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COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

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IMPACT OF ARTISANAL AND SMALL-SCALE GOLD MINING ON POVERTY  
ALLEVIATION: A CASE STUDY OF CENTRAL-SAKWA LOCATION IN SIAYA  
COUNTY

**BY:**

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## **DECLARATION**

### **DECLARATION BY CANDIDATE**

I hereby declare that this project paper is my original work and has not been presented for any other academic award at the University of Nairobi or any other institution.

**Name**

.....

**Date**

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### **DECLARATION BY SUPERVISOR**

This project paper has been submitted with my approval as the University of Nairobi Supervisor

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.....

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.....

## **DEDICATION**

I dedicate this study to my grandfather Leokadus Achieng' Oketch and my grandmother Jane Adhimbo Opata for their great love and emotional support. You are a great source of joy and pillars of strength in deed.

## **ACKNOWLEDGEMENTS**

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## **ACRONYMS AND ABBREVIATIONS**

**AIDS**-Acquired Immune Deficiency Syndrome

**ASM** – Artisanal and Small-Scale Mining

**CASM**- Community Artisanal and Small-Scale Mining Initiative

**CFC**- Common Fund for Commodities (CFC)

**DEAP** –District Environment Action Plan

**FGDs**- Focused Group Discussions

**FPE**- Free Primary Education

**GDP**-Gross Domestic Product

**GoK**- Government of Kenya

**HIV**- Human Immunodeficiency Virus

**ILEG**-Institute for Law and Environmental Governance

**ILO**- International Labor Organization

**LSM**- Large Scale Mining

**MDGs** – Millennium Development Goals

**NEMA**- National Environment Management Authority

**PRSPs**- Poverty Reduction Strategy Papers

**STDs**- Sexually Transmitted Deficiencies

**UNECA**-United Nation Economic Commission for Africa

**UN**- United Nations

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## **ABSTRACT**

The urgent demand for appropriate mitigation of the activities of Artisanal and Small-Scale Mining (ASM) in Africa has become necessary in view of the immense contribution of the mining activities to poverty alleviation in the continent. The specific objectives of this study were; to find out how the people of Central- Sakwa location have conceptualize ASM and poverty; to examine the extent in which ASM have alleviated poverty among the people of Central-Sakwa location; and to find out the factors that have promoted or inhibited ASM in alleviating poverty among the people of Central- Sakwa Location.

This study had two theories governing it and this were the resource – curse theory and the theories of poverty as well as a conceptual framework illustrating the link between ASM and poverty alleviation. Chapter three of this study focused on the research methodology setting out a descriptive study design with Household Survey, Focus Group Discussions (FGDs), Key Informant Interview, and observation as data collection methods used to generate primary data. Secondary data provided complementary information on the topic of study.

The analyzed data was presented using narrative reports and quantitative techniques of data such as Pie charts, tables, percentages and graphs. The findings of this study revealed that respondents had diversity on conceptualization of ASM and poverty. A good number of respondents did not understand the meaning of artisanal an indication that the problem of understanding ASM existed in Central-Sakwa location.

The study established that ASM had help gold miners to meet their needs but this was identified to be short term as it depended on the fluctuating income of the miners. From the findings, it was evident that with the illegality of the sector, there was no taxation of income from the activity hence no development projects directly associated with it in the location. The study found out that the main factors that had promoted ASM to alleviate poverty were; availability of ready market and the mineral gold within the location, and provision of food to casual laborers by the site managers while those that inhibited ASM from alleviating poverty included; accidents/deaths at the mines, lack of finance to invest on mining equipments and machines, political instability, and lack of skills on harvesting gold.

From the findings it was evident that with financial support, legalization of the sector, training of miners and putting measures on how to properly invest income from gold mining, would help ensure that ASM alleviates poverty among the community members of Central-Sakwa location.

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background to the Study**

Artisanal and Small-Scale Mining (ASM) is an important and increasingly popular livelihood for tens of millions of people around the world. Yet, while it brings in needed income for rural communities, ASM is also a serious and growing threat to biodiversity and the integrity of protected areas due to the mining methods (clear-cutting forests, river dredging, frequent use of toxic chemicals) and the livelihood practices (gathering firewood, hunting for food or trade) that support mining populations. Artisanal and Small-Scale Miners work in more than 80 countries and on every continent except the Antarctic (Telmer & Viega, 2009).

ASM produces some 10% of the world's mined gold, (Hruschka & Echavarriac, 2011). Many artisanal-mined minerals are part of developing countries export economies, bringing in much needed foreign exchange; others are used for the local market, for example salt, aggregates and stones. Despite their large numbers, the role artisanal mines play in the global minerals market is not always fully understood (Kramcha, 2004).

Since the 1990s, ASM has experienced rapid expansion from 12 million to at least an estimated 30 million or more miners today. The increasing price of precious minerals, especially gold, has resulted in mineral rushes on every continent except Antarctica. More often than not, these rushes attract people to increasingly remote locations, including protected areas (Viega & Velasquez, 2005).

ASM is a rational economic choice for people seeking to escape poverty or improve their lives: artisanal miners mine because it brings them more income and faster economic returns than other livelihoods such as agriculture or because traditional livelihood activities are becoming less viable due to climate change and other reasons. In Uganda, for example, the average miner contributes almost 20 times more to the Gross Domestic Product (GDP) than farming, forestry or fishing (Hilson et.al, 2003).

Artisanal mining also employs many more people than industrial mining. Often ASM is part of a diverse livelihood strategy at the individual and household levels, helping build resilience and

enabling families to better cope with seasonal and extraordinary stresses (Lahiri-Dutt, 2008). Of the entire global minerals industry 90% of the mining labor force is artisanal miners (Artisanal Gold Council 2012). Women's participation varies by region but can range from 10% in Asia, 30% at Latin America to 50% of miners in Africa (Lahiri-Dutt 2008).

For years the international community has been commenting on ASM's potential to play an important role in economic and social development in developing and rural contexts. A 2002 UN- organized conference in Yaoundé, Cameroon emphasized through its "Yaoundé vision" (Heemskerk, 2005.) that if properly harnessed, ASM and partner institutions can contribute to the UN Millennium Development Goals (MDGs) which is a way of how it alleviates poverty (CASM, 2010).

Links between ASM and the first seven MDGs are strengthened with evidence of the "crucial role (ASM income plays) in the education and health expenditures of many rural communities" (Pedro, 2005) in places like Burkina Faso, Mali and Guinea. Yet, despite international recognition of the development potential of ASM, Antonio M.A Pedro of the United Nations Economic Commission for Africa (UNECA) notes that ASM remains "conspicuously absent" from Poverty Reduction Strategy Papers (PRSPs). ASM's commonly cited environmental and social liabilities may explain this, as well as the fact that in the vast majority of countries where ASM occurs, it is somewhat or entirely illegal (CASM, 2010).

For self-employed artisanal miners, the use of safety equipments depends almost exclusively on miners own consciousness. Artisanal mine workers employed by small-scale mining concession holders, usually have to supply their own safety equipments – if any. Even basic safety equipments, like helmet, safety boots, working gloves and dust mask, however represent a significant investment for most of the miners, which, as it does not contribute directly to their daily income, has inferior priority for small-scale miners (Hentschel et al, 2003).

The geographical survey and assessment of minerals revealed that the ASM industry in Kenya is quite small. The endowment of mineral is varied. However, ASM is hampered by poor accessibility to deposits, legal set ups, financial and technical requirements, lack of markets and lack of large mineral deposits to warrant major capital investments. In terms of mining methods, some open cast mining happens where stones and quarries are mined which often leave holes that fill with water when it rains. Many a life has been lost in these collected waters. The other

issue with respect to ASM in Kenya is about community participation in making important decisions relating to the ASM activity: for example whether it ought to go or not, relocation of people and on their socio-economic and cultural activities (ILEG, 2003).

Central-Sakwa location is located in Bondo district which is one of the poorest districts in the country with poverty levels being as high as 70.6%. The most affected group is the women whose ratio compared to the male are very high. Also another group which is affected is the youth, whose percentage stands at 20.4 % of the total population. With such a high number of youth competing for the limited employment opportunities, many youth engage in income generating activities which are not environmentally friendly (NEMA, 2007).

Geographically, population distribution statistics shows that poverty levels are higher in rural areas (70.6%) compared to the urban centers (67.5%). This is mainly attributed to the availability of formal employment opportunities in urban centers compared to unprofitable farming which is the major economic activity in rural areas. Faced with unreliable farming, many people in rural areas of Central-Sakwa Location look for other ways of earning a living so as to manage the high poverty levels within the area. These include selling firewood, charcoal, quarrying and artisanal and small scale mining which may lead to environmental degradation (NEMA, 2007).

## **1.2 Problem Statement**

Defining the ASM challenge requires people first to be clear about what it is they are addressing and who is responsible for meeting these challenge of definition. For decades, experts worked to devise universal definitions of “artisanal” and “small-scale” mining but were unable to reach a consensus. As Hollaway (1997) explains in the following passage:

“In the 1980s, a string of conferences largely sponsored by the United Nations spent a disproportionate amount of time trying to define what it was they were talking about. At what point does ‘artisanal mining’ become ‘small-scale mining’? When does a small-scale mine become a ‘medium scale mine’? The problem persisted across languages: In French the difficulty was defining between ‘*les operations artisanale, semi-industrielle et industrielle*’ ”

For their own purposes, countries have devised unique definitions of “artisanal” and/or “small-scale mining”, according to a variety of criteria such as the following: Level of mechanization

(e.g. as in Brazil, Burkina Faso Ghana and Sri Lanka); Size of Concession (e.g. as in Ghana, Zambia and Zimbabwe); Depth of working (e.g. as in Colombia, Senegal and Ethiopia); Capital investment (e.g. as in Argentina, Mexico, South Africa, Pakistan and Thailand); Level of employment (e.g. as in Chile; and Production levels (e.g. as in the Philippines and Senegal).

Certain countries have made a distinction between small-scale and artisanal mining in legislation; in such cases, the former is associated with illegal activities and minimal mechanization, and the latter, with semi-mechanization and organization (Quiroga, 2002).

Over the past decade, a multitude of studies have been carried out on (ASM), providing valuable insight on the livelihoods, needs and concerns of the sector's participants (Hilson, 2003). Additional work has been undertaken that provides extensive description of the industry's gender and child labor issues (Hinton et al., 2003). Some of the needs and concerns of the sectors participants are on the way in which ASM can be used to alleviate poverty as well as the social organization, networks and the various relationships found within ASM as a livelihood industry not forgetting the way in which ASM sector is managed (Lahiri-Dutt, 2008).

Worldwide more than 13 million men, women, and children are making a living as artisanal and small-scale miners (Jennings, 1999). Their working conditions differ depending on many factors: geographic (e.g., location), geological (e.g. mineral mined), demographic (e.g., sex, age), socio-economic (e.g., alternative employment options), and cultural (e.g. taboos) (Hinton et al., 2003). Yet small-scale miners in different regions also have things in common. Usually, artisanal and small-scale miners live in poor rural areas of developing countries. Most are not formally trained in mining and have received little education in general. Although they use rudimentary exploration and extraction techniques, mining allows them to earn cash income for their households, supplement meager farming revenues, and — in the case of coal — obtain energy (Viega and Hinton 2002).

International donor organizations, including the World Bank and the United Nations, believe that artisanal and small-scale mining (ASM) can contribute to socio-economic development in poor rural areas. Support for policy efforts that could strengthen this contribution was expressed at the United Nations conference on mining held in 2002 in Yaoundé, Cameroon. The Yaoundé Vision Statement recommended that policies and programmes directed towards the subsector should contribute to sustainably reduce poverty and improve livelihoods in artisanal and small scale mining communities (UN, 2002).

Artisanal and small-scale miners are typically poor and have remained poor despite working as miners for many years. Many make barely enough money to establish and support a family. Their poverty produces and is perpetuated by vulnerability to shocks: unexpected events that trigger a decline in well-being, such as illness and accidents. By causing unpredictable fluctuations in household earnings and consumption, adverse shocks can pull poor families into a downward spiral towards destitution. Shocks also paralyze efforts to plan for the future, for example by forcing families to take children out of school (Wall, 2000).

Unhealthy and hazardous labor conditions in mines increase the chances of experiencing shocks and paralyze coping strategies. Injuries, for example, inflict medical costs and cause loss of working days. Income variability limits access to formal credit systems, and small-scale miners therefore often have to make unprofitable deals with informal creditors. Furthermore, few miners earn enough to invest in education, more efficient technology, and other assets that would allow their families to advance. These factors keep ASM households trapped in a vicious cycle of poverty and vulnerability and the great question is what can be done to break this poverty and vulnerability cycle so as to ensure the sustainability of livelihoods within ASM communities (Keeley, 2001).

### **1.2.1 Key Research Questions**

1. How do people of Central-Sakwa Location conceptualized ASM and poverty?
2. To what extent has ASM alleviated poverty among the people of Central-Sakwa Location?
3. What factors promote or inhibit ASM in the alleviation of poverty among the people of Central-Sakwa Location?

### **1.3 Objectives of the Study**

#### **1.3.1 Overall Objective**

The overall objective of this study was to assess the impacts of ASM on poverty alleviation among the people of Central- Sakwa Location.

### **1.3.2 Specific Objectives**

1. To find out how people of Central- Sakwa Location conceptualized ASM and poverty.
2. To examine the extent to which ASM have alleviated poverty among the people of Central-Sakwa Location.
3. To find out factors that promoted or inhibited ASM in the alleviation of poverty among the people of Central-Sakwa Location.

### **1.4 Significance of the Study**

Various studies exist on ASM but most of them look at its relationship with poverty alleviation as a sub-sector as most studies are concerned with impact of ASM on environmental degradation (Hinton et.al, 2003) and sustainable livelihood approaches (Gilman, 1999). Most of the studies done in relation to ASM Kenya, have been focused on Malcalder mines in Migori county (Ogola,1987) and Kakamega mines in Kakamega county with those in Siaya county such as in Central-Sakwa being mentioned to have gold mines. It is for this reason that this study accessed the impact of ASM on poverty alleviation among the people of Central Sakwa location.

This study contributes to the general understanding on how ASM impacts on poverty alleviation, the diversity that people have on ASM and how ASM can be used to improve the living standards of the rural poor.

To the academicians and researchers, this study provides information that will form a basis for further research on the relationship between ASM and poverty alleviation. It also provided a learning experience to the researcher and the community members on how ASM can be used to alleviate poverty among rural community members.

### **1.5 Scope and Limitations of the Study**

This study was carried out among the community members of Central- Sakwa Location, Siaya County in Kenya. The study was confined to the community members who are practicing Artisanal and Small-Scale Gold Mining, local and government officials.

In conceptualizing ASM the study was confined to what the community members of Central-Sakwa Location understands by the constituents of ASM, the values and the levels of attachment that they have on ASM. On the values the study looked at why the people practice ASM and the benefits they attain from ASM. On levels of attachment the study looked at the time and duration that the community members of Central-Sakwa Location take in ASM activities. In conceptualizing poverty this study was restricted to showing the indicators that the community members of Central-Sakwa Location use in showing what poverty is.

In examining the extent to which ASM have alleviated poverty among the people of Central-Sakwa Location this study was restricted to showing the effect that ASM have on the household income, the investment and the savings of the miners in Central-Sakwa Location as indicators.

On household income the study looked at the presence and quality of transport the ASM household members use as a means to move (e.g. bikes, boats, cars and many others), and the ownership of electronic appliances( e.g. radio, television, mobile phones, and many others) as well as land and house (s).

On investment this study looked at the following indicators, acquiring education for self or even the ASM household members, acquisition of ASM mining equipments (e.g. hydraulic mining machine and any other equipments) and establishment of alternative income generating activities from the income generated from ASM activities( e.g. setting up a store and many others). On savings this study was restricted to any form of savings as defined by the people of Central-Sakwa Location.

On factors that have promoted or inhibited ASM in alleviating poverty among the people of Central-Sakwa Location this study was confined to the social, cultural, economic, and political factors. On social factors the study was confined on the gender roles and equity, the organizations and empowerment of ASM household members in relation to ASM activities. On cultural factors the study was restricted to the taboos, norms and kinships associated with ASM activities. On economic factors the study was restricted to the availability of capital (money, land, labor) to be used by the ASM household members to maximize their output. On political factors the study was confined to the governance and administration of the ASM sector within Central- Sakwa Location.

## 1.6 Definition of Key Terms and Concepts

**Artisanal and small-scale mining (ASM)** – in this study refers to mining by individuals, groups, families, or cooperatives with minimal or no mechanization, often in the informal (illegal) sector of the market

**Community**- A group of interacting organisms sharing an environment and occupying the same geographical area

**Development** – a planned comprehensive economic, social, cultural and political process, in a defined geographical area, that is rights based and ecologically oriented and aims to continually improve the well-being of the entire population and all of its individuals.

**Large-scale mining (LSM)** – in this study refers to major companies as well as to mid-tier and small companies, or any formal company that complies with international performance standards.

**Livelihood** - is a set of economic activities, involving self-employment, and or wage employment by using one's endowments (both human and material) to generate adequate resources for meeting the requirements of the self and household on a sustainable basis with dignity.

**Poverty**- In a broad perspective, poverty is said to be the absence of resources. Poverty can be explained as being relative or absolute. In this study the researcher refers to the definition of absolute poverty which is a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information which depends not only on income but also an access to services.

## **CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK**

This chapter presented the available literature on the overview of ASM, the reasons and types of ASM and how poverty is conceptualized. The chapter then reviewed the past authors works regarding the relationship between ASM and poverty as well as the factors that have promoted or inhibited ASM to alleviate poverty. The chapter presented the gaps in knowledge as identified in the course of the literature review. This chapter also presented the Theoretical Framework as well as the Conceptual Framework.

### **2.1 An Overview of Artisanal and Small-Scale Mining (ASM)**

In terms of approaches, a number of studies have taken a more holistic approach of Artisanal and Small-Scale Mining (ASM), this include the sustainable livelihoods approach (Gilman, 1999). Others have concentrated on a specific aspect of the industry, for example the environmental consequences of ASM activities (Hinton et.al. 2003), regulatory frameworks (Barry, 1996) and technical issues (Bugnosen, 1995) with its impact to poverty alleviation being in cooperated as a sub-sector in most of the studies.

According to Hentschel, et.al. (2003), the approaches of dealing with ASM have evolved over time with definitional issues being in the year 1970's and technical issues in 1980's. More of the approaches towards integration of technical, environmental, legal, social and economic issues were dealt with in the early 1990's. The special attention of legislation of ASM sectors as well as the relation between large mining companies and ASM was from middle to late 1990's. The community related issues and sustainable livelihoods issues started in the year 2000 and was expected to advance to other detailed levels as years goes by.

While different definition exist, ASM is often defined by the use of rudimentary extraction practices with gold as the most commonly extracted mineral in this sector (Hinton, 2006). A report published by the International Labor Organization in 1999 captured the complexity of this sector, stating "ASM means different things to different people. To some it is a dirty, dangerous, disruptive and should be discouraged. To others it's profitable, productive or simply the only

way out of poverty” (Telmer and Viega, 2009) making its acceptance to vary from country to country as well as from region to region.

ASM have been an important economic activity since the pre-colonial period (Holloway, 1997). In Africa, the mining of gold and other minerals were cornerstone economic activities in most ancient civilizations (D’Souza, 2002). Most Latin American and Sub-Saharan African countries’ historical trajectories are closely associated with ASM development and exploitation (Klein, 1992). A good example is Ghana which her colonial name of the ‘Gold Coast’ aptly referred to the presence of gold which contributed greatly to her development (Jackson, 1992).

Mining activities have taken place in Kenya for many years up to the present time but most of the medium to large scale mining of gold and base metals took place during pre-independence days. The largest gold in the country was located at Rosterman near Kakamega town in Western region, where it was operated from the 1930’s till it was closed down in 1952. A medium scale copper mine was also operated at Malcalder in Migori areas of Nyanza region from 1956 until it closed in the late 1960’s. Lead ore mines were operated in the Kinagoni and Vitengeni areas of Coast region till the 1970’s (GoK, 2010).

In later year, however mining in Kenya has been dominated by the production of a variety of industrial minerals, among which are Soda ash, fluorspar, diatomite, and limestone. Gold and gemstone production became the main activity of Small-Scale miners who have operated continuously in different parts of the country (GoK, 2010). In Kenya, Artisanal and Small-Scale Gold Mining is associated with rural areas especially the western part which is said to have potential for gold. This includes the Kakamega, Vihiga, Migori, Bondo and Siaya areas (GoK, 2010).

Central- Sakwa Location traces back its Artisanal and Small-Scale Gold mining to the early 1980’s. This activity at that time was known to be under the name Bondo Gold Co-operative Society. It had a prospecting license with around 100 registered members involved. The license was supposed to work up to 1992 and since then it was never renewed. The mining process then became a local dealers’ management process. Since then to date there have been no clear records on the amount of gold mined within the entire location as well as its market availability (Okoth, 2008).

## **2.2 Reasons and types of Artisanal and Small-Scale Mining (ASM)**

There are various reasons why people engage in ASM and this is what has led to the different classification or types of ASM. ASM represents a full-time activity providing the principle means of subsistence, while for others it is a part-time or seasonal activity and supplements other activities. Some communities have engaged in ASM for generations while others are drawn to it following the findings of new reserves or a dramatic increase in demand for a particular commodity. An increase in ASM activity can be associated with periods of economic recession reflecting a lack of formal employment opportunities in the mining sector or an absence of alternative economic activities (Hentschel et al., 2003).

There is Permanent ASM which refers to mining as a full time, year round activity. Mining is frequently the primary economic activity for the community and is sometimes accompanied by other activities like farming or herding (Weber-Fahr et al., 2002).

In different developing countries throughout the world ASM more commonly serves as a seasonal or part-time activity alongside other activities, most commonly agriculture. In such cases ASM provides a means of generating additional income for the household or satisfying a particular need. In Mali it is estimated that up to 300,000 people are engaged in gold mining and although it has become the main income generating activity it remains a seasonal occupation (Labonne, 2003). In any one country different communities may engage in ASM activities on different scales and at different times of year. In Papua New Guinea, for example, communities may engage in ASM activities as a seasonal activity or as a part-time year-round activity to satisfy specific needs. As a general rule people in Papua New Guinea use mining as a source of cash, mining gold when they need money for school fees, medical expenses, social obligations or travel. This means that people engage in full-time mining activity at the beginning of the year when school fees are due and again around Easter and Christmas time. A sizable proportion of the population mines on a part-time basis all year round to supplement other activities and another section engage in agricultural activities such as growing coffee and do not mine during coffee harvesting (Susapu and Crispin, 2002).

In countries such as Bolivia, Colombia, Indonesia, Mali, the Philippines and Zimbabwe miners often come from communities that have a long tradition of small-scale mining and have strong cultural ties to the areas in which they mine. In tribal mining communities, for example, these

ties can extend back for many generations. Other communities are engaged in mining for socio-cultural reasons. Many of Ghana's gold miners, for example, continue to mine concessions awarded to large-scale mining companies contending that they have cultural ties to the land their ancestors mined for centuries (Hilson, 2003).

Shock-push ASM refers to when ASM is a poverty driven activity emerging after recent loss of employment in other sectors, conflicts or natural disasters. For example in a situation of economic collapse of a state or sudden displacement due to civil war, people may turn to ASM because it gives them immediate cash with very low barriers to entry. ASM offers the income in an otherwise desperate situation with few if any realistic alternatives e.g. Zimbabwe (Weber-Fahr et.al 2002). It was important to find out the reasons and type of ASM the people of Central-Sakwa Location have.

### **2.3 Conceptualizing poverty**

Poverty is a complex human phenomenon associated with unacceptably low standard of living. It has multiple dimensions, manifestations and causes (World Bank, 2000). United Nations defines poverty as a denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and clothe a family, not having a school or clinic to go to; not having the land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living on marginal or fragile environments, without access to clean water or sanitation (World Bank, 2000).

In a broad perspective, poverty is said to be the absence of resources. Poverty can be explained as being relative or absolute. Relative poverty is sometimes referred to as overall poverty which is determined with comparative socio-economic parameters defined by a given community or society. Relative poverty takes various forms, including lack of income and productive resources to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments and social discrimination and exclusion. It is also characterized by lack of participation in decision-making in civil, social and cultural life. On the other hand absolute poverty is said to be a condition characterized by severe deprivation of basic

human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to services (Mulwa, 2010). With the differences on how poverty is conceptualized, there was need to know how the people of Central- Sakwa Location have conceptualized poverty.

## **2.4 Relationship between ASM and Poverty Alleviation**

The link between ASM and poverty alleviation is profound and complex. Those who constitute the majority of the ASM community at the level of resource extraction, basic processing and local trading inefficiently and it are not sustainable (Woolard and Leibbrandt, 1999). Field et.al. (2006) argues that those involved in ASM activities are often driven into it by poverty and the income they receive from ASM can improve their daily subsistence and reduce the impoverished status in the immediate term. However the nature of the activity is such that it is exploitative. It draws people away from other more sustainable activities such as agriculture. It does not produce long-term wealth for these individuals. It creates debt. It uses resources have no other choice. ASM helps them to move from extreme poverty to poverty but that also varies from one group of people to another.

Woolard and Leibbrandt (1999) argued that many ASM workers are engaged in the trade because they have no jobs and no alternative options. In places where the previous, formal economy has collapsed due to war, political instability and corruption, ASM can rise as a survival strategy for those who live on and around mineral-rich land. It can be used as a general guideline that miners typically receive around a relatively small percentage of the local sale value of their product. Hentschel et. al. (2003) concluded that despite exploitation of the workers in the mines, a certain level ASM generates a high level of social access to the economic value of their product by generating a significant cash flow through the community.

An interesting argument is that, as with all forms of mining, ASM is a finite activity exploiting a non-renewable resource. The mineral deposits get overexploited and exhausted. As such, the livelihood potential associated with any ASM site is limited to the life of the resource, which is a function of the accessibility, scale and quality of the ore, the market, the efficiency of production techniques, the number of miners and the intensity of their labor (Woolard and Leibbrandt (1999). ASM can only begin to contribute to national poverty reduction if the technical elements of efficient mining are managed in order to deliver economic development (Krappmann, 2006).

ASM can attract workers away from more sustainable livelihoods, such as farming, and can destroy the future potential of such areas if there is a resource found on agricultural land (Gavin et.al. 2006).

Extreme poverty is Rampant in ASM communities. According to the Common Fund for Commodities (CFC) report of 2008 the relationship between ASM and poverty alleviation is usually linked to the Millennium Development Goals (MDGs) this is because the MDGs are seen to be relevant to ASM (CASM, 2010). In the eradication of extreme poverty and hunger (MDG 1) its relevance to ASM shows that 8,775 million people in Africa depend on ASM for their livelihood. ASM is poverty drive; it can reduce or can perpetuate poverty. Unregulated ASM undermines agriculture and food security (CASM 2010).

In achieving universal primary education (MDG 2), 676,000 children work in ASM in Africa. For many this is a result or cause of exclusion from school. In promoting gender equality and empowering women (MDG 3), 4 million women work in ASM in Africa. Women suffer inequality and abuse in ASM and need urgent support to strengthen or transform their roles (CASM, 2010).

In reducing child mortality and improving maternal health (MDG 4 and 5), ASM communities rarely have access to health, care, decent hygiene or sanitation, clean water, or good nutrition. Women and children are highly vulnerable in ASM communities. In combating HIV and AIDS, malaria and other diseases (MDG 6,), ASM is a high- risk activity for HIV/AIDS, ASM camps are high risk for diseases such as malaria, and water borne diseases (CASM, 2010).

In ensuring environmental sustainability (MDG 7), ASM causes water contamination, mercury poisoning, erosion, degradation of landscapes an agricultural land, deforestation. In Development of a global partnership for development (8), a range of ASM partnerships already exist and can be incorporated into global alliances to bring ASM into a stronger position for interventions (CASM, 2010).

The second to the eighth MDG all relate to the first MDG and if the MDG number one can be achieved then alleviating poverty through ASM can be achieved but a question that many developers ask is whether the 190 countries Kenya included, will manage to do so by 2015. This is because ASM- related poverty is not reducing; the number of projects actively assisting

children to leave the mines and enter school is too small; there are few HIV/AIDS programmes for ASM areas; ASM areas can suffer from increased malaria prevalence due to stagnant water and lack of access to prevention programmes; water quality in ASM areas poor and progressively deteriorating (CASM, 2010) but was this the case in Central- Sakwa Location?

## **2.5 Factors that Promote or Inhibit ASM from Alleviating Poverty**

Access to finance is essential to enable the formalization, improved production, strengthening of the ASM and its potential transformation into a larger scale which can be medium scale mining (Dreschler, 2001). Gavin and Hilson (2006) said ASM miners typically present a suite of factors which make them unattractive to lenders. First, they tend to be already in debt. Second, they are frequently migrating and ensuring potential repayment of credit is difficult. Third, they usually lack collateral. Fourth, they rarely have the capacity or expertise to be able to present a viable business plan for why they need the credit or how it will be effectively used. Fifth, Senauer (2002) also said ASM is rarely well reported statistically and therefore does not allow for risk analysis by creditors. And finally, there is a dearth of lending institutions that provide this type of credit or support for ASM. Given these constraints, artisanal miners usually resort to the most accessible local source of funds, namely pre-financing by traders, which further compounds the problems of debt as these loans may demand high rates of interest and sale of the product to the trader at a sub-optimal price for the miner.

According to Nyambe and Amunkete (2009) the tools used by ASM miners are rudimentary, manual and simply portable and are not sufficient to carry out mining activities. This makes the miners not perform to their maximum capabilities. This lack of equipments is worsened by the fact that miners do not have starting capital in order to acquire the tools they require. More, so miners have no access to credit from formal financial institutions for them to finance their operational requirements.

The sexual division of labor within the ASM sector varies from region to region. In many countries, women carry out what are perceived to be 'lighter' tasks, such as crushing, sorting and carrying ore (Wall, 2000).

Women are less than 10 per cent of those involved in ASM in some parts of Asia; whilst in many African countries vary between 50 and 100 per cent depending on the location and type of

mining (ILO, 1999). In Burkina Faso, approximately 90% of mineral processing activities are conducted by women (Gueye, 2001): here, between 45,000 and 85,000 women work in gold mining alone and as many as 45% of all artisanal miners are women. Over 50% of Mali's ASM workforce is comprised of women, who carry out an estimated 90% of mineral processing activities (Hinton et al., 2003). In Mongolia, women make up 40 per cent of ASM miners (Murray, 2003), and in Lao PDR, an estimated 80% of panniers are women (Hinton et al., 2003). The lack of precise gender data notwithstanding, what is certain is that women play a much bigger role in ASM than in large-scale mining. Lack of attention to gender issues and limited social analysis mean that women are often treated as a homogenous group, whereas there may be enormous social differentiation amongst women associated with mining in a given context. For example, some may be financing mining activities as entrepreneurs while others may be living in chronic poverty and driven to hard manual labor reprocessing tailings or ore crushing. (Hentschel et.al, 2003)

In some contexts and types of mining women are limited to engaging in lower status and lower-paid activities. This stems from a combination of cultural perceptions of appropriate work for men and women and issues regarding women's access to assets (financial, knowledge, time, labor) to engage in mining. In some cases, cultural norms are reinforced by legislation, such as regulation that makes it illegal for women to work underground (Drechsler, 2001). Less direct legislation can also restrict women's participation and control over mining activities (e.g. the denial of legal title to land, or the lack of access to credit). Some countries have acted on these issues by changing their legislation to provide women with the same rights to working underground as men (Ranchod, 2001), whilst others have attempted to enact gender neutral legislation. The efficacy of these approaches remains to be seen, given the deeply-rooted nature of male dominance in many societies.

Child labor is a huge issue within ASM. It's understood to be caused by poverty at the same time how it contributes to poverty (Dreschler, 2001). In some areas; children may constitute a significant component of the ASM workforce. This is universally condemned by the UN Convention on the Worst Forms of Child Labor yet, in many countries, even if there is national legislation to ban children from mines, enforcement may be severely lacking (Jennings, 1999).

The UN convention on the Worst Forms of Child Labor (ILO, 1999), identifies mining as “work which by its nature or the circumstances in which it is carried out is likely to harm the health, safety and morals of children”.

Children face many risks in mines including physical trauma, injuries, hernias, backache, eye damage, damage to growing bones and organs, mercury poisoning, long and skin disorders, water-borne disease, malnutrition exposure and addiction to alcohol and drugs (Jennings, 1999). Nyambe and Amunkete (2009) added that prostitution, trafficking, STDs, HIV/AIDS are risk to children who are exposed to the mines. Whilst some children undertake mining activities after attending school or at weekends, others are involved in ASM full-time. Chachage, (1995) found that in gold mining communities in Geita, Tanzania, it could be both a family livelihood strategy, mining being considered part of a particular lifestyle and a good opportunity for young people, but it could also be taking place where there is extreme impoverishment caused by family breakdown, with for example divorcees or elderly relatives dependent on children bringing in an income.

In Mongolia, the situation is slightly different due to the high level of importance given to educational attainment. Murray (2003) argues that whilst children’s participation in small-scale mining is widespread (about 40 per cent of the total); the majority is involved in mining work strictly during their school holidays. It is suggested that absenteeism and school dropouts are a problem limited to the poorest of the child miners (Murray, 2003).

The institutions, policies and processes which influence livelihoods in the ASM sector varies significantly both from country to country and within different regional contexts. At the national level, ASM has rarely been a key government policy priority, even where Large-Scale Mining (LSM) is identified as an important contributor to GDP (Gueye, 2001). ASM activities are apparently universally coordinated and managed by the Ministry of Mines or a related institution, which in most cases are in charge of regulation and management of the LSM sector. The extent to which the dominant/lead ministry interprets its role with regard to ASM (i.e. to promote and control) is a product of a range of factors (Murray, 2003).

In recent years, national Poverty Reduction Strategies Papers (PRSPs) have been a useful indicator of Government (and donor) sectoral priorities. While an increasingly significant livelihood strategy in many countries, ASM has been conspicuous by its absence in PRSPs, which appears to have reduced the willingness or ability of policy makers to prioritize

action/reform of ASM over and above other pressing needs and demands at a national level. The contentious nature of ‘mining’ has made it an area to avoid, particularly rush-type activities – a major problem for local and national governments (Solomon, 2004).

Attempts to decentralize management of ASM have tended to focus on regional mining bureaus/small scale mining centers deigned to carry out a range of outreach-type functions on behalf of central ministries. As seen in countries such as Ghana and Zambia, tasks undertaken by regional centers include ensuring compliance with legislation, demarcation of mining rights, collection of revenues, simplification of concession application procedures, monitoring production and provision of technical advice /support to miners (Fredrikson, 2003).

The impact of such institutions has been varied, however. In Zambia, for example, a recent report highlighted the un-sustainability and ‘paralyzed’ nature of the regional mining bureau, which is deprived of a means to meet its own costs on an ongoing basis with little incentive to collect revenue (Fredrikson, 2003). Similarly, each of Ghana’s seven small-scale mining district centres is without adequate communication facilities, computing and staff (Hilson and Mwaponga, 2004). In Kenya, according to the final draft of the National Minerals and Mining Policy, there is need to establish specific licenses for ASM which are reserved for Kenyan Citizens and there is also the need to mainstream the ASM operations in order to address the challenges faced by the sector but there are no clear deadlines on when the strategies put in place can be implemented to ensure the growth of the ASM sector (GoK, 2010).

## **2.6 Theoretical Framework**

This study was guided by the Theories of Poverty and the Resource-Curse Theory.

### **2.6.1 Theories of Poverty**

The theories of poverty explain the various causes of poverty. These are the individual theory of poverty; the cultural theory of poverty; the structural theory of poverty and the cumulative and cyclical interdependencies theory of poverty.

Variations of the individual theory of poverty ascribe poverty to lack of genetic qualities such as intelligence that are not so easily reversed. The belief that poverty stems from individual

deficiencies is old. Religious doctrine that equated wealth with the favor of God was central to the Protestant reformation (Weber 2001) and blind, crippled, or deformed people were believed to be punished by God for either their or their parents' sins. The individualistic theory explains poverty as a result of the attributes that are inherent in the individuals' which includes the character of the person as well as his or her personal abilities in life such as intelligence. That is to say people are poor in life because of their inability to compete with others for resources. As a result of this, they end up being caught up in poverty and its associated effects (Hurnstein and Murray, 1994).

The second theory of poverty roots its cause in the "Culture of Poverty". This theory suggests that poverty is created by the transmission over generations of a set of beliefs, values, and skills that are socially generated but individually held. Individuals are not necessarily to blame because they are victims of their dysfunctional subculture or culture. Technically, the culture of poverty is a subculture of poor people in ghettos, poor regions, or social contexts where they develop a shared set of beliefs, values and norms for behavior that are separate from but embedded in the culture of the main society (Ryan, 1957).

The structural theory sees poverty as resulting from capitalism. Many of the literature on poverty now suggests that the economic system is structured in such a way that poor people fall behind regardless of how competent they may be. Partly the problem is the fact that minimum wages do not allow single mothers or their families to be economically self sufficient (Jencks, 1996). The problem of the working poor is increasingly seen as a wage problem linked to structural barriers preventing poor families from getting better jobs, complicated by limited numbers of jobs near workers and lack of growth in sectors supporting lower skilled jobs (Tobin, 1994).

The cumulative and cyclical interdependencies of poverty theory looks at individual situations and community resources as mutually dependent, with a faltering economy, for example, creating individuals who lack resources to participate in the economy, which makes economic survival even harder for the community since people pay fewer taxes. This theory has its origins in economics in the work of Myrdal (1957) who developed a theory of "interlocking, circular, interdependence within a process of cumulative causation" that helps explain economic underdevelopment and development. Myrdal notes that personal and community well being are closely linked in a cascade of negative consequences, and that closure of a factory or other crisis can lead to a cascade of personal and community problems including migration of people from a

community. Thus the interdependence of factors creating poverty actually accelerates once a cycle of decline is started. The lack of employment leads to lack of consumption and spending due to inadequate incomes, and to inadequate savings, which means that individuals can not invest in training, and individuals also lack the ability to invest in businesses or to start their own businesses, which leads to lack of expansion, erosion of markets, and disinvestment, all of which contribute back to more inadequate community opportunities.

Health problems and the inability to afford preventive medicine, a good diet, and a healthy living environments become reasons the poor fall further behind. The cycle of poverty also means that people who lack ample income fail to invest in their children's education, the children do not learn as well in poor quality schools and they fall further behind when they go to get jobs. They also are vulnerable to illness and poor medical care.

In this study the causes of poverty are what may make one to be in ASM or it may be the driving force so as to ensure that poverty is alleviated among the ASM community members. These theories of poverty explains the causes of poverty and by knowing the causes of poverty, it may be the first step to develop strategies on how to alleviate poverty using ASM as a livelihood.

### **2.6.2 Resource –Curse Theory**

This study was also guided by the Resource-curse theory. The well known 'resource curse' hypothesis is regularly used to depict the mining sector in Africa. Many researchers have all researched and catalogued the clearly identifiable links between mineral exploitation and a variety of social and security issues ranging from wars, poverty and abuse of women (Woolards and Leibbrandt, 1999).

The idea that natural resources might be more an economic curse than a blessing began to emerge in the 1980s. In this light, the term resource curse thesis was first used by Richard Auty in 1993 to describe how countries rich in natural resources were unable to use that wealth to boost their economies and how, counter-intuitively, these countries had lower economic growth than countries without an abundance of natural resources (Auty, 1999).

The ambitions of the people and the government conflict, due to the large amount of resources and money a country's government a mass for their own luxuries rather than for the people. Thus natural resources serve as a curse for the people, who then have a lower relative standard of

living. Natural resources can, and often do, provoke conflicts within societies (Collier 2007), as different groups and factions fight for their share. Sometimes these emerge openly as separatist conflicts in regions where the resources are produced but often the conflicts occur in more hidden forms, such as fights between different government ministries or departments for access to budgetary allocations. This tends to erode governments' abilities to function effectively.

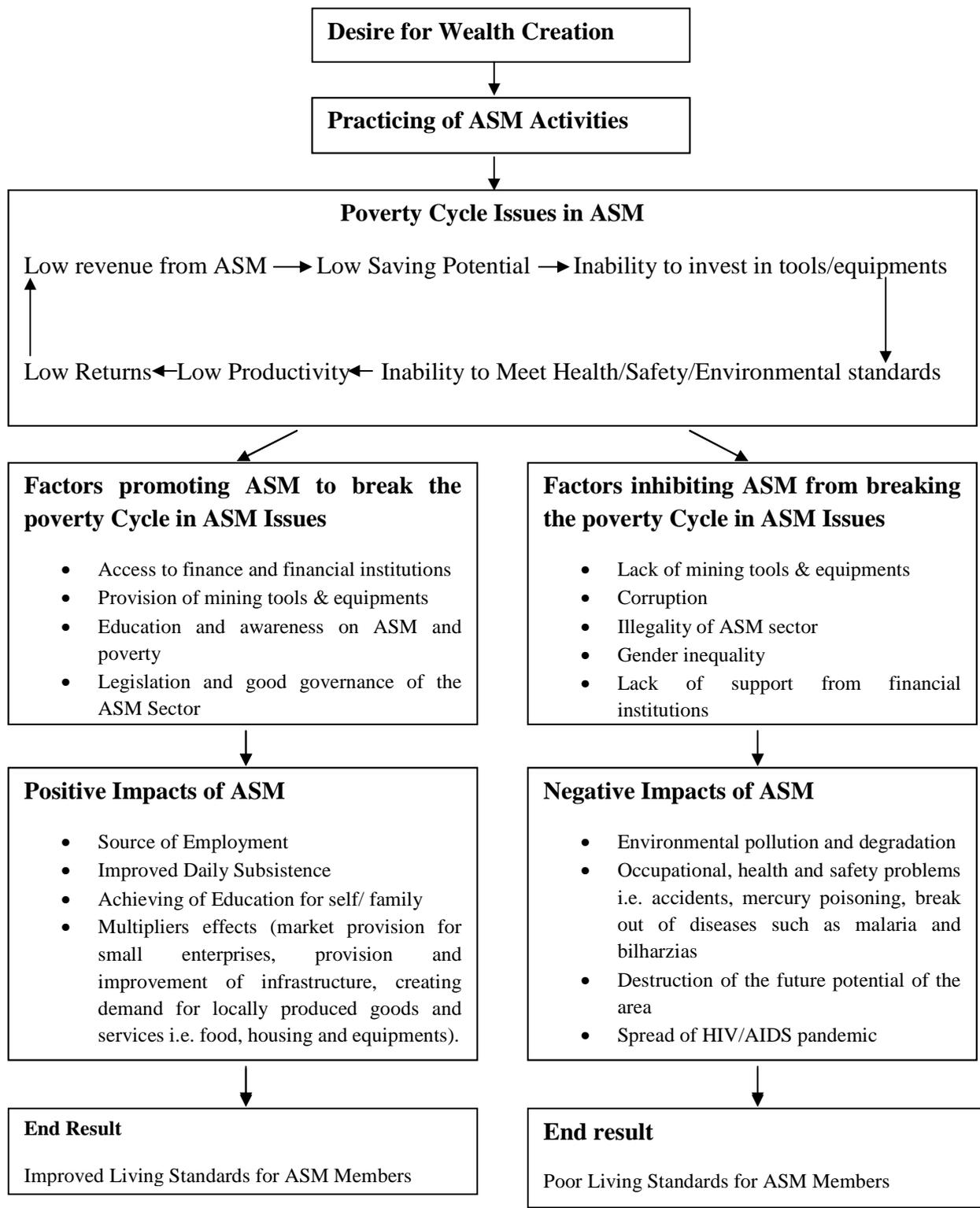
In resource-rich countries, it is often easier to maintain authority through allocating resources to favored constituents than through growth-oriented economic policies and a level, well-regulated playing field. Huge flows of money from natural resources fuel this political corruption. The government has less need to build up the institutional infrastructure to regulate and tax a productive economy outside the resource sector, so the economy may remain undeveloped. The presences of offshore tax havens provide widespread opportunities for corrupt politicians to hide their wealth.

This study therefore attempted to show that despite Artisanal and Small-Scale Gold Mining trying to alleviate poverty there are factors that when not looked into can make the resource gold to become a curse to the people in ASM sector for it can be the source of conflict, corruption and lack of infrastructural development hence a decrease in poverty alleviation.

## **2.7 Conceptual Framework**

A conceptual framework is a set of broad ideas and principles taken from relevant fields of enquiry and used literature a subsequent presentation (Reichel and Ramey, 1987). Below is a conceptual model showing the relationship between ASM and poverty alleviation.

### **Figure 1: Conceptual Model**



**Source:** Researcher

In **Figure 1** of the conceptual model, the desire for wealth creation is what drives people to practice ASM activities. During these ASM activities exist a poverty cycle of issues in ASM which can be broken by looking at the social, economic, cultural and political factors. With these factors in place, it is important to note that some of these factors promote as others inhibit ASM from breaking the poverty cycle of issues in ASM. With the help of factors that promote ASM to break the poverty cycle of Issues in ASM there is existence of positive impacts of ASM which has an end result of improved living standards for ASM community members. On the other hand the factors that are inhibiting ASM from breaking the poverty cycle of issues in ASM leads to the negative impact of ASM with an end result of poor living standards for the ASM community members.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

This chapter looked at the research design; the study site description; the target population; the sample size; the sampling procedures; the sources of data; the methods of data collection; the research instruments; the validity and reliability of the instruments; the data analysis and presentation.

### **3.1 Research Design**

Research design is a scheme, outline or plan that is used to generate answers to research problems (Orodho, 2003). This study adopted the descriptive survey design. Descriptive survey can be used when collecting information about people's attitudes, opinions, habits or any of the variety of education and or social issues (Orodho and Kombo, 2002). It allows the researcher to generate or acquire accurate information concerning the study. This study was concerned with documenting the concepts of Artisanal and Small-Scale Mining (ASM) and poverty, the extent in which ASM have alleviated poverty and the factors that have inhibited or promoted ASM to alleviate poverty.

### **3.2 Study Site Description**

This study was carried out in Central- Sakwa Location, Siaya County, in Kenya. Central- Sakwa Location is one of the locations in Bondo District and under the current Siaya County. It is bordered by Yimbo West Location on the West; South- Sakwa on the East; West-Sakwa on the North; and Lake Victoria on the South. Central-Sakwa Location approximate geographical Coordinates lies between latitude  $0^{\circ} 26^{\circ}$  to  $0^{\circ} 90^{\circ}$  and from longitude  $33^{\circ} 58^{\circ}$  E and  $34^{\circ} 35^{\circ}$  W.

Central-Sakwa Location is divided into four sub-locations namely Ndeda/Oyamo, Uyawi, West-Migwena and Nyango'ma. The location is headed by a chief with each sub- location having assistant chief. The location has a total area of approximately 85.20 square kilometers. The location has a population of approximately 27,353 people with a population density of 236 people per square kilometer (Kenya National Census, 2009).

There are neither settlement schemes nor squatters in the location. Most of the residents in the location have shelters which are semi-permanent. Slums are coming up especially along the beaches. Factors influencing types of shelter in Central- Sakwa Location include cultural beliefs, affordability of building materials, climatic conditions and technology. Main economic activities in Central- Sakwa Location include; *Agricultural activities*- agriculture contributes highly to the household incomes. As a result of massive unemployment experienced, particularly among the energetic youth, many people are turning to farming as a way of livelihood; *Fishing*- the location is endowed with a water mass making fishing to be one of the major economic activities in the location. However it is important to note that over-fishing in breeding grounds along the lakeshore and illegal fishing has negatively impacted on sustainable exploitation in the industry and this is due to the increasing demand by the increasing population; *mining and quarrying*- is generating income in a number of households. This venture is however unregulated and in most cases results to land degradation (NEMA, 2007).

### **3.3 Study Population**

Study population is defined as that population where the researcher wants to generalize the results of the study or a real or hypothetical set of people, events or objects to which a research data wishes to generalize the results of the research (Mugenda and Mugenda, 2003). According to the Kenya National Census (2009), Central-Sakwa Location has a population of approximately 27,353 people. However records from the location chief indicated that about 1,500 household heads engaged in gold mining activities within the location. Out of this 1,500 household heads 930 were males while 520 were females. In this study the target population comprises of house hold heads involved in gold mining activities and selected key informants such as the Local and Government Officials.

### **3.4 Sample Size**

The study used probability sampling method to get the sample size of informants for the house hold survey. Proportionate random sampling technique was used to get the household heads for the household survey. The desired sample size of informants for the household survey by the

researcher was 115 household heads involved in gold mining activities. To ensure gender representation in the sample, proportionate numbers were selected from male miners and female miners. The study population was 1,500 household heads with 930 household heads being males and 520 household heads being females. In order to get the size of respondents from each stratum the following calculation was used.

Study population = 1,500

Stratum is gender defined: Males= 930 males

: Females =520 females

Desired sample size: 115 household heads

Males =  $930 \times 115/1500 = 71.300 = 71$  males

Females =  $520 \times 115/1500 = 43.700 = 44$  females

Systematic random sampling was then used to get the sample interval for each stratum. On males 930 was the population, 71 males as the desired sample and the sampling interval was

$K = \text{size of population} / \text{desired sample size}$

$K = 930/71 = 13.098$  which means k was 13

On females 520 was the population, 44 as the desired sample size and the sampling interval was

$K = \text{Size of population} / \text{desired sample size}$

$K = 520/44 = 12.954$  which means k was 13

Simple random sampling was used to pick the first male and first female from each stratum. After picking the first male among the first 13 males out of the 930 males, the researcher then systematically selected every 13<sup>th</sup> male to obtain the rest 70 male household heads. After picking the first female among the first 13 females out of the 520 females, the researcher then systematically selected every 13<sup>th</sup> female to obtain the rest 43 female household heads.

Non- probability sampling method was used to get the key informants and the household heads to be used in the Focus Group Discussions (FGDs). Purposive sampling was used to identify the key informants and this included 1 location Chief, 4 Assistant Chiefs, 1 Divisional Officer and 3 clan elders leading to a total of 9 Key informants.

Purposive sampling was used to identify 6 household heads involved in gold mining activities to be included in the 4 FGDs that were conducted leading to a total of 24 respondents. The sample size was the 115 household heads for the household survey, the 9 key informants and the 24 household heads from FGDs making a total of 148 respondents.

### **3.5 Unit of Observation and Unit of Analysis**

In this study the units of observation were the household heads involved in Gold mining activities within the location. The Unit of analysis in this study was the Impact of Artisanal and Small-Scale Gold mining on poverty alleviation among the people of Central-Sakwa location.

### **3.6 Data Sources**

Two types of data was collected and these were; primary and secondary data.

Primary data refers to the information gathered directly from respondents and that which involves the creation of 'new' data (Kombo and Tromp, 2006). In this study the data was collected from gold miners and Key Informants and the methods which were used were; Household Survey, Observations, Interviews, and Focus Group Discussions.

Secondary data refers to the information that a researcher finds useful for the study at hand, although it was not originated for that purpose (Munyoki and Mulwa, 2012). Secondary data was obtained from published and unpublished data and existing studies such as thesis, journal, magazines, newspapers, government policy documents and electronic websites.

### 3.7 Data Collection Methods and Tools

**Table 1: Summary of Methods and Tools used in the Study**

Research Method	Research Tools	Household	Sample Size	Sampling Method
Household survey	Interview schedule	1,500	115	Proportionate Random Sampling
Key informants interviews	Interview guide		<b>9</b> 1 Chief 4 Assistant Chiefs 1 Divisional Officer 3 Clan Elders	Purposive Sampling
Focus Group Discussions (FGDs)	Guiding questions		4 FGDs to be conducted (6 household heads with gold mining as their main occupation to be used in each FGD)	Purposive sampling
Observations	Observation checklist			

**Source:** Researcher

#### 3.7.1 Household survey

Household survey attempts to collect data from the households in order to determine the current status or social phenomena of the population. The study assessed the impact of ASM on poverty alleviation among the people of Central-Sakwa Location. Data on demographic information, conceptualization of ASM and poverty, and the extent in which ASM has alleviated poverty and

factors that have promoted or inhibited ASM from alleviating poverty was captured at the household level. A set of prepared questions (interview schedule) were used in collecting demographic data and information on how the household heads under study have conceptualized ASM, economic status of the miners and the factors inhibiting or promoting ASM to alleviate poverty.

A sample of 71 male household heads and 44 female household heads was sampled from the study population of 1,500 household heads who are involved in gold mining activities by the use of proportionate random sampling method.

### **3.7.2 Key Informant Interviews**

Key Informant Interviews was conducted on specific key resourceful persons in the community who were having valuable insights and resourceful information regarding the topic of study. The information collected from the key informants was based on primary and secondary data.

Interviews were conducted by the researcher. A set of prepared questions (interview schedule) were used to get information from the Key Informants on the demographic information, conceptualization of poverty and on the factors that have promoted or inhibited ASM to alleviate poverty among the people of Central-Sakwa location. The questions were designed in such a way that basically same information was obtained from the people interviewed as each person was given same questions. Open ended questions were used as it allowed the interviewer to probe deeper into the initial responses of the respondent to gain more detailed answer to the question.

Purposive sampling method was used to get 9 Key informants among them, the area chief, 4 assistant chiefs, 3 clan elders and 1 divisional officer.

### **3.7.3 Observation**

Observation is a method in which a researcher takes part in the daily activities, interactions, and events performed by the target group hence providing information about the actual behavior of the target group under study. This study used observation to identify the setting, activities, people, the environment and the meanings of observed phenomena's verses the perspective of the participants in relation to ASM activities.

An observation checklist was used to observe the different methods, techniques, used by the miners during their daily activities, the environment and the relations that exist among those involved in the mining activities. The observed phenomena were then recorded.

#### **3.7.4 Focus Group Discussions**

Focused Group Discussions (FGDs) were used to get information on the topic of study. This involved 6 household heads per session and was guided by the researcher. The researcher focused on group discussions to gather information from household heads on the conceptualization of poverty, the extent in which ASM have alleviated poverty and the factors inhibiting or promoting ASM to alleviate poverty among the people of Central-Sakwa Location.

Guiding questions were used to collect data from household heads involved in gold mining activities. The questions were based on mining and poverty as key areas of discussion with focus being on the objectives of the study. Purposive sampling was used to attain the 6 household heads that were used in each Focus Group Discussion and those household heads had gold mining as their main occupation. A total of 4 FGDs were conducted.

### **3.8 Training**

Two field assistants were required to have a form four certificate and knowledge on gold mining. Four days training was conducted for the research assistants. The training covered the following areas; background and the objectives of the study; field study ethics, methods of interaction, team spirit, selection of respondents, understanding sections of the questionnaire, and data collection techniques. These were done in three days and on the fourth day there was pre-testing of data collection tools.

### **3.9 Pre-testing of study tools**

The Pre-testing study tools were tested on the fourth day of training. A total of 10 household heads was used. The 10 household heads used in the pre-testing study were drawn from the study population but were not part of the sample size used in the study. This was done to avoid inclusion of pre-test sample in the main study.

### **3.10 Validity and Reliability**

Validity is the accuracy, truthfulness and meaningfulness of inferences that are based on the data obtained from the use of a tool or scale for each variable or construct or variable in the study. Validity therefore, estimates how accurately the data obtained in the study represents a given variable or construct in the study, (Mugenda, 2008). Reliability on the other hand is a measure of the degree to which a research instrument would yield the same data or results after repeated trials (DeVellis, 1991). Questionnaires, Focus Group Discussions, Key Informant Interviews and observations were used to collect valid information from the study. Pretesting of the study tools ensured that content validity and reliability of the study was reached.

### **3.11 Data Analysis and Presentation**

Data analysis is the way with which to understand, interpret and use data collected and subsequently to aid in reporting of the information and knowledge conceived from the collected data (Mugenda and Mugenda, 2003). Qualitative data analysis was employed to generate accurate information from the data collected.

In this study data analysis started from editing and checking of gathered raw data for accuracy, usefulness and completeness. Coding then followed and it involved collaborating findings from the questionnaires, Focus Group discussions, Observations and Key Informant Interviews. Data from field were fed into the excel work sheets and analyzed by the use of descriptive statistics (involves the describing, exploring and summarizing of data to establish patterns in the data using summary measures that help to compress the data and make it easier to understand).

The analyzed data had both qualitative and quantitative features and was presented by the use of narrative reports as well as quantitative techniques of data such as Pie charts, tables, percentages and graphs. The researcher then discussed the findings based on the study objectives.

## **CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSIONS**

This chapter presents, and analyzes the generated data from the already selected area which was Central-Sakwa Location. The obtained data is then represented in different ways through the use of graphs, tables, percentages and pie charts. Interpretation of the represented data findings is also done in this chapter. Explanations which include discussions are then made available in this chapter so as to explain further the findings in relation to the study objectives. This chapter finally identifies the gaps in findings of the research in relation to impact of Artisanal and Small-Scale Gold Mining on Poverty Alleviation through the use of the study objectives achievement and answers to the study questions.

### **4.1 Response turnout rates**

The study targeted 149 respondents but 148 responded. Table 2 below, shows the number of respondents in each suggested category, the expected and found number of respondents together with the percentage turnout of respondents.

**Table 2: Response turnout rates**

<b>Category of Respondents</b>	<b>Expected No. of respondents</b>	<b>Found No. of Respondents</b>	<b>% turnout of respondents</b>
Household survey	115	115	100
Key informants	<b>10</b> 1 chief 4 assistant chiefs 3clan elders 1 divisional officer 1NEMA officer	<b>9</b> 1chief 4 assistant chiefs 3 clan elders 1divisional officer	90
Focus Group Discussions	24	24	100
<b>Total</b>	<b>149</b>	<b>148</b>	<b>99.33</b>

From Table 2 above, it is evident that 99.33% response turnout was achieved and this was because the researcher was not able to reach the NEMA officer of Siaya County whose work covers Central-Sakwa location as the officer was out of the location for other official duties. This high turnout was because of the cooperation between the miners and the local leaders who were willing to avail themselves despite their busy schedules.

#### 4.2 Demographic Characteristics of Respondents

The demographic characteristics of respondents information in this study was used to show an in-depth understanding of the respondents. These characteristics comprises of the sex ratio of respondents, their age, marital status, residing villages, name of mining sites, household size, highest level of education, main occupation, their main source of income and these are shown below:

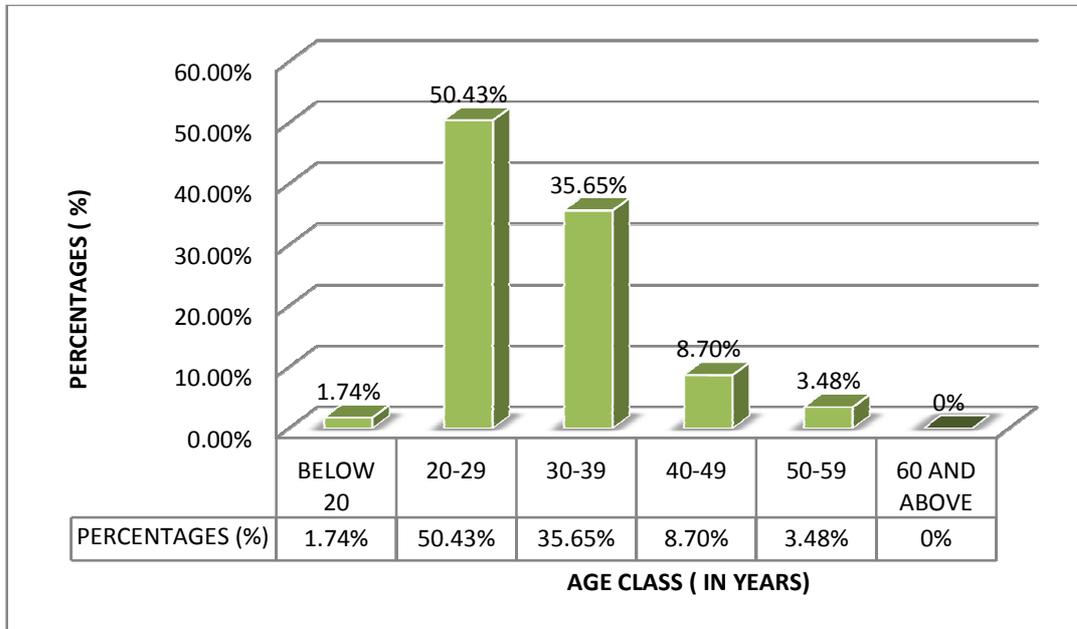
**Table 3: Sex Ratio of Respondents**

<b>Category of Respondents</b>	<b>Total Number of Respondents</b>	<b>Number of Males</b>	<b>Number of Females</b>
Household Survey	115	71	44
Key informants	9	8	1
Focus Group Discussions (FGDs)	24	13	11
<b>Total</b>	<b>148</b>	<b>92</b>	<b>56</b>
<b>Percentages (%)</b>	<b>100</b>	<b>62.16</b>	<b>37.84</b>

From Table 3 above, 62.16% of the respondents were male while 37.84% were female. The study found out that gold mining in Central-Sakwa Location is a male dominated activity. This was observed to be because of the hard labor required in the activity. Leadership in Central-Sakwa location was also found to be male dominated and this was identified to be influencing the operations and decision making on issues related to the activity with the females being left with the option of depending highly on their male counter parts who are the decision makers. This situation has made the women to be more vulnerable to poverty as compared to the men

because even ideas that can empower them must be passed by the men and incase the men fails to do so then they become more vulnerable.

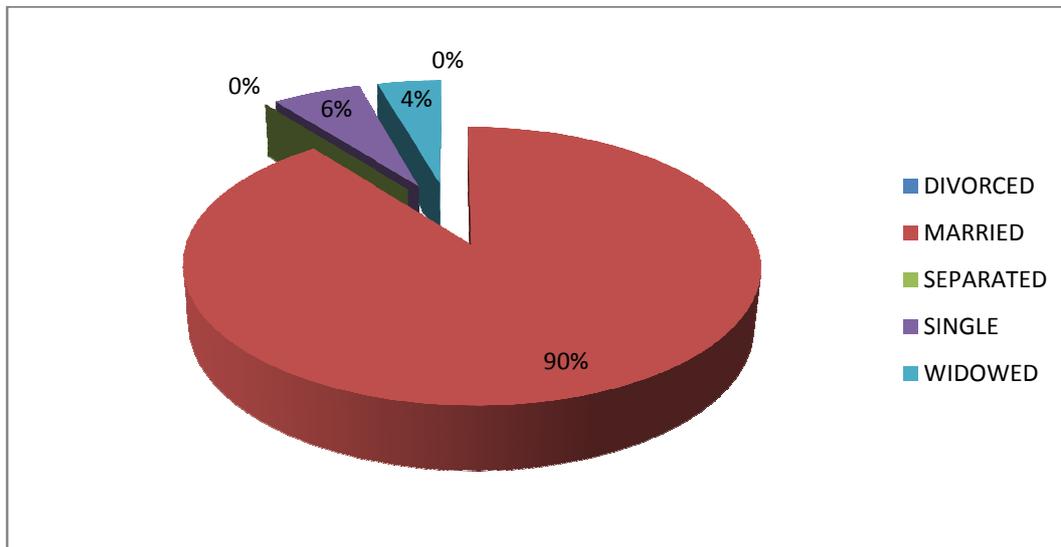
**Figure 2: Bar graph showing the Ages Respondents**



From Figure 2 above, it is evident that the majority of the respondents (50.43%) were between the ages of 20-29 years, followed by 35.65% between the ages of 30-39 years. Most youths in Central-Sakwa Location lack employment and in order for them to provide for their needs they practice activities such as charcoal burning and gold mining. The youths between the ages of 20-29 years are energetic and because of the intensive labor required in gold mining they end up being the majority even if they work as casual laborers at the mines.

Some of the respondents (3.48%) were between the ages of 50-59 years. With the intensity of hard labor required in the mining sites, it is expected that those between the ages of 50-59 years should not be practicing the activity but in this study, they were present in the activity because of the belief that it is what they know how to do best and also the need for them to provide for their family needs.

**Figure 3: Pie Chart Showing the Marital Status of Respondents**



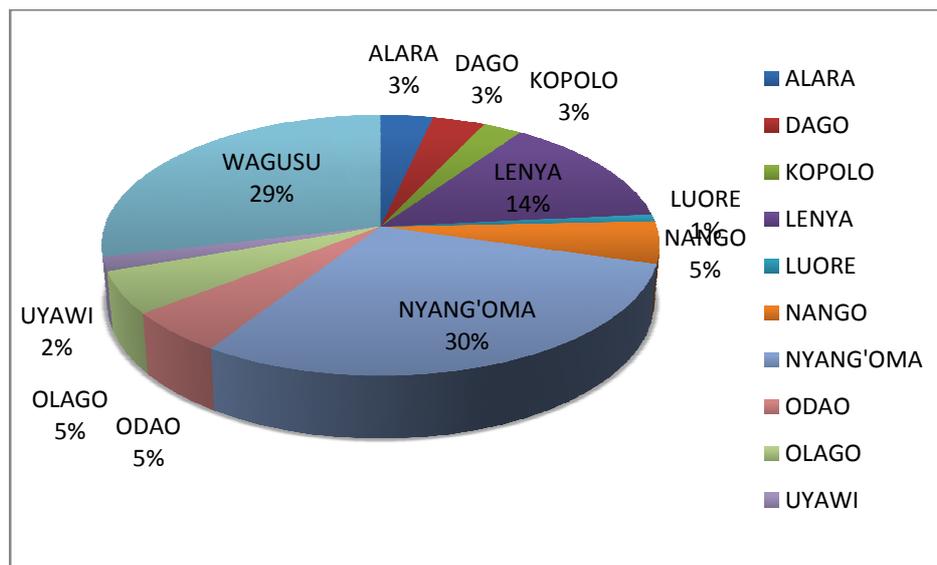
From Figure 3 above, 90% of the respondents were married, 6% were single and 4% were widowed. There were no divorced or separated respondents in terms of marital status as the respondents said that marriage in the community is highly valued and those who are divorced or separated are seen to be failures and they would rather endure the difficulties in their marriages than be seen as failures in the eyes of the society.

When majority of respondents in gold mining are found to be married, then the respondents are expected to be having a lot of responsibilities as marriage come with a lot of commitments and responsibilities. Those married devote their time and self to their partners, children, and even dependants and as time is required in the mining process they may end up losing in terms of production (harvesting and trading gold).

The married need to provide not only for their needs but for the needs of their dependants which income from gold mining activities may fail to satisfy. When a gold miner dies as a result of accident or death within the shafts and he/she is the family's bread winner, the family may suffer and become poor even if they were not but if they were classified by the community to be poor they may come poorer.

The widows in this activity at times may be favored by site managers and given opportunity to work on the mines even if they are not strong enough, but again they may become vulnerable as no one may be interested on speaking on their behalf. Single people want to enjoy themselves and because of the hard labor associated with gold mining they end up not being so many as there is less to enjoy in the activity.

**Figure 4: Pie Chart showing residing villages for the Respondents**

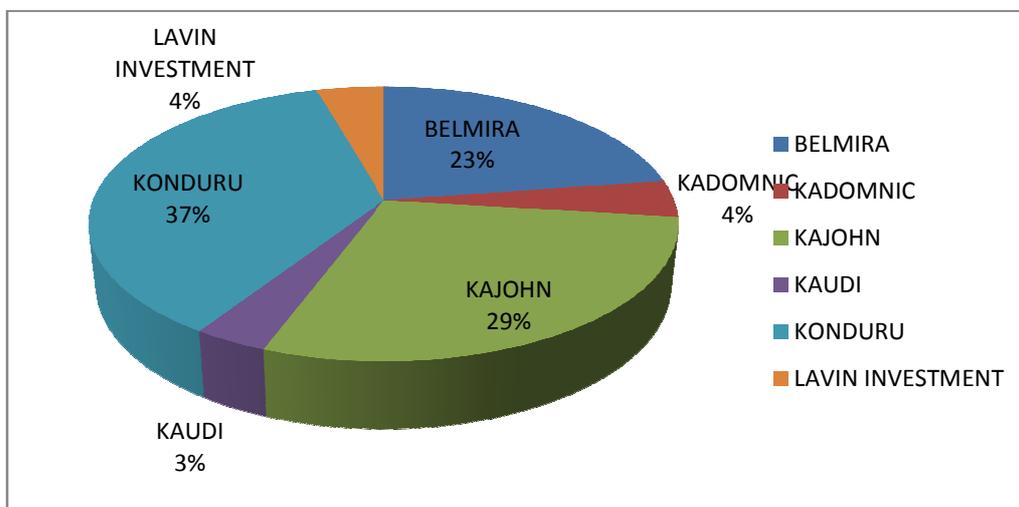


From Figure 4 above, Nyang’oma village had the highest number of respondents (30%) followed by Wagusu village (29%). This is because the two villages are close to the two major mining sites in the location which are Kibere and Belmira mines. Lenya had 14% of the respondents and this was identified to be because of the inadequacy on housing at Lenya market center which is the only available residential area apart from the homesteads bordering Kajoghn mines making most of those working at the mine to come from other villages or other market centers such as Nyango’ma and Nango.

Odao, Olago and Nango villages had the same number of respondents which reflects to 5% and this is because they are connecting villages to the mining sites such as Belmira, Kibere and Kajoghn mines. Alara, Dago and Kopollo had the same number of respondents (3%) as Uyawi and Luore had 2% and 1% of respondents respectively and this was because the community members of the these villages prefer other livelihood activities to mining.

The villages that had a good number of respondents such as Nyango'ma, Wagusu and Lenya were found to be having mining sites within them an indication that the mining activity has influence on the migration and settlement patterns of the community members in the location. Most of the miners residing in these villages were found not to be from those villages but from even some villages that are outside the location an indication that mining had attracted them to those villages.

**Figure 5: Pie Chart showing Names of mining sites for Respondents**



From Figure 5 above, Konduru had the highest number of respondents (37%), followed by Kajohn (29%) and then Belmira (23%). These 3 mining sites had a big population which was reflected to be because of the presence of the stone crusher based at their mining sites. Kadomnic, Lavin Investment and Kaudi had 4%, 4% and 3% respectively as they were new mining sites and they did not have grinding machines based within them.

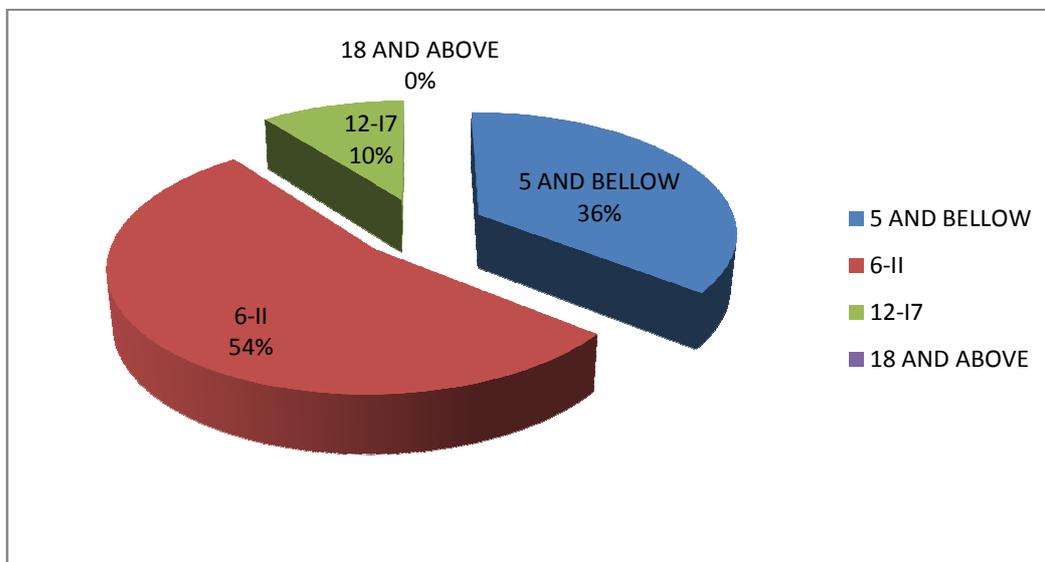
Availability of mining materials (equipments, tools and machines) influences the number of people found within it, this is because with these materials the work of miners are made to be less tasking as compared to where manual labor is used.

**Plate 1: Entrance of a shaft at Kibere mines in Wagusu village**



Plate 1 above, shows the way in which gold miners build the entrance of their shafts so as to avoid accidents caused by falling of animals and even community members into the shafts.

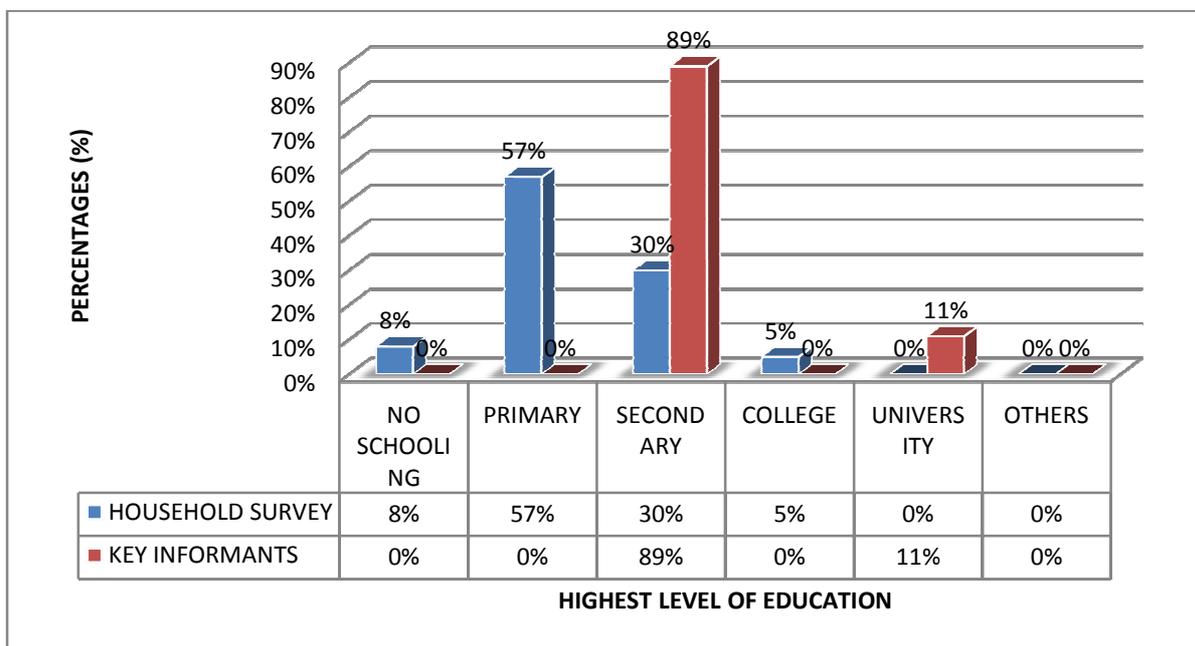
**Figure 6: Pie Chart showing Size of Household for Respondents**



In Figure 6 above, the class 6-11 of members in a household had the highest number of respondents (54%), the second highest was the class 5 and below (36%). The next was the class of 12-17 (10%) as the class of 18 and above members had no respondent.

This study established that the size of the household depended on the age of the respondents and it determined the number of dependants on the income earned from the mining activity. With a household size of 6-11 members it may be very difficult for a gold miner who works as a casual laborer to meet the needs of his/her family as from the study it was realized that it could even take more than three months before casual laborers got paid as they were only paid at the time in which gold ore was harvested and sold.

**Figure 7: Bar graph showing Highest Level of Education of Respondents**



From Figure 7 above, most of the respondents for the household survey had their highest level of education to be primary level (57%), followed by secondary level (30%). There were those with no schooling (8%) and those who had gone to colleges (5%). University and other levels of education had no respondents.

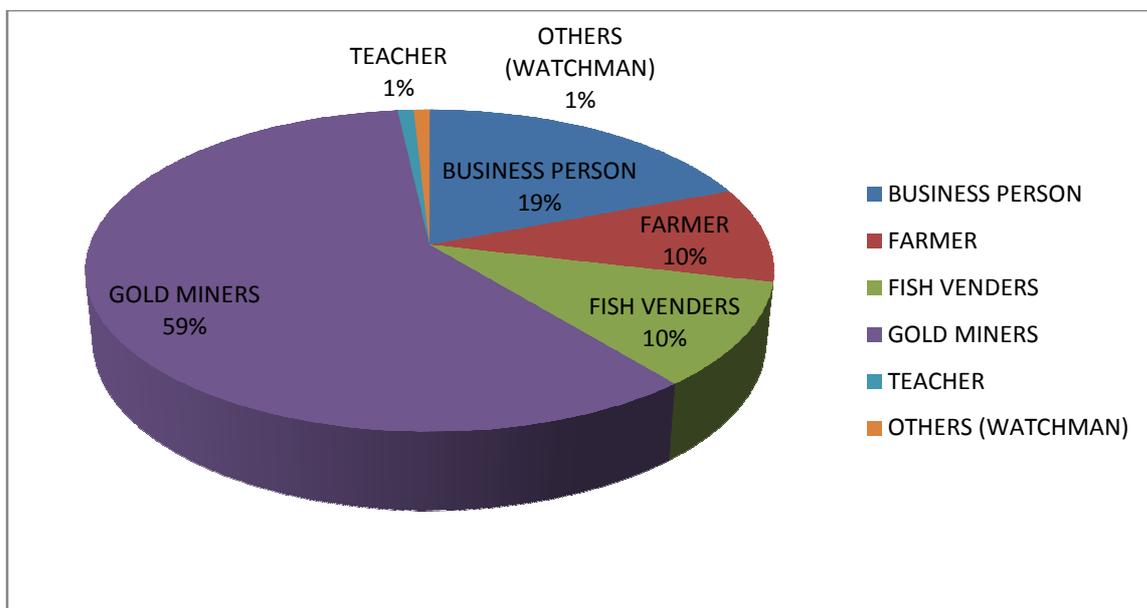
The study found out that gold mining activity in Central-Sakwa location did not have any academic qualification for one to operate or work at it and that is why those with primary level as their highest level of education were found to be many. This study established that Education level of the gold miners was found to determine how the gold miners harvested gold, took safety and health measures and how they spent income earned from the activity.

With no schooling, primary and secondary levels of education, it is difficult for gold miners to earn great income that can support their needs. This is because they may lack technical skills on how to operate and manage tools and equipments used in gold harvesting process and at times, they may not know how to put together the resources (land, money and labor) needed to enhance production which in this case is harvesting of gold.

The moment a miner has poor harvest he/she will experience the poverty cycle in gold mining where with low production, he/she has low amount of income, cannot access education, health and at times even provide food for the dependants.

Majority of the Key informants had their highest level of education to secondary (89%) while 11% of the respondents having university as their highest level of education. Through this study it was realized that the highest level of education of the key informants was determined by the qualifications needed for their various positions and professions.

**Figure 8: Pie chart showing the Main Occupation of Respondents**

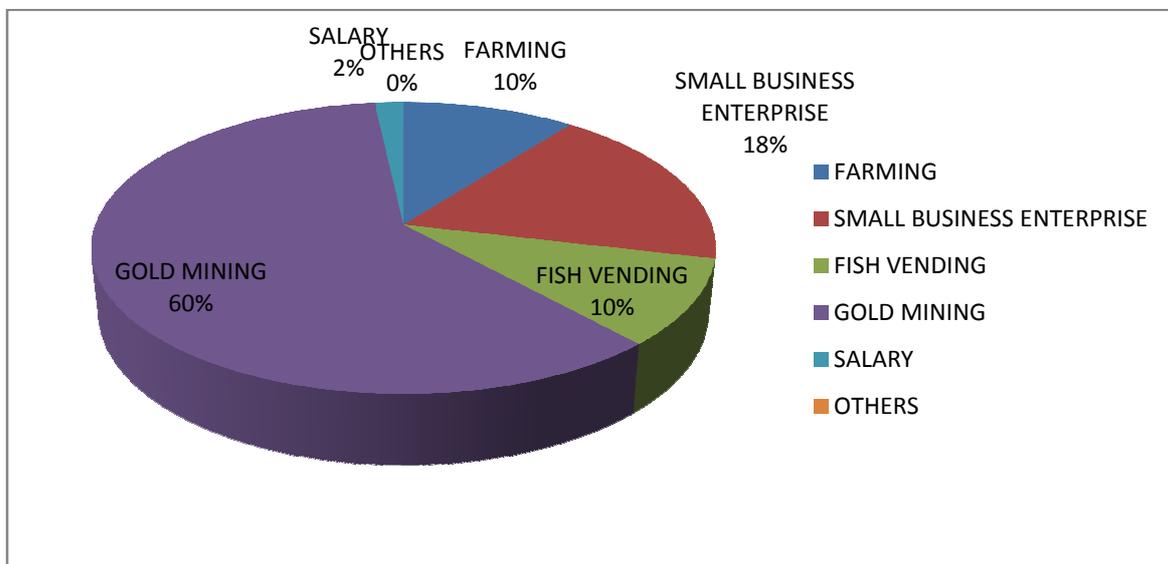


From Figure 8 above, 59% of the respondents had gold mining as their main occupation, 19% of the respondents were business persons', and 10% of the respondents were fish venders while another 10% were farmers. Those with teaching as their main occupation were 1% of the respondents and those as watchman were also 1% of the respondents.

Gold miners in Central Sakwa location said they practice gold mining throughout the year (on a full-time scale) but that did not mean they were not engaging on other occupations such as farming, fish vending and even operating businesses.

Those who did not have gold mining as their main occupation (business persons', fish venders, farmers, teacher and watchman) said they were mining gold on a part time scale ( when they need extra cash and their main occupation are not profitable enough to provide enough income to meet their demands).

**Figure 9: Pie Chart showing Main Source of income of Respondents**



From Figure 9 above, 60% of the respondents had their main source of income to be gold mining, 18% of the respondents had small business enterprise as their main source of income, 10% of the respondents had fish vending as their main source of income, another 10% of the respondents had farming as their main source of income, and 2% of the respondents had salaries as their main source of income.

The study established that the main source of income was determined by the main occupation of the respondents. Although the respondents gave their main sources of income, they were not willing to give particular figures in terms of the amount they earned from their various activities

as they only said it keeps on fluctuating with respect to the fluctuation on the production rates from their various activities.

### 4.3 Conceptualization of Artisanal and Small-Scale Mining (ASM)

Conceptualization of Artisanal and Small-Scale Mining (ASM) answers part one of objective one which was to find out how the people of Central- Sakwa Location have Conceptualize Artisanal and Small-Scale Mining (ASM) and poverty. In conceptualizing ASM the respondents gave their views about their understanding of ASM, the duration in years on how long they have been practicing the activity and what had prompted them into the activity and this information is shown below:

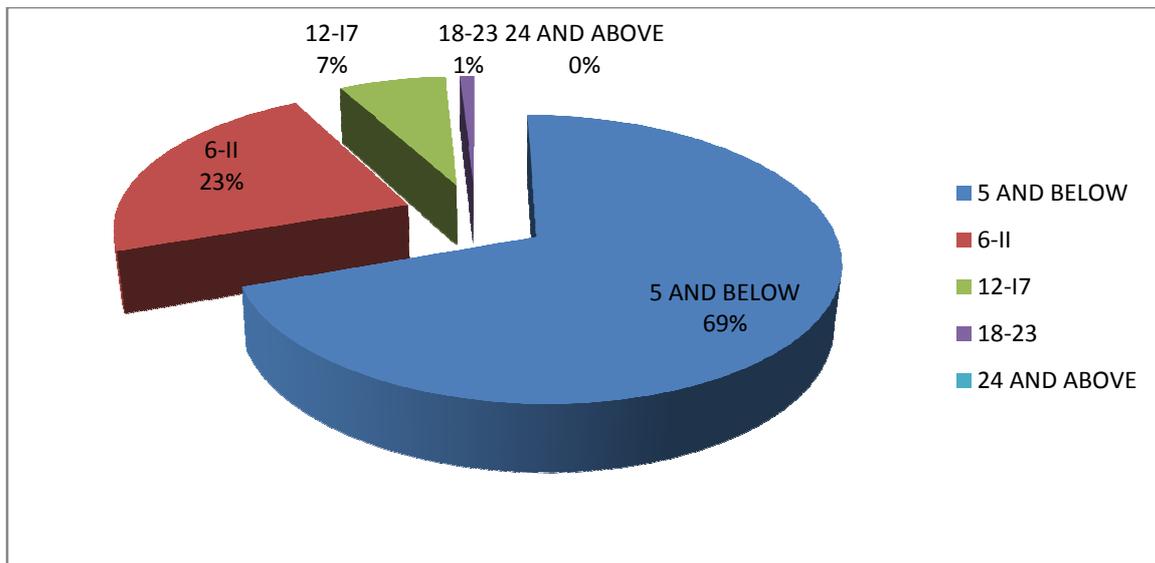
**Table 4: Understanding of ASM by Respondents**

Description Given	Frequency	Percentages (%)
Not know the meaning of artisanal	69	60
Process of harvesting gold	35	30.43
Process of separating gold ore from soil	29	25.22
Extracting gold using available materials	10	8.70
Process of digging/ washing/ heating gold ore	7	6.09
Dirty/disruptive activity of extracting gold	5	4.35
It is an activity that brings income	3	2.61
An activity done by individuals	1	0.87
Harvesting gold in small quantities	1	0.87

From Table 4 above, a good number of respondents (60%) did not know the meaning of artisanal but were aware of small-scale mining, while others gave the following as their understanding of ASM; a process of harvesting gold (30.43%); a process of separating gold ore from soil (25.22%); extracting gold using available materials (8.70%); a process of digging, washing and heating gold ore (6.09%) to make it pure and ready for selling; an activity that brings income (2.61%); an activity done by individuals (0.87%); and harvesting of gold in small quantities (0.87%).

From the study findings, some respondents had given more than one description of ASM and the diversity in their understanding showed that even in Central-Sakwa location there is no direct or universal understanding of what ASM is. The understanding of respondents of ASM determines the ways in which they can start, manage and even sustain the industry because when one understands something fully, then he/she will have knowledge on how to make the greatest profit from it.

**Figure 10: Pie Chart showing the duration of years in ASM by Respondents**



From Figure 11 above, it is evident that majority of respondents (69%) had been in the activity for 5 years and below. The second highest class was that of 6-11 years with 23% followed by the class of 12-17 years (7%). The next class was that of 18-23 years (1%) while the class of 24 and above being the last with no respondent.

This study established that the number of years that the respondents had been in ASM was determined by their age and because majority of respondents were between the ages of 20-29 years they had spent five years and below within the activity.

Due to manual and hard labor experienced in gold mining activities, gold miners prefer to practice the activity for a short period of time with the hope of using income from the activity to start other sustainable livelihoods. Those who practice the activity for a long period of time

express their cultural attachment to the activity and their helplessness in terms of having alternative sources of income.

**Table 5: Reasons for practicing ASM by Respondents**

<b>Reason for being in ASM</b>	<b>Frequency</b>	<b>Percentages (%)</b>
Lack of formal employment	74	64.35
Need to provide for dependants	49	42.61
Need to generate income	27	23.48
Desire to earn quick cash	25	21.74
Desire to be wealthy	21	18.26
Drop on other livelihoods income	14	12.17
As a cultural practice	9	7.83
To generate additional income	9	7.83
Desire to create wealth	2	1.74
For personal satisfaction	2	1.74
To improve daily subsistence	2	1.74
Availability of the mineral gold	1	0.87
Being poor	1	0.87
Loss of formal employment o attain social status	1	0.87
To attain social satisfaction	1	0.87

From Table 5 above, the study findings showed that the main reason why gold miners prompted to be in ASM was because of lack of formal employment (64.35%). The second highest reason for practicing ASM in Central-Sakwa Location was the need to provide for their dependents (42.61%) being that they were household heads.

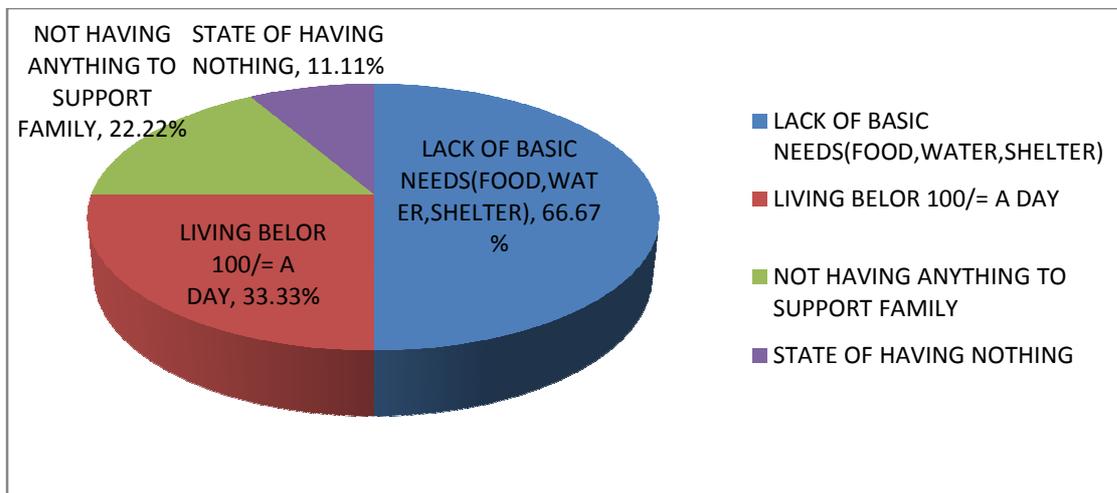
Some of the other reasons included; the need to generate income (23.48%); the desire to earn quick cash (21.74%); the desire to be wealthy (18.26%); the drop on income from other livelihoods (12.17%); seeing ASM as their cultural practice (7.83%) as that's what they know how to do best as it was an activity practiced by their grandfathers hence passed through to their generation; to generate additional income so as to make ends meet (7.83%); the desire to create wealth (1.74%); the need for personal satisfaction (1.74%); the need to improve daily subsistence (0.87%); availability of the mineral gold within the location (0.87%); to attain social status (0.87%) and as a way of self employment (0.87%).

People go to mining for different reason but all these reasons come back to the desire to create wealth and provide for dependants. At times this does not happen because of other issues such as lack of resources to harvest gold and lack of the desire to invest wisely the income attained from gold mining activities an indication that gold miners are prone to the poverty cycle within communities.

#### 4.4 Conceptualization of Poverty

Conceptualization of poverty answers part two of objective one which was to find out how the people of Central-Sakwa location have conceptualize Artisanal and Small-Scale Mining (ASM) and poverty. In conceptualization of poverty the respondents gave their views about understanding of poverty, understanding of vulnerability, what qualifies a household to be poor in Central-Sakwa location, causes of poverty in the location, the strategies put in place to reduce poverty and this information is as shown below:

**Figure 11: Pie Chart showing the Understanding of poverty by Respondents**



From Figure 11 above, it is evident that majority of the key informants (66.67%) understood poverty to be lack of basic needs (food, shelter and water); followed by living below 100Kshs a day (33.33%); while not having anything to support family had 22.22% of the respondents and to be in a state of having nothing to support ones' self said by 11.11% of the respondents.

*From the FGDs discussions the following were given to be the understanding of poverty; not having anything to support ones' self; lack of financial support; lack of resources such as land; lack of basic needs (food, shelter and water); and not having justice, power and right over anything.*

*From the discussions in FGDs, the respondents also gave their understanding of vulnerability which they say is to be; an act of being desperate; being prone to danger i.e. disasters; not able to deal with calamities and being in a position that any bad thing can happen to one.*

This study established that there was diversity on the understanding of poverty and that reflects on the idea that individuals and societies do have different understanding of poverty making the process of poverty alleviation to be difficult and complex.

Vulnerability and poverty are always associated with each other and at times one is mistaken for the other. Vulnerability makes gold miners who have been classified by society to be poor to become poorer and in some cases it makes those seen to be above the poverty line to become poor. If vulnerability factors are not dealt with, then more miners may become poor, and this depends on the qualifications given by a community for one to be poor.

*From discussions in the FGDs, it is evident that there are various qualifications for a household to be identified as poor in Central-Sakwa Location. These qualifications are; not having land or even food, shelter and clothing; not able to eat 3 meals a day; not having a child; not having educated children, poor water and sanitation provision; not able to have public transport; not able to access healthcare; not having a husband or a wife and is within the age determined by the society to be of marriage; not having cattle especially goats, sheep and cows; and not able to have farm produce (especially maize, beans).*

The reason why having land, food, shelter and clothes are so important in Central-Sakwa location is because most activities depends on land and if one has no land then, he or she is prone to poverty and that is why those who work as casual laborers at the mines are seen to be vulnerable to poverty as compared to their counter parts who owns the lands in which mining of

gold is done. The difference is found to be because the land owner will be given his wages and a percentage as a commission for owning land after every income is received from mined gold while, the casual laborer will be given his/her wages which sometimes comes after a period of time (3 months).

Key informants gave their views on the causes of poverty in Central-Sakwa Location. The following are some of the causes; dependency on agriculture; decrease in available natural resources; emergence of diseases such as malaria and typhoid; climate change as what makes the changes in rain patterns hence a change in the living patterns of the people of Central-Sakwa Location; unemployment as many people especially the youths do not have high levels of education making it difficult for them to create or get employment; food insecurity as many do not have resources that can be used to ensure long term food provision i.e. a year and they end up blaming their failures on any other thing; high population leading to competition and exploitation of available resources; inadequate education for the youth as they lack support and the will to do so; lack of awareness on other livelihood methods; lack of endowment to support and ensure provisions on necessities; and poor farming methods as most farmers do farming on a non professional basis or casual basis.

*According to respondents in FGDs the following were identified as the causes of poverty in Central-Sakwa location; lack of plan to invest income attained from factors such as mining, fishing and farming; inadequate education which makes one vulnerable to doing anything that comes their way; over dependency on others in terms of ensuring they provide everything to you; under exploitation of natural resources such as gold, sand, stones; political instability where people do not look at who will provide for their needs but look at the party in power to enhance their affiliations; ill health (HIV/AIDS) and other diseases; being lazy as one is not able to work and stand for one's self; unemployment by the youths making them to practice activities like charcoal burning which is a threat to the environment.*

The first step in alleviating poverty is done by identifying the root cause of poverty. This applies to the gold mining activity as most of the gold miners in Central-Sakwa location are casual laborers who qualifies to be poor and for them to be out of this social classification, they need to

know what has made them to be poor so that they can work on it hence improve their living standards.

Key informants went ahead to give strategies on how poverty can be alleviated in Central-Sakwa Location and some of these strategies include; providing economic endowment and educating community on how to have other livelihoods rather than depending on fishing and farming; advancing ones' education while at basic learning levels of education (primary and secondary) to tertiary levels (universities and colleges); community members having partnership with development agencies and practicing proper farming systems; having family planning programs which can be used to control rapid population growth and improved maternal; creating awareness on health issue as and having control over diseases which will ensure good health for people hence making them to work hard towards achieving their goals.

From the discussions in FGDs the following are some of the strategies that can be put in place in order to alleviate poverty in Central-Sakwa Location at individuals, household and community levels and with government agencies, NGOs/CSOs and parastatals supporting the strategies; awareness on how to ensure food security which helps in reducing poverty as those who have food can work to earn more resources; having improved health standards through equipping health facilities with machines and personnel as healthy people produce more income and work hard on development activities; practicing good politics making people to respect others opinion and when opinions are respected resources that could be lost over conflicts are well utilized; avoiding laziness and being self responsible making one to work hard to meet one's needs; acquiring education and professional skills helping people to provide for themselves with ease; working as a team which makes working easier; and sensitizing community on the importance of team work making the community members less vulnerable to poverty.

From the FGDs discussions, government need to solve the problem of the value added tax (VAT) as it is making it difficult for people to meet their needs; provide financial empowerment for individuals to start business or invest on sources of income to make them independent; improve infrastructure to enhance movement and flow of goods as well as services to the remote areas; educating the public on social and economic values of available resources (gold, sand, fish e.t.c.) within Central-Sakwa Location; providing security; providing good leadership and making resources available for development projects.

NGOs/CSOs were required to educate people on entrepreneurship which will provide the people with financial power to reduce poverty; support community projects; provide grants/ loans to community groups; help community members to formulate and manage groups; and to partner with government to help improve infrastructure. The respondents said that parastatals should create awareness on sustainable development and help community members start development projects. Strategies on how to alleviate poverty have been given time and again but the big question that needs answers is on how these strategies can be implemented and who has the responsibility of doing so.

#### **4.5 Extent in which ASM have alleviated poverty**

Extent in which ASM have alleviated poverty answers objective two of this study which was to examine the extent in which ASM have alleviated poverty among the people of Central-Sakwa location. On the extent in which ASM have alleviated poverty the respondents gave their views about their economic status, they sketched a map of Central-Sakwa location showing its boundaries and the key features found within it, they highlighted the changes that have taken place over time in the last years on specific sectors, they then gave their views on their best and worst hour(s); day(s); week(s) and month (s) in terms of harvesting and trading of gold and this information is shown below:

**Table 6: Economic Status of Respondents**

<b>Economic status</b>	<b>Before being in mining activity</b>		<b>After being in mining activity</b>	
<b>Transport</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Cars (s)	0	0	0	0
Motorcycle (s)	0	0	8	6.96
Boat (s)	2	1.74	4	3.48
Bicycle (s)	8	6.96	8	6.96
<b>Property ownership</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>House:</b>				
Grass thatched	12	10.43	3	2.6
Semi-permanent	5	4.35	18	15.65
Permanent	0	0	1	0.87
Land	10	8.7	24	20.87
<b>Sources of Information</b>	<b>Frequency</b>	<b>Percentage (%)</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Television	0	0	11	9.57
Radio	44	38.26	56	48.7
Letters	0	0	2	1.74
Cell phone	1	0.87	32	27.83
Newspaper	0	0	4	3.48
<b>Owns nothing</b>	<b>31</b>	<b>26.96</b>	<b>19</b>	<b>16.52</b>

From Table 6 above, respondents gave their views in relation to economic status in terms of transportation, property ownership and sources of information. On transportation, 6.96% of the respondents confirmed that they had bought motorcycles with the money from gold mining activities; 1.74% of the respondents said that they had boats before being in gold mining while 3.48% respondents confirmed to have boats after being in gold mining activities; 6.96% of the

respondents said that they had bicycles before being in gold mining; 6.96% of the respondents said that they had their bicycles after being in gold mining activities.

When most of the respondents confirm not to be having a means of transportation, they may be classified to be poor because with no means of transportation one cannot have accessibility to other production resources. Transportation determines the level of production and when it is accessible and efficient then high productions (harvesting of gold) are expected in gold mining activities.

On property ownership, 10.43% of the respondents said that they owned grass- thatched houses before being in gold mining but only 2.6% of them had grass thatched houses after being in gold mining activities an indication that some of those who owned the grass thatched houses had use money from mining to get themselves other types of houses (permanent or semi-permanent).

4.35% of the respondents said they had semi-permanent houses before being in gold mining while 15.65% of the respondents had semi-permanent houses after being in gold mining activities with some respondents among them saying they had used money from mining to build semi-permanent houses. 0.87% of the respondents confirmed to have built a permanent house with income earned from gold mining activities. 8.7% of the respondents said that they had owned land before being in gold mining activities but 20.87% of the respondents said they had land after engaging in gold mining activities but that does not mean they all had income from gold mining to buy land.

On sources of information 9.57% of the respondents confirmed to have bought television using income from gold mining activities. 38.26% of the respondents said that they had radios before being in gold mining activities while 48.7% of the respondents said that they had used income from gold mining to buy radios so that they could continuously get informed of what goes around the world especially in the world of harvesting and trading of gold.

1.74% of the respondents confirmed to be having letters after being in gold mining activities. 0.87% of the respondents said they had a cell phone before being in gold mining activities while 27.83% of the respondents said that they got their cell phones after being in gold mining activities. 3.48% of the respondents confirmed to be having Newspapers and this they did after being in gold mining. There were 26.96% of the respondents who did not have any of the listed

possessions before being in gold mining activities with 16.52% of the respondents did not have any possessions being in gold mining activities.

Availability of information to the gold miners depended on the ownership of devices used in transmitting information. Radio was the most owned asset by the respondents, followed by cell phone and then television with a few respondents having access to letters and newspapers. Most of the respondents used money to acquire the mentioned assets but the money they said did not only come from income from gold mining but were from their other sources of income such as fishing, farming, business enterprises and many others.

**Plate 2: A house built with money from gold mining activities**



Plate 2 above, shows how one of the gold miners had used money from gold mining activities to build a house. This plate helps in showing that some gold miners in Central-Sakwa Location invested wisely on the income they generated from gold mining activities.

**Sketch Maps of Central-Sakwa Location**

From **Appendix 5**, the researcher re-sketched what the 4 FGDs respondents had sketched on the ground using leaves, sticks and stones. This study had 4 sketched maps labeled sketch map I, II, III, and IV. From these sketch maps the following were identified as the key features found in

Central-Sakwa Location; health facilities (Kopolo CFC, St. Anne Nyango'ma dispensary, Sirawuongo dispensary and Uyawi dispensary); mining sites (Kiberi mines which has Konduru and Lavin, Belmira, Kaudi and Kajohn); homesteads with most of them being along the roads , paths and market places; Sirawuongo hills where water tanks used by SIBO water company are as the company uses the hills height to ensure a gravity flow of water with Olago beach as the shore of Lake Victoria where water used to supply the people in Central- Sakwa Location; police post at Kopolo market to ensure law enforcement and security; churches ( Catholic, Anglican, Protestants); a mosque at Warianda beach an indication that there is diversity on religion within the location; roads (loose surface) and foot paths used as means of transport; island (Ndeda/Oyamo island) which is one of the sub-locations in Central-Sakwa location.

From the sketch map there were beaches along lake Victoria shores (Wagusu, Uyawi, Warianda, Liunda, Olago, Sirongo and Warianda) where fish vending takes place; Market Centers ( Lenya, Nango, Nyang'oma, and Kopolo) where trading takes place; streams and bridges (Kogola and Ndati) that supply water to lake Victoria which at times are used by the community members to have a source of water as said by the respondents; Schools (primary, secondary and Nyang'oma technical); and water in lake Victoria a great resource for the community of Central-Sakwa location. The respondents also referred to Nyang'oma as a complex for having many facilities within it.

From the study, it was evident that there was no trace of benefits obtained from gold mining that was used to acquire, manage or even ensure sustainability of the features as illegality of the mining sector had denied the community of such benefits. It was also observed that Central-Sakwa location did not have a financial institution not even a village bank with the respondents saying that such institutions were targeted by criminals.

### **Changes that have taken place overtime in the location on specific sectors**

Changes that have taken place overtime in the location on specific sectors were additional information to show the extent in which ASM has alleviated poverty. The following are the changes;

### ❖ **Food availability**

Subsistence farming is the main activity ensuring food availability in Central-Sakwa location with maize, sorghum and beans and this depends on the amount of rainfall received in the area. The amount of rainfall received has decreased over time and it is not easy to determine the exact rain patterns as it was in the years of 1980's and 1990's.

Fishing on the other hand has been important as most of it, is used to feed community members and a source of income. Gold Mining, sand harvesting and quarrying (stones) are also sources of income and the income here is used in ensuring that households have enough to sustain them in term of food provision. Poultry farming is now used to subsidize the availability of food and income so as to meet the needs of one's family.

Harvesting of farm produce was done in the month of July, August and September and fishing was banned in the month of August to ensure breeding as the other activities like gold mining and charcoal burning was practiced throughout the year.

This study revealed that most respondents in gold mining directed their income in buying food for their households but in terms of making great changes on the strategies to ensure food security to the households in the future they were lacking.

### ❖ **Water availability**

The respondents said that Lake Victoria was the main source of water within the location and in the earlier years around 1960's people went to the lake with donkeys or used their heads to carry water a way in which some people have continue to use even today but it depends on the distance to be covered. In late 1980's the catholic mission brought water pumps and pumped water from the shores of Olago beach to Sirawuongo hills and then supplied this water to the various areas within and outside Central-Sakwa Location.

In 2008 the Olago water project was handed over to government under the name SIBO water company after the catholic mission had failed to meet the demand of the community members. The water project is operating up to date with many at times community members failing to get water. Places where gold mining have stopped and had high water tables were used and are still

being used as sources of water and this has helped in providing water to be used for domestic use and washing of the gold ore.

There were and still are bore holes within homesteads which were used and are still being used by individuals majorly for domestic purposes. Harvesting of rain water in large quantities has not been well practiced in this location and this is due to lack of finances to get water tanks for water storage and the type of houses that majority of the people have.

From this study it was established that, a large consumption of water by gold miners was used to wash soil to get the gold ore and this had made some of the gold miners to carry soil to the shores of Lake Victoria to wash and get the gold ore. By doing so a great contamination of the Lake Victoria waters takes place as miners are using mercury in the washing process and this is a threat to those getting water and fish from the lake.

**Plate 3: An old shaft in Belmira mines used in providing water to the community**



Plate 3 above, shows how one of the old shafts has benefited the community by ensuring that water from the shaft is transferred to a water kiosk through use of pipes and sold to the community members. This is a source of income to the land owner and a source of water to the community members who depends on that water to meet their water demands.

The first part of the plate shows a shaft that was used in mining gold and a pipe has been placed down the shaft. The second part of the plate shows the pipe that is used to transfer water from the shaft to the water tank on top of a water kiosk which is part three of the plate.

### ❖ Health

Before the year in 1960's herbalist were the main source of health providers with men and women of above 60 years of age as practitioners and plant parts (roots, leaves, backs and stems) as medicine. The earliest health centre in this location was 'od-thieth' Nyang'oma dispensary in the early 1960's which is currently known as St. Anne Nyang'oma dispensary; others include Uyawu dispensary (established on the late 1960's), Kopolu CFC clinic (established in 2008) and Sirawuongo dispensary (established in 2010).

HIV/AIDS, malaria and water borne diseases are the main diseases prone to Central-Sakwa Location. For HIV/AIDS they said new infections were many as the fishing and mining activities involves a lot of immoralities and sexual relationships.

At the time when gold miners have received income from the sector there are immigrants into the location and this includes prostitutes who are out to spend the gold miners' money and leave when the money has been all used up. In fishing, it is the men who go fishing in the lake, they at times ask sexual favors from the women who sells fish and these women prefer to give in so as to get the fish they need for their customers.

In support to gold mining, it is within the mentioned health facilities above, that those who have suffered accidents and injuries from falling shafts are treated. It was also evident that there were no direct links in which the mining sector had help in improving the availability and accessibility of health facilities a situation that is reflected to be because of the illegality of the sector in the location.

### ❖ **Employment**

Unemployment has increased over time in Central-Sakwa Location and currently many youths and women are the majority of the victims. Grants and loans are issued to groups so as to ensure self employment through entrepreneurship.

Fishing, gold mining, farming and small businesses are the activities in which the community members of Central-Sakwa location look at as sources of employment. Teachers have the highest number of formal employment within the location, followed by health practitioners but this they depends on the individuals' interest and level of education.

This study established that while gold mining is not the main activity in the location, it has managed to ensure a great number of people are employed and are earning income for the benefits of themselves or even their dependants something that many small sectors within the location are unable to achieve.

### ❖ **Housing**

Having a house is associated with well-being in the society of Central-Sakwa Location. Over time, men have been given the mandate to build and own a house as women do the act of decorating and keeping the house clean and in order. There have been grass-thatched houses in Central-Sakwa location since time in memorial and that have not changed to date as it is associated with the Practice of Luo culture with Luos being the majority in the location.

Mabati roofed houses are now many within the location as a few people have other types of roofing such as tiles. Some people do rent houses and this is done around the market centers such as Nyang'oma, Nango, and Kopololo and along the beaches such as Wagusu, Olago, Sirongo, Uyawi, and Liunda. On the other hand, in the current days, grass thatched houses are sometimes associated with the poor within the community but that depends on the understanding within a family or homestead.

### ❖ **Security**

Security has been improved in Central-Sakwa Location after the killing of two business men at Kopololo market by armed robbers in the year 1992, making a police post to be situated at the

market. Issues of thefts such as one stealing another person's property are handled by the local leaders (village elders, assistant chiefs, chiefs) and available government leaders such as the divisional officer.

There is need to equip the police and create new police posts for the one at Kopolo market is not enough to ensure quick responses when need arises. In relation to mining activities, there are many criminals who migrate into Central-Sakwa location whenever there is income earned from the sale of gold mining. These criminals gun down those who have received income a situation that gold miners do not know how to deal with as strategies such as enhancing general security in the area had failed in ensuring individual miners safety.

### ❖ Education

There are several primary schools in Central-Sakwa Location with a few secondary schools to take care of the population from the primary schools. There is one primary boarding school in Central-Sakwa Location Nyang'oma girls (established in 1963) and one secondary girl school Mbeka girls secondary day which has been in existence since 2010.

St. Mary's primary school (established in 1961) and Fr. Oderra secondary school (established in 2007) cater for the hearing impaired within and outside the location as Nyang'oma technical (established in 1963) help in training youths from within and outside the location on technical skills. There is one boys' boarding school (Nyang'oma boys' secondary School).

Majority of youths in Central-Sakwa location after finishing class eight do not go to secondary school for a number of reasons such as, lack of school fees, lack of qualification and encouragement to do so. Performance of schools in Central- Sakwa Location is not good and this is because of the conditions of schools, shortage of teachers and at times misunderstandings between students/pupils, teachers and parents.

This study showed that gold mining activities does not impact directly to those in primary schools as the activity involves a lot of manual labor and is not liked by many children. The study also revealed that the attendance of school by those in school going age had not been affected by the gold mining activity in the area as those in primary schools due to Free Primary Education (FPE) were not allowed into the mining sites but the same could not be said about

students in secondary school and other levels of education. It is evident from this study that learners with hearing impairment are catered for but this cannot be associated in any way with it benefiting directly from the gold mining activities within the location.

Although gold mining is good, it supports or put a threat to education of individuals because; gold mining provides income used in buying stationeries and uniforms to school going children; on the other hand it sometimes take three months before gold miners get any income from mining and at that point even school going children dropped out of school due to lack of learning resources provisions; and finally most youths like money and after finishing primary school all they want to do is marry or get married, have children, have a source of income and life continues without them thinking of the benefits of furthering their education.

#### ❖ **Culture**

Wife inheritance was practiced to letter around 1960's by all in Central-Sakwa location and those who did not want it would be forced to it but today this is practiced at individuals will. Land ownership in the year 1960's up to the year early 2000 was purely for the men but since around 2001 it was made possible for women to own land.

In relation to gold mining, women are not allowed to go down in the shafts and this had made it difficult for them to get the main ore found down in the shafts hence they rewash the left over soil that has been washed by the men.

#### ❖ **Labor**

There is great division of labor in Central-Sakwa Location. This is found to be in fishing where men go fishing as women wash and trade fish; in farming where clearing of land is done by men as planting, weeding and harvesting of crops is done majorly by women but at times by both men and women; in gold mining men go down the shaft to get the stones, as grinding of stones is done by both women and men as the men use stone crusher and women use grinding stones, women wash grinded gold stones to get the gold ore but at times the activity involves both the men and women, trading of gold is majorly done by men and by women on rare occasions.

*From the discussions in FGDs the following were given as the best hour(s), day(s), week (s) and months in term of harvesting and trading gold in Central-Sakwa Location; best hours were between 6.30 am and 6.30 pm. The hours were during the day as it was the time in which gold miners were allowed to be at the mines; in terms of best days, Monday to Saturday were their best days in harvesting and trading gold as they were the days when they were allowed to be in the mines. There was variation on the best week as some respondents gave 1<sup>st</sup> week of the month while others gave the 4<sup>th</sup> week of the month which they say was influenced by their determination to earn income to pay for their pressing needs i.e. rent that were either on the 1<sup>st</sup> or 4<sup>th</sup> week.*

The best hours of the day depended on the day because during the day there is light and gold miners do not need much extra light down the shaft hence a reduction on the amount of fuel needed to support the activity. On the best days Monday to Saturday were chosen as miners were having Sunday as a resting day and this was to help miners to bond with the family members as they take care of their other needs. The best weeks depended on the time miners had received income and were in a position to meet the needs of their dependants.

**Plate 4: A small portion of gold ore after washing grinded gold stones**



Plate 4 above, shows a sample of gold ore that has been got by one of the respondents as the respondents washes soil from gold stones.

*On the worst hours of harvesting or trading gold the respondents in FGDs gave hours between 6.30 pm and 6.30 am to be the worst hours. These hours they say were determined by the time in which they started the operations at the mines and again because they were not allowed to work at the mines when there is darkness. The respondents said that there was no specific worst day in terms of harvesting and trading gold but they considered Sunday because it was a day they would not go to the mines but again that depended on when the gold is mined, the amount of gold harvested and the pricing of gold that keeps on fluctuating. Respondents said that their worst month in the year in terms of harvesting and trading gold was that of January as their expenses were out stretched making them loose working hours at the mine as they take care of issues search as food provision to households, paying fees for self or household members and many other things. Others said August was their worst month in terms of harvesting gold for they had to balance between mining and harvesting of farm produce and some said April for the Easter feasts would make less people to go harvesting and a low harvest will automatically lead to less trade.*

The worst hours, days and weeks on harvesting of gold and trading of gold were all dependants on the dangers associated with darkness in the shafts, the day they did not have to be in the mine and the week they had no income to benefit in providing their needs. The worst months were associated with the competition between activities in ASM and other livelihoods such as farming and fishing especially in farming where during planting, weeding and harvesting seasons where most miners' abandoned mining activities to go farming.

#### **4.6 Factors promoting or inhibiting ASM from alleviating poverty**

Factors promoting or inhibiting ASM from alleviating poverty was use to answer objective three of this study which was to find out the factors that have promoted or inhibited ASM from alleviating poverty among the people of Central-Sakwa location. On these factors the respondents gave their views on the conditions that have made it possible for gold miners to meet their needs as they perform their day to day activities, the challenges gold miners experience as they do their gold mining activities and the recommendations they would give to improve on the challenges and this information is as shown below:

**Table 7: Conditions making gold miners to meet their needs**

Conditions	Frequency	Percentages (%)
Availability of ready market	52	42.21
Availability of mineral gold	46	40
Food provided to laborers	32	27.83
Cooperation among miners	29	25.22
Support from local/government leaders	26	22.61
Availability of mining equipments	21	18.26
Awareness on strategies to reduce poverty	7	6.07
Awareness on safety issues	6	5.22
Control on the time of mining	1	0.87
Less regulation to work as a laborer	1	0.87

In Table 7 above, the following are the conditions that have made gold miners to meet their needs; Availability of ready market (42.21%); availability of the mineral gold (40%); food provided to laborers by the site managers (27.83%); cooperation among gold miners (25.22%); support from local and government leaders (22.61%); availability of mining equipments (18.26%) ; awareness on safety issue (5.22%); awareness on strategies to reduce poverty (6.07%); control on mining time (0.87%) and less regulation for one to work as a laborer (0.87%).

**Plate 5: Stone grinder at Konduru site at Kibere mines in Wagusu village**



Plate 5 above, shows a stone grinder used by gold miners to grind gold stones. From the plate there is a generator which is the source of energy, the water tank which has water for the cooling effect of the machines and the grinder itself that processes the stones to soil.

*From the discussions in FGDs the following were identified as the conditions that have made it possible for gold miners to meet their needs; provision of food for laborers by site managers. This is because when food is provided to miners, they worry less about getting it and dedicate their time in working hard in order to earn more income; availability of mining equipments as it make miners work with ease and efficient; availability of the mineral gold and awareness on safety measures by the miners because without the mineral gold then there is no mining; awareness on safety issues help reduce accidents and deaths within the mines; awareness on development projects, health issues and ready market for the gold as awareness on development projects make miners to invest income from mining, while awareness on health issues make them be conscious and work together and ready market makes it easy for the miners to sell their gold hence earn income.*

Most of the conditions that made gold miners to meet their needs were efforts made by them, local leaders, land owners and site managers but development agencies are lacking in action and that is why most mining machines are owned by individuals who take their percentages (commissions) from what is earned after gold ore is harvested an indication that casual laborers are extorted at the end of the day.

**Plate 6: Casual laborers taking a meal at Lavin Investment mining site**



Plate 6 above, shows casual laborers (gold miners) as they take a meal provided to them by the site manager.

*The key informants gave the following as conditions that have made it possible for gold miners to meet their needs; ready market for gold; availability of mining equipments; availability of the mineral gold; food provided to miners by site owners and managers; education on poverty issues; having other businesses to supplement their income; information on the dangers in mining made available helping in the reduction of accidents and deaths in the mines.*

This study revealed that there were common conditions that had made gold miners to alleviate poverty and the conditions were categorized as social, economic and political factors promoting ASM to alleviate poverty. On economic factors, this study found out the following factors to have made it possible for gold miners to meet their needs; availability of ready market for the mineral gold; availability of mining equipments; provision of food to gold miners who are casual laborers by the site managers whenever they are at work in the mining sites; having other sources of income hence not depending fully on gold mining; and finally awareness on how individuals can start development projects using income from gold mining activities.

On social factors, the following were conditions that had made it possible for gold miners to meet their needs; cooperation and teamwork among miners; awareness provided to gold miners on the dangers associated with mining; awareness on strategies to reduce poverty; and awareness on safety and health issues related to gold mining provided to all gold mine stakeholders.

On political factors, this study identified following to be the conditions that had made it possible for gold miners to meet their needs; support from local and government leaders; control of the time in which mining takes place; and availability of less regulations to work as a casual laborer in the shafts within the location.

When community members meet their needs with income from ASM activities then, it is an indication that in deed ASM can alleviate poverty with some factors promoting it to do so. For example in this study, a good number of gold miners were able to own properties such as land, houses, have means of transportation and communication with factors such as; food provision to

casual laborers, availability of mining equipments among others ensuring they earn enough income to get those possessions. This is an indication that gold mining in Central-Sakwa location have contributed to the process of poverty alleviation even if this can only be visible at individuals' household level.

**Plate 7: Compressor machine found at Lavin investment mines**



Plate 6 above, shows a compressor that is used by gold miners to harvest gold. It provides the power that is used in drilling the ground to get gold stones.

**Table 8: Challenges to gold miners by Respondents**

Challenges	Frequency	Percentages (%)
Lack of mining equipments	56	48.70
Lack technical skills	41	35.65
Social pressure	31	26.96
Accidents/deaths in the shafts	29	25.22
Lack of water	27	23.48
Increase in immorality	21	18.26
Lack of finance	17	14.78
High rate of crime	11	9.57
Corruption among leaders	8	6.96
Fluctuation in gold prices	8	6.96
Lack of equitable market	7	6.07
Domestic violence	5	4.38
Poor housing	5	4.38
Greed amongst workers	3	2.61
Poor working conditions	2	1.74
Illegality of the sector	1	0.87

From Table 8 above, the following challenges were identified to be faced by gold miners as they do their day to day activities; Lack of mining equipments (48.70%); lack of technical skills in gold mining (35.65%); social pressure (26.96%); accidents and deaths in the gold mining shafts (25.22%); lack of water to be for domestic use and use in washing of gold ore (23.48%); increase in immorality (18.26%); lack of financial support (14.78%) from financial institutions, development agencies and government; high rates of crime in the area when income from mining is earned (9.57%); corruption among leaders (6.96%) who need their shares from income as the mining sector in the location is illegal; fluctuation in gold prices (6.967%) which they say is done in relation to the amount in grams of harvested gold; lack of equitable market for trading gold (6.07%) for there are many brokers involved; domestic violence(4.38%) when gold miners earn income; poor housing (4.38%); greed amongst workers (2.61%) who at times fail to help when one is in need; poor working conditions (1.74%) as gold miners are not having personal protective equipments; illegality of the mining sector (0.87%) which brings challenges on how proper management of the sector and income generated from the sector can be used to help improve infrastructure within the location.

**Plate 8: Explosives used in gold mining activities**



Plate 8 above, shows explosives used by gold miners as they mine gold. Getting access to explosives by miners is not easy as the mining sector in Central-Sakwa location is illegal.

*From the discussions in FGDs the following were identified as challenges experienced by gold miners as they do their day to day activities; Underpayment of workers as one can work as a laborer for a long period such as even 3 months and at the end low payment is given to the same laborers as site owner, machine owners together with land owners receive high payments; poor health conditions within the mining sites; high spread of HIV/AIDS as sexual favors are exchanged within the mining sites; presence of diseases; depression and frustrations when income delays; domestic violence which increases when there is more money received from gold mining; lack of technical skills to do mining; high rates of crime when income is earned from mining; poor lighting system within the mining sites and over population due to immigration of people from other areas to the mining sites location.*

The challenges to gold miners are so many as mentioned in the FGDs but they are all relating to inadequate skills, inadequate mining equipments and illegality of the mining sector in Central-Sakwa Location. These challenges are a threat to the progress of the mining sector in this location as well as other sectors such as education and health.

**Plate 9: Researcher & Miners as they wash soil to get gold at the shores of Lake Victoria**



Plate 9 above shows the researcher and gold miners as they wash soil to get gold at one of the shores of Lake Victoria. There is water pollution at the shores of the lake and people come to collect water from nearby which means that they are collecting contaminated water as the miners are using mercury in this process.

*Key informants identified the following as the challenges experienced by gold miners as they do their day today activities; Increase in immorality such as crime and prostitution; lack of mining equipments; illegality of the mining sector; corruption; deaths and accidents in mining sites; lack of technical skills on gold mining; lack of financial support from government and financial institutions; poor planning of income from gold mining activities; existence of diseases in and around the mining sites such as malaria, HIV/AIDS, typhoid and other water borne diseases; gender discrimination where women are seen to be subjective to men; poor grading of gold where brokers are left to grade gold while miners do not know how the grading is done; poor working conditions and school dropout by pupils especially those in secondary schools as free primary education has taken care of those in primary schools.*

The key informants showed that the challenges that gold miners were facing as they do their day to day activities were linked to their levels of education and age as most of them had believed that they were poor and at the same time not many were coming out to practice or contribute to the strategies used in alleviating poverty in the location due to their low income.

**Plate 10: Researcher and Women washing soil to get gold at Kajogh mines**



Plate 10 above, shows the researcher and women washing soil with the aim to get gold ore so that they can sell and have money to ensure that they provide for their needs and the needs of their dependants.

This study revealed that there were common challenges experienced by gold miners as they practiced their day to day activities and the challenges were then categorized as social, economic and political factors inhibiting ASM from alleviating poverty.

On economic factors the following were the challenges experienced by gold miners as they do their day to day activities; lack of mining equipments at some sites; lack of technical mining skills; lack of financial support from financial institutions, government and development agencies; poor grading of gold which is done by brokers; poor planning on how to invest income from gold mining activities; fluctuation in gold prices within and outside the location; lack of equitable market for gold; underpayment of casual laborers; and poor lighting systems within the mining shafts.

On political factors the illegality of the mining sector and corruption among leaders were the main challenges faced by gold miners as they do their day to day activities. On cultural factors this study found out that there were no cultural challenges associated directly to gold mining except that women were not allowed to go down the shafts making them to only wash the soil that have been washed by the men in order to get the gold ore an indication that they highly depended on their male counter parts.

On social factors this study found out the following challenges to be experienced by gold miners as they do their day to day activities; occurrence of deaths and accidents in the mines; deceases prone to the sites (malaria, typhoid and spread of HIV/AIDs); increase in immorality (prostitution and crime); domestic violence when one receives money from gold mining activities; social pressure to engage in drinking and prostitution; depression and frustrations of household members when one receives money from the activity; and increase in population as migrants from other areas came to the mining site from other villages within the location or even from outside the location.

When gold miners have challenges in meeting their needs, then this is an indication that they are not able to deal with the poverty cycle which is prone to areas where ASM activities are carried out. These challenges are seen to be factors that are inhibiting ASM from alleviating poverty. For example in this study, lack of financial support from development agencies (financial institutions, government agencies, NGOs and CSOs) among other factors hinder miners from

meeting their needs and when these needs are not met then, poverty becomes a permanent problem even with gold mining as a livelihood activity.

**Table 9: Recommendations on challenges experienced by gold miners**

<b>Recommendation</b>	<b>No. Of respondents</b>	<b>Percentages (%)</b>
Financial support	63	54.78
Training miners	49	42.61
Availability of mining equipments	43	37.39
Legalize the sector	32	27.83
Respond positively to social pressure	29	25.22
Making water available	25	21.74
Education on environmental management	21	18.26
Changing attitude towards gold mining	14	12.17
Plan on how to invest income	14	12.17
Work with development partners	13	11.30
Cooperation with local leaders	12	10.43
Enhancement of security in the area	6	5.22

From Table 9 above, the following were recommendations on challenges experienced by gold miners as they do their day to day activities; getting financial support (54.78%); training miners to have good mining skills (42.61); availability of mining equipments (37.39%); legalizing the mining sector (27.83%); responding positively to social pressure (25.22%); making water available for domestic use and washing of soil to get gold ore (21.74%); educating on environmental management (18.26%); changing people’s attitude to accept gold mining as a decent activity (12.17%); planning on how to invest income from mining (12.17%); working with development partners (11.30%); cooperating with local leaders (10.43%); and enhancing security within the location (5.22%).

*From the discussions in FGDs, the following are some of the recommendations on challenges experienced by gold miners as they do their day today activities; ensuring financial support from development agencies; educating on how to invest income from gold mining; enhancing security; improving lighting systems within the mining and having control over the diseases prone to the location.*

The recommendations by key informants will only help in the gold miners are willing to cooperate with government as well as development agencies. This is because through partnership work is made easier and productive to all stake holders.

**Plate 11: A young lady washing gold at Kajohn mines**



Plate 11 above, shows a young lady who came with her younger one to wash gold because she had no one to leave the child with at home and due to the less income she is getting from gold mining she was not able to pay someone to take care of the child as she comes to work a situation seen to be endangering the child's health as mercury is used in the process of washing gold.

*Key informants gave the following recommendations on how to deal with challenges experienced by gold miners as they do their day to day activities; having financial support which help miners to solve many other problems; legalizing the mining sector to support and develop infrastructure; attain technical mining skills to ensure quick and proper mining of gold; proper investment of income from gold mining; getting mining equipments; balancing mining with other livelihoods such as farming (during harvesting of farm produce balancing the activities to ensure food security and generation of income); educating and creating awareness on gold mining activities; provision of gender balance and empowerment among those involved in gold mining activities; increasing security; having partnership with development agencies; subsidizing the prices of mining equipments by government and providing universal market for trading gold.*

The following are the common recommendations harmonized from the findings of this study to be used in controlling the challenges experienced by gold miners as they do their day to day activities; financial support which would help solve most of the gold miners' problems; training of miners on mining skills; making mining equipments available to gold miners; and legalizing the mining sector.

People may recommend on how factors inhibiting ASM from alleviating poverty can be dealt with but at times, this does not happen as poverty alleviation depends on other factors such as attitude of the poor and those supporting them towards initiatives to alleviate poverty, the conceptualization of poverty by the poor and availability of resources to be used in poverty alleviation.

For example in this study, gold miners in Central-Sakwa location gave their conceptualization of poverty, conditions that have made it possible for them to meet their needs together with the challenges they experience as they do their day today activities. They went ahead to suggest recommendations on how these challenges can be dealt with but the big question that they are asking themselves is who is assigned with the task of implementing these recommendations and at what speed is this going to happen?

## **CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

This chapter discusses the main issues assessed in the study which is impact of Artisanal and Small-Scale Gold Mining on poverty alleviation among the people of Central Sakwa Location, of Siaya County in Kenya. This chapter presents conclusions on findings of the conceptualization of Artisanal Small-Scale Gold Mining (ASM) and Poverty; the extent in which ASM has alleviated poverty among the people of Central-Sakwa Location and the factors that have promoted or inhibited ASM from alleviating poverty among the people of Central- Sakwa Location. The key issues covered in this chapter includes summary of findings, conclusions, recommendations and suggestions for further studies.

### **5.1 Summary of Findings**

From the findings of this study, there was a turnout of 99.33% of the respondents. 62.16% of the respondents were male while 37.84% were female. Majority of the respondents (50.43%) were youths between 20-29 years of age. 90% of the respondents were married, 6% of the respondents were single while 4% of the respondents were widowed. A good number of respondents (54%) had a household size of 6 to 11 members. Most of the respondents had their highest level of education as basic education (primary-53% of the respondents, secondary-34% of the respondents) with those having tertiary education (college-5% of the respondents, university- 1% of the respondents) being very few and others had no schooling (7% of the respondents).

On the first objective of this study, which was finding out how the people of Central-Sakwa location have conceptualized ASM and poverty, the respondents gave their views in relation to ASM and poverty. From the findings of this study, it was evident that there was diversity on the understanding of ASM by the respondents. All the answers stated by the respondents on the understanding of ASM narrowed down to ways in which the mineral gold could be mined with the diversity being on how the process was done, the kind of equipments and tools used in the process.

A good number of respondents did not know the meaning of artisanal with Most of the respondents confirming to have been practicing the activity for about five years and below. This

they said was because of the hard labor that is associated with the activity making them to practice the activity with the expectation of moving to other sustainable livelihoods when their body could no longer sustain the pressure from the hard labor. Finally, on conceptualization of ASM, the main reasons that had prompted gold miners into this activity were identified to be lack of formal employment and the desire to satisfy ones' needs either as an individual or a household.

This study established that there was diversity on how the respondents understood poverty with the main understandings being lack of basic needs (food/shelter/clothing) and living below 100 Kenya shillings a day. Vulnerability was understood to be an act of being desperate and not able to deal with calamities making it to be confused or used interchangeably with poverty.

The indicators used to show that one is poor in Central Sakwa Location were found out to be; not having land, food, shelter and clothing as the main indicators while other indicators included not having children, having un-educated children, and not having a wife/husband while one had reached the age of marriage as stated by the society. The study found out that the main causes of poverty in Central-Sakwa Location were the belief that one is poor, political instability and lack of plans on how people invest their income to take care of future provisions.

This study established the main strategies used in alleviating poverty at individual, household, and community levels and with the help of government and development agencies in Central-Sakwa Location to be; having political stability and practicing good farming methods as peace and food availability are key issues in ensuring that the people overcome poverty.

On the second objective of the study which was to examine the extent in which ASM have alleviated poverty among the people of Central Sakwa Location, the findings of this study identified that ASM had managed to help individuals improve their living status as miners owned houses, land, means for transportation and communication using income from gold mining activities.

From the study, it was evident that due to the illegality of the sector there was no taxation of income made from the activity and this made it difficult for the income to be used to help in the development projects such as infrastructure (roads, schools, health facilities, lighting systems) within the location. The study further revealed that due to gold mining activities, crime rates

were high in the area when the gold miners received their income and this was a threat to the entire community as even those not involved in gold mining activities ended up being targets.

In terms of investment on education and other businesses, there were no clear successful cases on how gold mining had made individuals or dependants achieve education while on the other hand a few of the respondents had invested their money in buying motorcycles and employing their mates to ride them as they continue with the gold mining activity. However, despite the negative impacts associated with gold mining activities (accidents and deaths in the shafts, domestic violence, alcoholism and prostitutions, water contamination by use of mercury), it still had positive impacts such as helping to ensure availability of water to the community for domestic use as the old shafts with high water tables provided water to the community members throughout the year.

On savings, the study was unable to determine the savings in terms of cash in the banks or at home that the gold miners had as the respondents said that it was difficult for them to provide this information to the researcher as they were targets by gangsters and they did not trust the researcher hence were not in a position to comfortably provide the researcher with that information. The other forms of savings used by the respondents within the location as given by the respondents were using income to build houses, and buy cattle (goats/sheep and cows) that they would sell later or use to pay dowry to their in-laws.

The third objective of this study was to find out the factors that have promoted or inhibited ASM in alleviating poverty among the people of Central-Sakwa location. According to the findings of this study all the categories of respondents exhaustively identified these factors.

The outstanding factors promoting ASM to alleviate poverty among the people of Central-Sakwa location that cut across all the categories of respondents included; social factors (cooperation and teamwork among gold miners, awareness by gold miners on the dangers associated with gold mining activities, awareness on health and safety issues on gold mining); economic factors (availability of the mineral gold in the area, availability of ready market for trading gold, availability of mining equipments such as the compressor and stone crusher within the reach of gold miners, provision of food to casual laborers by site managers, and having other sources of income hence not depending on gold mining activity to provide for one's all needs); political

factors (support from local and government leaders, controlling the times in which mining is done, and availability of less regulations to work as casual laborers in the mines).

The following factors were identified from this study to be common factors inhibiting ASM from alleviating poverty among the people of Central-Sakwa Location;

Social factors were: occurrence of deaths/accidents on the mining sites which is majorly caused by the falling of mining shafts, diseases prone to the site such as malaria/ typhoid/ spread of HIV/AIDS, social pressure such as prostitution/ crime/ alcoholism;

Economic factors were: inadequate availability of advance mining equipments such as detectors/compressors/stone grinders/water pumps, lack of technical mining skills, lack of financial support from development agencies (financial institutions /government /NGOs /CSOs), poor grading and pricing of gold as it is done by brokers who exploit the gold miners, lack of equitable market for gold as at the mining site 1 gram goes for 3,000 Kenya shillings and when the same gram reaches towns such as Kisumu which is only 21 Kilometers from the mining sites then the price shifts to 4500 Kenya shillings or even more, underpayment of casual laborers and poor lighting systems in the shafts;

Political factors were: illegality of the gold mining activity in the location and high rates of corruption to acquire licenses, explosives and other mining.

From the study it was evident that the respondent went ahead to recommend on ways in which the challenges would be reduced so as to ensure that ASM alleviates poverty. This showed that the respondents were well aware of the different ways of which the challenges could be dealt with and some of the recommendations cutting across all the categories of respondents included; making financial support available to all gold miners, training of gold miners to attain technical mining skills, creating awareness on the dangers associated with gold mining activities and legalizing the sector so as to ensure that the sector can be used to help start development projects within the location.

## **5.2 Conclusions**

From the study findings, it is clear that ASM can be used to alleviate poverty among the community members of Central- Sakwa location but this depends on a lot of factors such as the understanding of poverty and ASM by those involved in the activity; the level of organization among the miners as they practice the activity; the levels of skills of miners; availability of advance mining equipments; legalization of the mining sector and implementation of regulations that are in line with ASM activities; working together by community members, development partners, local and government leaders; not forgetting ensuring financial support for the mining activities as in this study, alleviation of poverty was only evident at the household level but not at the community level.

From the study findings, it can be further concluded that gold miners were aware of the challenges associated with gold mining activities but were not in a position to deal with them due to lack of finances which they say would help them solve most of their problems.

## **5.3 Recommendations to ASM Stakeholders**

There is need to sensitize all stakeholders (gold miners, development agencies, government departments) on the importance of ASM as a sector so as to ensure that it can be use to provide development into the rural areas such as Central Sakwa location and to the community members found within the areas in which this activity is curried out. The sensitization should be carried out through trainings, workshops, seminars, awareness creation and education on the strategies that can be put in place to ensure that gold miners invest income that they have attained into sustainable livelihoods. The sensitization would also help on how to cooperate ASM and other livelihoods such as farming and fishing without one putting pressure on the other.

There is need to legalize the mining sector in Central Sakwa Location because with legalization, there will be taxation of the income generated from the activity and the money obtained from the tax will be used to ensure infrastructural development which will be used by community members even if the activity were to end in the years to come as ASM is not a sustainable activity (it depends highly on the duration of the availability of the mineral gold).

In some areas, the soil obtained from the mining sites were being washed at the shores of the lake and this was causing contamination of the water as the miners used mercury in the washing process and with the community members fishing and collecting water from the same shores, there was a possibility of many of them having health problems associated to mercury. There is need to provide alternative water provision to gold miners as this will help in avoiding contamination of the Lake Victoria water or any other water body within the reach of gold miners.

#### **5.4 Recommendations for Further Research**

The study carried out on Impacts of Artisanal and Small-Scale Gold Mining on poverty alleviation among the people of Central-Sakwa location had targeted objectives. However in the course of the study, there some issues that were not related to the study objectives but had significant importance on how ASM would alleviate poverty. This study therefore recommends future studies to be carried out on the following areas;

The first area is on the role of development partners in ensuring that ASM alleviates poverty among the rural community members. This was found out to be important as it had been identified that development partners in the area had neglected the sector making it difficult for community members to initiate development projects that could ensure poverty alleviation.

The second area is on the role played by HIV/AIDS pandemic on ASM. This was identified after finding out that there was increase in the cases of prostitutions as respondents confirmed that there was high spread of HIV/AIDS associated with gold mining whenever gold miners received income from gold mining activities.

## REFERENCES

- Auty, R. M. (1993). *Sustaining Development in Mineral Economies: The Resource-Curse Thesis*. London: Routledge.
- Bugnosen, E. (1995) Approaches to providing appropriate technology to small-scale miners, The World Bank International Roundtable on Artisanal Mining, May 17-19, Washington DC
- Chachage S. L. (1995) 'The meek shall inherit the earth but not the mining rights: the mining industry and accumulation in Tanzania', in Gibbon, Peter (ed.) *Liberalized Development in Tanzania: Studies on accumulation processes and local institutions*, Nordiska Afrikainstitutet: Uppsala
- Chapin, F. S. and Kaiser, E. J. (1979) *Urban land use planning*. Urbana. University of Illinois Press.
- Collier, P. (2007). *The Bottom Billion: Why the poorest countries are feeling and what can be done about it*. New York, Oxford University Press.
- DeVellis, R. E. (1991). *Scale Development*. Newbury, Sage Publication
- Dreschler, B. (2001). *Small-scale mining and sustainable development within the SADC Region*. London: International Institute of Environment and Development (IIED)/World Business Council for Sustainable Development.
- D'Souza, K. (2002) *Artisanal and small-scale mining in Africa: a reality check*, keynote presentation at the Seminar on Artisanal and Small-scale Mining in Africa, Yaoundé, Cameroon.
- Field, M., Downing, J. and Kula, O. (2006). *Value Chain Programmes to Integrate Competitiveness, Economic Growth and poverty Reduction: Small Enterprise Development: USAID*
- Fredrikson, G. (2003). *Study on the regional Mining Bureas (Zambia)*.
- Gavin, M. and Hilson, G.M. (ed.) (2006). *Small- Scale Mining, Rural Subsistence and Poverty in*

- West Africa: Practical Action Publishing.
- Government of Kenya (GoK). (2010). The Kenya National Minerals and Mining Policy: Revised Final draft, Government Printers, Nairobi.
- Gueye, D. (2001). Small-scale mining in Burkina Faso. Mining, Minerals and Sustainable Development (MMSD) Working Paper 73, International Institute for Environment and Development (IIED), London.
- Heemskerk, M. (2005). Collecting data in artisanal and small-scale mining communities: Measuring progress towards more sustainable livelihoods. *Natural Resources Forum*, 29, 82-87.
- Hentschel, T., Felix H. and Michael P. (2003) Global report on artisanal and small-scale mining, IIED and WBCSD
- Herrnstein, R. J., and Murray, C. (1994). *The Bell Curve*. New York: Free Press.
- Hilson, G. (Ed.), 2003. *The Socio-economic Impacts of Artisanal Small- Scale Mining in Developing Countries*. A.A. Balkema/Swets & Zeitlinger Publishers, Rotterdam, Netherlands
- Hilson, G. and Mwaponga, O. (2004) 'How has a shortage of census and geological information hindered the regularization of artisanal and small-scale mining?' unpublished manuscript, submitted to the Natural Resources Forum
- Hinton, J. J., Veiga, M. M., & Veiga, T. (2003). "Clean Artisanal Mining Technologies, a Hinton, Jennifer et al. (2003a) 'Clean artisanal gold mining: a utopian approach?' *Journal of Cleaner Production*, vol. 11, no.2, pp. 99-115, March
- Hollaway, J. 1997. Policies for artisanal and small scale mining in the developing world – a review of the last thirty years, pp. 35-42, in *Mining on a Small and Medium Scale* (ed. A.K. Ghose), Intermediate Technology Publications, UK.
- Hruschka, F., Echavarria, C. (2011) for the Alliance for Responsible Mining. "Rock Solid Hughes, N. and D. Furamera (1999) Socio-economic issues relevant to the uptake of new technology in small-scale gold mining: studies in Guyana and Zimbabwe, BGS, MERN and DFID
- International Labor Organization (1999) *Social and labor issues in small-scale mines: Report for*

- discussion at the Tripartite Meeting on Social and Labor Issues in Small-scale Mines, Sectoral Activities Programme, TMSSM/1999, ILO: Geneva
- Institute for Law and Environmental Governance (ILEG), 2003. Community Guide to Environmental Management in Kenya. Institute for Law and Environmental Governance.
- Jackson, R. (1992) 'New mines for old gold: Ghana's changing mining industry', *Geography*, vol.77, pp175-179
- Jencks, C. (1996). Can we replace welfare with work? In Darby, M.R., (ed), *Reducing Poverty in America*. Thousand Oaks: Sage.
- Jennings, N. (1999). "Social and labour issues in small-scale mines". Report for discussion at the Jennings, Norman (1999a) Child labor in small-scale mining: examples from Niger, Perú, and Philippines, Working Paper, Sectoral Activities Programme, Industrial Activities Branch, SAP 2.78/WP.137, ILO: Geneva
- Johnston, H., Enrique L. and Gusfield, J. R. (1994). Identities, grievances and new social movements. In E. Laurana, H. Johnston and J. R. Gusfield (eds.), *New Social Movements: From Ideology to Identity*, 3-35. Philadelphia, Pennsylvania: Temple University Press.
- Keeley, J. (2001). *Influencing Policy Process for Sustainable Livelihoods, Lessons for Change*, IDS Sussex.
- Klein, J. (1992). *Where to find Gold and Gems in Nevada*. London, Gem Guides Book.
- Kombo, D.K. and Tromp, D. L. A., (2006). *Proposal and Thesis Writing: An Introduction*. Nairobi, Paulines Publications Africa.
- Krappmann, O. (2006). *Tantaline, Tingsten and gold mineralization suitable for small-scale mining in Namibia: A Qualitative Survey of metal Occurrences and Assessment project preferences: Goakey Consult cc:Windhock, Namibia*.
- Labonne, B., Olympios K. and James C. (2003) Report - Multi- Disciplinary mission to Ethiopia, Project RAF/99/023 – Poverty eradication and sustainable livelihoods: focusing on artisanal mining communities. Prepared for the UNDP and the Government of Ethiopia, UNDESA: New York
- Mugenda, A. G. (2008). *Social Science Research*. Nairobi, Applied Research & Training Services, Nairobi, Acts Press

- Mugenda, O. M. and Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi, Acts Press
- Mulwa, F. M., (2010) *Demystifying Participatory Community Development Revised Edition*, Nairobi, Daughters of St. Paul.
- Munyoki, J. M. and Mulwa, A. S. (2012). *Social Science Research Hand Book*. Nairobi, Downtown Printing Works Ltd.
- Murray, N. (2003) 'Informal gold mining and national development: the case of Mongolia', in *International Development Planning Review*, vol.25, no.2, pp.111-128
- Myrdal, G. (1957). *Economic Theory and Underdeveloped Regions*. London, Gerald Duckworth and Co.
- National Environment Management Authority (NEMA), (2007) *District Environment Action Plan (DEAP)2006-2011*. Bondo District
- Nyambe, M. J. and Amunkete, T. (2009). *Small Scale Mining and its Impact on poverty in Namibia. A case Study of Mines in the Erongo Region:NEPRU:Windhock, Namibia*.
- Ogola, J. S (1987). *Mineralization in the Migori Greenstone Belt. Malcalder, Western Kenya, Journal Africa Geological Review*. London, John Wiley and Sons, pp.25-44.
- Okoth, S. (2008). *Gold Mining at Wagusu Village: Report on the Baraza*. Bondo- National Environment Management Authority (NEMA). Unpublished.
- Orodho, A.J (2003). *Essentials of Educational and Social Sciences Research Method*. Nairobi, Masola Publishers.
- Orodho, A. J. and Kombo, D. K. (2002). *Research Methods*. Nairobi, Kenyatta University, Insitute of Open Learning.
- Quiroga, E. R. (2002) 'the case of Artisanal mining in Bolivia: local participatory development and mining investment opportunities', *Natural Resource Forum*.
- Reichel, M., and Ramey, M.A (eds). (1987). *Conceptual frameworks for bibliographic education: Theory to practice*. Littketon, Colorado: Libraries Unlimited Inc.
- Ryan, W. (1957). *Blaming the Victim*. New York: Vintage
- Senauer, B. (2002). *APro-poor growth strategy to 2002, a pro-poor growthStrategy to end hunger: American Journal of Agricultural Economics*. 84(3):826-831
- Smyth, R. (2004). "Exploring the usefulness of a conceptual framework as a research tool:" *Issues in Educational Research*.

- Solomon, M. (2004). Critical Issues in Developing a Mining-related Poverty Reduction Strategy for the People's Republic of Tanzania.
- Susapu, B., and Crispin, G., 2001, Country Study Report on Small-scale Mining in Papua New Guinea, Country Study commissioned by MMSD.
- Tobin, J. (1994). Poverty in Relation to Macroeconomic Trends, Cycles, policies. In S. H. Danzinger, S.H., Sandefur, G.D., and Weinberg, D.H., (eds), *Confronting Poverty: Prescriptions for Change*. Cambridge, Harvard University Press
- Veiga, M. and Hinton, J. (2002) 'Abandoned Artisanal Gold Mines in the Brazilian Amazon: a legacy of mercury pollution', *Natural Resources Forum*.
- Wall (2000) Small-scale mining and the reduction of poverty, the case of Llallagua, Bolivia, M.Phil Thesis, International Development Centre, Queen Elizabeth House, Oxford University
- Weber, M. (2001). *Protestant Ethic and the Spirit of Capitalism*. New York: Routledge
- Woolard, I. and Leibbrandt, M. (1999). *Measuring poverty in South Africa*, DPRU Working paper No. 99/33: university of Cape Town, South Africa.

### **Internet Sources**

- Barry, M. (ed.) (1996). Regularizing informal mining - a summary of the proceedings of the international roundtable on artisanal mining, Industry and energy department occasional paper; IEN no. 6 (April 1996), World Bank. Retrieved from [http://www.wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1999/09/10/000009265\\_3980429111204/Rendered/PDF/multi\\_page.pdf](http://www.wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1999/09/10/000009265_3980429111204/Rendered/PDF/multi_page.pdf). Accessed on 20<sup>th</sup> March 2013
- CASM, IFC-CommDev, ICMM (2010). "Working Together: How large-scale mining can engage D'Souza, Kevin (2002) Artisanal and small-scale mining in Africa: a reality check, keynote presentation at the Seminar on Artisanal and Small-scale Mining in Africa, Yaoundé, Cameroon. Accessed on 10<sup>th</sup> February 2013
- Gilman (1999) Artisanal mining for sustainable livelihoods, UNDP. Retrieved from [www.undp.org/sl/Documents/General%20info/Artisanal\\_mining/artisanal\\_mining.htm](http://www.undp.org/sl/Documents/General%20info/Artisanal_mining/artisanal_mining.htm). Accessed on 20th March 2013

- Kramcha, S. (2004) "Livelihoods and Policy in the Artisanal and Small-Scale Mining  
Kuter, U. & Tilmaz, C. 2001. Survey methods: Questionnaires and Interviews.  
Retrieved from: <http://www.umd.edu.html> . Accessed on 14<sup>th</sup> April 2013
- Lahiri-Dutt, K. (2008). "Digging to Survive: Women's Livelihoods in south Asia's Small  
MIME Consult Ltd. (2002) *Ghana: Poverty eradication and sustainable livelihoods: focusing on artisanal mining communities*, Prepared for UNDP/DESA, RAF99/023  
Mines and Quarries" in *South Asian Survey* 15: 2 (2008): 217–244. Retrieved from:  
MMSD (2002) 'Artisanal and small-scale mining' Chapter 13 in *Breaking new ground: mining, minerals, and sustainable development*. Retrieved from  
development, [http://www.iied.org/mmsd/mmsd\\_pdfs/finalreport\\_13.pdf](http://www.iied.org/mmsd/mmsd_pdfs/finalreport_13.pdf). Accessed on 22<sup>nd</sup>  
February 2013.
- Ranchod, S. (2001) Gender and mining: workplace, Research Topic 3: Mining in Society,  
Mining Minerals Sustainable Development Southern Africa, African Institute of  
Corporate Citizenship, Retrieved from  
<http://www.aiccafrica.com/Reports/docs/gender%20and%20the%20workplace.hTm>.  
Accessed on 20<sup>th</sup> March 2013
- Telmer, K. H., & Veiga, M. M. (2009). "World emissions of mercury from artisanal and small  
the Natural Resources Forum, Volume 26, Issue 1, pages 3–13, February 2002, available  
here: <http://onlinelibrary.wiley.com/doi/10.1111/1477-8947.00002/abstract>. Accessed on  
13<sup>th</sup> April 2013
- United Nations Development Programme (UNDP), 2002. Artisanal mining for sustainable  
livelihoods. Retrieved from  
[www.undp.org/sl/Documents/General%20info/Artisinal\\_mining/artisinal\\_mining.htm](http://www.undp.org/sl/Documents/General%20info/Artisinal_mining/artisinal_mining.htm),  
last updated 3 November 2002, accessed 19 March 2013.
- Veiga, M., & Velasquez L., P. C. (2005). "Technical Report on Cyanide and Hg, UNIDO."  
Viega, M.M & Hinton, J.J. 2002. Abandoned artisanal gold mines in Brazillian Amazon:  
A legacy of mercury pollution. Natural Resources Forum. Retrieved from:  
<http://www.ddiglobal.org/pages/artisinal-diamond.php>. Accessed on 13<sup>th</sup> April 2013

- Weber-Fahr, M. et al. (2002.) 'Chapter 25: Mining', Volume 2 – Macroeconomic and Sectoral Approaches, World Bank [http://poverty.worldbank.org/files/4251\\_chap25.pdf](http://poverty.worldbank.org/files/4251_chap25.pdf) with artisanal and small-scale miners". Retrieved from: [www.icmm.com/document/789](http://www.icmm.com/document/789). Accessed on 23rd March 2013
- World Bank (2000) Tanzania: women in the mining sector, Private Sector and Infrastructure – Findings, No.189, August. Retrieved from: [www.worldbank.org/afr/findings/english/find189.pdf](http://www.worldbank.org/afr/findings/english/find189.pdf). Accessed on 6<sup>th</sup> March 2013.

## APPENDICES

### Appendix One: Interview Schedule

#### Household heads involved in gold mining will be the main respondent.

My name is Beatrice Atieno Abura, a student at the University of Nairobi studying a Masters Degree in Arts (Rural Sociology and Community Development). I am currently undertaking an academic research project whose title is “Impact of Artisanal and Small-Scale Gold Mining on Poverty Alleviation: a Case Study of Central-Sakwa Location, Siaya County in Kenya”. You are invited to participate in this research by providing your views in relation to this study. Your contribution will help in the completion of this study. Participation on this study is voluntary and your confidentiality will be reserved as the information you give will be used strictly for academic purposes.

#### Level 1: Household Demographic Information

1. Sex: (tick as appropriate) Male [ ] Female [ ]
2. Age: .....
3. Name of village: .....
4. Name of the mining site: .....
5. What is your household size? (Indicate in numbers) .....
6. What is your Marital Status? (tick as appropriate)  
Single [ ] Married [ ] Divorced [ ] Separated [ ]
7. What is your highest level of education? (tick as appropriate)  
No schooling [ ] Primary [ ] Secondary [ ] College [ ] University [ ] others [ ] if  
others specify.....
8. What is your main occupation?  
Farmer [ ] Miner [ ] fisherman [ ] teacher [ ] business person [ ] others [ ] if others specify  
.....

9. What is your main source of income?

Farming [ ] small business enterprise [ ] self employed [ ] Mining [ ] others [ ] if others specify .....

**Level 2: Economic Status of the Miners**

<b>Assets</b>	<b>Before being involved in gold mining activities</b>	<b>After being involved in gold mining activities</b>
<b>Transport</b> ❖ Cars ❖ Motorcycles ❖ Boats ❖ Bicycles		
<b>Property Ownership</b> ❖ House-e.g. thatched, semi-permanent, permanent ❖ Land		
<b>Sources of information</b> ❖ Television ❖ Radio ❖ Letters ❖ Cell phone ❖ Newspapers		

**Level 3: Conceptualizing Artisanal and Small-Scale Mining**

1. What do you understand about Artisanal and Small-Scale Gold Mining?

.....  
 .....  
 .....  
 .....  
 .....

2. How long have you been in Artisanal and Small-Scale gold mining?

5 and below years [ ] 6-10 years [ ] 11-15 years [ ] 16-20 years [ ] above 20 years [ ]

3. What prompted you into this Activity? Briefly explain

.....  
.....  
.....  
.....  
.....

**Level 4: Factors promoting or inhibiting Artisanal and Small-Scale Gold Mining from alleviating poverty**

1. What conditions have made it possible for Artisanal and Small-Scale Gold Mining to meet your needs as you do your day to day activities?

.....  
.....  
.....  
.....  
.....

2. Explain the challenges you experience as you do your day to day mining activities?

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b). what recommendations would you give to improve the challenges above?

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**Appendix 2: Focus Group Discussion guide**

**Household heads with gold mining as their main occupation will be the main respondents**

My name is Beatrice Atieno Abura, a student at the University of Nairobi studying a Masters Degree in Arts (Rural Sociology and Community Development). I am currently undertaking an academic research project whose title is “Impact of Artisanal and Small-Scale Gold Mining on Poverty Alleviation: a Case Study of Central-Sakwa Location, Siaya County in Kenya”. You are invited to participate in this research by providing your views in relation to this study. Your contribution will help in the completion of this study. Participation on this study is voluntary and your confidentiality will be reserved as the information you give will be used strictly for academic purposes.

**Level 1: Conceptualizing poverty**

1. What is your understanding of poverty? Briefly Explain

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.....  
.....  
.....

2. What is your understanding of vulnerability? Briefly Explain

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3. What qualifies a household to be poor in this community? Briefly Explain

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.....

4. Explain the causes of poverty in this community?

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.....

4. What strategies do you think can be put in place to ensure that the poor in this community attain their needs? (List them)

<b>Institution</b>	<b>Strategies put in place to ensure that the poor in this community attain their needs</b>
Individuals	
Households	
Community members	
Government agencies	
NGOs/CSOs	
Others	

**Level 2: Extent in which Artisanal and Small-Scale Gold Mining have alleviated poverty**

1. As a group kindly sketch a map of Central-Sakwa Location showing its boundaries and the key features found within it.

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2. Highlight the changes that have taken place overtime in the last years in the following sectors;

a) Food Availability

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b) Water Availability

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c) Health

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d) Employment

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e) Housing

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f) Security

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g) Education

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h) Others (specify)

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3. a) Which is your best hour (s) in the day in terms of the following;

i) Harvesting of gold

.....  
.....

.....  
.....

ii) Trade

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.....  
.....

b) Which is your best day (s) in the week in terms of the following?

i) Harvesting of gold

.....  
.....  
.....

ii) Trade

.....  
.....  
.....

c) Which is your best week (s) in the month in terms of the following?

i) Harvesting of gold

.....  
.....  
.....

ii) Trade

.....  
.....  
.....

d) Which is your best month (s) in the year in terms of the following?

i) Harvesting of Gold

.....  
.....  
.....

ii) Trade

.....  
.....  
.....

e) Which is your worst hour(s) in the day in terms of the following?

i) Harvesting of gold

.....  
.....  
.....

ii) Trade

.....  
.....  
.....

f) Which is your worst day (s) in a week in terms of the following?

i) Harvesting of Gold

.....  
.....  
.....

ii) Trade

.....  
.....  
.....

g) Which is your worst week (s) in a month in terms of the following?

i) Harvesting of Gold

.....  
.....  
.....

ii) Trade

.....  
.....  
.....

h) Which is your worst month (s) in a year in terms of the following?

i) Harvesting of gold

.....  
.....  
.....

ii) Trade

.....  
.....  
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**Level 3: Factors promoting or inhibiting Artisanal and Small-Scale Gold Mining from alleviating poverty**

1. What conditions have made it possible for gold miners to achieve their needs as they perform their day to day activities? (Briefly explain)

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.....  
.....

2. What challenges do you experience as you do your mining activities?

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3. What recommendations would you give to improve the challenges above?

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### Appendix 3: Key Informant Interview Guide

#### Key respondents included;

- ❖ Area chief
- ❖ 4 assistant chiefs
- ❖ 3 clan elders
- ❖ 1 divisional officer

My name is Beatrice Atieno Abura, a student at the University of Nairobi studying a Masters Degree in Arts (Rural Sociology and Community Development). I am currently undertaking an academic research project whose title is “Impact of Artisanal and Small-Scale Gold Mining on Poverty Alleviation: a Case Study of Central-Sakwa Location, Siaya County in Kenya”. You are invited to participate in this research by providing your views in relation to this study. Your contribution will help in the completion of this study. Participation on this study is voluntary and your confidentiality will be reserved as the information you give will be used strictly for academic purposes.

#### Section 1: Demographic Information

1. Sex: (tick as appropriate) Male [ ] Female [ ]

2. What is your highest level of education? (Tick as appropriate)

No schooling [ ] Primary [ ] Secondary [ ] College [ ] University [ ] others [ ] if others specify.....

3. Position held: .....

#### Level 2: Conceptualizing poverty

1. What is your understanding of poverty? (Briefly explain)

.....  
.....  
.....

.....  
.....

2. Explain the causes of poverty in this community?

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b). What strategies do you think can be put in place to reduce levels of poverty in this community?

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**Level 3: Factors promoting or inhibiting Artisanal and Small-Scale Gold Mining from alleviating poverty**

1. What conditions have made it possible for gold miners to meet their needs as they perform their day to day activities?

.....  
.....  
.....  
.....  
.....

2. What challenges do gold miners experience as they do their day to day activities? (List them)

.....  
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b) What recommendations would you give to improve the challenges above?

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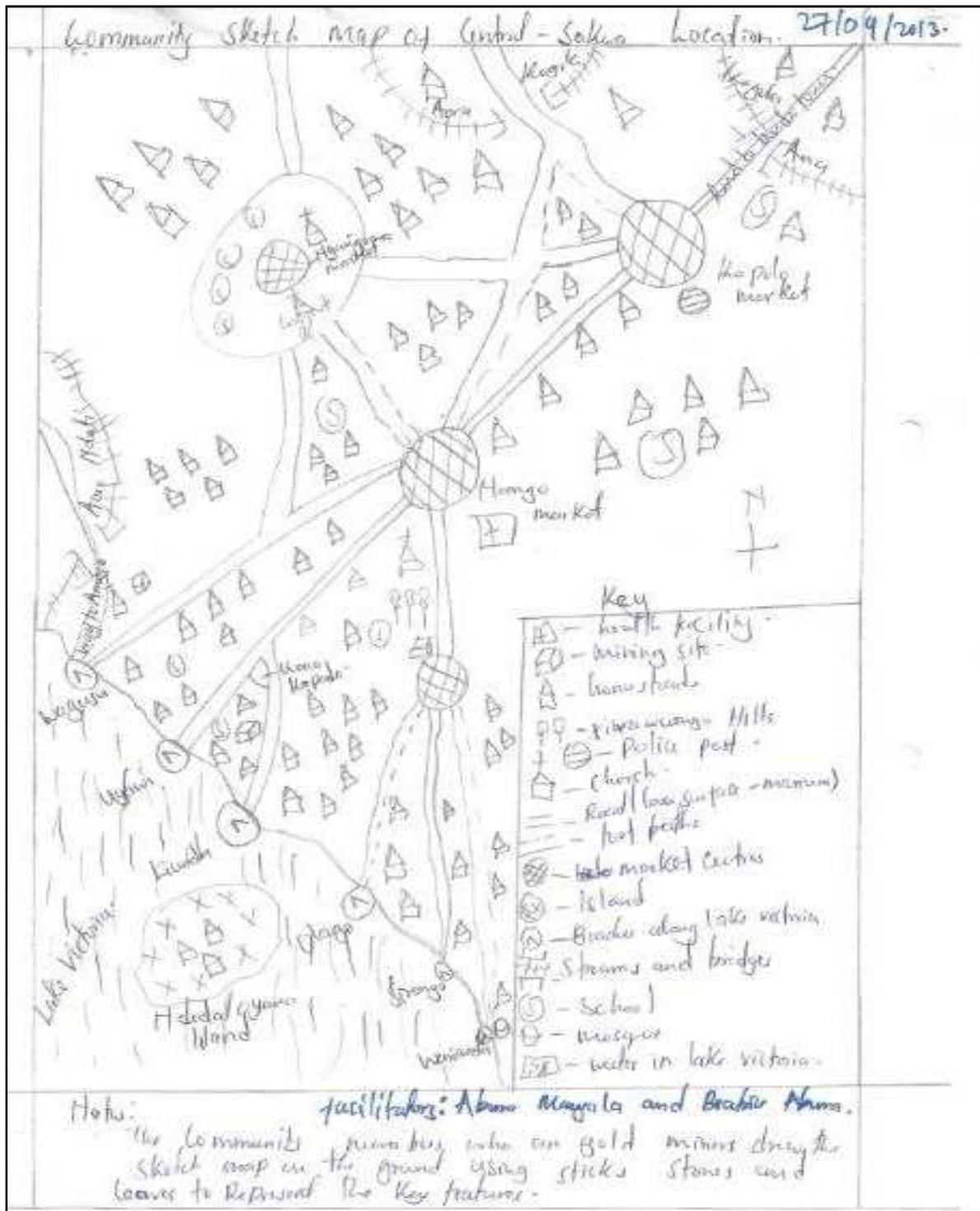
#### **Appendix 4: Observation Checklist**

The following will be the things to be observed during the field study

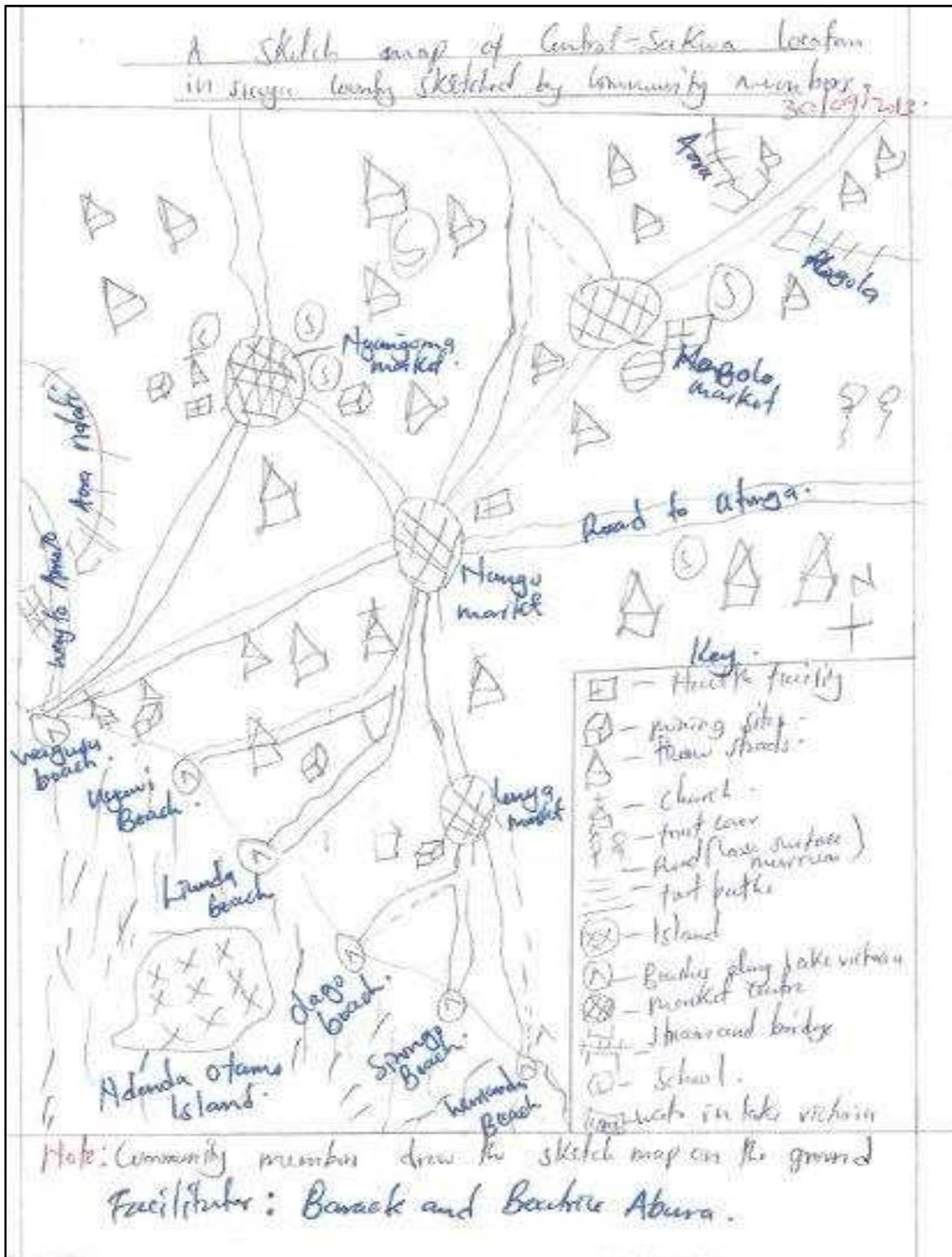
- ❖ Methods used in gold mining
- ❖ The techniques and tools uses in gold mining
- ❖ Division of labor within the mining process
- ❖ Relations among those in gold mining activities
- ❖ Environmental conditions of the mining sites

## Appendix 5: Sketch Maps of Central-Sakwa Location

### Sketch Map I



**Sketch Map II**







**Appendix 6: Research Work Plan**

<b>ACTIVITY</b>	<b>Proposal Writing</b>	<b>Preparation of Research Instruments</b>	<b>Field Data Collection</b>	<b>Data Processing, Analysis and Report Writing</b>	<b>Presentation of Final Document</b>
<b>MONTH'S in the Year 2013</b>					
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

**Key**



Time of the month in which the activity took place

**Source:** Researcher

## Appendix 7: Project Paper Budget

### An Activity Budget for Project paper

<b>Core Activities</b>	<b>Items/ Participants</b>	<b>Cost (Kshs.)</b>
Consolidation of Literature	Library search, Traveling expenses and internet bundles	3,500
Designing and Developing Research Instruments	Typing and photocopying of Research instruments	2,000
Finalizing of Research Instruments (Typing and Photocopying)	159 Questionnaires	4,500
Field Data Collection	Travel, Accommodation and Research Assistants	8,200
Data Processing, analysis and report writing	Printing and Photocopying of the Final Document, the Researcher and the Research Assistant allowances	25,500
Purchases	Camera and accessories	11,000
Emergencies and Other Expenses that had Come		5,000
<b>Total</b>		<b>59,700</b>

**Source:** Researcher