Small-Scale Stone Quarrying: Its Contribution to People's Livelihoods.

A Case Study Kasenge Parish, Nama Sub-County, Mukono District (Uganda)

By

Birabwa Elizabeth

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ABSTRACT

With majority of the world's poor living in rural areas and engaging in agriculture governments and NGOs have taken measures to promote agricultural activities so as to alleviate poverty. Uganda's Poverty Eradication Action Plan (PEAP) which serves as the government's main development intervention to reduce poverty acknowledges agriculture as one of the strategies aimed to increase income levels of the poor. Provisions of agricultural advisory services in addition to establishment of agricultural research centers amongst others; are some of the initiatives put in place by the government. However in spite of the all these efforts, there is concern about the growing non-agricultural informal activities as alternative sources of income in Uganda, a country with high agricultural potential. It is in this context therefore, that this research study seeks to find out why individuals and rural households in Kasenge Parish, Mukono district engage in small scale stone extraction. This study also seeks to identify the constraints and the vulnerabilities associated with small scale quarrying activities and further assess the effects of laws, policies and institutions in enhancing or hindering these activities. This research study also endeavors to explore the different livelihood outcomes realized by the stone workers and Kasenge parish as a result of stone quarrying activities. The study relies on information collected qualitatively through individual and group interviews coupled with personal observations in addition to documented data from published and unpublished articles. Based on the Sustainable Livelihoods Approach and the Sustainable Livelihoods Framework, findings revealed that small scale stone quarrying was both a poverty and market driven activity; that was enhanced by political stability and rural-urban population increase. Informal stone extraction however, was prone to human and economic shocks that affect the workers, quarrying activities and the outcomes as well. The findings further showed that small scale quarrying activities are not affected by the law that governs mineral extraction. In fact the Mineral Policy enhances small scale mining for national, socio-economic development. However, women at Kasenge are constrained by gender roles and informal regulations. The livelihood outcomes realized were both tangible and non-tangible to the workers and the Kasenge community. In view of this, the study recommends official recognition of small scale quarrying so as to enhance sustainable development in harvesting of a non-renewable natural resource. Key words: ***Small Scale Mineral Extraction, Sustainable Livelihoods***

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ABOVE ALL, I GIVE GLORY AND HONOUR TO GOD

TO ALL I SAY; MAY YOU BE BLESSED!

DECLARATION

I hereby declare that the work in this thesis is my own and has not been submitted for any degree or examination in any other university. In all cases where other people's ideas were used, they have been duly acknowledged by complete references.

Full name of Student: Birabwa Elizabeth

Signature……..

Date……

DEDICATION

I dedicate this Thesis to the Kassajja and Mainja Families.

May God richly reward you.

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
CBOs	Community Based Organisations
DFID	Department for International Development
FAO	Food and Agriculture Organisation
GoU	Government of Uganda
GDP	Gross Domestic Product
IDS	Institute of Development Studies
IFAD	International Fund for Agricultural Development
IIED	International Institute for Environment and Development
ILO	International Labour Organisation
IPEC	International Programme on the Elimination of Child Labour
ITDG	Intermediate Technology Development Group
MMED	Ministry of Energy and Mineral Development
MFPED	Ministry of Finance Planning and Economic Development
MLSW	Ministry of Labour and Social Work
MMSD	Mining Mineral and Sustainable Development
MUK	Makerere University Kampala
NAADS	National Agriculture and Advisory Services
NEMA	National Environment Management Authority
NGOs	Non Governmental Organisation
NIOSH	National Institute for Occupational Safety and Health
NRM	National Resistance Movement
PEAP	Poverty Eradication Action Plan
PRSP	Poverty Reduction Strategy Paper
HIV	Human Immune Virus
SANTREN	South African Network for Training and Research on the Environment
SADC	South African Development Community
SIDA	Swedish International Development Cooperation Agency
SOER	State of Environment Report
UBOS	Uganda Bureau of Statistics

Exchange Rate 1US$= UGX 1800

CHAPTER ONE

1.0 INFORMAL SECTOR AND SMALL SCALE MINING

1.1 Introduction

While most of the rural dwellers make their way to the fields as expected in the countryside, residents in Kasenge Parish, Nama Sub-county, welcome everyday of the year trekking uphill the Kasenge stone quarry. Men, women with children on their backs, start and end their day extracting, lifting and crushing stones; using simple hand made tools to quench the insatiable construction industry in the rapidly urbanising city.

This chapter introduces the study by showing the existence of the rural informal sector, with emphasis on small scale mineral extraction and its related significance. Shown in this chapter is the statement of the problem, aim and objectives pertinent to the study.

1.2 Background to the Study

World Bank (2003) reports that more than half of the people in developing and transition countries live in poverty with about 1.2 Billion people, living on less than US $ 1 per day or less in 1999. A further 1.6 billion people live on US$1 to $2 a day and are thus insecure in the risk of falling to the level of bare subsistence. Carney (1999) and estimates by IFAD (2001) show that close to 70 percent of the World's poor live in rural areas depending on agriculture as a source of livelihood and additional research predicts increasing numbers of the rural poor in the foreseeable future.

ILO (2003) shows that, activities on farms account for 60-75 percent of rural work and together with associated industries and services, is central to the livelihood of the worlds' communities. Agriculture is the core industry in most rural areas, employing majority if the rural poor and generating between a quarter and a third of national output in many developing countries (ibid). Evident studies however, show that rural dwellers are more prone to high rates of unemployment and are the most affected by natural shocks such as droughts, floods and civil strife. IFAD (2001) also emphasizes that since they have the

least access to government and non-government social services, rural households are also the most vulnerable to illnesses and high mortality rates. Vulnerability is associated with increased exposure to risks and defencelessness against deprivation which leads to societal and economic marginalization.

Poverty in Africa is predominantly rural, with more than 70 percent of the continent's poor people living in rural areas. East and Southern Africa have been noted as regions with the world's highest concentrations of poor people, depending on subsistence agriculture as a source of food and income. However, engagement in non-agricultural activities in sub-Saharan Africa is common in adverse environmental changes such as drought and floods, declines in agricultural markets relative to non-farm wage levels; making agriculture less viable as a source of livelihood, high population increase in areas of high population growth (IFAD, 2006) leads to land fragmentation, rises in input costs due to the removal of subsidies during the Structural Adjustment Programmes in the 1980s and the 1990s significantly affected economies in Africa that relied heavily on agriculture.

Sida (2004) defines non-agricultural rural economic activities, as those outside production of plants and animals. These include petty trading, artisan work, casual laboring and employment either locally or far away through migration. Non-farm sources of income also cover a variety of activities excluding those that are performed on the farm or related to the farm as shown by Chambers (1989), NEMA (1996). These are either full time activities in incidences of landlessness and lack of employment or part time when agricultural activities are less demanding.

Sida (2004) acknowledges the importance of non-agricultural activities in providing employment to 80 percent of the African population, as well as income to 30-50 percent of households in sub-Saharan Africa and Asia. Smith (2001) asserts that the presence of the informal economy in rural areas has been recognised for broadening income and livelihood strategies away from purely crop and livestock production towards both farm and non-farm activities. These are undertaken to generate additional income via production of non-agricultural goods and services, sale of waged labour or self employment.

1.3 What is the Informal Sector?

Coined in the early 1970s by Hart (1971), the term informal sector, is associated with Third World countries and is used to describe small scale, non-agricultural activities which provide a livelihood for people who make simple goods, such as chairs and handicrafts or who provide a range of basic services, like carrying water from a standpipe. Unlike those who work in factories, government offices or the larger commercial undertakings; informal activities are largely outside the countries' legal and regulatory framework. Reasons to maintain informality are related to their marginal productivity, high initial capital investment and registration (that is often bureaucratic) required by the formal sector. At times, actors in the informal sector prefer to be clandestine so as to avoid taxes and government supervision (Sida, 2004).

In spite of their invisibility in the official statistics, most informal activities produce commodities that can not be imported, substituted and are affordable to low income earners. Apart from yielding services to both high and low income earners, informal activities also provide useful business experience and improve the living standards for majority of the population in developing countries (Friedman, 1992). Lubell (1991) also notes the significance of the indigenous apprenticeship system in Africa which enhances human capital with minimal straining. Since the participants are mostly school dropouts, they imitate goods produced by modern companies. This is in addition to being innovative which helps them become independent hence able to survive the competitive labour market.

In spite of the evident benefits of the sector, governments especially in Eastern and Southern Africa have perceived the informal sector as the antithesis of Modernization; and as perpetuating outmoded methods of production. The sector has often been associated with criminal activities and illegality. Johnston *et al* (2000) observe that the informal sector in the Third World is seen as a problem of under development as well as a solution to it. As noted in the 1970s by ILO, it is associated with absorption of unemployed majority but on the other hand the use of simple technology and low productivity hinders modernization of the sector.

ILO's 1972 employment Mission to Kenya in relation to small scale enterprises, described the informal sector as *a way of doing things*. This is characterized by; easy entry, reliance on indigenous resources, with family ownership of resources and small scale operation. Activities are usually labour intensive relying on adapted technology, with skills acquired outside the formal school system (Aboagye, 1986). In addition to these characteristics, there is a relatively low level of capital investment. As informal activities crystallize in most developing countries, terms such as; K*azi kwa Nguvu* (Tanzania) which means *work with strength* and *Jua Kali* (Kenya) which literally means *hot sun,* depict the work environment in the informal sector (Livingstone, 1991).

1.3.1 Small Scale Mineral Extraction

Small scale mineral extraction is one of the non-agricultural activities carried out in developing countries. ILO (1999) defines small scale mineral extraction in relation mining and quarrying of industrial minerals and construction materials such as limestone, coal, zinc, gypsum, clay, and granite. While mining is common with minerals such as; gold, diamonds, precious stones and semi-precious stones like beryl, garnet and tourmaline. Characteristic of informal sources of income, small scale mineral extraction involves use of rudimentary tools such as hoes, pick axes, chisels and shovels; coupled with labour intensive activities like digging, breaking, panning, sorting and carrying by hand. Statistics by ILO (1999) reveal that close to 80-100 million households and an estimate of 13 million workers are directly engaged in small scale mining worldwide and out of this population, 1 million are children aged between 5 and 17 years.

Largely a poverty driven activity, small scale mineral extraction is a source of income to the poorest, the less educated, unemployed, migrant and landless populations in remote areas (Labonne *et al*, 1999); and meets about 15-20 percent of the world's non-fuel mineral production as documented by ILO (1999). Small-scale miners contribute up to 25 per cent of total gold production in Zimbabwe and Tanzania and they also form the basis for local processing industries either as small scale or as feeders to larger centralised plants, such as artisanal cutting and polishing of gemstones, use of clays to make bricks, silica sand for glass, and gypsum for cement to mention a few (Labonne *et al,* 1999).

Small scale extraction provides employment during incidences of economic shocks during the closure of private and state owned mines in the 1970s and 1980) in Tanzania as shown by (Labonne *et al* 1999). The sector also helped in resettling skilled and semi-skilled employees who lost their jobs during implementation of Structural Adjustment Programmes. According to statistical data gathered in 1997 there was an increase of over 550,00 people in the industry from estimated numbers of 100,000 in 1989 to 300,000 in 1992, around the same time when the programmes were carried out *(ibid).*

Labonne *et al* (1999), notes that artisanal and small-scale miners work largely in the 'informal sector'. This serves as a serious impediment to improving the sector's contribution to sustainable development. Small scale mining enterprises do not normally pay royalties to the state or taxes on profits. They may also lack official rights to exploit a particular deposit – working without mining title or any kind of contract with the owner of the concession, which makes them vulnerable to eviction. Since they do not work under government supervision, small scale mineral extractors do not strive to follow health and safety regulations or meet environmental standards.

According to UBOS (2002), 88 percent of the Ugandan population is rural based, with agriculture engaging close to 77 percent of the rural dwellers and contributing almost 75 percent to Uganda's exports. The importance of agriculture in supporting national and rural households is therefore undeniable. However most agriculture in Uganda is still at subsistence level relying on traditional methods of production, whose productivity is marginal. IFAD, (2006) also notes the high incidence of crop and livestock disease infestation which leads to pre and post harvest losses. Further assertion shows that most rural dwellers are unable to access credit services that can help them increase their productivity.

MFPED (2004) notes a remarkable decline in agricultural performance between 2000 and 2003 showing increasing inequalities and low household incomes in Uganda. Also noted, is the proportion of households whose head was mainly employed in agriculture that fell from 71 percent in 2000 to 58 percent in 2003; while there was a corresponding increase in the proportion of those who were self-employed outside agriculture from 12 percent to 25 percent in the same period *(ibid).* The effects of natural and human caused shocks

have contributed to the increased involvement in non-agricultural activities in rural Uganda.

Socio-economically, agricultural productivity in Uganda has been affected by political insurgency which has not only led loss of lives but reduced accessibility to productive agricultural land. While Uganda is at the forefront in the fight against HIV/AIDS, (IFAD, 2006) the threat of the epidemic remains acute throughout the country. Although the adult prevalence rate dropped from 30 per cent in 1986 to 5-6 per cent in 2003, nearly 80% of those infected with HIV are between the ages of 15-45 years, comprising of the most economically productive age group and often fenders of families (AIC, 2003). The epidemic has greatly affected the rural areas because of the inadequate health care facilities and high levels of poverty. Agriculture as a livelihood has been affected, as the able bodied die leaving the old and the young who engage in non-agricultural activities for survival.

This study therefore identifies with Kasenge a rural parish in Uganda and endevours to find out why rural individuals are engaged in non-agricultural activities specifically stone quarrying. It will also assess the constraints related to the sector which affects both the workers and stone quarrying as a livelihood. This study will also find out the effect of processes, institutions and policies on small scale stone quarrying. And will also explore the outcomes of small scale quarrying activities. Based on the Sustainable Livelihoods Framework as an analytical tool this study research will assess the contribution of small scale stone quarrying to people's livelihoods. Sustainable livelihood tools can be better integrated into the poverty alleviation strategy. The linkages between poverty, artisanal mining and sustainable livelihood have to be explored, in order to identify better entry points for poverty reduction strategies.

1.4 Statement of the Problem

Most studies Aboagye (1986), Midamba and Ekechi (1995) show the prevalence of the informal sector in urban areas. Odongo (2001) acknowledges the significance of the sector in Uganda which supports close to 800,000 enterprises; and provides employment to an estimated population of 1.5 million people, which amounts to about ninety percent of the non-farm workers. However in spite of the high underemployment and

unemployment rates in the rural areas where most of the youth are found, most studies relating to the informal sector have been carried out in the urban areas (MLSW, 1997).

Recent studies by Bryceson (1996, 2002), Ellis (1998, 2000), Gordon and Craig (2001) among others have shown that rural economies are not only based on agriculture. Evidence from this documented information shows the need to acknowledge non-farm activities as a source livelihood to rural households. This is especially relevant to Uganda, where close to 88 percent of the population is rural based and depends on agriculture as the main source of income UBOS (2002) .

Agriculture is prone to natural and economic shocks. In an effort to increase the income of the rural poor, the Uganda government recognises enhancement of non-farm activities. This has been shown in the country's Poverty Reduction Strategy Reports aimed at increasing the incomes of the rural poor.

Uganda according to MMED (2003) is endowed with many geological mineral and stone deposits. Although the Mineral Policy and the Constitution of Uganda 1995 acknowledges the need for sustainable mineral extraction, of concern in this case are rock deposits used in the construction industry which are not considered by the constitution. How can sustainability be guaranteed amidst high market demand of rock material by the growing building and construction industry in Uganda?

Based on this the study will therefore be of significance to the government and NGOs in relation to meeting people's needs using a resource that can not be renewed. It is a debatable issue given the growing concerns of poverty reduction and sustainable use of infinite geological resources.

1.5 Aim of the Study

The overriding purpose of this study is to:

Assess the contribution small scale stone quarrying to people's livelihoods in Kasenge Parish, Mukono District.

The increasing demand for raw materials by the construction industry has led to the realisation of non-agricultural activities in Kasenge Parish as a source of income. This study will specifically focus on small scale stone quarrying which is one of the predominant rural informal activities that has engaged Kasenge residents and migrants for more than a decade. Presented below, are the objectives and the research questions related to the study.

1.5.1 Objectives and Research Questions

Specifically the study aimed at:

Objective 1:

Finding out why people engage in small scale stone quarrying in Kasenge Parish.

- Who are involved in stone quarrying?
- Why are they engaged in small scale stone quarrying, particularly Kasenge?

Objective 2:

Identifying the constraints associated with small scale stone quarrying in relation to the vulnerability context.

- What constraints limit small scale stone quarrying?
- What coping strategies do the workers use?

Objective 3:

Assessing the effects of processes, institutions and policies on small scale quarrying in Kasenge.

- Do laws, policies or institutions hinder or enhance stone quarrying?
- How have culture and gender roles affected quarrying activities and consequently livelihood outcomes of the stone workers?

Objective 4:

Exploring the outcomes of small scale stone quarrying activities

- What livelihood outcomes have the workers attained from engaging in stone quarrying?
- What are the outcomes of quarrying realised in Kasenge parish?

- Are there any other outcomes as a result of these activities?

1.6 Organisation of the Study

This research study has been organised in nine chapters closely linked to the problem under investigation and based on different sources of information.

Chapter One: Provides a background about the informal sector in rural areas and focuses specifically on small scale mineral extraction. Also presented, is the statement of the problem under investigation, the objectives and research questions pertinent to the study.

Chapter Two: I give highlights about the theoretical and analytical framework relevant to the study. The Modernization and Alternative development theories have been discussed in relation to development and the informal sector. Further discussed, is the effect of colonisation in the consolidation of informal activities. Included in this chapter is the relevance of the Sustainable Livelihoods Approach/Framework to Kasenge stone quarry.

Chapter Three: Concentrates on the methodology and the study area. Featuring in this chapter are the weaknesses and strengths of the different methods of data collection, the sampling techniques used to select respondents and the limitations encountered during data collection.

Chapter Four: In this chapter I concentrate on the country where the study was done. In addition to the physical features, I discuss the historical background of Uganda in relation to the informal sector, the poverty trends in Uganda and government's efforts to mitigate poverty. In this chapter I also give an overview of the mining sector and further show the different hindrances that have restrained its growth. Demographic characteristics, education status, and taxation as one of the precursors of engagement in informal activities have been discussed to provide empirical data for later discussions.

Chapter Five: From Chapter Five up to Chapter Eight I present the findings of the study. These are mainly based on primary data and are concordance to the objectives of

the study. Chapter Five therefore identifies factors that lead individuals into quarrying activities, hence leading to the growth of informal stone extraction in Kasenge.

Chapter Six: Here I present the constraints hindering stone quarrying activities in relation to the vulnerability context. I also show the different coping strategies stone workers apply during periods of shocks and stresses.

Chapter Seven: Presents the processes, policies and institutions assessing their effects on small scale stone quarrying. Of concern in this chapter are the Constitution of Uganda and the Mineral Policy, highlighting their relevance to small scale mineral extraction.

Chapter Eight: I show the different livelihood outcomes resulting from quarrying activities in Kasenge. These have been shown at individual, household and community levels

Chapter Nine: This chapter discusses the thesis in a nutshell, giving special consideration to the findings conclusions and that I found significant and worth consideration in an effort to enhance the contribution of stone quarrying to people's livelihoods.

CHAPTER TWO

2.0 THEORETICAL AND ANALYTICAL FRAMEWORK

2.1 Introduction

This chapter presents a theoretical review applicable to the research, showing how societies relying on natural resources and indigenous technology; characteristic of the informal sector were perceived by proponents of the Modernisation Theory. The chapter later discusses colonisation, as one of the factors that led to consolidation of informal activities in developing countries. Also discussed in this chapter are the Alternative Development Theory and the Sustainable Development concept in relation to meeting people's basic needs and sustaining the ecology. This background gives the basis for Sustainable Livelihoods Approach which is also used as the analytical framework.

2.2 Modernisation Theory

Prominent in the 1950s and 1960s, the Modernisation Theory perceived development as an advancement of traditional societies which were characterized by a subsistence economy, low productivity and reliance on natural resources compared to modern industrialized societies. Schech and Haggis (2002) point out that, modernisation was believed to be the only force that would destroy archaic superstitions and relations at whatever social, cultural and political cost. Actually modernisation was linked to urbanization and industrialization with capital investment being the most important ingredient in economic growth and development.

The Modernisation theory was not only concerned with economic growth, but also with how traditional values, practices, social societies break down and are replaced by modern ones. This theory emphasized that countries were poor because of their dependence on natural resources. They lacked adequate technological innovations and were predominantly illiterate. It was on this basis that proponents of the theory believed that for Third World countries to develop, they needed to pass through similar stages of development similar to the First World countries in Europe.

The Modernisation Theory was epitomized in Rostow's influential model showing stages of economic growth, where by *traditional societies* with primitive technologies and high dependence on natural resources would develop to *pre-conditions for take off* stage, (like those experienced in seventeenth-and eighteenth-century Western Europe). Then the *take off stage* to sustained growth, the *drive to maturity* and finally the *age of mass consumption* which was the final stage evident in most developed countries characterized by steady economic and minimal population growth (Potter *et al*, 1999).

The informal sector associated with the use of indigenous technology, marginal productivity and dependence on natural resources was related to the traditional society. In fact proponents of the Modernisation Theory believed that as societies became more advanced, the informal sector would be absorbed by the formal sector (Martinussen, 1998). It is however evident that in spite of the economic growth realized since the conception of the theory; the informal sector has continuously developed in the Third world countries and even penetrated the developed world as noted by (Lubell 1991). Decades after the theory was debated upon, majority of the world's population Uganda inclusive still derive their livelihoods from mineral extraction, agriculture, fishing and use of forests products. In fact Bryceson (2002), associates the African continent with reliance on natural resources and an abundance of unskilled labour.

Although Martinussen (1998), predicted absorption of the informal sector, it is worth identifying the varying political and socio-economic background of developing countries which is different from that of developed nations. Issues such as colonialism, political upheavals, and the continuous dependence of independent nations on their colonial masters; have contributed to the dependency on natural resources as a source of livelihood, and more so the informal sector which employs majority of the population.

2.3 Colonialism and Neo-colonialism

Colonialism is related to the extension of a nation's sovereignty beyond its borders through the establishment of either settler colonies or administrative dependencies in which indigenous populations are directly ruled or displaced. The new territories provide cheap labour and material resources; and the colonizers impose socio-cultural, religious and linguistic structures on the conquered population.

Bauer (1976) notes that colonialism was perceived as a benign force of economic modernisation and social advancement of the colonized societies through law and order, private property ownership and contract, basic infrastructure and modern politico-legal institutions. Clark (1991) on the other hand argues that, although Europeans introduced modern technology in various aspects such as agriculture and infrastructural development, these were strategies they used to enhance exploitation of raw materials. Road and railway networks connected collection points to regions endowed with agricultural raw materials and minerals. An example is the Uganda railway whose construction began in 1876 Mombassa Port, traversed most agricultural regions in Kenya and in western Uganda linking to the Kasese copper mines.

Nederveen (2001) asserts that colonialists were against the industrialization of colonies and illustrates the sabotaged efforts of industrialization in Egypt, Persia and Turkey, in addition to destruction of native textile manufacturing in India. Economic progress was not considered worthwhile for the colonies, in fact Schech and Haggis (2002) note that economic progress for the natives was regarded pointless.

In relation to agriculture there was a fundamental change in the peasantries as Francis (2000) notes that colonialists reordered land usage, introduced and forced the growth of export related crops such as tea, coffee and cotton. As a result African subsistence farmers were pushed to marginal areas which were less productive. Evident of these were the white owned farms in Kenya and Zimbabwe which occupied large stretches of fertile land. In *Scramble for Africa,* Bryceson (2002) describes the effects of depeasantization[1] and deagrarianization[2] in sub-Saharan Africa. The colonial governments presented a fundamental change in the peasantries, reordering of land usage and introduced the growth of export related crops.

[1] Depeasantization- Entails change from small scale production of subsistence crops with high dependency on manual labour to large scale using modern technology.

[2] Deagrarianization is defined as a long-term process of occupational adjustment, income earning reorientation, social identification and spatial relocation of rural dwellers away from strictly agricultural-based modes of livelihood (Bryceson, 2002).

The formal education system destined the African fraternity for clerical, house keeping and low income earning jobs related to the informal sector. In fact, the administrative skills confined Africans to positions where they were less engaged in decision making.

Rules were forcefully applied and most colonial policies were not people centred; but only aimed at economic development of colonial governments through exploitation of the indigenous societies. They fully exploited human labour and unsustainably used natural resources to achieve their goals. Craig (1991) notes tax payment as one the ways the colonial government administered, financed and benefited from the colonies. In addition to other taxes, Africans had to pay the hut tax pay for living in their own houses. Since agriculture activities could not yield adequate income to provide household needs and tax payment; Africans were forced into informal activities such as wage working at road construction sites, mines and in homes of the wealthy to meet their household needs (Clark, 1991).

Potter *et al* (1999) point out that colonialism gave way to neo-colonialism, instances where the World's most powerful states such as the United States and the member states of the European Union exercise economic and political control over the societies of the developing world. Although African colonies were declared independent, their economic and political systems are externally monitored through political, trade and aid relations. To note for instance, are the packages that accompanied the Structural Adjustment Programmes of the World Bank and the International Monetary Fund implemented in developing countries in the 1980s and the persistent dependence of primary export production of developing countries on former colonies.

2.4 Alternative Development Theory

The Alternative Development Theory emerged in the 1970s as a critique to the Modernisation and Dependency theories which were Eurocentric in nature putting emphasis on economic growth and industrialisation as being paramount for development. The Alternative Development Theory established itself in the economic development debate due to the fact that it was people-centred, emphasised on self-reliance and embraced sustainable use of natural resources. The Alternative Development Theory also considered development in relation to meeting the *basic needs* of the poor which included

food, shelter, clothing, health and poverty alleviation among the vulnerable (the poor, women, children).

Although economic growth was evident in some developing countries, poverty and unemployment still prevailed. ILO according to Potter *et al* (1997) adapted the 'basic needs' concept to reduce poverty by encouraging employment opportunities. The scarcity of employment in the formal sector called for emphasis on maximizing employment in agriculture and the informal sector (Hettne, 1995). The *basic needs approach* in the Alternative Development Theory is therefore relevant in assessing the contribution of stone quarrying to people's livelihoods This is because; basic needs are some of the livelihood outcomes that stone workers at Kasenge strive to attain by utilizing the different assets at their disposal.

Inspired by the works of Friedman (1992) the main idea behind the Alternative Development was not to replace the mainstream development path of modernisation through the state but rather to transform and include the disempowered poor in political, economic and decision making. Friedman (1992) identifies empowerment as a process which occurs both at individual and collective levels; whereby the isolated and disadvantaged people in society (the poor, and the women) become aware of their needs and are able to make decisions towards better changes.

The process of empowerment enables the poor to re-examine their lives, discover the structures, sources of power and subordination, discover their strengths and initiate action Friedman (1992). In this way, the poor take part in the providing for their own needs rather than relying on the external assistance. The significant dependence on social capital especially in the rural areas has plays a role in promoting endogenous empowerment. Social capital captures community and social claims on which individuals can draw by virtue of their belonging to these social groups (Ellis, 2000).

The Alternative Development Theory is therefore relevant to this study because most of the stone workers are poor. When empowered they are able to meet their needs, develop skills, are able to plan and make decisions regarding their own lives. Women's involvement in stone quarrying has enabled them access financial capital. The

involvement in decision making at household and community levels has enhanced psychological empowerment and self esteem. The collective crushing of stones has enabled the women attain desired livelihood outcomes hence played a role in reducing household poverty.

2.4.1 The Concept of Sustainable Development

The inevitable co-existence of development and resource utilization led to the development of the concept Sustainable Development. The term was first used in early 1980s in the World Conservation Strategy and was later acknowledged by the World Commission on Environment and Development through the report; *Our Common Future* (Hettne, 1995).

With emphasis on sustainability, development was defined as; *one that meets the present needs without compromising the ability of the future generations to meet their own needs* (Potter *et al*, 1997). The issue of meeting people's needs and preserving natural resources became a global concern with consequential International Conferences such as The Earth Summit held in Rio de Janeiro in 1992, followed by the Summit on Sustainable Development in Johannesburg a decade later. During these meetings it become widely accepted that development and the biophysical environment (in its broadest sense) were inseparable and that one was interdependently connected to the other. At its core, Sustainable Development seeks to open a path by which economic development can progress, whilst simultaneously enhancing human development and ensuring the long-term viability of those natural systems on which development depends.

Dreschler (2001) also supplements that, the concept of Sustainable Development was as a result of increased awareness of how finite resources such as minerals would be preserved and at the same time support livelihoods. The utilization of non-renewable resources therefore engaged looking beyond ecological sustainability. With respect to small scale mining, emphasis is placed on other activities which would sustain a community long after the minerals were depleted. DGSM (2003) relates Sustainable Development to efficient mining to minimize environmental impacts and rehabilitation of abandoned mines to make land useful for other users. Sustainable Development also

considers making Environmental Impact Assessments before mining projects, to minimize environmental damage (*ibid*)

Since the 1992 Earth Summit, Uganda has joined the rest of the world to promote initiatives and mechanisms for attaining sustainable development. It was one of the first countries that embraced the principles of Agenda 21 aimed at promoting initiatives and mechanisms for attaining Sustainable Development. Sustainable Development in the Ugandan context is based on ecological, economic and social objectives (NEMA, 1996). Ecologically, there is need to conserve ecological life-support systems and biodiversity, using renewable resources sustainably, and minimising the depletion of non-renewable resources in the absence of substitutes.

Social objectives related to Sustainable Development emphasise on enhancing empowerment, human capital development, social cohesion, legal, policy and institutional development. NEMA (1996) recognises social equity, economic efficiency as the economic objectives related to sustainability. Visualising sustainability in extraction of non-renewable resources goes beyond harvesting of a natural resource sparingly for the next generation. This study focuses on Sustainable Development from the social and economic point of view, which can also be explained through the Sustainable Livelihoods Approach.

2.5 Analytical Framework

2.5.1 Why use the Sustainable Livelihood Approach?

The Sustainable Livelihoods Approach (SLA) was pioneered by DFID and was later adapted by organisations such as OXFAM, CARE, and FAO to suit their varying objectives which generally encompass around relief, poverty eradication, seen both in terms of actual poverty and vulnerability to poverty.

The Sustainable Livelihoods Approach centers on both people and their livelihood, prioritizing both the tangible and intangible assets they utilise to achieve their desires. The approach also considers the vulnerable environment the poor operate in and their

ability to with stand shocks and stresses, amidst external forces such as policies that affect accessibility of the assets that the people depend upon.

A livelihood according to Chambers and Conway (1992) comprises of capabilities, assets (both material and social resources) and activities required for a means of living: a livelihood is considered sustainable when it can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and contributes net benefits to other livelihoods at the local and global levels and in the long and short term. Ellis (2000), also defined livelihood in relation to assets and activities, influenced by social relations, gender, class, kin and institution, although excluded in this definition is capability and sustainability. In relation to Kasenge stone quarry, capabilities are both a means and an end to attaining livelihood outcomes. Sen (1984, 1987) defines capability as being able to perform certain functionings, what a person is capable of being and doing. For example able to be to dress adequately, live healthy and live decently.

The approach is founded on a belief that people require a range of assets to achieve positive livelihood outcomes; no single category of assets on its own is sufficient to yield the varied livelihood outcomes that people seek. The assets on this approach are therefore utilized synergistically to pursue the different livelihood people aspire. In the case of Kasenge, the stone workers use and convert the different assets (human capital, financial, physical, natural as well as social capital) in order to achieve the different their livelihood outcomes.

The Sustainable Livelihoods Approach is relevant to this study because it is people-centered. And seeks to gain an accurate and realistic understanding of people's strengths (assets or capital endowments) and how they endeavor to convert these into positive livelihood outcomes. The different assets possessed by the poor are referred to as their 'strengths'. The approach does not perceive the poor to be in 'lack of' but it recognizes the inherent potential in individuals, households and communities which is used to build positive livelihood outcomes (Helmore and Singh, 2002). In relation to Kasenge, the stone workers access to natural capital, skills and infrastructure that have enabled them to achieve their livelihood outcomes.

The approach is also based on the belief that people require a range of assets in order to achieve positive livelihood outcomes; no single category of assets is sufficient on its able to yield all the many and varied livelihood outcomes that people seek. The assets on this approach are therefore utilized synergistically to pursue the different livelihood people aspire. In the case of Kasenge, the stone workers use and convert the different assets (human, capital, financial, physical, natural as well as social capital) in order to achieve the different their livelihood outcomes.

Ashley and Carney (1999) acknowledge the relevance of this approach in poverty alleviation by analyzing the effects of the effect of laws, policies and institutions on the livelihoods that the poor depend on. In an effort to ensure sustainable development, laws and policies are often in place to limit over exploitation of these resources. Informal institutions such as culture also have an effect on resource accessibility in relation to gender. Based on this, the study will analyse laws and policies that govern the mining industry and at the same time explore the accessibility of quarrying activities to the female gender. This approach is therefore relevant to stone quarrying and the informal sector in general in understanding how individuals meet their needs using minimal financial input, simple technology and indigenous resources amidst a competitive formal market and restrictive government policies.

Informal sources of income and those engaged are vulnerable to shocks and stresses. Externally, livelihoods are a subject to stresses and shocks. The internal aspect of vulnerability is the capacity to cope. Shocks distinct from stresses are sudden, traumatic and unpredictable. On the other hand, stresses are typically continuous, cumulative and predictable. It is in this context therefore that the study endevours to find out the constraints in small scale stone quarrying in to stress and shocks and the different ways in which stone workers cope with these conditions. Most shocks in the small scale stone quarrying involve accidents, diseases, and weather changes. As coping strategies the stone workers depend on claims and resources from fellow workers so as to survive.

Labonne *et al* (2001), Helmore and Singh (2002) identify a sustainable livelihood as one that maintains ecological integrity of the environment. To note however is that mining

activities irreversibly degrade natural resources. This therefore calls for a need to use mining techniques must be environmentally sound so that land and water can be used for other added-value activities at a latter date (Labonne *et al* 2001). Based on these features the Sustainable Livelihoods Framework was therefore found suitable as an analytical tool in this case study.

2.5.1.1.1 Why the Sustainable Livelihoods Framework?

The Sustainable Livelihoods Framework (SLF) is an analytical tool which simplifies the complex holistic reality into a simple analytical tool which is used to understand livelihood strategies and their interaction with processes, institutions and policies. The framework forms the core of the Sustainable Livelihoods Approach and serves as an instrument for the investigation of poor people's livelihoods, whilst visualizing the main factors of influence.

The Sustainable Livelihoods Framework (Figure 1) is divided into five key components which include the Vulnerability Context, Livelihood Assets, Transforming Structures and Processes (Policy, Institutions and Processes), Livelihood Strategies and Livelihood Outcomes. The arrows shown in the framework show the links between the different components reflecting how people convert assets to activities, or how policies, institutions and process affect the key components.

People's livelihoods and their access and control of resources can be affected by events largely beyond their control. The vulnerability context in the framework observes the external environment in which people exist (DFID, 1999). Based on Figure 1, and in relation to informal small scale quarrying activities at Kasenge, the *Vulnerability context* identified here encompasses *shocks* such as accidents, disease and death which are common in mineral extraction. The shocks identified were economic such as price fluctuations, loss of stone products and loss of money during business transactions.

Seasonality and *trends* in this framework can also be related to *Stress* which are predictable events that affect livelihood outcomes attained from a livelihood strategy. Seasonality in relation to stone quarrying can be related to the weather changes that affect productivity at the quarry especially during the rainy season because the workers

activities are reduced. Seasonality was also related to the price fluctuations that were mainly determined by the demand for stone products. The vulnerability context also acknowledges how people cope with stresses and shocks that are common in the informal sector specifically stone quarrying. Common in informal activities such as stone quarrying is the reliance on social networks such as family, friends for material and immaterial support.

Assets according to framework are presented in the asset pentagon which shows the different assets people use realise livelihood outcomes. Ellis (2000) defines assets as natural capital (resources such as land, water, forests) human capital (refers to skills, knowledge, physical capability and ability to labour), physical capital (infrastructure such as roads), and social capital (safety networks social claims, social relations).

In relation to Kasenge, the piece of land where quarrying was done provided the *natural capital* which workers freely accessed to engage in stone extraction activities. The *human capital* included their physical capability and ability to labour. Similar to most informal activities, stone workers depended on skills acquired through apprenticeship from experienced workers at the quarry.

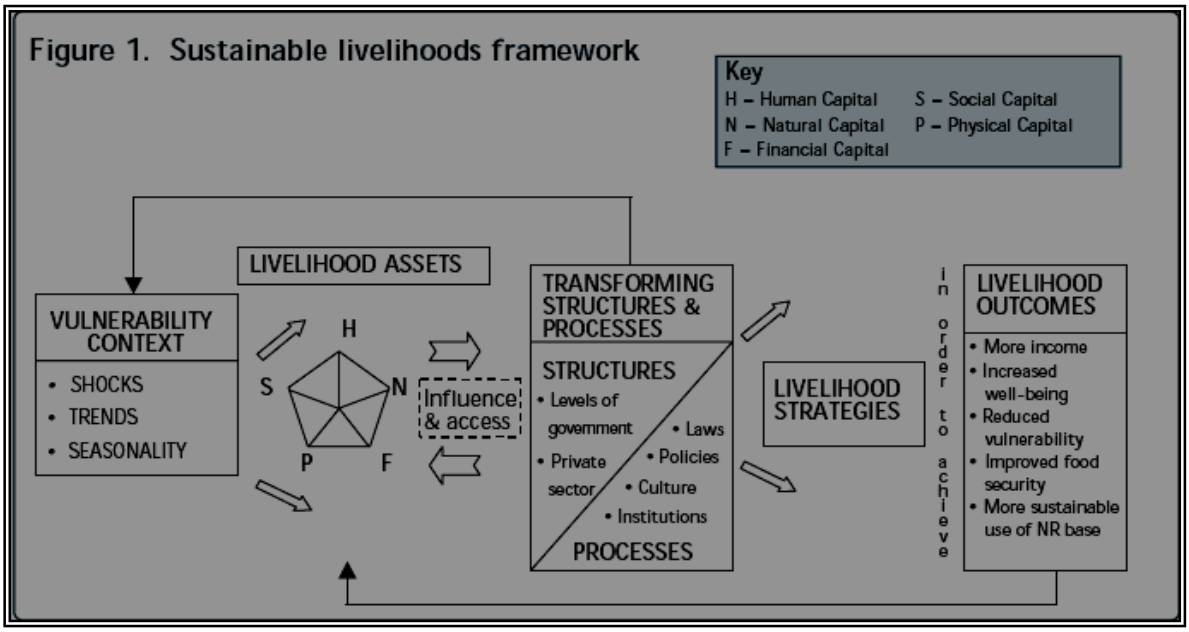


Figure 1: The DFID Sustainable Livelihoods Framework

Source: http://www.livelihoods.org/info/guidance_sheets_pdfs/section2.pdf 21/02/2006)

Financial capital from Ellis (2000) refers to cash, savings loans, remittances and credit and other economic savings. The stone workers used financial resources to rent working places, to buy tools or hire wage workers. In some cases however they depended on credit from family members and friends. Financial capital is a direct achievement as a livelihood outcome and at the same time was converted to other livelihood outcomes.

Physical capital can be referred to basic infrastructure and producer goods needed to support livelihoods. Included here are roads, shelter, and accessibility to information. Producer goods are tools people use to function productively, such as equipment, tools. The stone workers at Kasenge used simple hand tools to extract rocks for sale. The road network which enhanced accessibility to the quarry and hence, high customer turn up making quarrying a fast income generating activity.

In the context of the sustainable livelihoods framework *social capital* it is taken to mean the social resources upon which people draw in pursuit of their livelihood objectives. These could be developed through networks and connectedness, either vertical (patron/client) or horizontal (between individuals with shared interests) that increase people's trust and ability to work together to achieve their desired objectives (DFID, 2001). This was an asset that workers at the quarry relied upon to access the quarry and during periods of shocks at the quarry. Women workers depended on social networks to increase on their productivity and hence their income. Ellis (2000) supplements this by asserting that they are affiliations, associations upon which people draw when pursuing different livelihood strategies. *Social capital* is an asset that workers depend upon especially in the form of shocks, stress and weather changes that affect their activities.

Transforming *structures* and *processes* occupy a central role in the framework in determining the accessibility to assets. Structures identified in this case include public or private organisations that set up rules or policies (processes) that enhance or hinder accessibility to a resource. *Institutions* according to Scoones (1998) are formal or informal regulations structured by the rules and norms of society. Understanding institutional processes allows identification of restrictions and opportunities to sustainable livelihoods. In this case study the Constitution of Uganda 1995 and the Mineral Policy 2001 were identified as the processes that did not hinder informal small

scale stone extraction at Kasenge. On the other hand, informal institutions such as culture and regulations at the quarry hinder the accessibility of women to quarrying activities hence affecting their livelihood outcomes since they are obliged to perform their reproductive roles in addition to the productive roles at Kasenge.

Livelihood strategies are the range and combination of activities and choices that people make in order to achieve their livelihood goals. Livelihood strategies are determined by the resources available. Depending on the assets people have the structures and process that impact on them, tradition, and the vulnerability context under which they operate, people choose livelihood strategies that will best provide them with livelihood outcomes. The livelihood strategy in this particular study was stone quarrying.

The framework identifies *Livelihood outcomes* the achievements or outputs of livelihood strategies. Income increase as an outcome reduces the vulnerability of the poor to shocks such as diseases and accidents. Increase in income increases the workers' well-being both at individual and household level because they are able to provide for their households basic needs. Outcomes help us to understand the 'output' of the current configuration of factors within the livelihood framework; they demonstrate what motivates stakeholders to act as they do and what their priorities are. Apart from obtaining better extraction tools to reduce environmental degradation, sustainability in the Kasenge context led to development of other income generating activities in the parish such as trade and agriculture. Other livelihood outcomes identified were improved social networks among the stone workers, and enhanced decision making among the women as a result of their engagement in stone quarrying.

As one of the feed back arrow shows in the framework, livelihood outcomes can also be converted to assets. For example financial increase as a livelihood outcome can be converted into physical capital such as tools to increase productivity of rock materials and thus a realisation of more livelihood outcomes.

The focus on synergy between different types of capital is important in this framework. This is in relation to Ashley and Carney (1998) who point out that since no particular asset can solitarily support the poor, these often combine and nurture the different assets

to meet their needs. Although the Sustainable Livelihoods Framework was used as analytical framework it lacks some features which were important in this study. This weakness was identified and the necessary adjustments have been done to adapt the model to fit the study as will be shown in one of the chapters.

Summary

This chapter has shown the endeavored to show how the theoretical framework is related to the informal sector. Highlighted in this chapter is the Modernisation Theory in relation to the informal sector. Discussed in this chapter is the colonization and the after effects of colonial rule on the continuous presence of the informal sector in developing countries. The Alternative Development Theory was pertinent to the study in relation to meeting basic needs of the poor which are also the livelihood outcomes that stoneworkers pursue in their day today activities at Kasenge. The Empowerment Approach a core concept in the study was related to economic enhancement and decision making capabilities of the stone workers in meeting their needs especially the women. Of relevance in this study was Sustainable development which relates development to sustainable use of natural resources. The Sustainable Livelihoods Approach was related to small scale stone extraction in Kasenge and the applicability of the framework as an analytical model in this research study were also shown in this chapter.

CHAPTER THREE

3.0 RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

Padgett (1998) refers to research design as procedures, plans that a researcher follows to attain the objectives of a study. Yin (1994) supplements that; research design is the logic that links the data to be collected and the conclusions to be drawn to the initial questions of a study. In view of this, presented in this chapter is the methodology and a justified account for its applicability in this study. Discussed also are the different data collection techniques their strengths and weaknesses. An overview of the study area and all preparatory measures taken prior to data collection are also contained in this chapter. The last section in this chapter shows how the data was analysed, in order to attain the desired findings. Limitations that hindered data collection have also been highlighted in this chapter.

3.2 Choosing a Methodological Approach

Strauss and Corbin (1980) describe methodology as a way of thinking about and studying a social reality; stressing that the methodology gives a vision to what the research should involve. Methods, on the other hand are a set of procedures and techniques used for gathering and analyzing data. It is through these techniques that the analysts see the ordinary and are able to arrive to new understanding of social life (*ibid*).

Qualitative and quantitative methodologies have been used by social scientists to generate knowledge. In quantitative methodology, questionnaires are suitable when a researcher seeks short and precise answers from respondents. The responses obtained can easily be compared, aggregated; statistically analysed, tabulated and displayed diagrammatically. The close-ended questions expose a researcher to a variety of opinions from different respondents within a short period. To note, however, responses from close-ended questionnaires lack depth.

Limb and Dwyer (2001) identify observation, individual and group interviews as techniques useful in collecting qualitative data. Qualitative methodology is based on

direct quotation, careful description and interpretation of the respondents' views, seeking to capture what the people say about their lives, experiences and their interactions, in their own words (Patton, 1980), in response to open-ended questions. In addition to being content-specific, qualitative methodology is most suitable when exploring individuals' perceptions attitudes and priorities. Limb and Dwyer (2001) assert that social reality can be understood better through qualitative methodologies than through statistical description or generalised predictions. Qualitative methodology is distinguishable from quantitative because it perceives the world as dynamic which is constantly being shaped by socio-economic and political processes.

However, one common criticism levied at qualitative methodology is that the results of the study may not be used to generalise larger population because the interviewed population is small and the respondents were purposively chosen (Hancock, 1998). In spite of the weakness and strengths of the qualitative and quantitative methodology, research questions will always determine the data collection techniques to be used in a study as Limb and Dwyer (2001) emphasise.

In the quest to assess the contribution of stone quarrying to people's livelihoods, I found it appropriate to use close-ended questions to generate quantifiable information; in relation to the socio-demographic characteristics of the stone workers, the constraints in small scale extraction, reasons they joined stone quarrying and the attained livelihood outcomes from quarrying activities. On the other hand, I needed to explore in detail these features from a smaller group of workers; the key informants, using open-ended questions. The information accrued from close-ended questions was used to supplement and confirm some of the responses acquired from open-ended questions.

This study was therefore based on qualitative methodology since it aimed at describing phenomena through rich contextual data by unearthing information that could not be easily quantified. The close-ended questions aimed at obtaining workers socio-demographic characteristics and any other quantifiable information related to their livelihood which I found useful during interpretation of the research findings. Similarly, the open-ended questions provided systematic contextual knowledge about the respondents and their source of income.

3.3 Why is Stone quarrying at Kasenge a Case Study?

Case studies have often been used to elicit information about individuals in medical and psychological research. Social scientists on the other hand, use case studies to obtain information from individuals, groups, organisations and communities; or about social or political phenomena (Casley & Lury 1987) and (Yin, 2001).

Yin (1994) adds on that, case studies tend to be selective focusing on one or two issues that are fundamental to understand the system being examined, and they are usually suitable in incidences where a researcher needs to make an in-depth holistic investigation. The importance of selecting case studies is also to maximise what can be learned in the period of time available for the study. This particular study therefore focused on a stone workers' community at Kasenge parish with an aim of assessing the contribution of stone quarrying activities to their livelihoods.

Multiple sources of evidence that converge to the same set of findings are important in case studies because of the content-rich information collected. This actually concurs with Yin (1994), Huberman and Miles (2002) who acknowledge the importance of interviews, questionnaires, direct observation and documented information as sources of data in case studies. The focus on a particular case under investigation provides in-depth information and helps to understand complex social phenomena. Further assertion by Yin (1994) suggests that case studies are a preferred strategy when '*how*' or '*why*' questions are being posed and when focus is on a contemporary phenomenon within some real life context. This particular case study, therefore, relied on both primary and secondary data sources which provided complementary as well as supplementary information; which was used to find out '*why*' stone workers are engaged in stone quarrying and '*how*' they had benefited from the activity. Based on these features, case study as a strategy was found relevant to this research study.

To note, however, case studies tend to over generalise characteristics about a group of individuals from the selected respondents, this therefore leads to information loss since the whole population is not represented.

3.4 Data Collection

Acquisition of primary data involved interacting with respondents during field visits to Kasenge, through individual and group interviews between June and August 2005. I sought the help of two research assistants one of them was a University Graduate, while the other had done a study related to environmental consequences of stone quarrying in Nama Sub County. I found the research assistants helpful in penetrating the quarrying community since the workers were hesitant to release any information to an 'outsider' like me. Their assistance was also valuable in note taking since the respondents did not want to be voice recorded. I and one of the assistants carried out interviews, took the notes concurrently and later compared them for analysis. Working this way helped to find information gaps in the collected data and clarify any information from the respondents the following day.

3.4.1 Mukono District and the Study Area

3.4.1.1 Location and size

Kasenge Parish is located in Nama Sub-county in Mukono District. Mukono lies between longitudes 32˚35'E and 33˚ 05' E and latitudes 00˚ and 1˚ 30' N and it borders the districts of Jinja and Kamuli to the east, Mpigi and Luwero to the west, Apac to the north and Tanzania to the south. The district covers an area of 14,241 km 2 of which 9,648 km 2 is open water and swamps (NEMA, 1997). The climate of Mukono district is influenced by Mabira Forest Reserve and Lakes Kyoga and Victoria. The district experiences two wet seasons (March to May and September to December) with a mean annual rainfall of 1400- 1600 mm. The mean annual maximum temperature of Mukono District is 25 - 27.5 C and mean annual minimum is 15 -17.5 C.

3.4.1.2 Population

Mukono, one of the districts in the central region, has a population of 807,923 people according to (NEMA, 2004) and an annual population growth rate of 2 percent. Mukono's 7.62 percent immigration rate is ranked third after Mpigi district which is 7.63 percent and Kampala district which has 15.14 percent (NEMA, 1998). Prominent for its cultural diversity, Mukono is a hot spot for migrants from the neighbouring districts and countries because of the different economic activities. NEMA (2004) observes that for more than two decades, people have migrated to Mukono from all over Uganda

especially Northern Uganda (Kitgum, Kumi, and Gulu) which are war ravaged areas. These mainly target fishing activities and wage employment in the banana plantations, tea and sugar estates as casual laborers, in fact out of every 100 people living in Mukono, only 52 percent are natives.

3.4.1.3 Economic activities

Not different from any other rural districts, Mukono depends on agriculture and agricultural based industries such as sugar and tea processing. Other industries in the district are engaged in production of mattresses, processing soft drinks and electric cables. Being one of the most forested districts in the country, with the highest water resource, activities such as fishing and fuel wood harvesting are common in Mukono. NEMA (2004) notes the wide distribution of stone quarries in widely in the sub-counties of Goma, Nama, Nakisunga and Nabbaale.

3.4.1.4 Response to environmental change

Although the different economic activities provide employment to the rural population, evident in the district is the high rate of environmental degradation. Increased soil erosion because of vegetation over fishing, and development of unplanned fishing villages with associated environmental problems, wetland degradation as a result of brick making, increased soil depletion, and encroachment on fragile ecosystems in order to increase productivity and open pits left after excavation (NEMA, 2004).

Given the rampant environmental degradation from indiscriminate harvesting from natural resources, Mukono district has put in place a department which is responsible for environmental issues, with an aim of enhancing the quality of life of the people in addition to promoting long term sustainable economic development through sound environmental and natural resource management and use. Among the strategies put in place by the department, is to increase environmental awareness through community mobilization and sensitization which are essential for environment protection. To save the dwindling forest resources, the department encourages the development of fuel saving technologies and alternative sources of energy. Tree nurseries and tree planting are some of the activities in the district aimed at restoring lost tree cover in sub-counties of Wakisi

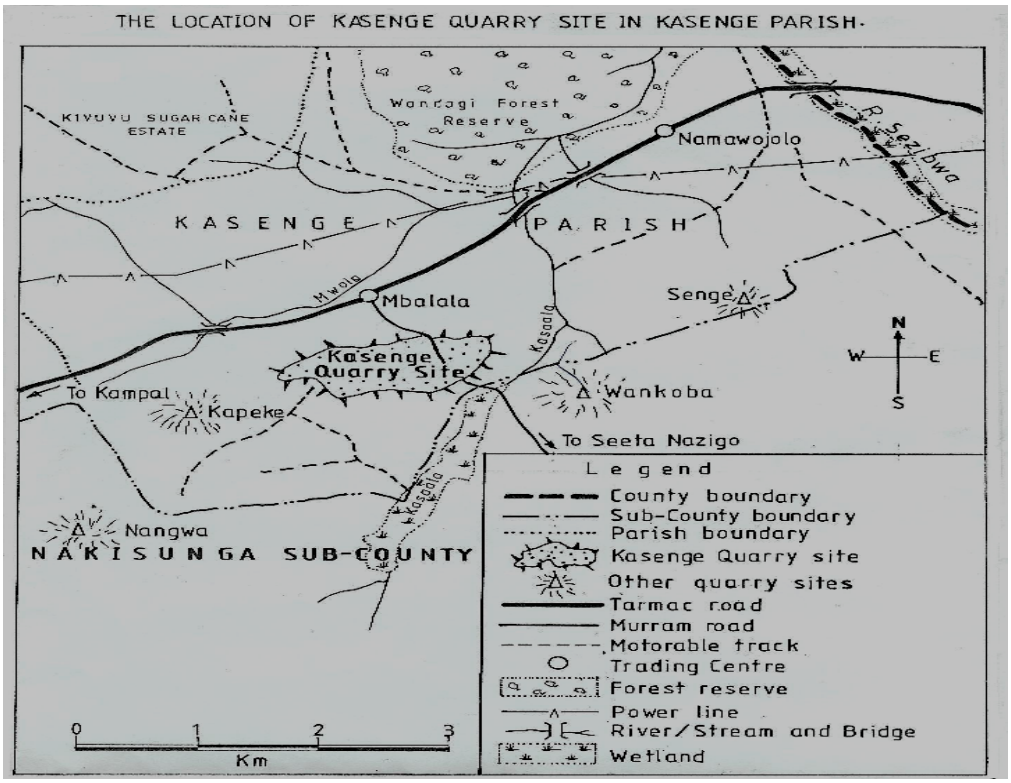
and Njeru (NEMA, 2004). In addition to these, monitoring of economic activities and environmental regulations are in place to ensure sustainable utilisation of resources.

3.4.2 Study Area-Kasenge Parish

Kasenge parish is one of the six parishes in Nama sub-county, Mukono district with a population of 2,800 males and 2,912 females (UBOS, 2002). Other villages of include Kirivu, Kasenge A, Kasenge B, Nakapinyi and Kapeke. Kasenge parish, prominent for its small scale mining activities shares the red deep clay loams and laterites soils of the Buganda region with several quartzite patches in the hill tops. The parish has exposed quartzite that favors stone quarrying in some areas of the Parish.

Cash crop and food crop agriculture are the main sources of income in Kasenge. Sugarcane plantations owned by Mehta a prominent investor are also prominent and they mainly rely on cheap labour from wage workers. Food crops grown include; matooke, sweet potatoes, beans, cassava, and maize. According to MDSP (2003) the government has taken initiatives to assist farmers through NAADS, several NGO' and CBOs that are encouraging the growing of aloe vera, pineapples and Vanilla in the parish. Other sources of income in the parish involve ceramic work specifically brick making, stone quarrying both at large and small scale in addition to fish farming which is currently on two private fish farms in the parish. The youth are also engaged in the local transport industry using motorcycles commonly termed 'boda-boda' (MDSP, 2003). The growing construction industry has contributed to sand mining, an economic activity that has led to wetland degradation in the sub-county and in the parish as well. The various economic activities especially stone quarrying have provided employment Kasenge residents and migrants from areas such as; Acholi, Lango and eastern Uganda (MDSP, 2003).

Communication in Kasenge Parish is composed of accessible seasonal murram roads and feeder roads that supplement the main tarmac road transport of the Jinja-Kampala Highway and the Mukono-Kayunga road. There are no postal services, electricity and fixed telephone. Mobile telephones are however used for communication although it is limited to particular service providers.



Map 1: Map Showing Location of Kasenge Stone Quarry

Source: (Drawn by Magaawa, Geography Department -MUK)

The quarry in Kasenge parish is located along the Jinja-Kampala highway and it covers an area of 3-4 kilometres. Situated on a granite based hill the quarry has been a source of livelihood to about 200 stone workers and their households. Other small scale quarrying sites as shown are located at Nakisunga, Wankoba, Senge, and Kapeke. The study was specifically carried out in Kasenge parish (Map 1).

3.5 Sampling Techniques

Before primary data collection, I carried out a reconnaissance in the study area to establish and confirm the most viable sampling techniques. Based on the research questions the study had to address and given the different respondents that I had to extract information from; I used both probability sampling and non-probability sampling methods.

Through random sampling the probability of selection is the same for every case in the population. The sampling frame was a registration book that contained names of stone workers at Kasenge; from which I selected fifty respondents out of 200 workers for the semi-structured interviews. Based on Patton (1980), random sampling is an appropriate strategy, when one wants to generalise from the sample studied to some large population. Through random sampling there is increased likelihood that the data collected are a representative of the whole population of interest (*ibid*). Similarly, Peil (1982) asserts that sampling is the selection of a part to represent the whole. Another reason why I used random sampling was to avoid bias by giving all units in the target population equal chances of being selected as suggested by (Nichols, 1990).

In order to find out the different vulnerabilities and constraints associated with stone quarrying and to explore the livelihood outcomes, I purposively selected the LC I Chairman[3] Kasenge parish and ten stone workers who had been at the quarry for more than five years for unstructured interviews. Similarly to assess information related to the effects of transforming structures and processes on small scale stone quarrying the regional mining officer, and a NEMA environmental inspector were purposively selected for unstructured interviews. The purposive selection of key informants was based on Lewis-Beck *et al* (2004) who identify them as individuals that provide in-depth and proficient information about a particular phenomenon. I found purposive sampling useful in data collection because I knew which respondent to see for what interview. However, I was biased when selecting informants. This intentional selection limited the quantity and quality of information I could have accessed.

3.6 Sources of data

3.6.1 Primary Sources of Data

The physical proximity with the respondents and their livelihood during primary data collection allowed me to access both verbal and non-verbal information which had not been documented elsewhere. However, primary data collection required patience and creation of a good rapport especially when dealing with respondents from different socio-

[3] L C I Chairman –Leader at the lowest level of governance that corresponds to a village or zone

economic backgrounds. The different advantages and disadvantages related to primary data collection methods have been discussed in the forthcoming paragraphs.

3.6.1.1 Semi-structured Interviews

During semi-structured interviews I engaged fifty respondents through the same set of open-ended and close-ended questions for comparative purposes and also to reduce variation of the information. The responses yielded were convenient to transcribe, analyse, interpret and represent in form of tables, graphs and charts and were also useful in discussing the findings as shown in the Chapter Five and Eight of this Thesis.

Since the questions were precise and straight forward; the workers easily responded, which made it difficult to generate of irrelevant information that is common with un-structured interviews. The nature of questions and mode of administration made it convenient for me to cover at least 50 stone workers which would not have been possible with in-depth interviews given the minimal time I had for field work.

I found semi structured interviews important in this study because they provided different views from a wide section of respondents in relation to the study objectives. This was based on Mikkelsen (1995) who also gives examples of semi-structured interviews and group interviews; as techniques developed to optimise the knowledge, attitudes and practise of different individuals and groups.

On the other hand, since I already had pre-determined questions, I could not explore some issues and likewise respondents were not able to freely express themselves on certain aspects. This therefore was a drawback because I missed some information that would have been vital for this study. As I interacted with the workers, I observed that some stone workers were not comfortable with questions related to their age and earnings since the questions were so direct. To overcome this, I at times asked such questions at the end of the interview or addressed them indirectly.

3.6.1.2 Unstructured Interviews

Based on open ended questions, these interviews were explorative and they aimed at obtaining detailed information from key informants. I chose the key informants with a backing from Nichols (1991) who describes them as members who are particularly knowledgeable and reliable about factual matters in a community. The informants for that matter included ten stone workers who joined the quarry not less than five years ago, the L.C (I) Chairman Kasenge parish, the regional mines officer, and a NEMA environmental inspector. After being at the quarry for more than five years, these stone workers identified with ease the different livelihood outcomes they had accrued from quarrying activities. They were also informative about the kinds of shocks and stresses common at the quarry and what coping strategies they applied. During the unstructured interviews The L.C (I) chairman provided detailed information about the different outcomes of stone quarrying activities to the Kasenge parish, the mines officer and the NEMA environmental inspector were useful in relating stone quarrying to the Constitution and the Mineral Policy. These informants not only provided me with the practical details related to the activity but they gave me some secondary information related to large scale stone quarrying, which I later found useful for comparative purposes.

Key informants were not only a source of data, but they were also helpful in modification of some of the questions that I asked the other respondents in the semi-structured interviews. Since the questions were not restricted, I also probed the informants further in case of any issues that required clarity. I also used the responses as basis for further inquiry. Yin (1984) asserts that the more a respondent provides information about a phenomena under study the more he becomes an informant rather than a respondent. A key informant for that matter not only provides information but goes an extra mile to initiate sources of information.

I also found unstructured interviews appropriate for the study because open-ended questions allowed the participants to express themselves as much as possible in relation to the questions addressed. I also made it a two way traffic to know about my respondents by allowing them to ask me questions they thought would be important to the study and

these I definitely included in the semi-structured interviews that I would later use in the individual responses. Since the respondents were free to express themselves, they felt proud to be part of the study which was different in the case of semi-structured interviews which was rather a question and answer session.

In relation to the weakness of unstructured interviews, the informants at times provided information that was irrelevant to the study. This was time consuming during the interaction as well as when analysing the data. To reduce on the irrelevancy, I would in some instances rephrase questions for the respondents in a simpler form. It is worth noting that since the informants in unstructured interview, were purposively selected, Yin (1984) advises against fully relying on a key informants influence because one can not rule out the possibility of biasness, by relying on other sources of data.

In comparison to semi structured interviews, unstructured interviews required time and patience right from booking appointments and through the interviews as the respondents narrated their stories. This was not only time consuming to me but to the respondents too. Since I had used their working hours to obtain information, I gave some them a token of appreciation such as money and consumables such as sugar at the end of the interviews.

3.6.1.3 Focus Group Discussions

According to Lewis-Beck *et al* (2004), a Focus Group Discussion is a research interviewing process specifically aimed to uncover insights from a group of individuals. This may be either homogenous or heterogeneous and is guided by a set of questions deliberately sequenced to move the discussion towards concepts of interest to the researcher. Lewis-Beck *et al* (2004) highlight the importance of focus group discussions in case studies, understanding people's behavior, understanding how people see needs and assets in their lives and communities.

In this study, I used responses from Focus Group Discussions to develop questions and identify key topics that I would later use for unstructured and semi-structured interviews. This is in relation to Limb and Dwyer (2001) and Patton (1980) who recommend the importance of group discussions in penetrating a community and at the same time allowing respondents to express their feelings about the issue under investigation. Kumar

(1997) also observes the importance of focus group discussions in understanding perspectives, attitudes, behaviors, and concerns of different groups and when seeking recommendations and suggestions from respondents.

Conducting discussions with stone workers at Kasenge parish was organised in three different groups which comprised of women, men and both gender; with a group of seven respondents in each discussion. This was based on Nichols (1990) who recommends that a focus group should not exceed ten and should not be less than six individuals for a variety of ideas and for easier moderation. Meetings were arranged according to gender so as to avoid possibilities that might hinder interactions during the discussions. This concurs with Limb and Dwyer (2001) who point out that factors like age, gender, socio-economic class, religion and race are likely to affect the ways individuals interact with one another, consequently affecting the flow of information. In the same vein, African women especially in rural areas find it hard to express themselves in the presence of the opposite sex, especially their spouses.

Further justification for having different focus groups was based on Helmore and Singh (2002), who observe that women and men's roles are imbued with different meanings in different societies, since men and women experience life differently. The Sustainable Livelihoods Approach acknowledges the distinct roles played by women and the obstacles they face; in addition to unequal accessibility to resources. I needed the separate groups since men and women have different needs and experience different constraints in their day to day life at Kasenge stone quarry.

The group discussions with the workers exposed me to different ideas and perceptions using minimal resources in a short time. This is also in agreement with Padgett (1980) who acknowledges that; focus group discussions are advantageous in terms of elicitation of rich qualitative data from individuals stimulated by a group format.

Focus Group Discussions can be exhilarating and exciting with people responding differently to ideas contributed by others (Hays, 2000). The discussions facilitated interaction between participants highlighting their view of the world, values and beliefs about a situation. Talking about an activity that was their source of income, a lot of

dynamism was displayed during the interactions. However, the workers responded differently to different issues. For example on some occasions, I noticed that the workers agreed in unison to a particular answer given by one of the respondents, but on others they would either take long to respond or give different responses. Faced with such a situation, I rephrased the questions and noted the responses given. During the discussions I discovered issues which were important to the workers which I had not initially included in the interview guide.

On the other hand, focus group discussions hindered information flow in relation to issues. The 'group environment' hindered some workers from fully participating in the discussion. Also some members dominated the discussion by responding to every question asked this reduced the chances of getting a variety of ideas from the workers. I took note of individuals who reservedly participated and booked them in for individual interviews. I also found out that some respondents could not easily contribute because of a language barrier. This was common with some migrant workers from non-Ganda speaking tribes, (Ganda is the main language of communication) who found it difficult to contribute during focus group discussion. This therefore limited their participation during the discussions.

3.6.1.4 Personal Observation

Observation was important because it provided background information about the environment where the study was taken. In addition to interviews I accessed non-verbal information through observation. I found covert observation more suitable in this study, because the workers continued with their activities normally without their awareness that they were being observed. Although observation is often related to seeing, Hays (2000) points out that, observation goes beyond the visual aspect; by touching, smelling and hearing. Peil *et al* (1982) also asserts that observation in social studies is more than just observing. It involves listening, asking questions and at times participating in activities so as to get first hand experience of what daily life involves.

I found observation important in documenting activities, behaviour and physical aspects without having to depend upon the stone workers' willingness and ability to respond to questions. I observed the working environment of the stone workers which enabled me to

relate to the shocks and stress at that hinder quarrying activities at Kasenge. By observing, I proved some of the outcomes identified by the stone workers during the interviews which included infrastructure such as roads, schools and health centres. By observing how they carried out business transactions, for the different extracted products, I was able to estimate how much they earned on daily basis. I also acknowledged the effects of stone quarrying activities on the environment which the stoneworkers found difficult to share with me during the interaction. To note also was the distinct gender division of labour at the quarry which I was able to relate to the livelihood outcomes noted by the stoneworkers.

In an effort to assess the contribution of stone quarrying to people's livelihoods in Kasenge, I found observation relevant to the study because it enabled me to study the phenomenon in its natural setting, thereby enabling a richer understanding. Direct observation in this study revealed social and economic conditions, problems, and behavior patterns that the informants were unaware of and some could not adequately describe.

Different from the other methods of data collection, observation was a continuous process that I used to obtain information before, during and after other structured descriptive forms of data collection such as interviews. I found it convenient also to use observation as a method of data collection because of its validity. By observation, I was able to compare what the stone workers did, with what they said during the interviews to affirm consistency. Through observation, I was able to get first hand information which was not available in any publication. To note however, although many activities took place at the quarry, I only observed those that were related to the study. Observer bias is noted as a weakness with observation as a data collection technique.

Photographs are good way of collecting observable data of phenomena that can be captured in single shot or series (Hancock, 1998). Photographs in this study supplemented interviews and observation data collection techniques. And they were significant in showing the real existence of quarrying activities and to describe physical features that could not be verbally explained as shown in the findings chapters.

3.6.2 Secondary Data Collection

Secondary data collection is a process that began upon inception of the study problem and this was continuous until the end of the study. Secondary data involved reading, analysing and recording information relevant to the study from published and unpublished books, Government and International Reports, Journals, Newspapers and Magazines. These I got from different resource centres in Norway and Uganda. The internet was an important source of information in accessing information that was unavailable in the books. Some of the government publications I found vital for this study include the Uganda Population and Housing Census Report (2002), the Mukono District State Report (1996, 2004), the Uganda Poverty Status Report (2003), the Constitution of the Republic of Uganda 1995, and the Mineral Policy (2001).

Secondary data collection was based on Mikkelsen (1995) who points out, that secondary data sources provide a wealth of information from different studies which can be utilised to shape and mould a research study. Information from the secondary sources not only supplemented the primary data that I collected but also gave me more insight about different aspects linked to the study topic.

Although most of the secondary data was accessible, it was not easy to acquire information that was directly linked to my study topic. Information about non-agricultural activities and sustainable use of non-renewable natural resources in Uganda lacked in most data bases. I therefore, had to rely on studies carried out in South Africa and Latin America where active small scale mineral extraction has been related to sustainable livelihoods.

Much as I expected to acquire information from the Department of Geology and the Ministry of Energy Mineral and Development in Uganda, it was impossible because most of the data was outdated and more so there was no data about small scale stone quarrying. Some libraries did not allow easy access to information to outsiders. Such 'protected' institutions required payment of a fee in order to use their data bases.

3.7 Data Recording and Analysis

Although most publications such as in Limb and Dwyer (2001), Patton (1980), recommend tape recording, in my case I found out that when respondents were conscious that they were being recorded, they tended to give skewed information. They either exaggerated some aspects or sparingly contributed to some topics. While some workers were willing to contribute to the study, they requested not to be tape recorded for security reasons and purposes of privacy. Ethically I had to respect their decisions so I resorted to note taking.

Data collection in research is incomplete without analysis, interpretation and presentation of findings. The processes of interpretation and analysis involve making sense out of what people have said, looking for patterns, putting together what is said in one place with what is said in another place, and then integrating what different people have said (Patton, 1980).

According to Huberman and Miles (1994), data analysis involves the different, procedures encountered in converting information recorded during fieldwork for example field notes, into partially processed data such as write ups which are later coded and analysed with an aim of answering the research questions and consequently drawing conclusions in relation to the study. Patton (1980) supplements by asserting that, the basic purpose of qualitative analysis is to retrieve and filter the information got from the different interviews. Analysis is only meaningful when it yields and advises on response to questions under investigation (*ibid*). This involved analyzing the detailed conversations and extracting what was pertinent to the study. It also involved coding variables such as age, marital status, and level of education of the respondents. These were quantitatively analyzed using Statistical Programme for Social Scientists (SPSS) and the simple statistics generated were presented in charts, graphs and tables.

I usually analysed information at the end of a day's work. This was worthwhile because it was easy to remember how the respondents expressed themselves and how they reacted to different questions during the interviews. It was also easy to identify information gaps in the collected data.

3.8 Trustworthiness

Padgett (1998) suggests trustworthiness as a key issue in research. A trustworthy study is one that is carried out fairly and ethically and whose findings represent as close as possible the experiences of the respondents. The trustworthiness of a research is shown by how valid and reliable the methods and the results collected from a research are.

Reliability according to Peil *et al* (1982) is based on consistency. If a measurement system is reliable, then it should provide the same results consistently over time across a range of observers. Through individual and group interviews for both structured and semi-structured questions, I found that the responses to the research questions had an aspect of similarity.

Peil *et al* (1982) observe that measures are reliable if the same people are asked the same questions again and they give the same answers. Towards the end of the field work I casually addressed the workers with the same questions, I had asked them at the beginning of the study and I found out that there was not so much variation with what they had told me earlier on. I also assessed the reliability of the information through observation. From this I was able to prove or disapprove what they said during the interviews from what they did.

Validity in social research is determined when the researcher reports correctly what happened; measuring exactly what the research is supposed to measure. External validity is based on whether the researcher reported what the respondents said while internal validity is determined whether the researcher reports in accordance to the research questions. Borrowing a leaf from Kvale (1996) validity refers to the truth and correctness of a statement. A study that is valid will produce a well grounded, justifiable, strong and convincing report. On the same note, validity determines whether the research truly measured what it was intended to measure and how truthful the results of the study are.

To ensure validity of the data I used different methods of data collection. I found a combination of observation, individual and group interviews useful for comparative and supplementary purposes for the different responses. As I collected data I found out that none of the data collection methods was perfect each of them presented with strengths and weaknesses. The utilisation of a variety of methods in data collection is

recommended by Denzin (1978), Tasshakori *et al* (1998) who refer to it as triangulation. This entails combining different data collection techniques to study the same phenomena. One of the methods of triangulation identified by Denzin (1978) and Patton (1980) includes methodological triangulation which entails use of multiple methods to study a research problem. By using different methods of data collection, triangulation reflects an attempt to secure an in-depth understanding of the phenomenon in question. The combination of multiple methods is a strategy that adds richness and breadth to an inquiry. The importance of triangulation in social research is evident important in overcoming problems of bias common when one method is used.

In my quest to understand how stone quarrying contributed to stoneworkers' livelihoods, I used semi structured interviews, structured interviews as well as observations. Triangulation in data collection is worth consideration because the weaknesses of one method of data collection are offset by the strengths of another. This improves on the quality and quantity of data collected during a particular study.

3.9 Limitations to the Study

To have a better understanding of how stone quarrying has contributed to the workers' livelihoods, I needed more time and money to visit some of my respondents' home towns. This I was unable because of most of them were migrant workers whose homes were from very far from Kasenge.

Similar to any informal activity, entry into stone quarrying is not deterred. This has led to the involvement of individuals from different socio-economic backgrounds. These ranged from non-tax payers to criminals and retrenched formal employers. With such a cross section of respondents it was not easy to convince them that the research was purely for academic goals and was not politically inclined or for the media purposes. With time however, some of them opened up and became willing to interact with me but with restrictions for security reasons.

The unwillingness to be voice recorded affected my data collection since it was hard to note down the whole verbatim of every worker I interviewed. There was scanty

information about the rural informal sector and small scale stone quarrying in Uganda. This was a major limitation in relation to secondary data sources.

The unwillingness to be voice recorded also affected my data collection since it was hard to note down the whole verbatim for every worker I interviewed.

Summary

This chapter focused and provided a justified account on the methodology and different data techniques used to access primary and secondary data. Discussed also in this chapter is an account of a case study and why assessing the contribution of stone quarrying to people's livelihoods deserves to be a case study. Presented was the study area showing the physical and the socio-economic features of the area where the study was done. Shown also are the sampling techniques used for the different respondents in this research. Limitations experienced during data collection were also pointed out.

CHAPTER FOUR

4.0 COUNTRY PROFILE AND STUDY AREA

4.1 Introduction

Shown in this chapter are the physical features and the demographic characteristics of Uganda. The country's historical and socio-economic background will be discussed in relation to the informal sector pointing out the showing prominent features that contributed to the growth of poverty and the informal sector. Featuring in this chapter is the poverty trend, Uganda's economic progress and a discussion of the education and taxation system in relation to the growth of the informal sector in Uganda.

4.2 Location and Geography

Uganda is a landlocked country in East Africa bordering the Republic of Kenya in the east, Tanzania and Rwanda in the south, the Democratic Republic of Congo (former Zaire) in the west and Sudan in the north. Covering a perimeter of about 16,630km according to NEMA (1996), Uganda is situated between latitudes 1° 30' south and 4° North and longitudes 29° 30' East and 35° East. Out of an area of about 241,500 sq. km, 15.3 percent is open water, 3.0 percent is permanent wetlands and seasonal wetlands cover 9.4 percent of the land surface (*ibid*).

Most of the country is a vast plateau with the main mountain ranges of Mufumbiro and Ruwenzori located in the west as well as Mt. Elgon to the east. The volcanic Mt. Mufumbiro Highlands are separated from the Ruwenzori Mountains by low valleys which contain Lake George and the Kazinga Channel. The country lies within the upper basin of the White Nile; while the principal rivers are the Victoria Nile and the Albert Nile. The country has many rivers and lakes that are interconnected by swamps.

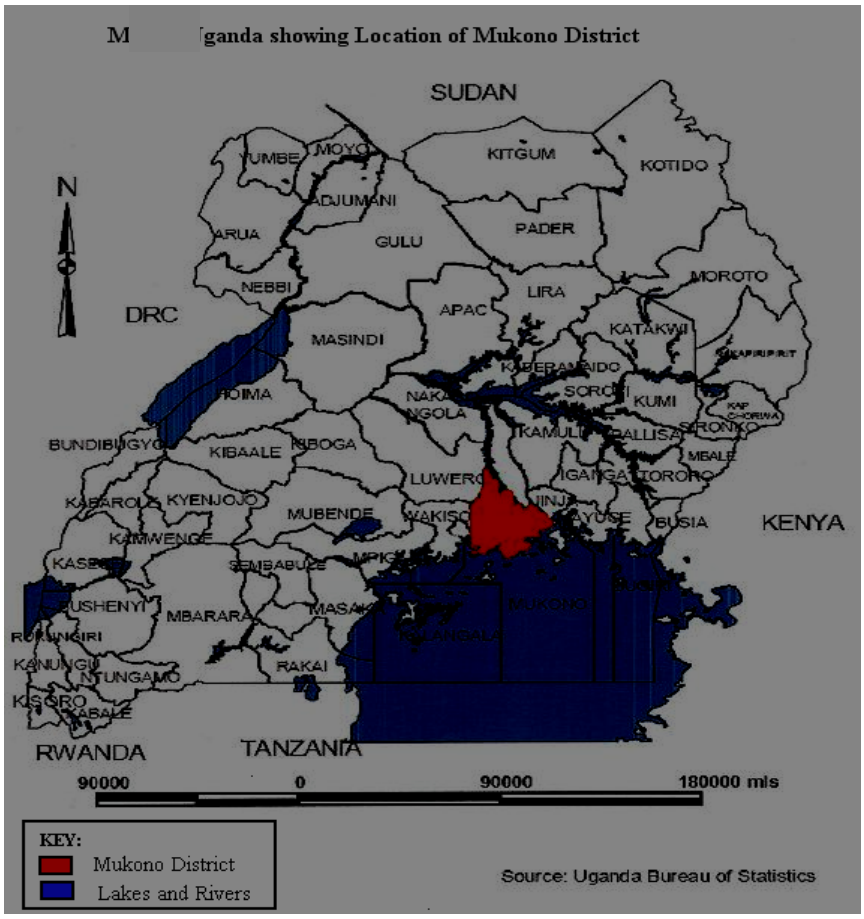
Uganda according to the most recent population census has a total population of 24.4 million UBOS (2002), and a population density of about 124 persons per square kilometer. Most of the population is rural based with only 12 percent living in urban areas. Out of every 95 there are 100 females. Uganda presents a fertility rate of 6.9 and an average growth rate of 2.9 Uganda's population is noted as one of the fastest growing

populations in the world, after Nigeria and Yemen (MFPED, 2003). Population statistics show that Uganda is characterized by a higher percentage of a youthful working population (UBOS, 2002) and fewer elderly. According, (MFPED, 2003) Uganda's current phase can be described as a 'demographic burden'. 52.3% of the population is aged between 0-14 (over 13m), with 2.2% above the age of 65, giving Uganda a dependency ratio of greater than 1. This implies that each working age person has to take care of more than one dependant. Quoting Bloom and Williamson (1998) in MFPED (2003), Uganda's current phase can be described as a 'domestic burden'.

4.3 Climate and Soils

Uganda's climate, as pointed out by NEMA (2001), is influenced by the Inter-tropical Convergence Zone (ITCZ) and the southwest and southeast monsoons. Although the seasons are fairly marked as dry or rainy season, physical features tend to modify temperatures in particular regions of the country. The adjacency of districts such as Mukono to large water bodies such as Lake Victoria has contributed to the modified temperatures due to maritime conditions. Uganda's location along the equatorial belt also contributes to a bi-annual rainfall of about 1244.3mm in March -May and September-December for most parts of the country, apart from the Northern and North Eastern region which receives rainfall once a year.

Although Uganda's economy is agro-based, soils and the climatic conditions highly determine economic activities in rural areas. Areas with poor soils are characterized with pastrolism as the main economic activity. The most dominant type of soils is the ferralitic, which accounts for two thirds of the country's soil. These, according to NEMA (1996), are very old and in their last stages of development with little mineral reserves left. The other varieties of soil include ferruginous soils, which are richer in mineral reserves. The volcanic soils, most of which are very productive and Alluvial soils occur in many places and are associated with present or past drainage systems. Ugandan soils are classified based on the FAO system according to productivity as; very high to high productivity, moderate productivity, fair productivity, low productivity, negligible productivity, and nil productivity (NEMA, 2002).



Map 2: Map of Uganda Showing Location of Mukono district

4.4 Historical and Economic Background

Uganda derived its name from Buganda one of the most influential kingdoms during the British rule. In spite of her association with the long distance traders from the East African coast in ivory, slaves and animal hides, pre-colonial Uganda entirely relied on subsistence agriculture. Given the favourable climate and fertile soils, the introduction of cash crops to an already agricultural community was not a problem to the colonizers. Using the abundant unskilled African labour to work in the plantations and mines, British colonialists constructed roads and the railway, to transport agricultural and mineral products from the sources of production to collection points, and finally for shipment of the raw materials for their industries abroad through the East African port of Mombasa.

When Uganda became independent in 1962 it had one of the most promising economy in sub-Saharan Africa, built on a sound agricultural base and a mining sector with export earnings from coffee, tea, cotton, tobacco, and copper. Although the industrial sector was small it was robust because it catered for domestic needs and also contributed to the export goods which included textiles, sugar, and cement. Likewise, the stable political climate contributed to the growth of the tourist industry (Mugerwa *et al*, 1990). With an average GDP of 5.6 percent, domestic investment at 7.4 percent and a private consumption expanding at 5.6 percent annually; the economy was promising for a freshly independent country *(ibid)*.

Coupled with this, was a good transport system in place which included road network, railways, a port on Lake Victoria and an efficient air service. It is also worth noting that this registered impressive growth rates for the first eight years after independence was attributed to the formation of the East African Community (EAC), which combined Kenya, Uganda and Tanzania. This community not only aimed at providing a common labor market for East African nationalities, but also targeted creating a shared market for East African exports and imports and at the same time sharing the cost of transport and banking facilities. To a land-locked country like Uganda, the community was of immerse socio-economic benefit.

However, a decade after independence the promising economy that had taken so many years to build crumbled in the hands of tyranny and dictatorship of President Idi Amin. Although the period between 1971 and 1979 coincided with the disturbance in the international economy as Mugerwa *et al* (1990) assert, Uganda's economy suffered mostly from the withdrawal of donor aid from countries such as Great British, Canada, and United States which could not withstand President Idi Amin's dictatorial government. The collapse of the public and the social infrastructure, led to brain drain as professionals in various developmental agencies sought asylum abroad. The economy was further affected as investors' confidence in Uganda reduced upon the expulsion of Asians by President Idi Amin; who had been active in agriculture, manufacturing and commercial sectors. Also evident during this regime, was the lack of accountability of the tax payers' money and donor aid and increased expenditure on military artillery in the

name of 'national security'. A combination of all these features contributed to the collapse of social facilities such as education, infrastructure and health.

In 1979, national and International efforts to oust the dictatorial regime yielded when the Tanzanian army overthrew President Idi Amin ushering in another regime of Obote II which was characterized by poverty and high inflation rates. The massive devaluation of Uganda's shilling from 8.4 to 78, and scarcity of basic commodities, contributed to commodity smuggling across boarders and growth of the informal sector as Ugandans struggled to survive (Midamba and Ekechi 1995). In an article *Buganda Women's Night Market Activities* Musisi in Midamba and Ekechi (1995), reported that the collapse of the formal sector resulted in the astronomical growth of the informal sector. Further assertion shows that women were most hit by the crisis and had to take on petty jobs such as selling cooked food, working in night markets and working as domestic servants so as to meet the deterioration education and health standards (*ibid*).

4.4 Geology and Mineral Extraction

Geological investigations carried eighty years ago and the available mineral production statistics show that Uganda is endowed with diverse minerals which are economically valuable (MEMD, 2003). The Geology is made up of the basement complex, the Nyanzian System, the Buganda-Toro system, Ankole-Karagwe, Karasuk, Bunyoro-Kyoga, systems, Carbonite ring complexes, Mesozoic and Cainozoic rocks. The complex is predominantly of granitic metamorphic rocks of Archean shield and is found in the central and northern parts of the country (DGSM, 2005). Mukono one of the districts in central Uganda is famous for both large scale and small scale quarrying activities because to the basement complex that contains granite an essential material in the building and the construction industry.

In the early 1970s, copper, tin, bismuth, tungsten, rare earths, phosphates, limestone, and beryl were mined by commercial companies. The mining sector employed 8,000 people and accounted for 9 percent of exports.[4] Inspite of the potential socio-economic

[4] http://countrystudies.us/uganda/50.htm 15/02/2006

development from mineral resources, their exploitation has been inadequate due to low priority ranking of the sector, despite the government policy to create an independent, integrated and self sustaining economy. In addition to this, the desertion of professionals during the infamous declaration of the economic war in the 1970s and the low levels of remunerations of earth scientists and technicians highly contributed to the declined activities in the sector (MEMD, 2003). However with the current political stability after 1986, the mining/quarrying sector was rediscovered registering a growth rate of 11 percent per annum[5] and in 1987 mining output increased close to 20 percent, largely because of the rapid growth in demand for road and housing construction materials, such as stone, sand and gravel.

In an effort to revive the sector, the government in 1988 established a National Mining Commission which was intended to encourage investment in the mining sector through joint ventures with the government. This commission also provided some support for small mining operations. Through efforts by the Uganda Investment authority, incentives such as holiday taxes have been put in place to encourage foreign and local investments in the mining and quarrying industry DGSM (2003). With reference to Mukono District, (NEMA, 2004), reports over ten large scale quarrying companies and other numerous small scale quarrying sites that produce stones for the construction industry. DGSM (2003) shows the importance of these quarrying sites in providing employment and reducing rural poverty.

4.6 Poverty Trends in Uganda

Much as economists use the poverty line approach to measure poverty (which reflects the monetary cost of meeting the basic requirements of life), social scientists perceive poverty to be more than just lack of income. According to MFPED (2000), poverty has many dimensions including low and highly variable levels of income and consumption, physical insecurity, poor health, low levels of education, disempowerment, a heavy burden of work or unemployment, and isolation (both social and geographical).

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[5] www.ugandainvest.com/mining.pdf 27/03/2006

Although a common phenomenon in developing countries, poverty manifests itself differently in the urban and in the rural areas. Urban poverty is evident with increased involvement in the informal sector in the face of the inelastic formal sector. While in rural areas, low human capital, landlessness, weather changes and the decline in agricultural production coupled unstable price fluctuations, have contributed to the involvement of rural dwellers in non-agricultural activities. Okidi and Mugambe (2002) observe that the poverty is more associated with the rural areas than the urban areas. In Uganda for instance, 48 percent of the rural population is living below the poverty line as compared to 16 percent of the urban dwellers (*ibid*).

Poverty is also spatial, seasonal and gender related. According to MFPED (2003) more than 91% of the households in the war ravaged Northern and Eastern Uganda, and the rural areas are poor. Okidi and Mugambe (2002) also affirm that poverty is a rural phenomenon with 48 percent of the rural population living below the poverty line as compared to 16 percent of the urban dwellers. The implementation of Structural Adjustment Programmes in the 1990s contributed to a decline in terms of trade, tax revenues, high levels of poverty, illiteracy and disease. By 2003, 39% of the Ugandan population lived under poverty. Of these were youth between 18-30 years who constituted 30 % of the poor Women constituted 33% and tended to be poorer than the men, while the landless, the near landless and those without productive labour assets were more likely to be poor (Mijumbi and Okidi, 2001).

The Poverty Eradication Action Plan (PEAP) was launched as the national policy framework for medium term growth and development. PEAP is built on four fundamental goals which aim at creating a framework for economic growth and transformation, ensuring good governance and security, directly increasing the ability of the poor to raise their incomes and directly increasing the quality of life of the poor (MFPED 2003).

As a way of increasing the ability of the poor to raise their income, the PEAP looks at the employment situation where by most Ugandans are involved in agriculture and other non-farm sector activities. Noted also is the concentration of a wider range of non farm activities in the central and western regions than else where (Marter, 2002 in MFEPD 2003) of which Mukono district and Kasenge stone quarry in particular is located.

4.7 Uganda's Economic Progress

Despite the political and economic upheavals, Uganda is known for its registered impressive progress in poverty reduction over the 1990s. MFPED (2003) observes the declined proportion of people living below the poverty line from 56 percent in 1992 to 44 percent in 1997 with a further decrease to 35 percent in 2000. Although large numbers of households escaped from poverty, chronic poverty[6] is still evident in a number of households. According to Okidi and McKay (2003) chronic poverty is evident among the internally displaced persons, in areas of protracted violent conflicts, among the elderly, civil war and HIV/AIDS related orphans and in remote areas with limited access to social services.

In an effort to reduce poverty the NRM government implemented and prepared the country's Poverty Reduction Strategy Papers (PRSP) of which the Ugandan version was referred to as the PEAP. Uganda is one of the few countries who first developed a Poverty Eradication Action Plan. Early economic reforms in Uganda's did not address poverty, NRM government implemented and prepared the Poverty Eradication Action Plan which was geared towards stabilising an economy torn apart by war and needed rehabilitation, stabilising the erratic macro economic environment and promoting economic growth. The hope was that, benefits would percolate down through increased participation of the poor women and men in the economy. These later became the country's Poverty Reduction Strategy Papers (PRSP) which describes a country's macroeconomic, structural, and social policies and programs to promote growth and reduce poverty, as well as associated external financing needs. PRSPs are prepared by governments through a participatory process that involves civil society and development partners, including the World Bank and the International Monetary Fund.

Pillar One: Emphasizes on rapid and economic growth and structural transformation

By encouraging private sector expansion and competitiveness, structural transformation through encouraging modernization of agriculture and developing a competitive manufacturing sector.

[6] Chronic poverty exhibits in people who either experience extended duration of poverty or those who benefit the least or suffer most from contemporary development polices and practices and whose emergence from poverty is difficult. In the Ugandan context these are people who have remained below the poverty line for several years in spite of the country's liberalization policy (Okidi *et al* 2003).

Pillar Two: *Good Governance and Security*

This pillar emphasizes on justice and respect for human rights by providing peace, and reducing political conflicts.

Pillar Three: *Increasing the ability of the poor to raise their incomes.*

The PRSP recognizes the importance of natural resource utilization, and the importance of non-farm employment to the poor. However but most of its thrust is placed on modernizing through research, agricultural education, and rural finance, agro-processing and marketing.

Pillar Four: F*ocuses on enhancing the quality of life of the poor.*

This emphasizes on provision of basic health care, education and reducing the literacy levels among the populace.

4.8 Education and the Informal Sector.

Education and literacy determines one's accessibility to assets especially human capital like modern skills which determine one's capability to earn a livelihood in the formal sector.The government of Uganda recognizes the importance of education in different aspects of life including employment and enhancing the quality of life for the poor. According to MFPED (2003), one of the Millennium Development Goals aims at providing full primary schooling for 6-12 year olds by 2015. When UPE was introduced in 1997, the gross primary enrollment surged from 3.4 million in 1996 to 6.9 million in 2001. Net primary enrollment rates also increased from 62 percent in 1992 to 77 percent in 1999/2000, according to household survey data.

MFPED (2003) also notes the strain on UPE because of overwhelming turn up of pupils. The demand for infrastructure, scholastic materials as well as training of more teachers was desired to attain the objectives of the programme. MFPED (2003) also shows that the quality UPE is still very poor in many rural and remote areas because of the lack of human and financial resources. Actually the most successful teacher recruitment has taken place in the urban and peri-urban districts *(ibid).*

It was worth mentioning that although the government has endeavored to enhance education levels through the UPE policy, it has not made provisions for post primary

education. This implies that most of the pupils who graduate from primary schools are likely to be unemployed or would possibly join the informal sector.

4.9 Taxation and the Informal Sector

Uganda's taxation system has its history since 1900 when the hut tax was introduced by the Local Authorities Ordinance in 1900. According to Kaweesa (2004) a series of taxation laws were introduced and some of them were either repealed or subjected to amendments so as to cope with the contemporary situation. Uganda's taxation system has undergone dynamic reforms over the past thirteen years both in terms of policy and administration. Among the taxes paid to the central government are Domestic trade/consumption taxes (sales tax, Commercial Transaction Levy, and local Excise duty). Direct Tax includes Income tax, Corporate and Individual Income Tax, Pay As You Earn. Taxes on International Trade such as import duty and Excise duty on imports. Other taxes include Drivers permits Motor Vehicle Registration and Road toll.

Taxation can be viewed as an implicit contract between citizens and their governments in which the amount and types of tax paid are related to the services provided by public institutions. According to Bahiigwa *et al* (2004) taxes are supposed to raise and stabilize local government revenue in support of Uganda's poverty alleviation goals. From the taxes the government is supposed to provide an enabling environment for the ordinary people to go about their businesses without unpredictable changes.

In a study to assess the rural taxation system in six districts in Uganda in 138 small enterprises, Bahiigwa *et al* (2004) point out the flaws in the tax collection system by the local government and the private tendered systems which lead to increase in price commodities and likewise affect the profits realized. Identifying some of the draw backs to the growth of small scale enterprises and the arbitrary rates which vary across commodities and which impose undue burdens on small informal businesses in the rural areas. Bahiigwa *et al* (2004) also acknowledge that the local taxation system is anti-poor, distorts the relative prices of commodities and inhibits growth of small scale enterprises. The multiple array of taxes are non transparent and do not match the services provided.

Tax evasion and consequential growth of the informal sector has been associated with multiple taxes that are collected aggressively by local government and private institutions in commercial areas such as market places, trading centres and in village parishes. This consequently leads to rural households engaging in activities that pay less tax, which are mostly in formal in nature for example stone quarrying.

Summary

This chapter provided a brief discussion of Uganda's physical and demographic features. Included was Uganda's political, socio-economic history since independence which revealed different features that contributed to the development and growth of the informal sector. The chapter also discussed the different perceptions of poverty which is one of the reasons why the informal sector has taken root in Uganda. Featuring in this chapter were the different measures put in place by the government of Uganda to reduce poverty one of them being the PEAP. However, much as these measures have been put in place to enhance the lives of the poor who are the majority in Uganda, the inefficiency of the PEAP in relation to education, the taxation system and the current employment situation has led to the growth of the informal sector.

CHAPTER FIVE

5.0 STONE QUARRYING AT KASENGE PARISH

5.1 Introduction

Ellis (2000) identifies livelihood strategies as activities that generate the means of household survival. These strategies were determined by available assets and the external environment. It is the aim of this chapter therefore to find out why individuals prioritized stone quarrying over other strategies in Kasenge Parish in order to pursue their desired goals.

The reduction of poverty ultimately requires that individuals and families can access assets that enable them participate in productive economic activities, so as to generate adequate and secure standard of living.

5.2 Who are engaged in Stone quarrying?

5.2.1 Age of respondents

Stone quarrying not any different from other informal activities engages all groups and both gender. From the interviewed respondents, findings showed that 40 percent of the sampled respondents were aged between 18-25 years. Those between 26-33 years comprised 22 percent while those below 18 years were 14 percent. Interestingly, the percentage of respondents declined with increase in age, with 8 percent of the workers interviewed aged between 42-49 years, while those who were 50 years and above were 2 percent (Appendix I, Table I). The use of simple tools to extract hard rock material makes stone quarrying a strenuous activity. This therefore limits it to the youth and the able bodied.

5.2.2 Gender

Table II, Appendix I shows the gender composition of stone workers at Kasenge. Findings revealed that stone quarrying involved mostly men who comprised 62 percent while the women were 38 percent. The ratio of women to men is also related to intensive

activities engaged in stone quarrying. Women because of their feminine nature are engaged in stone crushing activities which were less straining and less paying as well. Women's attendance at the quarry was irregular at because they had to attend to domestic chores which involved their reproductive roles such as child bearing, child rearing and taking care of household responsibilities.

5.2.3 Place of Origin of the stone workers

Although most stone workers resided in Kasenge and the neighbouring villages, interviews revealed that some workers commuted daily from the city, while others were migrants from rural districts in and neighbouring countries. However non-Kasenge residents comprised majority of the stoneworkers as shown in Table 7 in the Appendix.

5.3 Why Do People Engage in Stone Quarrying?

5.3.1 Poverty

At the launch of first PEAP in 1997, the Government of Uganda defined poverty as lack of access to basic necessities of life (food, shelter, clothing, education and health). This is in agreement with White *et al* (2001) who assert that material deprivation is at the core of poverty. However, poverty is more than income and consumption. It also embraces deficient command over productive assets and access to key public services (*ibid*).

It can further be defined as the inability to satisfy a range of basics human needs, the lack of employment and survival opportunities stemming from powerlessness, social exclusion, ignorance and lack of knowledge. Powerlessness was defined as lack of participation in decision making at community and household level, especially by women (MFPED, 2002).

In response as to why they were engaged in quarrying activities, the stone workers at Kasenge identified poverty as a major causative factor. However poverty *per se* is multifaceted and it is perceived differently by different people, depending on their location, social status, gender and age. With this in mind I decided to explore further what poverty meant to the stone workers.

Most of the workers related poverty to lack of money to buy food, clothing, to obtain shelter or to pay their children's education. They therefore had to engage in quarrying activities, so as to meet these basic needs. The lack of natural capital such as land and livestock which are important assets in rural areas was associated with poverty. Since they lacked these assets, they joined stone quarrying with a hope to accumulate money to buy these assets which they believed if acquired they would became less poor and less vulnerable as well. I also noted that some of the workers especially women linked poverty to lack of financial capital to pursue other less straining activities, such as retail trade, selling food, opening up a beauty shop to mention a few. Although these respondents earned a living from stone quarrying, they believed that stone quarrying was a masculine related job. The students who extracted rock material at Kasenge stone quarry perceived poverty as the lack of money to attend better schools and the inability to attain school requirements such as school uniforms, and stationery.

These expressions from different people showed the multiple dimensions of poverty in relation to age, gender, and socio-economic background of the stone workers. However, it was evident that most respondents associated poverty with the lack of tangible assets such as, natural, physical and financial capital. In order to establish why individuals joined the small scale quarrying industry, I carried out explorative interviews with some key respondents at the quarry.

5.3.2 Losses in Agriculture

Coupled with productive soils and a favorable climate, agriculture is the main source of income to almost 88 percent of the rural based population in Uganda according to UBOS (2002). However both subsistence and large scale agriculture is affected by weather changes and most of all price fluctuation at the local and the international market hence affecting the rural dwellers who utterly rely on agricultural activities as a source of income. One of the contributing factors to this was emphasized in President Museveni's speech at an International Conference in Tokyo on 29/09/2003.

'*One of the causes why coffee prices are going down is the crowding by many Third World countries into the production of coffee because they have no other free window for exporting raw materials or food products. There is protectionism on wheat, sugar, beef, dairy products, corn, cotton, etc. not to forget intermediate products such as steel. The only remaining windows therefore, are those provided by coffee, tea and rice – products that the temperate developed countries cannot produce. The Third World countries, therefore, crowd on those few windows which consequently drive the prices down'*. **Mr. Y.K Museveni, President of the Republic of Uganda.**[7]

In order to increase their productivity, plantations owners in Uganda have established outgrowers schemes where small scale farmers grow a particular crop to supplement the factory's produce. Small scale farmers are given seeds, special land preparation in addition to technical services. However, by contract, they are committed to sell exclusively to the company that provided them with the services at a factory price which is determined by the company.

The outgrowers' scheme is beneficial to small scale farmers because it provides modern techniques of enhancing productivity and a ready market for produce. On the other hand, incidences of unpredicted events such droughts, floods or pest infestation; subsistence farmers are always at a loss. Presented in BOX I, is one of the many responses I got form the stone workers who had been previously engaged in the out growers' scheme before coming to the quarry.

[7] http://www.statehouse.go.ug/news.detail.php?newsId=51&category=News%20Release 28/03/2006

Price Fluctuations in Agricultural Products.

'I decided to cultivate rice as an outgrower for Kibimba Rice Company. Since my land was small I had to rent a bigger piece of land and a one roomed house away from home. In addition to my energy in clearing the land, planting, weeding and harvesting, I invested UGX 250,000 in this project. At times I had to stay all day long in the fields to protect the rice from being eaten by birds.

I was however disappointed when I got only UGX 80,000 from my harvest .I was told by the company, that my produce did not meet the company standards in terms of quality and quantity.
Having no formal education and a family of 8 children, stone quarrying is all I can do to support my family.'

Source: Narration from a migrant worker from Eastern Uganda
Date: 18th July 2005

Box 1: Price Fluctuations in Agricultural Products

5.3.3 Losses and taxes in other sources of income

During the interviews, I learnt that most of workers were initially engaged in income generating activities such as retail trade, charcoal burning and brick making. However these activities required higher capital investments than stone quarrying in terms of renting premises, paying electricity bills and buying stocks. The lack of storage facilities led to losses for those who dealt in agricultural products. The stone workers also identified a variety of taxes they had to pay for running their businesses.

This was affirmed by Ellis *et al* (2004) who identify close to twenty different taxes Ugandans are obliged to pay and it was also confirmed by NEMA (2004), a variety of taxes, market dues, licenses and permits, that Mukono residents pay to the local

government. In addition to these, property on commercial buildings, farming and agricultural estates are paid by business men so as to generate the district revenue. Interestingly though, small scale stone quarrying did not appear on the list of income generating activities that are taxed. Since most of the individuals were low income earners while some were unemployed, minimum taxation was a predisposing factor into stone quarrying.

5.3.4 Level of Education

Education is a determining factor in securing employment opportunities in the formal sector in fact Aboagye (1986) associated informal activities with low levels of education. This aspect was also related to the findings obtained from semi-structured interviews with the workers at Kasenge. As shown in Table III (Appendix) and Figure 5, 18 percent of the sampled workers never had any formal education, 40 percent dropped out at the elementary level, while 38 percent attended secondary school only 4 percent attended tertiary institutions.

To these workers poverty was associated with lack of adequate education. Most of them said that their parents did not have enough money to help them pursue further education and hence engage in other income generating activities. The stone workers justified their low education status with their presence at the quarry. As one of the respondents said that:

> '*Guno mulimu gwaffe abataasoma tewali mirimu milala gyetusobola kukola kubanga n'emirimu gyibuze. Olaba gyibula baasoma ate olwo ffe?'*
>
> **Female Stone worker- 23**

Literally this translates;

> *'This type of job is meant for us the least educated; we have no any other alternative source of income, because even those who are more educated do not have any job either.*

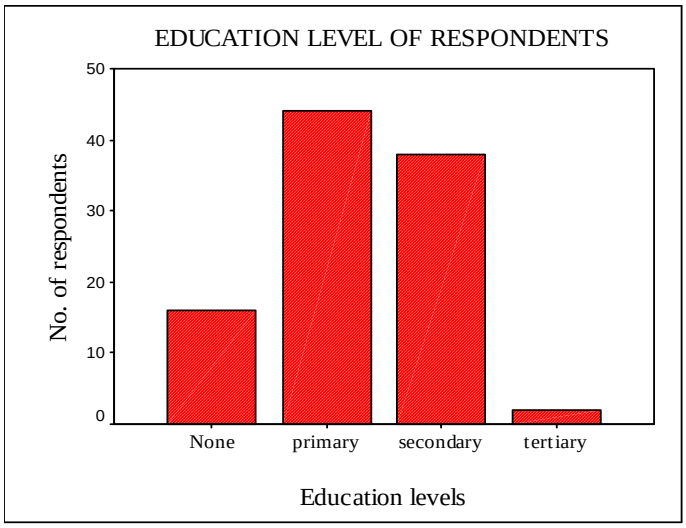

Figure 2: Graph Showing Education Levels of Stone workers

Source: Field data

They also said that the nature of their work and the tools they used did not require formal education. What they needed was physical strength to extract, lift and crush rock boulders in order to earn a living. The ability to labour in this case is an asset that the poor use to realise livelihood outcomes. This concurs with a Swahili saying that goes: *Mtaji wa maskini ni nguvu zake mwenyewe*. This can be translated as*; the asset of the poor is his strength (*Mduma and Wobst, 2005).

5.3.5 Loss of Formal Employment

The easy entry and minimal requirement in the informal sector enables school dropouts and those who have lost their jobs to support their families through informal activities. Among the respondents I interacted with, were workers in the public service and companies who had lost their jobs during the economic restructuring programmes in the 1980s and 1990s. These workers decided to engage in stone quarrying activities in order to meet their needs and those of their households members support themselves a these workers joined the informal sector so as to support themselves and their households.

5.3.6 To Provide Household Basic needs

Marriages in Uganda are based on statutory, religious or customary laws. In some cases, it is just a mutual agreement between two adults who cohabit as husband and wife. Polygamous marriages and remarriage after separation or death of a spouse are not prohibited. Among the workers interviewed, marital status showed that about 52 percent were married, 42 percent were single while 6 were widows. Since marriage comes with responsibilities, I noticed that married stone workers were more than either the single or widows.

African culture has always dictated women's work to be mainly reproductive and community participation in the labour market. As I interacted with the women respondents during focus group discussions, I found out that although some of them were married and as expected their husbands would provide for the household needs, the women complained of minimum financial support from their spouses. As the women whole heartedly contributed to this issue, they said that some of their spouses were low income earners who wasted the little they earned on alcohol and gambling. This concurs with Ellis (2000) who asserts that women are more likely than men to spend cash resources under their jurisdiction on basic household needs compared to men.

According to Moser (1993) men have always played the role of the primary bread winner while women are seen as dependants who are supposed to perform domestic chores. However, due to socio-economic changes, women of recent are getting more involved in the labour market than it was decades ago. This is mainly to satisfy their and their households' practical needs such as food, clothing and catering for their children's education requirements.

During the men's focus group discussion, they justified their reasons for not being able to fully support their families. This they related to the high women to men population ratio, which was also evident in the country's demographic statistics (UBOS, 2002). Given this fact, most claimed to have more than one wife and household to support; and besides, they were low income earners.

Easy entry into the quarry allowed children to involve in quarrying activities. Most of the children I interacted with either worked as wage workers or with their parents to provide supplement household needs and meet their school requirement as well. One of the children I found at the quarry had this to say:

> *'Bangobye ku ssomero lwa school fees, naye bwetuyamba ku maama sente ziwera mangu n'enzirayo mangu ku ssomero'.*

This means that:

> '*I was suspended from school for lack of school fees. So when I come here (at the quarry) to help Mummy the money accumulates faster and I can go back to school within a shorter period.'*

It can therefore be suggested that, poverty at household level led to engagement of women and children in informal non-farm activities such as stone quarrying.

5.3.7 To meet Practical Gender Needs

Women's practical gender needs are those that arise by virtue of their gender in the existing division of labour. Needs such as adequate housing, clean water as referred to by Ostegaard (1992) generally affects household members. They are however referred to as women's needs because they reinforce their responsibility for productive work in the household. Moser (1993) identifies men as the primary bread winner, while women are seen as dependants who are suppose to perform domestic chore. However, due to socio-economic change, women of recent are engaging in the labour market than it was decades ago.

As I interacted with the female respondents at the quarry during the focus group discussions, I found out that, although some of them were married and expected their husbands to provide for their household needs, however most of the women complained about minimum financial support from their spouses. As they contributed whole heartedly to this topic, some of them said their husbands were low income earners; who

at times spent whatever they earned on alcohol and gambling. It is for these reasons that women were engaged in stone quarrying so as to support their families.

5.3.8 The Desire to meet School requirements

During the study I found out that the quarry was a place where students at different education levels came to earn money to meet their school requirements. Most of the children I interacted with either worked as wage workers or worked under close supervision by their parents with an aim of earning money to meet their school needs such as scholastic materials and uniforms. Others helped their parents so as to supplement their school fees as well as household needs. One f the children I found at the quarry had this to say:

Bangobye ku ssommero lwa school fees, naye bwetuyamba ku maama, sente ziwera mangu n'enzirayo mangu ku ssomero.

Translated this means that, I was suspended form school due to lack of school fees. So when I come here (referring to the quarry) to help mummy the money accumulates faster and I can get back to school after a shorter period.

5.3.9 ***The effect of AIDS on Women and Orphans***

Some of the workers at the quarry related poverty to loss of a parent or spouse to HIV AIDS. Although Uganda has been applauded for substantial decline in HIV/AIDS prevalence, the effect of the epidemic on livelihoods and resource accessibility has greatly affected rural areas where medical services are insufficient. One of the orphans I spoke to said that he had to drop out of school to support his siblings when their parents died from HIV/AIDS. The easy entry at the quarry enabled him to earn a living as a wage worker where he was engaged in lifting and crushing stones for a pay.

Since most cultures in Uganda are patriarchal, women and widows in this case had no access to their husband's property. Left with children to support, with no productive assets, stone quarrying was one of the activities they easily engaged in to earn a living.

Despite the NRM government's efforts to sensitise communities, contraction and death form HIV/AIDS is still regarded as a disgrace to most Ugandans. This I found out from the stoneworkers especially the widows who were often treated with contempt and stigmatized by their husbands' families, because of their HIV sero-status. They therefore migrated to Kasenge parish not only to earn an income, but also to escape from discrimination in their marital homes.

5.3.10 Financial Savings

The lack of assets to initiate personal businesses was noted as a contributory factor to engaging in stone extraction. Some of the workers especially women and the youth aimed at accumulating financial capital in order to buy productive assets such as land for agricultural production, construct houses for rental purposes, or buy a motorcycle to engage in the rural transport industry. These workers lamented that stone quarrying was quite laborious for one to be involved for a long time.

5.3.11 Insurgency and Insecurity

Poverty in relation to insecurity was manifested in the displaced persons who engaged in extraction activities at Kasenge. War and insurgency in some parts of Uganda and in the neighbouring countries (Rwanda, Democratic Republic of Congo) for the last two decades has led to death, loss of assets and displacement of the people. Those who escaped death found their way to 'safer places' and were mainly involved in wage labour in sugar cane and tea plantations in the Mukono district. However, the need to maximise profits, by foreign owned companies often led to exploitation of wage workers by making them work hard for low payments.

A former sugar plantation worker who was at the quarry said that work at the plantations was less paying, strenuous and the chances of being bitten by poisonous snakes which nested in the thick dark vegetation were high. Inspired by a friend, he joined the quarry. I also discovered that as the insurgency in northern Uganda continues, some of the workers went back home and brought members of their households to work at the quarry.

5.4 Location and Market

From my personal observation and the worker's views, the quarry at Kasenge is strategically located for business. Located along the Kampala- Jinja Highway, at a distance of 20 km from the city, and all year accessibility, these factors enhance the market for stone products in Kasenge; and as a result they indirectly contribute to the workers influx to the quarry. With increasing population in the urban areas, the demand for commercial and residential premises also increases. This is evident with the increased encroachment of wetlands in Kampala given the shrinking space in the urban areas. The increased market, has therefore, contributed to rural and urban dwellers to engage in quarrying activities.

The increasing population has also called for rehabilitation and construction of infrastructure. Featuring in this case is the rehabilitation of the Nakivubo Channel, whereby Kampala City Council, with funding from the World Bank, took on a project (that ran from July 1st 1999- June 30th 2002). This aimed at rehabilitating the 11km stretch of Nakivubo channel and other smaller channels to enable faster movement of the waters into Nakivubo wetland and finally Lake Victoria to reduce floods after heavy rains which affected traffic flows. Most communities affected by floods were those who had constructed in reclaimed wetlands, such as Bwaise, and Kisenyi.

After three decades of political strife, the prevailing peace and stability has encouraged foreigners as well as Ugandans to invest in assets such as land and buildings. This is evident from the increasing value of land and real estate developers who were unheard of years back. The construction of commercial premises by foreign investors has created a market for stone products. For instance, the workers associated their activities with the construction of the multi-billion Speke Resort Munyonyo, Kabira International School and the refurbished Serena Hotel Kampala all investor owned.

I personally visited these places and witnessed the evident state of the art used on most of the buildings, interior décor, walk-ways, swimming pools, making of flower vases, gardens, and pavements as well as in the construction of drainage channels as shown in Figures 3. These and other numerous projects were fast income generating which contributed to the high influx of workers to the quarry.

Figure 3: Different uses of stones: Clockwise; Stone pavements at Munyonyo Beach, stone flower pots at Munyonyo Resort beach, walls of Nakivubo Channel lined with stones, Kabira International School fence and wall made of stones

Source: Field findings

Summary

This chapter has presented the different reasons that led to engagement in stone quarrying activities. Stone quarrying as discussed in this section of the study was both poverty and market-driven. Poverty according to the workers was related to lack of money to support their household needs, the lack of money to engage in less laborious income generating activities; and for the students, the inability to provide for their school requirements. Stone quarrying is also perceived as an alternative source of income by the workers. The impact of AIDS on rural individuals and households in addition to insecurity in some parts of the country were also associated with the influx of individuals into stone quarrying. The strategic location of the quarry and the increasing market for building materials was also identified by the workers as a significant factor in engaging individuals in stone quarrying.

CHAPTER SIX

6.0 CONSTRAINTS AND VULNERABILITY CONTEXT

6.1 Introduction

Assessing the contribution of stone quarrying to people's livelihoods based on the Sustainable Livelihoods Approach would be incomplete without discussing the constraints that affect stone workers as well as their livelihood. Vulnerability can be related to susceptibility to damage and injury. Most informal activities and the lives of those engaged in the activities are prone to diseases, losses and damages.

The Vulnerability context in the Sustainable Livelihood Framework refers to shocks and stress (trends and seasonality) which is the external environment that is directly or indirectly responsible for the stone workers poverty. Shocks and stress not only affected livelihoods but they affected lives of individuals, households and communities as well. The interaction of processes, policies, and institutions as well as the vulnerability context determine the livelihood outcomes from a particular livelihood strategy.

This chapter therefore, endeavours to assess the different constraints that affected quarrying activities at Kasenge discussed under the vulnerability context; and the different coping strategies the workers adapted to mitigate the effect of the shocks and stresses. In order to survive in incidences of scarce resources, the poor adapt measures that help them meet their needs these in the study are identified as coping strategies. It should be noted however, that there is no clear-cut divide between shocks, trends, and seasonality.

6.2 Human Shocks

Ellis (2000) defines shocks as unpredictable events that can directly destroy assets or affect the people themselves. Chambers and Conway (1992) emphasize that shocks are typically sudden, unpredictable and traumatic. Shocks such as wars, civil violence, famines, persecutions, storms and epidemics have been identified to affect communities *(ibid)*. On the other hand, death of a bread winner, illness, accidents, sudden loss of property or loss of a job, have more impact on individuals and households. Shocks can

also be classified as natural for instance floods, drought and famine. Findings in this study were related to shocks that affected the stone workers as well as stone quarrying as their source of income. These were classified as human shocks (illness, accidents, death) and economic shocks (loss of money, theft of tools, price changes).

6.2.1 Accidents at the quarry

Stone quarrying activities as I observed created steep rock cliffs and the deep gaping pits in the earth surface. These features characterised the working environment of the stone workers and made them prone to accidents and fatality. Accidents caused by collapse of walls on the stone workers affected their lives and reduced their capability to engage in more income generating quarrying activities hence affecting their livelihood outcomes as well.

This I found out from a worker whose leg was hit by a rock during extraction (Figure 4), leaving him disabled. As he narrated the consequences of the accident, he said that during the twelve months of hospitalisation his children were unable to go to school since stone quarrying was his only source of income. Other accidents were caused by stray stones that hit the workers' eyes and hands as they extracted and crushed stones. Although severe accidents and sometimes death were common few of them were reported.

Scoones (1998) identifies the importance of claims from friends, relatives, neighbours and communities as one of the individual and household strategies of coping up with stress and shocks. In relation to the accidents at the quarry, stone workers often depended on social capital and financial support from their fellow workers and customers.

Figure 4: A stone worker's leg hit by a rock Car tyres used to heat rock

Source: Field findings

Stone workers depend upon claims from fellow stone workers during incidences of shocks and stress. This could be material or moral support or other practical support. This is often n terms of good, implements loans and gifts.

6.2.2 Respiratory Diseases

During data collection, I found out that stone workers often heated rocks using wood fuel to enhance expansion and cracking. Using a chisel and hammer the workers produced block slate one of the most expensive products at the quarry used in interior décor by house constructors and interior designers. However, short of wood fuel, the workers used worn out car tyres for heating the rocks. I observed not only generated a thick dark smoke, but workers also inhaled toxic substances which were released from burnt rubber. This therefore made them prone to respiratory tract complications.

I also observed that the workers at Kasenge lacked protective gears, against accidents and occupation related hazards. This made them vulnerable to diseases such as silicosis, also

known as the miners' disease. NIOSH[8] describes silicosis as a disabling and often fatal lung disease caused by breathing dust that has very small pieces of crystalline silica in it. Early stages of the disease present with shortness of breath, severe cough and weakness. In advanced stages however, chest pains, fevers, weight losses, night sweats, respiratory failure may present which may later lead to death. Since rock material contains crystalline silica, workers were at high risks of being affected by silicosis.

However, different from the other types of shocks, such health complications were not easily identified by the workers since they often presented after a long time exposure to the causative factors and were difficult to diagnose. This is in agreement with NIOSH who identifies three types of silicosis. Accelerated silicosis results from exposure to high levels of crystalline silica between five to ten years, while acute silicosis can present even after a weeks or months of exposure to very high levels of crystalline silica and death occurs within months. Chronic silicosis is however, the most common and it manifests after a period of ten years or more of working in silica related environments *(ibid).*

During one of the interviews I interacted with a single mother of two who had worked at the quarry for five years. In relation to constraints that affected her activities at the quarry, she confessed that she suffered from wheezing coughs and allergies especially when exposed to dust or cold conditions. Although medical reports showed that she suffered from Asthma, she still responded negatively to asthma treatment.

Although there was a relationship between the nature of work and the symptoms of silicosis, with this particular respondent, I could not fully establish whether it was actually silicosis or asthma for that matter; due to the lack of information about work-related health hazards in Uganda, especially in the informal sector. My weakness in confirming this finding was affirmed by a Senior Lecturer in the Geology Department, Makerere University in Kampala, with whom I informally interviewed in relation to this aspect. In response to this he said that:

[8] http://www.cdc.gov/niosh/docs/2004-108/ 21/02/2006

'*Unless a Doctor has taken a course in Occupational Health, it is hard to diagnose a disease like silicosis, because of its linked symptoms to asthma. So when people exposed to silica conditions present with silicosis they will be treated as asthmatic cases'*

(Lecturer, Geology Department (MUK), Informal conversation, July 2005**)**

6.2.2 Sanitary related Diseases

Hetchsler *et al* (2003) acknowledges the poor sanitation and public health care in mining communities. There is always an assumption that mining populations are transient and are likely to leave upon mineral exhaustion (*ibid*). In relation to Kasenge, I noticed the appalling state of human waste disposal. With a population of about 200 stone workers, the study disclosed the absence of toilet facilities at the quarry. Since most of the workers lacked boots which would protect their feet, the chances of worm infestation were relatively high. More so, poor human waste disposal increased the chances of cholera outbreak at the quarry in case of water contamination with faecal material. I therefore, categorised this as a potential human shock which would directly have an impact on the workers' lives. Also in case of a cholera outbreak at the quarry activities may be stopped by health authorities. In such a case ill health would affect the workers' activities, and as a consequence affect their livelihood outcomes as well.

6.3 Economic shocks

Economic shocks in this study were related to features that affected productivity and accessibility to financial capital. These included financial constraints, theft of tools and materials and influence of middlemen in determining prices of stone products at the quarry.

6.3.1 Financial constraints

Dreschler (2001) asserts that most small scale miners are in a poverty trap, which inhibits their ability to purchase advanced modern extraction equipments to increase their productivity. They often have inadequate access to financial institutions and advanced

technology to improve on their skills hence their production is often marginal. Although these workers could be assisted by financial institutions, in form of loans or credit, Hentschel *et al* (2003) notes that financial institutions consider small scale mineral extraction to be risky, so financial institutions often charge high interest rates to recover their costs.

Most workers at the quarry complained about their hindered productivity due to lack of financial capital to purchase better extraction tools, enhance the quality of their products and hence command more value for their products. The workers also considered the need for enrolment in vocational schools to obtain formal skills in relation to masonry so as to enhance their indigenous skills.

Although monetary constraints were a general complaint for all the workers, women were more affected than the men. From the interviews and by observing, I noted that work at the quarry was gendered. The men were engaged in most of the strenuous but most income generating activities such as clearing of soil material to expose the rock, cracking of boulders, lifting and loading of the boulders onto trucks, Table 6 (Appendix) while women were involved in the less straining but less paying job of crushing stones. In addition to this, their irregular attendance at the quarry equally affected the financial capital as well as livelihood outcomes. This gender division of labour caused a variation in the financial outcomes realized by the stone workers.

As a coping strategy therefore, stone workers relied on informal money loans from friends, fellow workers and relatives to overcome financial constraints. In most cases they borrowed money from their fellow workers in incidences of money scarcity. Those who owned pits borrowed from the landlord. It was easier for this kind of workers because pits acted as collateral, in case they failed to pay back the lender would definitely sell the pit to someone else. Collective work at the quarry was also common as a strategy to increase their financial output.

6.3.2 Sale through Intermediaries

Francis (2000) notes, that the informal sector is highly socially embedded. Since informal workers lack the funds and marketing promoters to sell and advertise their products, they

usually rely on customers, contacts and information by word of mouth, to enhance or lay strategies in their businesses. By the fact that the middlemen at Kasenge were informed about the market and any upcoming construction projects, they always got in touch with the customers to negotiate for prices before hand. When the clients came to pick materials they paid the middlemen and not the stone extractors. Whatever money they were given, the middlemen always took the biggest share or at times they paid the stoneworkers in deposits over a long period of time. This not only affected the returns of the workers but also affected the financial capital that they depended upon. It can therefore be suggested that, informality and illegality increases the vulnerability of the stone workers to exploitation by middlemen. As a solution to this problem some of the workers bought mobile telephones, which enabled direct communication with their clients without engaging the middlemen.

6.3.3 ***Theft of Tools and Products***

Among the shocks identified by Chambers and Conway (1998) theft of property is noted to affect individuals' and households' productivity. Theft cases at the quarry were cited as a common problem by most workers. When their tools were stolen, they became jobless until they acquired other tools. This constraint was related to economic shocks because it affected the workers financial output and as a consequence affected their expected outcomes. As a coping strategy, the workers, either drew money from their savings and bought other tools or alternatively specialised in other activities such as lifting and loading trucks which did not involve use of tools. Victims of theft cases would in some instances borrow tools from fellow workers until they were able to buy their own.

6.4 Stress

Chambers and Conway (1992) describe stresses as pressures which are typically continuous and cumulative, predictable and distressing. These gradually increase and have an effect on resource accessibility. DFID (2000) acknowledges trends and seasonality in relation vulnerability context. Trends can be related to demographic changes, technological advancement, governance, and employment availability. Stress that affect stone quarrying were related factors that affected the returns of the workers. I

found out that technological advancement and government initiatives to encourage investment in the mining industry stone quarrying for this case, led to competition between large scale companies and small scale informal extractors at Kasenge.

6.4.1 Technological advancement

In an effort to revive the mining and quarrying sector, the government of Uganda through the Uganda Investment Authority has encouraged investment in stone quarrying by foreign and local investors. Large scale stone quarrying involves use of explosives to blast rock material and advanced machines to produce and process large quantities of stones (Figure 5).

Figure 5: Machines used on large scale. Simple tools used at Kasenge
Source: Field findings

In comparison, the small scale workers at Kasenge use simple hand made tools supplemented by human labour to extract process and lift hard rock material. The tools used involved hammers (30kg and 200grams) which were used for cracking and crushing the rocks, a chisel for widening cracks in rocks, a metal rod for extracting the rocks in between soil layers, spades for clearing the soil, plastic containers for measuring and lifting extracted rock materials from one place to another. These tools as I observed produced less hard and lower quantities of stone material compared to the machines used

in large scale. In relation to this, it can be suggested that technological trends presented a threat to the small scale workers. By using advanced technological methods the large scale companies produced hard rock materials for highly paying projects such as road construction and rehabilitation. Since the small scale workers produced less quality and less quantity this limited them to particular customers. This affected the income generated by the workers as well as the expected livelihood outcomes.

Quoting one of the respondents who said that; '*our returns are so small because of the tools we use this work is meant for machines but since we have no alternative we have to us the simplest tools to earn a living.'*

6.4.2 Seasonality

Due to the poor communication network in Uganda, most rural areas are often inaccessible during the rainy season. Kasenge stone quarry although accessible throughout the whole year, most respondents commented about reduced activity during the rainy season in May and September to December. The boulders were impossible to crack during the wet season which consequently affected the amount of stones produced and hence the income generated.

The workers also remarked that the possibilities of walls collapsing upon them as they worked were high in the rainy season. This is because since the soil embedded between the rock material was soft and it easily gave way with constant hitting, which was inevitable during rock extraction. Since they did not have any shelter at the quarry, their time in stone cracking and crashing was also limited which affected their returns as well. With less activities at the quarry the workers, the workers engaged in other income generating activities such as agriculture and fishing. Another coping strategy they used was seeking financial assistance from fellow stone workers. Alternatively some of the workers increased their labour power by producing in large quantities and different varieties of stone material on the days when the rain was less.

Summary

This chapter discussed constraints encountered by stone workers in Kasenge in relation to the vulnerability context in the Sustainable Livelihoods Framework. The shocks identified in the study include accidents, diseases and death as workers carried out their activities. Shocks were sudden and unpredictable. Economic shocks identified were related to productivity and these included economic constraints and theft of tools and materials. Other constraints such as seasonal changes and competition from large scale producers were categorized under stress in the vulnerability context. As coping strategies the workers relied on informal money lending institutions, from relatives friends and fellow workers. The workers also engaged in other activities besides stone quarrying especially in the rainy season when activities at the quarry were less intensive.

CHAPTER SEVEN

7.0 EFFECT OF STRUCTURES, PROCESSES ON QUARRYING

7.1 Introduction

Carney (1998) acknowledges the significance of transforming processes, policies, and structures who stresses their importance in determining the accessibility to assets in pursuit for a viable livelihood. Access, control and use of assets are determined by institutional structures and processes. This chapter therefore aims at assessing the effect of processes, policies and institutions on quarrying activities in Kasenge Parish.

7.2 Structures

DFID (2000) describes structures as public and private organizations that set and implement policy, legislation, deliver services, purchase, and perform all manner of other functions that affect livelihoods. Well working structures are therefore important because their absence is an obstacle to sustainable development by making asset accessibility difficult and hence hindering particular livelihoods. The legislative bodies in any country are important because they make the laws that are used in governance; DFID (2000) further asserts that structures make processes to function. The Parliament of Uganda is responsible for m*aking laws on any matter for the peace, order, development and good governance of Uganda and it is also obliged to protect the Constitution and promote democratic governance in Uganda*.

Mean while the Ministry of Mining, Energy and Mineral Development of which small scale stone mining is under seeks to*: establish, promote development, strategically manage and safeguard the rational and sustainable exploitation and utilization of energy and mineral resources for socio-economic development.* The Ministry plays role is responsible for making policies regarded to mineral extraction.

7.3 Processes

Processes refer to the policies, institutions, legislations culture and power relations. Processes determine the way in which structures and individuals operate and interact.

Policies identified could be are macro, sectoral, redistributive or regulatory. Institutions according to Ellis (2000) are formal or informal codes of behavior. Carney (1998) and DFID (2000) also include markets, societal beliefs and norms in addition to power relations which include gender, caste or class. Policies grant or deny access to assets, and through markets people are able to transform one type of asset to another. DFID (2000) asserts that policies have a strong influence on interpersonal relations how different groups of people interact with each other. Processes as noted by DFID (2000) are limited by the processes that frame their livelihoods which restricts their opportunities for advancement.

7.3.1 The Constitution of Uganda 1995 and Mining

When Uganda became independent from the British in 1962, it automatically inherited the legislative tools of governance from the colonial government. However, the Uganda Constitution 1962 was void of sensitive issues relating to accessibility and sustainable utilization of natural resources (MMED, 2003). Therefore following promulgation of the Constitution in 1995, laws and polices related to mining were revised to address these contemporary issues.

According to MEMD (2003), the Constitution of the Republic of Uganda; places important natural resources including minerals under the protection of the Government, on behalf of the people of Uganda. The Constitution also mandates the government to promote sustainable development and public awareness; of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations *(ibid)*.

However to ensure that minerals are used for socio-economic development, sharing of royalties between the government and the individuals engaged in exploitation is shown through the payment of royalties as shown in Article 244 (b) BOX 2. In an effort to protect the environment, Article 244 (d) recommends the restoration of derelict lands and observes conditions in relation to paying indemnities arising from mineral exploitation. On the other hand however, the laws do not affect 'minerals'[9] such as sand, murram or

any stone used for building purposes as shown in Article 244(f), BOX 2. Although the constitution considers environmental sustainability in mineral exploitation as shown in Objective XIII, it is evident that laws regarding mineral exploitation exclude small scale stone quarrying. This shows that the Constitution of Uganda enhances small scale stone quarrying at Kasenge. However, this exclusion leads to environmental degradation by small scale extractors and since they do not pay indemnities, then they are not concerned about the restoration of degraded land.

The Constitution and Mineral Resources

Objective XIII: ***Protection of Natural Resources: The State shall protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda.***

(ii) Article 244: Parliament shall make laws regulating:
(a) the exploitation of minerals;
(b) the sharing of royalties arising from mineral exploitation;
(c) the conditions for payment of indemnities arising out of exploitation of minerals;
(d) conditions regarding the restoration of derelict lands;
(e) minerals and mineral ores shall be exploited taking into account the interest of the individual land owners, local governments and the Government; and
(f) for purposes of this article "minerals" does not include clay, murram, sand or any stone commonly used for building or similar purposes.

*Source: The Constitution of Uganda, 1995 (*GoU, 1995).

Box 2: The Constitution and Mineral Resources

Mineral- means any substance, whether in solid, liquid or gaseous form occurring naturally in or on the earth, formed by or subject to a geological process; but does not include petroleum, as defined in the Petroleum (Exploration and Production) Act, 1985, Act 7 of 1985, water or building mineral

"Building mineral- means rock, clay, gravel, laterite, murram, sand, sandstone and slate, which is mined by a person from land owned or lawfully occupied by him or her for his or her own domestic use in Uganda for building, or mined by a person for his or her own use for road-making, and includes such other minerals

7.3.2 The Mineral Policy 2001

A policy is defined as a course of action designed to achieve particular goals or targets. Since the 1970s, the mining sector has been affected by the political and socio-economic upheavals hence a decline in productivity. To revitalize the sector therefore, the Mineral Policy 2001 was put in place to enable the private sector take lead in mineral exploitation, mine development, mineral beneficiation and marketing. The policy also encourages local entrepreneurs to develop small scale mines so that they can gradually build up capacity to offer employment and alleviate poverty among the rural population. As a strategy, this will serve as an engine of growth towards development of infrastructure, employment creation, industrial development as well as increased revenue (MEMD, 2003).

In order to attain this goal the Mineral Policy aims at developing the mining sector to encourage sustainable national and social growth by creating employment and providing a source of income particularly for the rural population in Uganda. There is therefore need to relate the Mineral Policy to small scale stone quarrying in Kasenge. Box 3 shows the objectives and later is an analysis of the objectives.

The Mineral Policy Objectives:

(a) To stimulate mining sector development by promoting private sector participation;

(b) To ensure that mineral wealth supports national economic and social development;

(c) To regularize and improve artisanal and small scale mining;

(d) To minimize and mitigate the adverse social and environmental impacts of mineral exploitation;

(e) To remove restrictive practices on women participation in the mineral sector and protect children against mining hazards;

(f) To develop and strengthen local capacity for mineral development; and

(g) To add value to mineral ores and increase mineral trade.

Source: Ministry of Energy Minerals and Development (2003).

Box 3: The Mineral Policy Objectives

The importance of minerals in national economic and social development is an objective stressed by the Mineral policy. In this objective, the government is obliged to benefit from mineral resources through levies and royalties collected from mineral extraction. These royalties as noted by the policy are supposed to be shared by the local government and the central government. Relating this objective to small scale stone extraction at Kasenge, I found out that stone workers did not pay any royalties to the district. This particular objective can be closely linked with Objective XIII of the Uganda Constitution 1995, specifically Article 244 (f). This is because stones are not classified as minerals by the constitution.

In Objective Three of the policy, regularizing and improving artisanal and small scale mining has been noted. Under this objective, the government seeks to promote formation of small-scale miners' associations, in order to improve their competitiveness. The strategies put in place include: applying light-handed regulation in small-scale mining; providing information on available production and marketing facilities; providing extension services to the small-scale miners through their associations and carry out awareness campaigns targeting the artisanal and small-scale miners. In relation to Kasenge, most of the activities are carried out individually and no measures have been taken to encourage formation of a miners' association. The groups I found at the quarry were informal based on mutual understanding between the group members.

The Policy also aims at reducing the shocks and risks that are associated with small scale mineral extraction; by minimizing and mitigating the adverse social and environmental impacts of mineral exploitation. Objective Four seeks to carry out sensitization campaigns about the impact of mining on the environment, promote friendly extraction technology, ensure health and safety regulations and encourage clean up operations from past environmental impacts.

The Mining policy encourages involvement of both gender in mineral extraction by encouraging employment and involvement of women in mining, formation of women mining associations or groups. It also considers the risks associated with child workers in mines hence places regulations against child exposure to mining activities.

Objective Seven of the policy seeks to promote and facilitate trade in minerals, through giving licenses to mineral dealers, availing market information, and conducting awareness campaigns for stakeholders and other law enforcing agencies.

Although the objectives were relevant to small scale stone quarrying at Kasenge, my interaction with the respondents showed that, the Ministry had not implemented the objectives of the policy at the grass roots. This is an indication that much as small scale mineral extraction was not constrained by the Mineral Policy, it hindered the different aspects of sustainability and more so made the workers more vulnerable to shocks since they lacked guiding rules. This consequently led to the negative impacts of stone quarrying in Kasenge.

7.3.3 Gender roles and quarrying activities

Gender different from sex (biological presentation of male and female) refers to the socially constructed roles played by men and women. Ellis (2000) shows that there is there are gender inequalities in asset ownership and labour markets. Gender inequality in the rural areas is pervasive because women in the rural areas have unequal access to resources and their decision making capabilities regarding resource use is severely restricted. Customs and norms which are male determined affect women. In this case women involve in activities that their participation is traditionally allowed for example crop marketing, food processing to mention a few. Gender roles are determined by cultural, social and economic facts which are learned by all women and men in all societies.

Figure 6: Mothers crushing stones at Kasenge.
Field Findings.

Both men and women are involved in productive roles which involves work for payment of cash or in kind. Women however are obliged to perform their reproductive roles which include child bearing and rearing responsibilities; domestic tasks required to guarantee the maintenance and reproduction of the work force. Activities undertaken primarily by women at the community level, as an extension of their reproductive role, to ensure the provision and maintenance of scarce resources of collective consumption such as water, health care and education. This is voluntary unpaid work undertaken in 'free' time.

It is evident that by the time a housewife in Kasenge completes domestic work, engagement in a straining activity such as stone quarrying is impossible. To note also since they need to attend to domestic chores, they either come late to the quarry or leave earlier than the men. According to the chairman of the quarry, regulations at the quarry do not allow women especially housewives at the quarry in the morning and in the evening. This is time set aside for engagement in household activities. With limited time in quarrying activities the women realise a narrow range of livelihood outcomes as a result of engaging in both income generating activities at the quarry and domestic activities.

I also observed that some women came to the quarry with their children because they had no one to take care of them at home in their absence. As I interacted with the stone

workers I observed that mothers often found it difficult to concentrate especially when the children cried for attention. They had to leave their work to feed them, change clothes or play with them. At times the children would want to sit on the pile of stones where their mothers were working from. These and many other inconveniences, affected the mothers' concentration and consequently they earned less than they were supposed to.

Summary

This chapter found out that small scale extraction was not affected by laws concerned mineral extraction. However much as small scale stone quarrying is not hindered by the law and the Mineral Policy, it exposes the workers to vulnerable conditions which affect the livelihood. The objectives presented in the mineral policy are relevant to Kasenge because they enhance small scale mineral extraction and they encourage women's engagement in quarrying activities. To note however culture and gender roles however affect women's realization of the benefits of stone quarrying. This chapter showed that informal institutions, deny women from accessing productive assets which increases their vulnerability and poverty levels.

CHAPTER EIGHT

8.0 OUTCOMES OF STONE QUARRYING ACTIVITIES

8.1 Introduction

Livelihood Outcomes Livelihood outcomes in the Sustainable Livelihoods Framework are the outcomes of livelihood strategies. These however are determined by the available assets and the mediating factors such as processes and institutions that may hinder or enhance a particular livelihood strategy.

Based on the Sustainable Livelihoods Approach no single asset is sufficient to yield all the varied outcomes that people seek. This is particularly true for poor people whose access to assets tends to be limited. In this context therefore, the workers at Kasenge combined natural capital, human, physical, social and financial capital in order to achieve their desired livelihood outcomes. Discussed in this chapter are the outcomes of stone quarrying at individual, household and community level. Rural livelihoods provide food, cash that satisfy variety of human needs. Some of these outputs are consumed immediately while some are invested in other assets.

8.2 Livelihood outcomes to individuals and households

8.2.1 Wage and Self - employment

Since stone quarrying engaged most of the workers' time and yielded economic benefits, it was identified as a source of employment to majority of the people at Kasenge (Appendix Table 4).The forms of employment I noticed were, self employment for those who had permanent working places, and wage employment for those who carried out any activity within the quarry for a pay. Stone quarrying at Kasenge was unregulated with easy entry and it involved labour intensive activities coupled with low technology and skills. The use of indigenous resources coupled with productivity on a small scale, depicted characteristics of the informal sector as shown by (Aboagye, 1986 and Lubell, 1991).It can therefore be confirmed that small scale stone extraction provided informal employment to the rural and migrant population in Kasenge Parish.

8.2.2 Financial Capital- More income

The stone workers' ability to labour and to apply skills enabled them to extract and modify stones, which they sold to building and road constructors for a fee. Most of the respondents confessed that the minimal financial input coupled with less taxation favoured them to generate reasonable profits which they invested in other assets. However, when I probed to find out how much they earned per day, it was not easy to establish since most of them had no records. Others were rather uncomfortable to reveal their daily income, skeptical that I was a government official. Nevertheless, I later established that the income earned was predominantly weather determined, depended on one's ability to engage in the different activities, and the workers' bargaining power. Based on informal price quotations, as shown in Appendix I Table 5, I concluded that workers remained with a substantial amount of money after paying off the wage workers and the landlord's levy of UGX 3000 for every truck of their products that left the quarry.

The increase in monetary income is important in satisfying a wide range of material needs and acquisition of assets. Increase in income increases ones well-being in terms of health, education and general contentment. The workers identified the different ways money enabled them realize other benefits. They were able to provide for their household with basic needs and invest in assets such as; land, livestock, houses and retail business. These assets provided them with additional income hence reducing their vulnerability to economic shocks at the quarry.

8.2.3 Human Capital

8.2.3.1 Acquisition of Skills and Basic needs

Potter *et al* (1999) identifies human capital as skills, knowledge, the ability to labour and good health; as both a means and an end that enable people to pursue different livelihood strategies in order to attain livelihood outcomes. Skill acquisition through apprenticeship is common in the informal sector and Aboagye (1986), relates this to on job training which enables new entrants to master a business. With reference to the workers at Kasenge, the use of simple tools and labour power did not need prior formal training. In

fact skills were acquired skills from experienced workers who had been at the quarry for some years.

In relation to sustainability, Scoones (1998) observes that social sustainability involves passing on skills, assets and tools associated to a trade from one generation to the next to enable its survival. The flexibility of the informal sector specifically stone quarrying in this case, allowed children to access quarrying activities to supplement household labour, especially during holidays and weekends. As children worked alongside their parents they became proficient in the different activities and they would at times work alone at the quarry.

Another outcome identified by the workers was their ability to improve upon the nutritional needs of their households. From the money they generated, the workers provided better meals for their families let alone pay for their medical bills in case they became sick or had an accident while at work. With better health, the workers' capability was improved and they were also able to pursue this and other activities that provided a living.
Capabilities can be enhanced through investments are enhanced by training education and apprenticeship.

Tangible assets such as financial capital enabled the workers to invest in their children's education as shown in the Appendix I Table 4. From their earnings, they were able to pay school fees, buy school uniforms and scholastic materials. The workers were optimistic that if their children obtained formal education they would be employed in the formal sector which was less straining compared to stone mining. One of the interviewees said that, although he never went to school, he would sacrifice anything for his children's education. He had this to say:

> *When I started working at the quarry I had 5 pairs of trousers and most my children were not in school. Although at the moment I have only one pair, the greatest thing is that I am now able to pay school fees for my 8 children whom I visit after three months.* Male Stone Worker-35

I also found out that, some of the stone workers were students from all levels of education whose school fees solely relied on earnings from stone quarrying. These often came in the evenings after school and over the weekends to extract and sell stones. In fact, one of the key informants in this study was a University student who had requested to be exempted for the studies so that he could accumulate enough money to sustain him when he resumed studies.

8.2.4 Productive Assets

Natural capital is associated to natural resource stocks from which livelihoods are derived. From their savings, Kasenge workers invested in agricultural land in their home towns while others bought livestock and local poultry. These assets I found out reduced their vulnerability to shocks and stress especially during the rainy season when workers activities at the quarry were limited by the weather condition. Some of them pointed out that an asset such as land would enable them acquire loans from credit institutions in the future and this would enable them increase their income base.

8.2.5 Physical Capital

Physical assets according to Ellis (2000), includes infrastructure such as buildings, roads, power lines, tools and implements which enable people to pursue their livelihood outcomes and at the same time access other forms of capital. To increase productivity, the workers bought more tools and also hired more wage labour. The workers have also benefited from technological advancement in telecommunications. Some of the workers purchased mobile telephones to ease business transactions, make price negotiations, and to update customers about their stocks. This I proved during data collection as sales representative from different telephone companies came to advertise their products to the quarry. From their earnings the workers enhanced their physical capital by constructing houses either for residential or commercial purposes. This was cheaper especially for those who resided in Kasenge because of the abundance of construction materials.

8.2.6 Social capital

Social capital refers to social resources upon which people draw in pursuit of their livelihood outcomes DFID (2000). This embraces relationships of trust, reciprocity and

exchange that facilitate co-operation, reduce transaction costs and may provide the basis for the informal safety amongst the poor (*ibid*). Ellis (2000) adds that, social capital refers to personal or family networks typically comprising of kin and close family friends that offer spatially diverse potential means of support when past favours are reclaimed.

Findings in this study noted the importance of social resources before joining the quarry and through out the workers' stay at Kasenge. To note for instance, most of the respondents were motivated to join the quarry by a village mate, relative or a friend. Given the nature of the activities, new entrants depended on experienced fellow workers and friends for support until they were able to run their own business. During the training and initiation period, there was development of trust between the two parties and this relationship continued even after the workers had separated their working places.

The established social networks were also valuable as informal money lending institutions during incidences of economic shocks, accidents or death which were common at the quarry. The significance of social capital was exemplified by one of the workers whose leg was hit by a rock. According to the respondent, his employees periodically brought him money they generated from his pit during his absence. This money helped him to pay off the hospital bills and to provide for his household's needs since he was the sole bread winner.

8.2.6.1 Formation of Working Groups

Small scale stone quarrying involves several processes as shown in the Appendix, Table 4 and the use of simple tools to perform these activities therefore makes the work strenuous. For the women, it took approximately two to three weeks to fill a five tonne truck single handed. It is on this note that some workers decided to crush stones in groups, and a lump-some of money was given to each of the group members periodically. This not only took a shorter time but at least every member of the group got a reasonable amount of money which she would invest in any area of her need. The women often organised particular days in the week to do group crushing, while the rest of the week was for their own personal earnings.

Responses from women who worked in groups revealed that the relationship among group members went beyond the quarry. Women often assisted each other during social functions such as weddings, funerals and christening ceremonies. It can therefore be suggested that, looking at both the individual woman and the household, being linked up with others, the social network has an extraordinary potential for social change. Presence of self-help groups among the women workers empowered them economically by increasing their production and as a result their improved their incomes. It can also be noted that, the mutual support among the workers also improved their self-esteem and hence empowered them socially. With the money they got they attained different livelihood outcomes and also undertook major financial decisions in their homes and communities.

8.2.7 High self- esteem

Small scale stone quarrying is often associated with the landless, victims of war and the poorest as shown earlier in some case studies in Uganda. However, the quarry at Kasenge has a different story to tell. The indigenous and even those with other forms of livelihoods have joined the industry showing no signs of leaving in the near future.

Inspite of its tedious nature, the workers were proud of their livelihood because it was fast income generating with minimal taxation contrary to other economic activities. Unlike the traders who had to pay a daily tax, transit fee for those dealing in cattle and fish, retailers licence, a monthly rental fee and electricity bills, the stone workers were only required to pay a levy of UGX 3000 to the landlord hence leaving them with some money to save or invest in other assets.

The respondents I talked to said that, they were not embarrassed to extract stones for a living because of the livelihood outcomes they had achieved given their socio-economic background. Some of the workers talked with pride about their children going to schools, perceived to be for the rich. The workers believed that it was through their hard labour that their children were able to obtain formal knowledge. With an increase in income, some of the workers experienced a change in their social status. They sent remittances to their home villages which supported their families and this gave them prestige and

respect in their home areas. They were also able to attain assets that some people who were formally employed did not have.

Talking to a respondent who had been laid off from Stirling one of the prominent stone quarrying companies in Mukono District, I discovered that although large scale extraction companies provided benefits such as transport and insurance for their employees, work was often exploitative and the strict rules made it less appealing. In comparison to small scale, he said that the flexibility associated with self employment enabled him to take care of his livestock before going to work at the quarry and more so he did not have to wait for a salary at the end of the month.

I also observed that every worker talked with pride about how the quarry provided stones for most construction sites in Kampala and Mukono districts. Among the projects they pointed out were: the construction of Uganda's most prestigious hotels, Munyonyo Resort and Serena in Kampala. Road and drainage construction projects identified were the Nakivubo channel construction and rehabilitation and the 21 km Northern By pass commissioned in 2004, a highway that is supposed to divert traffic from Mombassa in Kenya, away from Kampala city to the western route heading to Tanzania, Rwanda and Congo.

There was also a good interpersonal relationship between the workers and the business community in Kasenge as result of the activity. During an informal interview with the traders, I discovered that the workers were given items on credit based on the trust that they would pay when they made sales. On several occasions some of the members represented the stone workers at annual informal sector trade exhibitions. These incidences as I noticed made the stone workers proud that their activities were appreciated by the world out there.

8.2.8 Decision Making Capacity

Women in African settings are hardly involved in decision making. Even in female headed households, the next of kin to the husband who is preferably a male always determines the lifestyle of the family. Although culture is a main determinant here, at times lack of resources especially financial capital plays a role.

The involvement of women in the labour market such as quarrying has empowered them both financially and psychologically and elevated them as decision makers at household and community levels. Since women workers controlled the profits they made, they took upon major decisions in regard to household needs and expenditure. This can be related to Gordon and Craig (2001) who assert that the involvement of women in non-agricultural activities, strengthens their decision making power, within the household in addition to improving the children's education and nutritional needs.

In relation to decision making at community level, below was what a female stone worker had to say.

> *'Bwenali mu katale nga sisobola kuteesa munkiiko oba kunyimbe. Naye kati bwengenda munkiiko z'e kika nteesa nange n'ebawulira kubanga bamanyi nti nina sente ez'o kuwaayo.'* Female stone worker-27

Meaning that;

> *'When I used to work in the market, I could not participate in any decision making especially during clan meetings or preparation for a relative's funeral rites. But now when I go for the clan meetings, my opinions are accepted because they know I have the money to contribute.'*

As I interacted with the workers, I noticed that some of the women especially those who employed wage workers were quite aggressive, and business oriented. They commanded an aura of authority and had good bargaining skills when it came to business transactions. Generally, most women at the quarry acknowledged reduced economic dependence on their spouses and male relatives.

8.3 Outcomes to the Community

8.3.1 Infrastructural Development and Physical Capital

To ease the movement of vehicles from the main road to the quarry and within the quarry itself, findings showed that workers were involved in constructing some of the roads at Kasenge. According to the landlord, the quarry was initially, an enclosed farm with no roads passing through it to connect Kasenge to the next village. Today however, three murram roads winding down the hill have been constructed to enable passage of trucks and pickups carrying stone products from the once enclosed, inaccessible hill.

The roads as he noted have not only enhanced the movement of goods and services between Kasenge and the neighbouring parishes but they have also encouraged more settlement of migrants in Kasenge. The increasing population has also contributed to development of services such as schools and health centres in the area.

Social equity as emphasized by Helmore and Singh (2001) shows the significance of a sustainable livelihood. According to Gordon and Craig (2001), non-farm activities act as engines of growth by enhancing the presence of other activities and are of importance in providing employment, hence reducing rural-urban migration. The study discovered that stone quarrying in Kasenge has contributed increase of agricultural activities in the area. Since most of the population is migrant, the farmers have economically benefited from the increased demand of agricultural products.

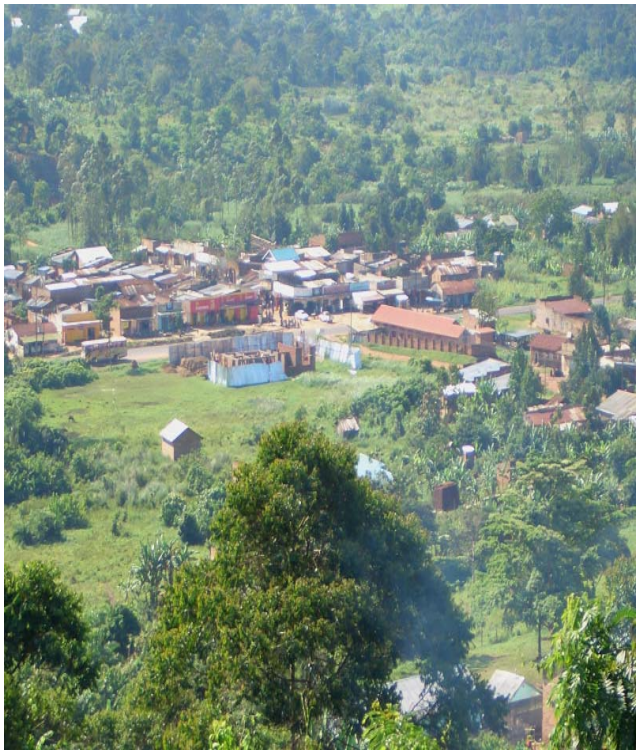

Figure 6: Kasenge Trading Centre. Visible land degradation and loss of biodiversity

Source: Field findings

Other income generating activities noticed were retail trade such food selling places, bars, markets and an increase motorbike transport in the trading center adjacent to the quarry. From informal and formal interviews this research also established that stone quarrying activities contributed to the growth of Kasenge Trading Center (Plate ix) which is one of the growing rural trading centers in Nama sub-county.

During primary data collection, I noticed the construction of a gas station adjacent to Kasenge trading centre. According to the LC (I)[10] Chairman in the area, one of the reasons for its construction was to serve the highway traffic and also to fuel the fleet of trucks that came to collect materials at the quarry. Such physical capital was not only an indication of infrastructural development in the area; but it also increased the workers' income since the construction materials were purchased from the quarry. Further still, a facility like a petrol station would benefit the local community by providing commonly used fuels such as paraffin for domestic consumption at an affordable price. I had an interview with the LC (I) Chairman Kasenge Parish Chairman to seek his opinion about the quarry and its contribution to the community. His opinions are hereby presented in Box 4.

Contribution to the community

'Compared to its size thirteen years ago, there are more people in Kasenge today, which has contributed to the increase of trade, services and infrastructure in the area coupled with price increase of food items and tools such as hammers, chisels, and pick axes which the workers often use.

Plots of land have become more valuable with the increased in demand for housing facilities and companies constructing in the area. Its central location makes shopping for the stone workers easy especially at the end of a hard days work. Most bars and eating places are open until dawn; the quarry in Kasenge village is the lifeline of Mbalala trading centre.

There are plans to open a bus terminal which will serve the city and the rural areas in Eastern Uganda. This will not only increase the workers income but some of them may be employed to work in the terminal as casual workers.'

Source: Chairman, Kasenge Parish. Date: 18th July 2005

[10] LC –Local Council - A political leader at parish level.

8.4 Effects on the Environment

Although small scale stone quarrying was applauded for contributing positively to the workers' livelihoods, the extraction of rock material in Kasenge affected the environment. This was evident from the distinct deep pits, trenches and predominant rock cliffs that characterized the quarry. These were created over time and no measures had been taken to cover up the unproductive pits. These were therefore breeding grounds for mosquitoes especially during the rainy season. The pits and steep rock cliffs not only destroyed the aesthetic beauty of the environment but they were also a potential threat in case any worker fell in any of them.

There was evident loss of biodiversity as workers cleared vegetation to expose the rock material for extraction. As the workers burnt tyres to enhance rock expansion there was production of soot and smoke from burning rubber which was a health hazard both to the workers and the surrounding community. Clearance of vegetation also led to soil erosion down the slopes. This was evident from the trenches that were on the road sides from the quarry.

Summary

This chapter has explored the different livelihood outcomes as a result of stone quarrying at individual, household and communal level. It can be noted that with an increase in income, the workers provided their families' needs and at the same time obtained assets (human, physical and natural) that they desired. Other livelihood outcomes noted were enhanced self-esteem, increased social capital which was not only important in increasing productivity but was used as a coping strategy by the workers during shocks.

Quarrying activities also contributed to the growth of infrastructure such as roads, increased migrant settlement and social services such as schools and health center in Kasenge parish. Other income generating activities have also resulted because of stone quarrying in the parish. To note however, however, quarrying led to the loss of biodiversity and degradation of the environment from the deep pits and steep cliffs that were created. These as noted in the chapter were a threat to the workers lives. It can therefore be suggested that although small scale stone quarrying did not show a significant environmental impact from a national or global point of view, the fact that

these activities were carried out every day by a number of people the cumulative effect will be evident with time.

CHAPTER NINE

9.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The overall purpose of this study, was to assess the contribution of small scale mineral extraction to people's livelihoods, with reference to Kasenge stone quarry. Specifically, this study aimed at; finding out why people engage in quarrying activities and identifying the constraints and vulnerability associated with the livelihood. The effect of processes, policies and institutions in enhancing or hindering quarrying activities was a significant factor that determined the livelihood outcomes of the workers. The study also explored these outcomes as a result of small scale stone quarrying to individuals, households and the Kasenge community.

Given in the introductory chapter was an overview of the informal sector; its characteristics with emphasis on small scale mineral extraction as a non-agricultural activity. Chapter One also illustrated why rural households even in countries with high agricultural potential such as Uganda, were engaged in non-agricultural activities.

Chapter Two presented the Theoretical and Analytical approach related to the study. In this chapter, the Modernization theory was related to traditional societies that depended upon natural resources and informal methods of production. Further shown was the effect of colonization and the role it played on consolidating informal activities before and after independence. The Alternative Development Theory was relevant to the study, in relation to meeting people's basic needs and at the same time maintaining the ecological integrity of the environment; based on the concept of Sustainable Development. The chapter also showed the relevance of the Sustainable Livelihoods Approach and the Sustainable Livelihoods Framework as an analytical tool in the contribution of stone quarrying to people's livelihoods particularly in Kasenge Parish.

In an effort to answer the research questions, I analysed opinions from stone workers, a mines inspector, local leaders and an environmental inspector; obtained from close and open-ended questions. The responses were supplemented with non-verbal information from personal observation and secondary data from documented studies in Chapter Three of this thesis. Also provided was a justification of the methodology and data collection

techniques used during field work, showing their weaknesses and strengths. This chapter concluded with the importance of collecting data using different methods and showed the hindrances that affected data collection.

Information about the country of study was important in tracing the roots of the problem under investigation in Uganda. As discussed in Chapter Four, Uganda's political insecurity, and socio-economic history not only did it lead to growth of poverty, but it also provided a fertile ground for the growth of informal activities as a source of income. It presents the country's deteriorating economic condition that heavily relied on agriculture for both domestic and home consumption and further shows how the breakdown of social services led to further consolidation of informal activities. This chapter also noted the peace and stability in Uganda since the NRM government came to power in 1986; and gave showed the different measures the government has taken to revive the economy and to reduce poverty levels. The chapter however identifies some draw backs in these strategies that are closely related to the problem being investigated. Rural taxation was considered as one of the factors that lead to involvement in alternative sources of income that are less taxed such as stone quarrying.

9.1 Summary of the Findings

The DFID Sustainable Livelihoods Framework was the analytical model in this study. However, its application has been mainly associated with studies and funded community based projects to suit DFID concerns and objectives. However the salient features in this model make it suitable for analysis but with adjustment to suit the Kasenge context. Although the framework identifies the environment in which the poor operate in pursuit of their livelihood outcomes, it does not identify the factors that make people vulnerable and hence their priority of particular livelihood strategies over others. The model also does not point out the coping strategies used by the poor in incidences of shocks and stress that affect their livelihoods. Although power struggles and culture have a significant impact in African household the Sustainable Livelihoods Framework does not consider effects of gender and culture on resource accessibility. Similarly, the framework relates Sustainability to preservation of ecological integrity thus identifying environmental sustainability as one of the livelihood outcomes. This study carried out in

Kasenge stone quarry, however goes beyond environmental sustainability by embracing other features of sustainability which include economic sustainability and social equity.

This study also made an effort to identify poverty as the main factor that leads individuals to choose the different livelihoods they opt for. Of importance are the coping strategies used as a fall back in periods of shock and stress. It is in view of these weaknesses therefore that this study adapted a modified Sustainable Livelihoods Framework to suit stone quarrying in Kasenge. Summarized below are the findings from Chapters Five, Six, Seven and Eight based on Figure 7.

As shown in Chapter Five, findings in this study revealed that, engagement in stone quarrying at Kasenge was both poverty and market driven. The demand for commercial and residential premises as a result of increased urban population, coupled with investment in infrastructural facilities due to political stability contributed to the market for construction materials. Shown in this chapter are the different dimensions poverty is perceived by the poor that leads them to engage in the informal sector so as to achieve their desires. Poverty, as identified by the stone workers was mainly associated with the lack of income to meet individual and household needs. In relation to the vulnerability context the study identified shocks and stress as factors that led individuals, household and communities to engage in small scale stone quarrying. Natural shocks that affected agriculture and stress in terms of weather and commodity price fluctuation that affected agricultural productivity were an impetus into involvement in quarrying a non agricultural activity. Government policies such as taxation on income earning activities and Structural Adjustment Programmes in the 1980s and the 1990s led to economic shocks both at individual and household levels, which increased their vulnerability to poverty. This led farmers and former public servants to engage in small scale stone extraction to pursue their livelihood outcomes.

Limited access to productive assets due to civil strife affected communities in northern, leading them to engaging in stone quarrying. In Chapter Five, women workers related poverty to lack of property such as land and livestock. The sudden death of a bread winner is associated with shocks in the vulnerability context. As a consequence widows and children sought small scale mineral extraction as a source of income.

Identified in this chapter was stress which is a gradual, predictable occurrence that hinders or enhance livelihoods and consequently the expected livelihood outcomes. Trends such as population increase in the urban areas provided market for construction materials due to high demand for residential and commercial premises. The political stability currently in Uganda also led to foreign investment rates in the construction industry. In the same way, the political situation, has led to change in people's attitudes in relation to saving and investing money in tangible assets such as buildings. These not only generate money to support their immediate needs but they believe that such capital can support future generations as well. Trend in this study was also related to increased influx of individuals to Kasenge and thus increasing quarrying activities.

Chapter Six of the study assessed the constraints that hindered activities at the quarry which were also discussed under shocks and stresses in the vulnerability context. Also identified were the various coping strategies applied by the workers during incidences of shocks. The lack of protective gears against health hazards led to shocks such as ill health, accidents and at times death of stone workers. As a coping strategy, the workers relied on financial and moral support from fellow stone workers.

Economic shocks acknowledged in the study were related to financial constraints. The study noted the lack of money to purchase better extraction tools and improve upon workers productivity. Related, is the loss of tools and extracted material through theft which consequently led to the workers' inability to access financial capital. The marketing of stones through intermediaries also led to economic shocks since some of the middlemen did not pay for the stone workers products.

Chapter Six of this study also identified stress as a result of weather changes as one of the features constraining quarrying activities at Kasenge. During the rain season the workers were less engaged in quarrying activities, and as a result their livelihood outcomes were also affected. However, they relied on informal institutions for credit facilities or alternatively extracted a variety of rock material for the different users. Due to the low productivity at the quarry during the rainy season, some workers engaged in other income generating activities such as agriculture and trade.

Technological advancement was noted by the workers as a potential threat to their livelihood. Categorized as a stress in this study, the workers noted that their tools affected both the quality and quantity of materials they produced. This led to the increased competition for customers with the large scale producers who produced large quantities of hard rock material using advanced methods of extraction. The research also identified culture and gender roles as a constraint in accessing financial capital, especially by the women. Most of the stone quarrying activities that generated a substantial amount of money as shown in the findings were laborious and strenuous. These factors therefore confined women to the least yielding activities of stone crushing since naturally women are physically weaker than men.

The study revealed the importance of social capital as a coping strategy that the stone workers used to mitigate the effects of shocks that affected either their lives as well as their livelihood. The reliance on claims such as food, implements, cash, debts or credit collection from relatives and friends was significant during economic and human shocks. Alternatively during periods of reduced quarrying activities especially the rain season; the workers engaged in other income generating activities such as agriculture or trade. Due to their reduced time in the rainy season the workers strived to produce a variety of stones to suit different needs of the customers.

Chapter Seven of the study showed that small scale stone extraction at Kasenge was enhanced by the processes and policies related to mining. As shown in the Constitution 1995, activities that engaged extraction of sand, stone or rock extraction were not affected by the law that affected mineral extraction. This is in relation to sharing of royalties, utilization of minerals on the account of the individual land owners, local government and the government. Small scale quarrying was also exempted from payment for the damage done as a result of the activities. This in the constitution was referred to as indemnities. The Mineral Policy encouraged regularization and enhancement of small scale mineral extraction and further still recommended the accessibility of women to stone quarrying activities.

Evident at Kasenge stone quarry is the effect influence of gender roles on women's engagement in quarrying activities. The study found out that in addition to the

reproductive and community roles, women stone workers were engaged in productive roles in order to meet practical needs at household level. These multiple roles affected their full involvement in stone quarrying activities; and consequently their livelihood outcomes. The most affected, were women with young children who found it difficult to balance both roles equally.

Chapter Eight analyses the different assets the stone workers used to attain their desired livelihood outcomes. Assets in this study were both a means and an end to achieving the outcomes. As a means, the workers used human capital (skills, labour, good health) to extract rock material (natural capital). They relied on the existing physical capital (roads, tools) which enhanced accessibility between them and their customers. Access to the quarry was based on social networks. Most workers were inspired by friends, relatives to engage in quarrying. Social capital was also important at the quarry especially in incidences of shocks such as accidents, death and price fluctuations. Financial capital was used to hire working places, to buy working tools and payment of wage workers. The stone workers in this study had free access to the land where quarrying is carried out. In order to carry out their activities, they however relied on human capital- *the ability to labour.*

As an end, this research revealed that some of the assets used to access quarrying activities were also livelihood outcomes. Noted in this case were: increase in income (financial capital) from the sale of stone products, enhanced social capital through working groups, improved physical capital through road construction to increase accessibility in the parish. At household level, the workers also identified investment in natural capital such as land and livestock. Such assets also made the workers more capable of acquiring financial capital from lending institutions. Through investing in their children's education, they improved human capital at household level. An aspect of synergism and flexibility was evident in this study as workers utilized the different assets concurrently or converted them from one form to another in order to reduce vulnerability.

Stone quarrying also enhanced the capabilities of the rural poor and the migrant population. In addition to increased well being, the workers were able to be adequately nourished, improve their health and lead a life without shame. Actually as noticed by the

stone workers, they were not embarrassed by the activities they were engaged in at the quarry. It can also be suggested that, enhancement of the workers' capability enabled them to cope with stress, and shocks making them able to find and make use of livelihood opportunities.

Although sustainability has been associated with ecological sustenance, the use of non-renewable natural resources with a growing insatiable market acknowledged sustainability beyond preserving the ecological integrity of the resource. The study discovered that stone quarrying although it affected the environment, led to the growth of other forms of livelihood. This aspect of social equity was evident in the infrastructural development evident in Kasenge parish because of stone quarrying activities, in addition to increased agriculture and retail business. Stone quarrying activities have contributed to increased accessibility between Kasenge and the neighboring parishes and more so led to increased human settlement due to the increased migrant population. In this context therefore, although environmental sustainability is central in sustainable livelihood, trade offs are inevitable in incidences of poverty reduction and rural development as findings in the study showed.

Findings also showed that, stone workers through their activities were able to support their households without any external intervention. This displayed an aspect of self sufficiency, or self reliance which is also a salient feature in relation to sustainability. In fact during the interviews women stone workers pointed that their engagement in stone quarrying had minimized the reliance on their spouses since they were able to meet their practical gender needs (also referred to as the household needs in this study).

9.2 Conclusions

In assessing the contribution of stone quarrying to people's livelihoods with reference to Kasenge parish in Nama sub-county Mukono district, it can be deduced that:

- In an effort to enhance the livelihoods of the rural poor, other livelihood strategies such as small scale mineral extraction in addition to agriculture need to be developed. Amidst the natural and economic shocks that affect agricultural productivity, such activities can be used as used as a coping strategy by the and hence support rural households.

- Small scale stone quarrying enhances the growth of other livelihoods both in the community and in the stone workers' home town. Because such activities are fast profit yielding, they can be used as a basis to enhance rural development, since they promote infrastructural development. This can be referred to as social equity or social sustainability in relation to the Sustainable Livelihoods Approach.

- In order to ensure to ensure sustainable development, there is need to recognise informal activities such as stone quarrying by policy makers and NGOs. This is relation to reducing shocks that affect the livelihoods as well as those engaged in them. In the same way, environmental sustainability should be given a high priority in an effort to preserve finite resources for the future generationsThere is need to ensure that mining operations are conducted in such a way that the broader scale benefits to society are openly acknowledged and that concerted efforts are made to ensure that these benefits can be sustained even when mining activities have stopped.

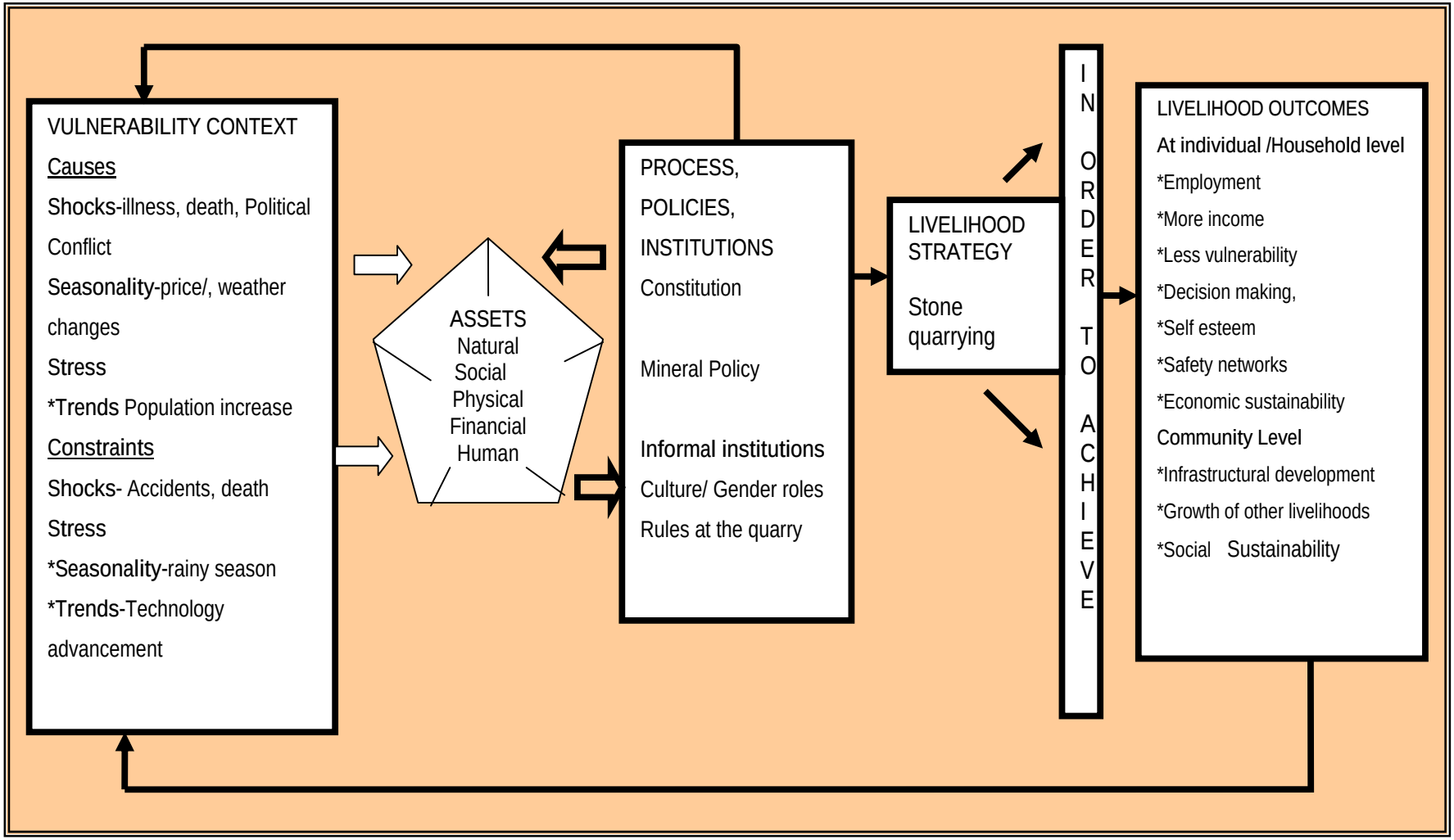

Figure 7: The Sustainable Livelihoods Framework Adapted to Suit Stone Quarrying

9.3 Recommendations

9.3.1 Legalization

Findings from this study show that, small scale stone quarrying contributes positively to livelihoods of rural dwellers. However these benefits are rather minimal because of the several constraints encountered. In view of this, the importance of small scale stone extraction needs to be recognised by policy makers in relation to individual, household and community benefits. The realisation of these benefits will enhance sustainable development in the exploitation of this non-renewable natural resource.

Hentschel (2003) notes that because informal producers are not supported by mining laws or the legal system in most developing countries it not easy for informally produced products to penetrate the formal market. As a recommendation, there is need to encourage value added products which fetch more money to strengthen the local or regional market *(ibid).*Recognizing the importance of small scale quarrying activities will help address the needs of the workers and provision of necessary assistance. Legalizing the activities is one of the strategies to reduce environmental degradation.

9.3.2 Stone workers' Association

For public and legal recognition, I recommend that the workers need to form an association. Based on Livingstone (1991) an association may increase their possibility of loan acquisition from financial institutions thus increased productivity. Through the association, it will be easier to mobilise funds, organise awareness and sensitisation programmes for the workers. From the rules that govern the association, it will be easier to implement safety measures so as to reduce on health hazards that constrain the activities of the workers.

I believe under an association, the workers can deal directly with the clients to avoid exploitation by middlemen. Through the association, workers can be trained how to invest their earnings in other income generating projects such as poultry and livestock rearing. These will be sources of income to the stone workers even after stone quarrying

is no more. It is worth mentioning that the association, will not only help them to solve internal problems that are common at the quarry but the association will also make it easy for them to present these constraints to concerned authorities for external intervention.

9.3.3 Provision for Financial assistance

Lack of financial capital was identified by the workers as a main hindrance to their activities. Given the different types of people with varying socio-economic backgrounds, financial assistance to individual workers may not be easily accounted for. It is in this context therefore, I suggest that any financial assistance from the government or an NGO should be channelled through the proposed Stone Workers' Association. More financial assistance could be accessed from micro-credit institutions helping the workers to save their earnings with high interest rates. With this at hand, the workers could invest in other forms of capital such a land, livestock or buildings which in the long run can serve as collateral in acquiring bigger loans in the future.

9.3.4 Improved Mechanization

Apart from financial assistance, the workers can also be supported in kind, through hiring of extractive equipments which are less strenuous. This equipment can also be used to make designs or rock sculptures which can fetch more money because of the added value. The stone workers can further be assisted by the government through importation of better extraction tools at a subsidised cost. Through concerned ministries, the government can support research at tertiary institutions to provide simple, cost effective and sustainable mining technology. This I believe this will not only be for the students' academic achievement as they practically apply theoretical knowledge; but it will also boost small scale quarrying enterprises at the local level.

9.3.5 Vocational Training

Aboagye (1986) and Lubell (1991) associate the informal sector with the acquisition of skills through apprenticeship. In agreement with ILO (1999) skills acquired through apprenticeship and elementary education help improve the human capital leading to production of better products that fetch more money. Skills enhancement will increase

their chances of being formally employed. I therefore, suggest that formal or semi-formal training be provided to the workers at the Kasenge quarry through extension workers from the Ministry of Energy and Minerals or alternatively as part of development assistance by NGOs.

9.3.6 Occupational Safety and Sensitization Programmes

Due to the informal nature of stone quarrying, accidents and deaths are under reported or not reported at all. Lack of awareness about safety measures against these accidents and preventable diseases coupled with poor tools jeopardise the workers' lives and likewise their livelihood. Through different ministries and the local communities, awareness campaigns and sensitization meetings may be organized periodically at the quarry. *Small-scale miners* need to be alerted about the effects of their activities and encouraged to take measures to mitigate or reduce the negative impacts. With the workers' consent, local newspapers and radio programmes could be used to increase health awareness in stone workers. During these programmes specialists in occupational health and stone workers could be invited to contribute to the programmes especially in relation to the purchase of safety gear to reduce on the common preventable diseases and accidents. In my view, such programmes will not only benefit the workers at Kasenge but also small scale mineral extractors elsewhere.

9.3.7 Environmental Awareness

Small scale stone quarrying is, undoubtedly environmentally degrading. However, being a source of income, measures can be taken to reclaim the destroyed land. One of the measures could involve filling in the unproductive pits with soil so as to make the useful for other uses in future. Alternatively, the workers can be encouraged to plant fast maturing trees in order to preserve the species that take a long time to reach maturity.

In a nutshell, therefore, policy changes will have to start from the national level through amending the national policy to include and recognize informal small scale mining. Changes will then trickle down to districts and lower levels. Of course, the whole process requires prior consultation and participation by the responsible stakeholders so that the

pleas and aspirations of the affected parties are included. In other wards, there is need for a bottom – up approach

Labour situations such as unemployment, underemployment and misemployment (the full time retention of unproductive workers) typify the labour market in developing countries. Though actual figures to show the actual presentation of the underemployment and unemployment are lacking, the increasing importance in by informal wage employment is also significant in the developing world, comprising 30 to 40% of informal employment (outside of agriculture) wage employment has also been asserted by (Bullock, 1980).

Quoting Juan Somavia, the director General of ILO in his 2003 report; *it is through employment that people find a dignified way out of poverty .Poverty elimination is impossible unless the economy generates opportunities for investment, entrepreneurship, job creation and sustainable livelihoods*. (ILO, 2005)

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APPENDIX I: TABLES OF FINDINGS

Table 1: Ages groups of stone quarry workers

Age groups of respondents	No. of respondents out of 50	% Respondent
Less than 18	7	14.0
18 – 25	20	40.0
26 – 33	11	22.0
34 – 41	7	14.0
42 – 49	4	8.0
50+	1	2.0
Total	50	100.0

Source: Fieldwork Findings

Table 2: Gender of Respondents

Sex of respondents	Frequency	Percentage
Male	31	62
Female	19	38
Total	50	100

Source: Fieldwork Findings

Table 3: Level of Education

Education Level	Frequency	Percentage
None	9	18.0
Primary	20	40.0
Secondary	19	38.0
Tertiary	2	4.0
Total	50	100.0

Source: Fieldwork Findings

Table 4: Benefits from stone quarrying

Benefits of stone mining	*Number of respondents out of 50*	%respondents
Income generation	48	96
Nutritional improvement	48	96
Children's education	33	66
Health improvement	43	86
Increase in assets	32	64
Social status	14	28
Job availability/ source of employment	38	76
Crime rate	12	24
Retail trade development	22	44
Ability to pay graduated tax	16	32
Development of infrastructure	35	70

Source: Fieldwork Findings

Table 5: Income Earnings per Truck and Type of stones

Rock Type	5 tonne truck	7 tonne truck	10 tonne truck
Hard Core	16,000	30,000	60,000
Quarter Inch	40,000	55,000	130,000
Slate	45,000	65,000	190,000
Block Slate	35,000	43,000	80,000
Concrete	25,000	35,000	90,000

Source: Quotations from a stone worker as of June 2005.

Table 6: Division of labour among gender in stone quarrying

Activities involved in stone mining	Sex of respondents	
	Male	Female
Removing soil layers to expose the rock for stone quarrying by using a hoe, spade, and containers for translocation the soil. Heating of the exposed rock using fire wood or old car tyres to enhance cracking.	16	4
Cracking of stone/boulder involves use of 10kg and 20 kg hammer to drive in a chisel into the cracked rock.	22	1
Lifting rock boulders from the pit to the surface or rolling the boulders down hill and pilling them depending on the shape and quality needed by customers.(Relocation of the boulders)	21	1
Crushing of smaller boulders using a 20 gram hammer, lifting and heaping of the half and quarter inch stones stone aggregates.	21	19
Looking for market and loading of stones onto trucks.	8	0

Source: Fieldwork Findings

Table 7: Place of origin of stone workers

	Residents	Non residents	Total
No. of respondents	12	38	50
% of respondents	24	76	100

Source: Fieldwork Findings

Table 8: Stone Quarrying and other activities

Activity	Frequency	Percentage
Stone quarrying	45	90
Stone quarrying + any other activity	5	10
Total	50	100

Source: Fieldwork Findings

APPENDIX II: Questionnaire For Stone Workers

Dear Sir / Madam,

This questionnaire is scheduled to assess the importance of stone quarrying in improving people's livelihoods in Kasenge Parish Nama Sub- county Mukono District. The information is specifically for study purposes and is highly confidential. Your Positive response is highly appreciated.

a) Date of Interview……

b) Respondents number……..

A) Demographic Information

1) **Age:**

a) Less than 18 years ☐ b) 18-25 years ☐ c) 26-33 years ☐

b) 34-41 years ☐ c) 42-49 years ☐ d) 50+ years ☐

2) **Sex:** a) Male ☐ b) Female ☐

3) **Level of Education:** a) None ☐ b) Primary ☐ c) Secondary ☐

d) Tertiary ☐

4) **Marital Status:** a) Single ☐ b) Married ☐ c) Widow ☐

5) **Number of dependants:** a) None ☐ b) 1-5 ☐ c) 10 + ☐

6) **Do you own this working area?** a) Yes ☐ b) No ☐

B) Why people engage in stone quarrying

7) Why are you engaged in stone quarrying?

…….

…….

……

8) For how long have you been engaged in stone quarrying?

a) Less than 6 months ☐ b) Less than a year ☐

c) 1-5 yrs ☐ d) 5- 10years ☐

9) Are there any members of your family engaged in stone quarrying?

a) Yes ☐ b) No ☐

10) If yes how many?

Specify: a) Child ☐ b) Spouse ☐ c) Relative ☐

C) Outcomes from small scale stone quarrying

11) How much do you earn per:

a) Day b) Week c) Month

12) How have you benefited from stone quarrying?

a) Individual

……

……..

b) Household

……..

……

13) How has the parish/ district benefited from this activity?

……..

……..

……..

14 What are the other effects of stone quarrying on the environment?

……..

……

……

15 How has stone quarrying changed your status?

a) Income
b) Marital
c) Children's education

16 Do you belong to any self help group?

a) Yes ☐ b) No ☐

17) If yes why did you join?

……

……

……..

……

18) If no why?

……

……

……

……..

C) Problems and Constraints encountered in stone quarrying

19) What problems do you encounter in stone quarrying?

……..

……..

……..

……..

20 What how do you solve these problems?

……

…….

……..

……..

21) Have you ever got any assistance from the government?

……..

……..

APPENDIX III: INTERVIEW GUIDE

Regional Mineral Officer, NEMA official, Chairman of Kasenge Village, Labour officer, Land Lord of the quarrying, long time workers

1) For how long has stone quarrying been done in Kasenge village?

2) Why do people join stone quarrying in spite of other economic activities?

3) Who are mainly involved in the stone quarrying industry and where do they come from?

4) How has stone quarrying enhanced the different assets at:

a) The stone workers /households:

i) Natural assets
ii) Physical capital
iii) Human capital
iv) Social Capital

b) Community

i) Natural assets
ii) Physical capital
iii) Human capital
iv) Other economic activities in the area

5. What is the effect of stone quarrying on the environment?

6) What problems are the faced by small scale mining?

7) Are there any mitigation measures put in place to reduce these problems?

8) Are there any government/NGO initiatives to improve the industry in terms of:

a) Awareness/ Sensitization

b) Funds

c) Any other