiers prior to mineral discovery lost their land without compensation or were inadequately compensated. While land acquisition was legally justifiable in the context of Tanzania, this goes contrary to the right to adequate and prompt compensation to the affected communities. Consequently, at the time of this study, the regulatory framework did not provide adequate protection to rural communities affected by mining operations due to weak tenure rights over the land. On the basis of the results of this review, displacement and resettlement were, in some instances, conducted without prior informed consent of affected communities. This indicates that there was a mismatch between policy statements, legal provisions and reality on the practical experience as revealed in different empirical evidence on the ground since there was lack of clearly stipulated criteria for compensation to the communities affected by LSM operations.

In the context of the challenges related to ASSM, the findings revealed challenges associated with formalization of the sector including registering and organizing unregulated ASSM into the formal economy. In terms of the experience of the regulatory environment in other contexts, the study findings show that Tanzania has an opportunity to draw experience from other contexts such as Botswana, Zambia, South Africa and Ghana which have shown that the mining sector can be leveraged into broader socio-economic development due to effective policy frameworks and institutions.

### **6.1.2 Compliance of large-scale mining on the regulatory framework**

The second objective of the study was on compliance of mining companies to the regulatory framework. Despite the presence of provisions in the regulatory framework, the findings show that the environment was highly interfered with mining activities that led to a failure of control in different ways. In this case, the study site was impacted with pollution, deterioration of quality of soil, air and water. These effects were felt more in the adjacent communities such as Mwendakulima Village and by people residing some distances from the mine due to noise and air pollution. Overall, the findings of this study indicate that, despite the indications that the mining company was complying with some aspects, community responses were largely not in agreement with this due to the environmental problems which resulted from mining operations that were mostly noted in relation to water, noise, air pollution, waste management and land degradation.

Compliance on compensation and resettlement of local communities was another aspect assessed on compliance for sustainable mining practices. The results show that compensation and resettlement were positively reported in different ways to the attendance of households affected by mining operations on resource compensation. In the meantime of operation, the company compassed areas were clearly demarcated from local settlements to avoid any further conflicts that would impose insecurity. In some cases, distortions of household income due to displacement were compensated for by offering direct employments to local people of the affected communities. However, in order to boost the local market as a result of dislocation, the mining company attempted to procure goods and services available in the nearby communities, a situation which created a closer relationship.

Despite the above-mentioned compliance on some of the aspects as indicated by the study results, community responses also indicated complaints about inadequate recognition of traditional land uses, compensation for the loss of resources and access rights which constituted major grievances between Buzwagi Gold mine and communities. Community responses indicated that some of the property items were not compensated for, such as crops. Even for those villagers compensated, there was inadequate consideration in terms of the packages provided. The findings further showed that some of the property items which were to be offered as payment for destructed assets, such as houses and land, were regarded by the mining company as part of the compensation process due to lack of close monitoring by the government, local authorities and lack of awareness among local communities.

### **6.1.3 Perceived implications of large-scale mining (LSM) on environmental sustainability**

Exploration on the perceived implications of LSM on environmental sustainability was another key component discussed in this study. One of the key factors explored was pollution and waste distortion practices in the context of environmental sustainability in Tanzania. Based on this factor, the study results showed that there were positive loadings of the perceived practices by the community, signifying that there were good management plans particularly on water, air and soil pollution. However, shaking and cracking of residential houses and other structures were continuously noticed during mining operations. Consequently, a number of cases related to cracking of houses and other structures were highly reported in all the study villages. Although the company was said to perform better in this area of sustainable practices in terms of planning, the extent to which these were implemented and accomplished in practice was not clearly appreciated by the community.



The practices towards the environmental restoration for enhanced environmental sustainability were also among the important factors explored in this study. Regarding this component, though there was little evidence showing this component was fully undertaken according to community perceptions, field observations showed that there were less efforts and willingness to fulfil this responsibility. A high negative loading was obtained in efforts towards the restoration of the environment for affected living organisms in form of plants and animals in and out operational areas. The same case was observed with respect to the rehabilitation of the degraded land in areas which were previously affected after mining operations. Moreover, the community noticed a failure to restore degraded areas due to open cast mining as a means of avoiding further soil erosion.

In light of this, the ultimate goal of the reclaimed land was not clearly known by the community, largely due to lack of involvement in such programmes. Furthermore, a review made in the mining regulatory framework appeared to lack a highlight regarding a holistic management for the usefulness of the reclaimed land, when referred to the previous resources as well as environmental effects. The results further shows that even the overall perception were negative, implying that the mining company did not fulfil the community desires upon the practices as expected. Although some of the practices were practised, most of them were not carried out to completion as per the regulatory framework. This suggests that while Tanzania has currently made considerable efforts towards improved governance of the mining sector and associated activities, such efforts are much more reflected on paper when viewed in terms of their impact at the community level. As a consequence, little still exists in practice given the picture on the ground, especially in relation to the accommodation of local peoples' concerns.

#### **6.1.4 Contribution of mining companies to the local livelihoods**

The last component in this study was about the contribution of mining companies to the local livelihoods. This component was measured in terms of habitat, economic and health related factors. Starting with the habitat security aspect, the study findings showed that habitat security in the context of housing and productive environment were according to the community taken care of by the mining company upon establishment of mining operations. The community realized a positive treatment in terms of consultation during compensation of demolished houses by the mining company. Similarly, alternative lands, as well as crops land in the field were also compensated for.

On the aspect of economic security, the livelihood security regarding the rural economy was negatively reported among other components by the community. Although the findings revealed that the cost of transport to market centres irrespective of roads constructed increased somehow, there were barriers to access the markets for goods and services when mining operations began. The results further show that even on the jobs created, the incentive was offered to only a few in the surrounding communities in terms of security guards. With respect to the health security related factors, the findings show some disparities in terms of limited access to such services. The findings showed that, regardless of the health centre that was constructed by the mining company at Mwendakulima Village, there was less improvement in facilities as well as social amenities during the onset of mining operations in the study area. A similar case was realized in relation to portable water; there was little provision of water services in the community as compared to the land occupied before mining operations.

While most of the members agreed on the peaceful way of the displacement process and adequate provision of housing and security, there were a lot of disagreement on access to

natural resources preferably land, cultural heritage, access of children to education, alternative livelihood improvement programmes and increase in food production. Based on these assertions, it can generally be said that most community members had a feeling that these factors subjected them more into vulnerable situations than it was before displacement. With this taking place in practice, the situation indicated that although a number of national policies have been put in place in response to addressing these challenges, yet these approaches may not fully account for the links between natural resources governance and enhanced local livelihoods in terms of poverty reduction. Consequently, there was a failure to realize the full potential of natural resources as wealth generating assets for the poor, suggesting concerted efforts in response to checking appropriate economic approaches that could be used to estimate the crop farms at best market prices.

## **6.2 Overall Conclusions**

Conclusions from the findings of the study are given below, and are organized based on the objectives of the study.

### **6.2.1 Policy enabling environment of mining sector in Tanzania**

Based on the study findings presented in Chapters 2 to 5 and summarised in Section 6.1 as per the specific objectives of the study, the following conclusions are made. The policy review has shown that Tanzania's mining sector has undergone major reforms which have been geared towards the achievement of sustainable management of the sector. Although the existing mining regulations address many of the stipulated policy objectives in practice, however, there are a number of key issues that should be incorporated which are vital to ensuring that there is an effective functioning regulatory enabling environment for Tanzania's mining sector. This is especially critical in areas where the policy gaps have

allowed for the persistence of poor practices in response to the realization of desired development outcomes.

### **6.2.2 Compliance of mining companies to the regulatory framework**

LSM companies' investments continue to be useful in line with Tanzania's efforts towards the realization of sustainable economic development. However, there is need to address the challenges that hinder their effective contribution to the country's socio-economic development particularly, compliance to the regulatory framework. Despite mining operations and programmes complying to some of the regulatory framework's requirements for example, compensation, resettlement, and social accountability they lack proper mine closure plans. In addition, there is failure when it comes to the management and control of both aerial and terrestrial pollutants: thus, leading to a lack of sustainable environmental management systems in areas affected by mining operations. Hence, resulting to complaints in relation to environmental pollution i.e. water, noise, and soil contamination around the mining sites. Failure to comply on issues regarding the management and control of pollutants has led to repeated reports of occurrence of living organisms in the surrounding environment being affected.

### **6.2.3 Community perception on mining companies' practices towards enhancing environmental sustainability**

Despite mining being an important activity, its exploitation has been generating environmental and social impacts that need to be identified and managed on a continuous basis for sustainable environmental management practices. Although large mining operations are legally governed by regulations in their operations, practical experience has indicated that the environmental management practices for sustainable mining in adjacent areas were partly hindered by inadequate regulatory protection due to lack of enforcement and monitoring system. Consequently, the practices to ensure sustainability have not very

much been reflected in practice on the ground. While some efforts were observed in response to addressing environmental challenges such as pollution, this has however been practised to a very limited extent as per communities in the study areas. Therefore, maintaining environmental sustainability in areas with LSM operations remains a formidable challenge that needs collective efforts among stakeholders.

#### **6.2.4 Contribution of mining companies to the local livelihoods**

It can be concluded that Buzwagi gold mine has and continues to contribute to the livelihoods of its surrounding communities as per its cooperate social responsibility and the mining sector's regulatory framework. However, some community members were dissatisfied with the compensation received in relation to their land and other property due to relocation from the mining sites. Furthermore, the framework appeared to lack openness and a clear allocation of responsibilities among these involved in the compensation agreements. Therefore, unless these challenges are effectively addressed, a significant expansion of the mining sector may not lead to sustainable socio-economic development.

### **6.3 Overall Recommendations**

This section presents the study's overall recommendation based on the study findings and conclusions.

#### **6.3.1 Recommendation for enhancing community participation in the sector**

The study has observed that mining operations resettlement projects can impact on local communities' livelihoods. Therefore, it is recommended that the Tanzanian government should design regulatory framework that ensures active participation of communities in the mining areas. In addition, it should clearly define the roles for the local government,

mining companies and the communities so as to ensure effective governance. Moreover, doing this will enhance effective stakeholder engagement and trust between mining companies and communities.

### **6.3.2 Recommendation for enhancing transparency and accountability**

The policy review done by the study has shown that transparency and accountability are regarded as useful for effective governance towards helping countries such as Tanzania to realize the benefits from the extractive sectors, especially the mining sector. Therefore, it is recommended that the government should have in place a well-defined regulatory and institutional framework for improved transparency and accountability for sustainable mining practices in the mining sector. Thus, ensuring LSM operations are legally bound and accountable to the interests of the general public.

### **6.3.3 Recommendation for environmental impacts management practices**

Pollution control was one of aspects highly contested in the study areas, and there were complaints regarding lack of support from the government and involvement by the mining company towards environmental management. Thus, it is recommended that the government, mining companies and local communities should work together to ensure they set strategies that benefit all stakeholders particularly in the management of the environmental impacts resulting from LSM operations in Tanzania.

### **6.3.4 Recommendation for enhancing biodiversity in affected areas**

The study found that loss of biodiversity was a major concern by communities around Buzwagi gold mine. Therefore, the study recommends that the National Environmental Management Council (NEMC) in collaboration with the Mining companies and local communities should undertake biodiversity studies before the start of mining operations in

order to provide guidelines on what to be done to ensure sustained biodiversity during and after closure of mining operations.

### **6.3.5 Recommendation for enhancing local livelihoods sustainability**

Since community responses realized both negative and positive implications of LSM operations on their livelihood security, with negative implications outweighing positive ones. It is hereby recommended that mining companies should be bound by regulations to commit themselves to the highest social, economic and environmental standards for sustainability of affected communities, especially after mine closure.

### **6.3.6 Recommendation for enhancing sustainable mining practices**

Since 2017 Tanzania has been taking serious measures to ensure that the mining sector contributes sustainably not only to the general economy but, also to the local communities close to mining sites. Therefore, the current efforts and future ones should always ensure the principles of sustainable development i.e. a balance of the economic, social and environmental needs. Furthermore, local communities' should actively be involved so as to address their social and environmental concerns in relation to LSM operations.

## **6.4 Area for Further Research**

Observations from the study show that the communities' surrounding Buzwagi Gold mines were concerned about the water quality in their area. In addition, respondents claimed that there were signs of improper discharge of chemicals from the mining site. Therefore, there is need for a study to analyse the water quality in the water bodies neighbouring Buzwagi Gold mine. Doing so will provide a clear picture of the water quality while providing guidance on what needs to be done to ensure safety of the communities and their livestock. Moreover, the above will address the concerns act as be

a guide for any remedial action required to ensure surrounding communities and their livestock are safe.

There is also need to further explore LSM operations and people's capabilities using many cases that cover the whole of Tanzania is being recommended. Doing this will allow a generalization of the findings in relation to LSM operations and local communities capabilities.

Lastly, there is a need to further explore LSM operations and stakeholder engagement using many cases that cover the whole of Tanzania is being recommended. Doing this will allow a generalization of the findings in relation to LSM operations and how stakeholders are engaged and its ultimate effect on local communities livelihoods and capabilities.

### **6.5 Theoretical Implications of the Findings**

This section presents the study's findings theoretical implications. The study was guided by the sustainable livelihoods framework (SLF) and three theories (i.e. the Capability, Stakeholder and Institutional theories). Whereas the SLF guided the study in examining the contribution of LSM companies to local livelihoods' the three theories were useful in examining Buzwagi gold mine's compliance to Tanzania's mining regulatory framework, engagement of local communities in mining operations and improvement of local peoples capabilities respectively.

The Capability Theory generally argues on people's ability to have freedom to do the things that bring happiness and satisfaction to their lives. Therefore, it was expected LSM operations would have enabled communities living around Buzwagi gold mine to better enjoy live as a result of the LSM operations in their area. However, the study findings



show a mixed picture whereby in some areas people's capabilities have been enhanced in others the opposite is true. For example, some of the communities capabilities have been curtailed due to re-location to other areas and LSM operations that have led to environmental pollution (air, sound and water) thus affecting their general happiness. However, due to the current study using only a single case of a large scale mining operation (Buzwagi gold mine) it may be pre-mature to claim that LSM operations' do not improve people's capabilities. Therefore, a further exploration of LSM operations and people's capabilities using many cases that cover the whole of Tanzania is being recommended.

According to the stakeholder theory (ST) companies have a social responsibility that requires them to consider the interests of all parties affected by their actions. In addition, the ST uses six internationally accepted key governance principles of discipline, transparency, accountability, independence, fairness and social responsibility and argues that these should be for all stakeholders not only shareholders.

The study findings further corroborate the need for a good institutional arrangement if LSM operations are to benefit local communities in particular adherence to the established regulatory framework. Based on the study findings it is clear that more needs to be done by Buzwagi gold mine and the local and central government so as to ensure local communities' livelihoods and capabilities are improved. Generally, due to some institutional challenges and laxity in some way the LSM operations did not benefit the communities as expected.

Study findings show that Buzwagi gold mine did not abide by all the above-mentioned principles hence leading to some complaints from the surrounding communities. In

particular, local communities were not adequately involved in the monitoring and evaluation of the LSM operations of the above-mentioned. Nonetheless, the Company did provide some social services such as building schools and health facilities for the communities as part of its corporate social responsibility (CSR). In addition, they were keen on local content by offering employment opportunities to members from the surrounding communities and establishment of a youth project for interlocking brick making. Nonetheless, the need to further explore LSM operations and stakeholder engagement using many cases that cover the whole of Tanzania is being recommended.

#### **6.6 Contribution of the Study to the Body of Knowledge**

It is generally agreed that the mining sector has a great potential to be a key growth sector in Tanzania, given the country's vast and rich mineral resources base. It is also widely recognized that mining can spur economic growth and generate employment opportunities among local communities as mining companies invest in infrastructure, utilities and other facilities, especially within the mining sites. However, the achievements of these benefits from the sector remain low compared to expectations. As regard to the focus of this study, it can be argued that although the system of governance exists in terms of the stated legal framework provisions, it does not capture the people's interests for improved local livelihoods. In the policy framework, the component of development has also dependence syndrome which caters from big nations which also depend on big companies such as Buzwagi Gold Mine in this case. The critical contribution of this study is the ability to add on to the existing literature knowledge with regard to the state of compliance of large mining companies to the regulatory framework for enhanced local livelihoods on the basis of local community perspectives in the Tanzania's mining sector Using Buzwagi gold mine as a case study.

Available literature at the time the current study was developed had a dearth of information regarding compliance of LSM practices on the legal and regulatory frameworks and how this affects local livelihoods of surrounding communities. In light of this, the current study fills part of the knowledge gap. Moreover, the study findings shed LSM operations affect local communities' livelihoods and their capabilities.

Furthermore, studying LSM in relation to local livelihoods' provides empirical evidence on activities carried out and how they impact on the local poverty situation in terms of improved livelihoods. In this context, Tanzania can also learn that, when well-managed, the mining sector can create jobs, stimulate transfer of technologies and knowledge and generate valuable foreign exchange earnings. In this context, the study contributes to the existing literature in relation to LSM operations and how best the same could be used to ensure sustainable development of communities around LSM operations. However, LSM operations need to adhere to the country's regulatory framework for the above to be achieved. The study also provides lessons on the potential challenges that have prevented LSM operations from adequately improving people's livelihoods and their capabilities. At the policy level, these findings have the potential to influence change of the common practice in order to embrace sustainable mining practices for sustainable development outcomes.

## APPENDICES

### Appendix 1: Household Questionnaire

#### SOKOINE UNIVERSITY OF AGRICULTURE



#### College of Social Sciences and Humanities

Department of Policy Planning and Management, P.O. Box 3025, Chuo Kikuu,

Morogoro Tanzania

**Dear respondent,** my name is **Willy Maliganya**, a PhD Candidate. I would like to invite you to participate in this survey. This questionnaire is part of a research to look into the *Response of Large Scale Mining on System of Governance for enhanced Local Livelihoods in Tanzania: A Case of Kahama District*. This will help us to understand different needs, issues and opportunities of community members especially those who are involved in different livelihood activities and how they are impacted by large scale mining activities. I will very much appreciate your participation. I also would like to assure you that anything you say will be kept confidential and your participation will not be made public.

**A: General Identification Variables**

Questionnaire No:\_\_\_\_\_ Date of interview:-\_\_\_\_\_

Village: \_\_\_\_\_ Ward \_\_\_\_\_

District: \_\_\_\_\_ Region: \_\_\_\_\_

**Questionnaire to be administered to Heads of Households****B: Demographic and Socio-Economic Information**

<b>B1: Age</b> In (Years)_____	<b>B2: Sex</b> 1: Male 2:Female	<b>B3: Marital Status.</b> 1: Single 2: Married 3: Divorced 4:Separated 5: Widow	<b>B4: Education Levels</b> 1: No formal education 2: Primary education 3: Secondary education 4:Technical/Diploma 5:University 6: Others (Specify)_____

**B5:** Please indicate the number of people in your household based on sex category

S/N	Sex	No. of male	No. of female
1.	Male		
2.	Female		

**B6:** How long have you lived in this area? \_\_\_\_\_ Years**B7:** What are your household's major economic activities?

S/N	Major economic activities in terms of their importance for household income	Monthly income in TSH	Annual income in TSH	Gender involved 1-Male 2-Female 3-Both
1.	Farming			
2.	Livestock keeping			
3.	Farming and Livestock			
4.	Large scale Mining			
5.	Small Scale mining			
6.	Petty trading			
7.	Casual labour			
8.	Formal employment			
9.	Food vendor			
10.	Others (Specify)			

**B8:** Provide information on land use you own and size

S/N	Land use	Coverage (Acres)
1.	Farming	
2.	Livestock keeping	
3.	Farming and Livestock	
4.	Petty trading	
5.	Settlement	
6.	Others (Specify)	
7		
8		

**B9:** How did you acquire land above [Tick what apply] 1: Inherited 2: Purchased 3: Allocated by village Government 4: Borrowed 5: Accessed free land

**B10:** Has there been any disposition of ownership/loss of land use you owned?

1: Yes 2: No [    ]

**B11:** If yes, what were the causes for ownership changes?

S/N	Land use	Reasons for ownership changes
1.	Farming	
2.	Livestock keeping	
3.	Farming and Livestock	
4.	Petty trading	
5.	Settlement	
6.	Others (Specify)	

**B12:** What are coping strategies for the changes in land ownership stated above basing on uses?

S/N	Land use	Coping strategy	Strategy Monthly (income)	Strategy Yearly (income)
1.	Farming			
2.	Livestock keeping			
3.	Farming and Livestock			
4.	Petty trading			
5.	Settlement			
6.	Others (Specify)			

**B13:** Is there change in value of your land? 1: Yes 2: No [    ]

**B14:** If yes, indicate the value of land: Before mining investment (Tsh) 1\_\_\_\_\_ 2: After

\_\_\_\_\_

**B15:** Rank your expenditures according to your family consumption.

S/N	Major expenditure	Monthly expenditure	Monthly expenditure
1.	Food		
2.	Health services		
3.	Clothing		
4.	Agriculture inputs		
5.	School children materials		
6.	Others (Specify)		
7			
8			
9			

**B16:** Please, give the number for assets owned by your household before and after mining investment.

SN	Assets	Before mining activities	After mining activities	Source for increase or decrease of assets
1.	Radio			
2.	Bicycle			
3.	Motorcycle			
4.	Hand set (Cellular phone)			
5.	Sewing machine			
6.	Water pump			
7.	Satellite dish			
8.	Iron			
9.	Ox- cart			
10.	Oxen plough			
11.	House			
12.	Others (Specify)			

**B17:** What has been your main source of energy for cooking?

SN	Source of energy	Before mining activities	After mining activities
1.	Electricity		
2.	Solar		
3.	Gas		
4.	Kerosene		
5.	Charcoal		
6.	Firewood		
7.	Animal Dung		
8.	Others ( <i>Specify</i> )		

**B18:** What kind of material has been used for the construction of the house wall? 1: Mud bricks 2: Burnt bricks 3: Cement bricks 4: Others Specify \_\_\_\_\_

**B19:** What kind of material has been used for house roofing? 1: Thatch grass/mud 2: Tin 3: Corrugated iron sheets 4: Others (*Specify*) \_\_\_\_\_

**B20:** What kind of material has been used for house floor? 1: Polished wood 2: Ceramic tiles 3: Cement 4: Others (s *Specify*) \_\_\_\_\_

**B21:** Are you a member of any organization or group in this village? 1: Yes, 2: No [ ]

**B22:** If yes, which of the following groups are you a member?

S/N	Membership group(s)	Response (Tick) all that applies
1.	Farmer or producer group	
2.	Livestock keeping/production group	
3.	Small scale mining group	
4.	Large scale mining workers group	
5.	Finance, credit or saving group	
6.	Other groups (Specify)	

### C: Compliance of mining companies to the regulatory framework

#### Support on Education Services

**C23:** Please, indicate the number of schools in your village in the table below;

S/N	Type of School	Total No. of Schools	Schools constructed by Buzwagi
1.	Pre-primary		
2.	Primary schools		
3.	Secondary schools		
4.	Vocational training centers		
5.	Others ( <i>Specify</i> )		

**C24:** What are constraints facing households sending children to primary school?

SN	Constraints	Before mining activities	After mining activities
1.	Long distance to school facility		
2.	Income poverty		
3.	Poor school facilities		
4.	Lack of teachers		
5.	Others ( <i>Specify</i> )		

**C25:** What is the distance to the nearest school facility before and after mining investment?

(1): Before \_\_\_\_\_ (Km)

(2): After \_\_\_\_\_ Km

#### Support on Water and Sanitation Services



**C26:** Where do you get water for domestic use?

SN	Main Source of water	Before mining activities	After mining activities
1.	Water Taps		
2.	Wells		
3.	Spring		
4.	River		
5.	Stream		
6.	Ponds		
7.	Others ( <i>Specify</i> )		

**C27:** Is supply of water from the source adequate for your daily needs? 1: Yes 2: No [   ]

**C28:** If no, what alternatives do you think can satisfy your needs?

\_\_\_\_\_

**C29:** Is there any water project supported by Buzwagi in your village? 1: Yes 2: No [   ]

**C30:** If yes, mention them \_\_\_\_\_

**C31:** What constraints has your household been facing in accessing water services?

SN	Constraints	Before mining activities	After mining activities
1.	Long distance to water source		
2.	Income Poverty		
3.	Lack of transport		
4.	Water pollution		
5.	Others ( <i>Specify</i> )		

**C32:** What is the distance to the nearest water sources before and after mining investment?

(1): Before \_\_\_\_\_ Km                      (2): After \_\_\_\_\_ Km

### Support on Health Services

**C33:** Do you have health services centre(s) in your village? 1: Yes 2: No [   ]

**C34:** If yes, specify the number of health facilities with respect to the constructing agency

No.	Health Facility	No	Government Health Facility	Buzwagi Health Facility
1.	Dispensaries			
2.	Health centre			
3.	Hospitals			

**C35:** Where does your household prefer to go for health services? Tick what applies

Institution	Preference	Reason for preference		
		(1)Affordability	(2)Accessibility	(3) Good services
1: Government				
2: Buzwagi mining company				
3: Community				
4: Private				
5: Traditional healers				
6: Spiritual healers				
7: Others ( <i>Specify</i> )				

**C36:** What type of toilet does your family have and use?

SN	Type of Toilets	Before mining activities	After mining activities
1.	Bush		
2.	Pit toilet		
3.	Modern toilet		
4.	Others ( <i>Specify</i> )		

**C37:** What have been the common diseases affecting your community? Tick what applies

SN	Type of Diseases	Before mining activities	After mining activities
1.	Malaria		
2.	Diarrhoea		
3.	Respiratory infections		
4.	Skin diseases		
5.	Malnutrition related diseases		
6.	Worms		
7.	STI/STD		
8.	AIDS/HIV		
9.	Others ( <i>Specify</i> )		

**C38:** Do you know any health campaign programme(s) conducted by Buzwagi in the community? 1: Yes 2: No [    ]

**C39:** If yes, please explain the activities carried out? \_\_\_\_\_

**C40:** Has the company built any health facility in this community for the service of both workers and nearby community? 1: Yes 2: No [    ]

**C41:** What constraints has your household been facing in accessing health services?

SN	Constraints	Before mining activities	After mining activities
1.	Long distance to health facility		
2.	Income Poverty		
3.	Shortage of drugs		
4.	Few medical practitioners		
5.	Others ( <i>Specify</i> )		

**C42:** What is the distance to the nearest health facility before and after mining investment?

(1): Before \_\_\_\_\_ Km                      (2): After \_\_\_\_\_ Km

**C43:** On the following statements, indicate the extent to which you agree or disagree regarding the compliance of large scale mining on the legal and regulatory framework. Use the scale SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree and SA-Strongly Agree.

S/N	Aspects/statements	Strongly disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly agree (1)
	<b>Environmental Impact Assessment</b>					
1	The mining company consulted for views on issues which were likely to cause effects before the start of mining operations					
2	Before the start of the project, the mining company publicized its anticipated effects and benefits by posting posters in strategic public areas					
3	Public meetings were held with the affected parties and communities to explain the effects before mining operations began					
	<b>Environmental Quality standards</b>					
4	Mining operations affect the quality of water in our area					
5	Mining operations affect the quality of air in our area					
6	Mining operations have induced noise and vibration pollution in our area					
7	Mining operations affect the quality of soil in our area					
8	Mining operations affect light in our area					
9	Mining operations interfere with radio waves					
	<b>Biological diversity</b>					
10	Mining company abides to conservation of plants and animals in surrounding areas					
11	The mining company uses the available natural resources sustainably					
12	Mining activities have resulted into release of modified organisms					
	<b>Restoration and Conservation</b>					
13	The mining company abides to the conditions to rehabilitate degraded land after operations					

14	The mining company abides to restoration of the environment for affected living organisms (plants and animals) in and out operation areas					
	<b>Resettlement scheme and Knowledge</b>					
15	Mining company offers relocation areas to people affected by mining project operations within the mining areas					
16	Mining company offers compensation to people affected by mining project operations within the mining areas					
17	Mining company procures goods and services available in your area					
18	Mining company offers employment to local people from the community					
19	Mining company keeps demarcated mining area to avoid conflict					

**D: Community perception on mining companies' practices towards enhancing environmental Sustainability**

**D44:** On the following statements, indicate the extent to which you agree or disagree regarding the response of large scale mining on environmental sustainability. Use the scale SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree and SA-Strongly Agree.

S/N	Aspects/statements	Strongly disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly agree (1)
	<b>Environmental Conservation</b>					
1	Mining company offers control practice over water pollution					
2	Mining company offers control practice over air pollution					
3	Mining company offers control practice over land vibrations					
4	Mining company offers control practice over noise pollution					
5	Mining company offers control practice over soil pollution					
6	Mining company offers control practice over light distortion					
	<b>Conservation of Biological diversity</b>					
7	The mining company undertakes measures to conserve plants and animals in surrounding areas					
8	The mining company impart means of utilizing available natural resources sustainably					
9	The mining company Mining activities have resulted into release of modified organisms					

10	<b>Restoration and Conservation practices</b>					
11	The mining company rehabilitates degraded land after operations					
12	The mining company restores the environment for affected living organisms (plants and animals) in and out operation areas.					

### **E: Contribution of Mining Companies to the Local Livelihoods**

**E45:** How far is your household located from Buzwagi \_\_\_\_\_ in Km?

**E46:** In what ways have communities benefitted from Buzwagi mining investments?

**E47:** On the following statements, indicate the extent to which you agree or disagree regarding the influence of large scale mining on the status of local livelihoods in this area. Use the scale SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree and SA-Strongly Agree.

S/N	Statement(s)	Strongly disagree (5)	Disagree (4)	Neutral (3)	Agree (2)	Strongly agree (1)
	<b>Displacement on livelihoods</b>					
1	Our family was displaced in a peaceful way					
2	Our accessibility to natural resources have been affected due to displacement					
3	Displacement affected our access to cultural heritages					
4	Displacement affected schooling for our children					
5	There were adequate health facilities in the area we were resettled					
6	The place we were resettled to has adequate security					
7	The place we were resettled to has adequate housing					
8	Livelihood sources have improved after resettlement					
9	Food production has increased after displacement					
	<b>Compensation on Livelihood</b>					
10	Valuation of our properties during compensation was fair					
11	Fund received from compensation was adequate					
12	Houses destroyed during displacement were compensated to new ones					
13	Alternative land was given as compensation for our former lands					
14	Crops in the field were compensated at the best market value					
15	Compensated land had					

	the same quality in terms of productivity as the old one					
16	There is good community-company relationship in our area					
	<b>Economic resource Distribution on Livelihood</b>					
17	The mining activities have created more benefits on business					
18	Gainful employment have been realized since mining activities began					
19	Mining company has accelerated accessibility to agricultural markets					
20	Roads have improved due to the presence of mining company					
21	Income level has significantly improved since mining company's operations began					
22	Health services have improved due to the presence of mining company					
23	Water services have improved due to the presence of the mining company					
24	The presence of the mining company has improved education services in this area					
25	The mining company supports developmental Projects in this area e.g. schools, dispensaries etc					
26	Food production has increased after the coming mining activities in this area					
27	Transport costs have decreased significantly due to roads construction by the mining company					
28	Access to market for goods and services have improved significantly due to the presence of mining operations					
29	Development projects established by mining companies have created many jobs for the local community members					
	<b>Socio-environmental issues on Livelihood</b>					
30	There has been no incidences of diseases (skin rashes, cancer, TB) among our household members due to mining operations					
31	Smoke and other emissions from large scale mining operations have not affected our crop growth					

**E48:** In your assessment, how has large scale mining projects influenced on your household livelihoods? \_\_\_\_\_

**E49:** What are your suggestions on the solutions to the challenges that you experience as a result of large scale mining activities in this district?

\_\_\_\_\_

*Thank you very much for your cooperation*

## **Appendix 2: Checklist for Key Informants/District Officials**

**Dear respondent,** my name is **Willy Maliganya**, a PhD Candidate. I would like to invite you to participate in this survey. This questionnaire is part of a research to look into the ***Response of Large Scale Mining on System of Governance for enhanced Local Livelihoods in Tanzania: A case of Kahama District***. This will help us to understand different needs, issues and opportunities of community members especially those who are involved in different livelihood activities and how they are impacted by large scale mining activities. I will very much appreciate your participation. I also would like to assure you that anything you say will be kept confidential and your participation will not be made public.

### **A: Demographic information**

1. Sex of respondent                      1: Male                      2: Female      [      ]
2. Age of respondent (years) \_\_\_\_\_
3. Marital status \_\_\_\_\_
4. Highest level of education attained (years) \_\_\_\_\_
5. Name of organization/Department \_\_\_\_\_

### **B: Enabling environment of the mining sector in Tanzania**

6. List down the potential government provisions/conditions in favour of mining investment.

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7. Explain the challenges facing your company in relation to investment in the mining sector.

---

### **B: Compliance of mining companies to the legal and regulatory framework**

8. What are the basic services does the mining company deliver to the community?

---

9. Does the company have performance targets in the delivery of basic services for the community? Please explain.

---

10. What kind of contribution does mining companies provide in terms of income?

---

11. Are there any sanctions levelled against mining companies in case they fail to deliver?

---

12. Do you think the beneficiaries are satisfied with the services provided by the mining company? Please explain.

---

13. How would you explain the forms of relationship existing between the mining company and the nearby community?

---

14. Are there strategies mining companies use to handle complaints on damages caused during mining operations?

---

15. Does the community participate in the development projects initiated by Buzwagi?

---

16. What institutions are responsible for monitoring large scale mining operations?

---

17. How often are these institutions conducting monitoring and evaluation of the mining operations?

---

18. How effective and efficient are these institutions in monitoring negative environment effects?

---

19. How does the local government authority enforce the system of governance against the company's mining operations?

---

20. What are your opinions with regards to the response of the company on the system of governance?

---



21. Has the system of governance changed the behaviour (practices) of the mining companies?

---

22. Does the change of mining companies' behaviour led to improved livelihoods?

---

23. How would you rank the compliance level of mining companies on the legal and regulatory framework in the mining sector?

---

### **C: Response of mining companies on environmental sustainability**

24. Are you aware of the impact of mining activities to the nearby communities?

---

25. How was Environmental Impact Assessment carried out?

---

26. In your opinion, do mining companies comply with EIA requirements?

---

27. What are your recommendations for improving the EIA process in the mining sector?

---

28. How do mining companies manage the wastes material produced during mining?

---

29. Are there embankments/dams for the management of tailings?

---

30. What have been the greatest environmental challenges in the community since mining started?

---

31. Is there any form of compensation for such environmental destruction by the company to the community?

---

32. How fair was the compensation process conducted?

---

33. Are there measures developed alternatively due to negative environmental and social impacts of mining activities?

---

34. What are strategies does the company adopt for promoting environmental sustainability?

---

**E: The influence of mining companies on local livelihoods**

35. In what ways have communities benefitted from the operations of mining companies?

---

36. What would you consider as a major positive impact that the company has brought to the community since mining started?

---

37. What should be the appropriate framework that will integrate actors in the mining sector?

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*Thank you very much for your cooperation*

### Appendix 3: Checklist for Buzwagi Gold Mining Company Officials

**Dear respondent,** my name is **Willy Maliganya**, a PhD Candidate. I would like to invite you to participate in this survey. This questionnaire is part of a research to look into the ***Response of Large Scale Mining on System of Governance for enhanced Local Livelihoods in Tanzania: A case of Kahama District.*** This will help us to understand different needs, issues and opportunities of community members especially those who are involved in different livelihood activities and how they are impacted by large scale mining activities. I will very much appreciate your participation. I also would like to assure you that anything you say will be kept confidential and your participation will not be made public.

**A. Name of organization** \_\_\_\_\_

#### **B: Enabling environment of the mining sector in Tanzania**

1. List down the potential government provisions/conditions in favour of mining investment. \_\_\_\_\_
2. Explain the challenges facing your company in relation to investment in the mining sector. \_\_\_\_\_

#### **C: Compliance to the legal and regulatory framework**

3. Does the company have a corporate social responsibility policy?

\_\_\_\_\_

5. What community development initiatives do your company undertakes?

\_\_\_\_\_

**4.** Does your company publish a corporate social responsibility (CSR) sustainability report? Please mention what you publish.

1: \_\_\_\_\_

2: \_\_\_\_\_

3: \_\_\_\_\_

**6.** Does the company have management person responsible for the following items?

(a) Social sustainability

\_\_\_\_\_

(b) Business conduct and compliance

\_\_\_\_\_

(c) Environmental sustainability

\_\_\_\_\_

**7.** For what social issues does your company have a policy?

\_\_\_\_\_

**8.** Have social audits been conducted at this site? Please provide evidence

\_\_\_\_\_

**9.** Does your company have a written health and safety policy in place which complies with industry, national and international standards?

\_\_\_\_\_

**11.** Have health and safety audits been conducted at this site?

\_\_\_\_\_

**12.** What share does the gold extracted by your company takes to Tanzania and global market?

---

**13.** What is the turnover of your company?

---

**14.** How much is paid as corporate tax to the government?

---

**15.** What forms of relationship exist between you and the nearby community?

---

**16.** Do you think the beneficiaries are satisfied with the services you provide? Explain how/why?

---

**18.** What strategies do you employ to ensure sustainability of the services you provide after mine closure?

---

**19.** How do you involve the community in the designing and implementation of development projects initiated by Buzwagi?

---

**20.** How does your company abide to the legal and regulatory framework in the mining sector?

---

**D: Environmental sustainability issues**

21. How did the company conduct environmental impact assessment?

---

22. In which ways do the activities of the mining company affect the lives of the surrounding communities?

---

23. What are the major environmental management practices does your company apply?

---

24. How do you maintain environmental quality standards?

---

25. How do you conserve the biological diversity in the surrounding environment?

---

26. How do you rehabilitate the environment after mining operations?

---

27. How do you manage the waste materials produced during mining operations?

---

28. How do you manage the dust produced during mining operations?

---

29. What do you implement in relation to mining closure plans?

---

30. What environmental sustainability initiatives do your company undertakes?

---

**31.** How does your company engage other stakeholders/actors with respect to environmental management?

---

**32.** What challenges does the company face in ensuring efficient management and conservation of the environment?

---

**33.** Does your company have a formal environmental policy, which includes a commitment to legal compliance, continuous measurement and continuous improvements in environmental performance?

---

**36.** Have environmental audits been conducted at this site internal and external? Please give reasons for your answer?

---

**37.** How does the company conserve the environment through waste management?

---

**38.** How does the company control contamination of heavy metals on soil?

---

**39.** How does the company control contamination of heavy metals on ground water?

---

**40.** How does the company conserve the ecosystem to conserve the biodiversity?

---

**41.** How does the company dispose solid waste materials?

---

**42.** How does the company dispose liquid waste materials?

---

**43.** How does the company control leakages of heavy metals to the surrounding environment?

---

**44.** How does the company ensure safety to the downstream community?

---

**45.** How does the company ensure safety to the biodiversity in rivers and lakes?

---

**46.** Does the company have plans for engaging actors/stakeholder regarding mine closure?

---

**47.** Is there any form of compensation due to environmental destruction caused by the company to the community? How is the compensation package determined?

---

**48.** Are there measures developed alternatively due to negative environmental and social impacts of mining activities?

---

**49.** What are strategies does the company adopt for promoting environmental sustainability?

---

**50.** What are the challenges do you experience in achieving environmental sustainability in the mining sector?

---



**E: Influence of the company on local livelihoods**

51. How have communities benefitted in terms of their livelihood improvement since mining operations begun?

---

52. What would you consider as a major positive impact that the company has brought to the community since mining started?

---

53. What have been the main challenges for your company to contribute significantly towards enhancing local livelihoods?

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*Thank you very much for your cooperation*

#### **Appendix 4: Focus Group Discussions Guide**

1. Can you tell me about the situation of Kahama district community before large scale mining started in terms occupation, life style of people, the landscape and natural resources, volume of business and main sources of livelihoods?
2. What have been the major changes in the community with respect to the coming of large scale mining?
3. What are your views regarding the presence of large scale mining? Are they beneficial or not?
4. What have been the greatest benefits to the local community due to the presence of large scale mining in the district?
5. What have been the greatest disadvantages to the local community due to the presence of large scale mining in the district?
6. What has been the greatest needs of the community and has the company made any move to fulfilling it?
7. Do you think large scale mining activities are causing environmental challenges? Explain how?
8. Are there initiatives undertaken by Buzwagi in addressing environmental challenges?
9. Are there diseases existing in the community which associated to large scale mining activities?
10. How has the mining company changed the sources of community livelihoods?
11. How are the waste materials resulting from large scale mining operations managed?
12. Do you participate on environmental management? Explain how?
13. Is there income contribution provided by the company to the community? What form does it take?

***Thank you very much for your participation***