

Environmental Consequences of Sand mining on the shores of  
Lake Victoria: A case of study of Kiyirira Village, Katabi Sub-  
County, Wakiso District

By

LUUTU IVAN

BEM / 0993 / 21 / DU

Supervised by

DR. TWAHA BASAMBA ALI

A research Report submitted in partial fulfillment of the  
award of the degree in Bachelor of Environmental management  
of Kampala International University

SEPTEMBER 2005

## DECLARATION

I, **Luutu Ivan**, I declare that, this work is original and has not been submitted in part or whole, to any institution of higher learning or any University for any degree or other award. The sources of information quoted in here have been duly acknowledged.

Signature.....

Date.....25<sup>th</sup> October 2005

LUUTU IVAN

This dissertation has been submitted with my approval as the University supervisor.

Signature.....

Date.....25.10.2005

DR. TWAHA BASAMBA ALI

## DEDICATION

This work is dedicated to my Lord, Jesus Christ, my dear family especially my mother, Ms. Nakalinzi Sarah who toiled to see me through my academic arena and my late grandfather, Mr. Mukasa Joseph.

## ACKNOWLEDGEMENTS

I acknowledge with sincere appreciation and gratitude the assistance given to me by various people. Special thanks are extended to my supervisors, i.e. Dr. Twaha Basamba Ali, Miss Tumushabe Ann and Mrs. Abesiga Nancy for their guidance, suggestions and encouragement through out the study.

Lastly, am also grateful to my father, Mr. Kizito George, my brother and sisters, Kayizzi Henry, Namubiru Flavia, Namutebi Diana Vicky, my uncles, aunties as well as my grandmother. I cannot also forget my colleagues who assisted me in one way or another when I needed their support and encouragement especially, Ileri, Ammon, Hadija, Gibson, Peter, Henry, Opira and the rest.

## ABSTRACT

Sand mining is one of the major economic activities in and around wetlands of Wakiso District and is an important source of income among smallholder communities in many parts of the country. The gray white sand type (Plasita) and yellow brown sand type (Nyanjja) are commonly harvested. However, the gray white sand dominates the harvest and Wakiso's gray white sand is demanded by the construction industry because it has a fine particle component other types don't have.

However, due to over harvesting of sand in this area, significant environmental consequences have been noticeably observed, especially in the last two years i.e. deforestation, erosion, increasing diseases, poor communication system, reluctance of the law and policy formulation bodies, among others.

This led to this study on possible environmental consequences of sand mining. This study will enhance environmental and community sensitization on the dangers of sand mining.

Finally, it is suggested that because sand is an important aspect of economic activity of Katabi sub-county, Wakiso has a high stake and important role to play in monitoring and evaluating sand mining activities in this particular region.

### KEY WORDS:

Sand mining, environmental consequences and economic activity.

## ABBREVIATION/DEFINITION

UNEP	UNITED NATIONS ENVIRONMENT PROGRAMME
NEMA	NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY
KIU	KAMPALA INTERNATIONAL UNIVERSITY
EIA	ENVIRONMENTAL IMPACT ASSESSMENT
PAF	POVERTY ALLEVIATION FUND
LGDP	LOCAL GOVERNMENT DISTRICT PLAN
UCDA	UGANDA COFFEE DEVELOPMENT AUTHORITY
PMA	PLAN FOR MODERNIZATION OF AGRICULTURE
PPA	PANTICIPATORY POVERTY ALLEVIATION REPORT.

## TABLE OF CONTENTS

CONTENTS	PAGE
Declaration.....	i
Dedication.....	ii
Acknowledgement .....	iii
Abstract.....	iv
Abbreviations / Definition.....	v
Table of content.....	vi
<b>CHAPTER ONE</b>	
1.0 Introduction .....	1
1.1 General.....	1
1.2 Back ground to the study.....	3
1.3 Problem statement.....	4
1.4 Research objectives.....	5
1.5 Hypothesis .....	5
1.6 Scope and purpose of the study.....	5
1.7 Significance of the study.....	6
1.8 Brief description of the study area.....	7
1.8.0 Location size and administration.....	7
1.8.1 Demography .....	7
1.8.2 Natural resource.....	7
1.8.3 Works, water and sanitation.....	7
1.8.4 Health units and indices.....	8
1.8.5 Education, institutions and indices.....	8
1.8.6 Community issues.....	8

1.8.7 Wetlands size of Wakiso.....	8
------------------------------------	---

## CHAPTER TWO

2.1 Literature Review.....	11
----------------------------	----

## CHAPTER THREE

3.3 Methodology.....	13
3.3.1 Target population.....	13
3.3.2 Research design.....	13
3.3.3 Sampling procedure.....	14

## CHAPTER FOUR

### RESULTS AND DISCUSSION

4.0 Presentation and discussion of research findings.....	15
4.1 Causes of sand mining .....	16
4.2 Consequences of sand mining.....	20
4.3 Measures in place to combat degradation due to sand mining....	27

## CHAPTER FIVE

### CONCLUSSION AND RECOMMENDATIONS

5.1 Conclusion .....	30
5.2 Recommendation.....	30

BIBILIOGRAPHY.....	32
--------------------	----

Appendix and Questionnaire .....	33
----------------------------------	----

### List of figures

Figure 1.....	14
Figure 2.....	16
Figure 3.....	18
Figure 4.....	20
Figure 5.....	21
Figure 6.....	22
Figure 7.....	24
Figure 8.....	26
Figure 9.....	27
Figure 10.....	27
Figure 11.....	28
Figure 12.....	29

## TABLES

Table 1.....	9
Table 2.....	15
Table 3.....	20
Table 4.....	23
Table 5.....	25

## MAP

Map 1.....	10
Map 2.....	

Introduction letter .....	<b>38</b>
Wakiso district map.....	<b>39</b>

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 General

Sand is an unconsolidated granular material resulting from the natural integration of rock or stone. Sand deposits are commonly found adjacent to river courses in an area with glaciated or weathered rock. Such deposits often contain the fine alluvial silt and fugitive dust operations.

There are two types of sand and gravel. Construction sand and gravel are used mainly in concrete, road bases, asphaltic concrete aggregates and construction fill.

Generally, the physical characteristics of construction sand and gravel and their proximity to construction sites are more important than their chemical characteristics.

Industrial sand and gravel are used mainly in the manufacturing of glass, ceramics, and chemicals. The chemical and physical characteristics of industrial sand gravel are very important to their end-use, and therefore subject to strict chemical and physical characterization than construction sand and gravel.

Therefore, loose sand and gravel deposits are usually mined without the necessity of drilling and blasting. However on rare occasions, blasting with light charges is used to loosen deposits.

Mineral extraction is broadly divided in to three basic methods: open pit on surface, underground and solution mining. The mining

method used depends on the particular mineral and the nature of the deposit.

## 1.2 BACKGROUND TO THE STUDY

According to the World Book Encyclopedia (2000), mining refers to a process taking mineral substances in almost any non-living thing that is found in the earth. These substances may include metal compounds, coal, sand, oil, natural gas and many other resources. In this situation, some minerals can be mined more cheaply than others because they are found at the surface of the earth, like sand, but some lie buried far beneath the surface. These can be removed only by digging deep under ground. However other minerals elements are found in oceans, lakes and rivers.

Prabhakan (2000) looks at the danger from increasing activities, which are threatening the environment of scientific, cultural, educational, recreational and economic value that needs to be effectively protected.

Gafabusa (2003) describes the risk of land slides in Uganda which unfortunately on the increase, coupled with soil erosion which is an anthropogenic-driven process associated with community's demand for land resources.

Pere (2005) describes the disappearance of Kyewaga Forest in Uganda as a result of sand mining activities. He argues that the system may not exist in few years to come if nobody intervenes to stop the sand mining activity. Degradation caused by this activity has also been affiliated to local leaders who, in one way or another, are reluctant to intervene due to the revenue received and employment opportunities created.

Sand mining in a forest loosens the water table around the trees, hence affecting their growth. Similarly, the depressions it causes make it hard for replanting. The removal of the topsoil to uncover the sand exposes infertile soil layers (Buyena, 2005).

Landslides may bring about sedimentation at the bases of hills slopes, in river channels and valleys. Sediment accumulation in rivers like Kinunya, Mpuliya and Sempaya, has led to siltation and flooding. This directly affects aquatic life, which is buried under the sediments. Siltation and sedimentation also affect water from rivers and streams. The water is polluted by debris and sand and most of its physical properties such as colour, odour and others are drastically changed, making it undesirable for drinking and cooking (Gafabusa, 2003)

### **1.3 PROBLEM STATEMENT**

This problem of sand mining in Wakiso District is influenced by such factors as the accelerated demand to meet the ever growing and expanding construction industry in the country, especially in major towns; revenue collection; employment opportunities of the local people like the miners and truck drivers; ignorance among the groups people involved; and poverty. Other factors include vegetation clearance and erosion, among others. Sand mining situations have been on the increase in terms of frequency of occurrence, hundred of tones collected have affected this area in the last 10 years. Therefore, as a result, the following environmental and social economic impacts are inevitable: destruction of agricultural land, impaired water quality,

interruption of communication and networks and creation of water ditches and gorges.

Nevertheless, there is very little data that documents the extent and consequences of sand mining in Wakiso District and people's response to the problem. It is against this background that there is need to carry out research on this subject properly.

#### **1.4 RESEARCH OBJECTIVE.**

- i) To find out the causes of sand mining in Katabi sub-county
- ii) To identify the consequences of sand mining on the environment.
- iii) To find out what has been done to control environmental degradation brought about by sand mining.

#### **1.5 HYPOTHESIS**

There is a significant relationship between sand mining and environmental degradation.

#### **1.6 SCOPE AND PURPOSE OF THE STUDY**

The scope of the research mainly looks at the implications of sand mining with its particular environmental consequences, what has been done and fundamental strategies that can be put in place to reduce the frequency of occurrence and impacts of sand mining in this area. The purpose of the study is therefore to find out the consequences of sand mining activity on the Lake Victoria shores, Katabi sub-county Kayirira Village, and examine what has been done to minimize this activity and its associated environmental hazards. Similarly, the study intended to suggest appropriate measures, actions and recommendations to control excessive sand mining activities in Wakiso District.

## 1.7 SIGNIFICANCE OF THE STUDY

By study this phenomenon of environment degradation as a result of sand mining, the primary goals of problem identification with in the study will be attained.

It is important for the local people to understand what kind of problem they are experiencing, or are yet to experience.

Secondly, all relevant information from the field will be availed to planners, decision makers, concerned institutions in government and other affiliated bodies like NEMA, NGO's etc. to guide and help the affected communities, as well as appreciating the problems associated with sand mining.

The research findings and recommendations are expected to provide important information to responsible institutions like Lake Victoria Management Programme, Wakiso District Planning committee, Ministry of Lands, Water and the Environment, ministry of Gender Labour and Social development, National Forestry Authority and many others which are concerned with rural development and environmental conservation in Wakiso District.

Similarly, this information will provide a useful guide for formulating appropriate policies and programmes for the improvement of land use patterns on lakeshore areas of Uganda with similar conditions.

## **1.8 BRIEF DESCRIPTION OF STUDY AREA**

### **1.8.0 Location, Size and Administrative units**

Wakiso district lies in the Central Region, and lies between 1,182 and 1,341M above sea level. It borders with Mpigi, Luwero, Kiboga, Mukono, and Kalangala districts. The Total Area is 2,704 Sq Km of which 1,710 is land area. It has 13 Sub- Counties, 2 Town councils, 2 Municipal divisions, 135 parishes, 676 villages, 38 trading centers and 20 urban centers.

### **1.8.1 Demography**

Wakiso is the third most populated district. The Total population is 957,280 of which males constitute 48.3% and females 51.7%. The rural population is 92% and the urban is 7%. The population density is 560 persons per sq Km, Average household size is 4.2, Population growth rate is 4.2% and the Dependency ratio is 99.5 per 100 persons in the 15-64 age group.

### **1.8.2 Natural resources**

Soils are generally of high productivity and range from red gravelly loams, reddish brown sandy loams to grey sands in wetlands. Vegetation ranges from forests to swamps and savannah. Wetland drainage systems are Lake Victoria and River Kafu.

### **1.8.3 Works, Water and Sanitation**

The road network covers 1,072 km including 551.4 km (district) and 656km (community). District class 1 roads cover 131.04 km. Class 2, 235.6 km and class 3, 184.8km. Access to Hydro Electric power is 21%, Safe water coverage 65% and Safe latrine coverage 63%.

#### **1.8.4 Health units and indices**

The district has 3 hospitals, 5 Health centre (HC) IVs, 29 HC IIIs, 48HC IIS in the seven health sub-districts, and over 300 private clinics. The fertility rate is high at 7.06 births per woman, the infant mortality rate is 94/ 1000, Level of stunted ness is at 38% and the maternal mortality rate is 550/ 100,000. The programs of emphasis in the district are malaria control, HIV/ AIDS control, Nutrition and Tuberculosis control.

#### **1.8.5 Education institutions and indices**

The district has primary schools 245 (Govt), 511 (private), secondary schools 16 (Govt), 223(private). The Enrolment in primary schools is 120,373 male, 125,287 female, while in secondary schools it is 31,323 male, 39,259 female. The pupil to desk ratio 4:1, pupil to teacher pupil to teacher ratio 45:1, pupil to toilet stance ratio 60:1 and pupil to text book ratio 5:1.

#### **1.8.6 Community issues**

Absolute poverty affects 35% of the population. Women constitute 70-80% of the agricultural labour force, 7% of the women own land and 30% have access to proceeds. Literacy rate is 73.3%, attendance of FAL classes –male (20%), women (80%).

#### **1.8.7 Wetland size of Wakiso.**

Wetlands cover 16% of the total area of the district and 574kms are permanent, while 480 km<sup>2</sup> are seasonal. Most permanent wetlands in the district have not been established since a new inventory is yet to be completed. The wetland types based on dominant plants include fresh water emergent reed swamps dominated by single reed species

(papyrus, *micanthus* sp), seasonally flooded herbaceous wetlands, where species composition is variable , seasonally flooded wooded grasslands, fresh water palustrine forests and fresh water riverine forests.

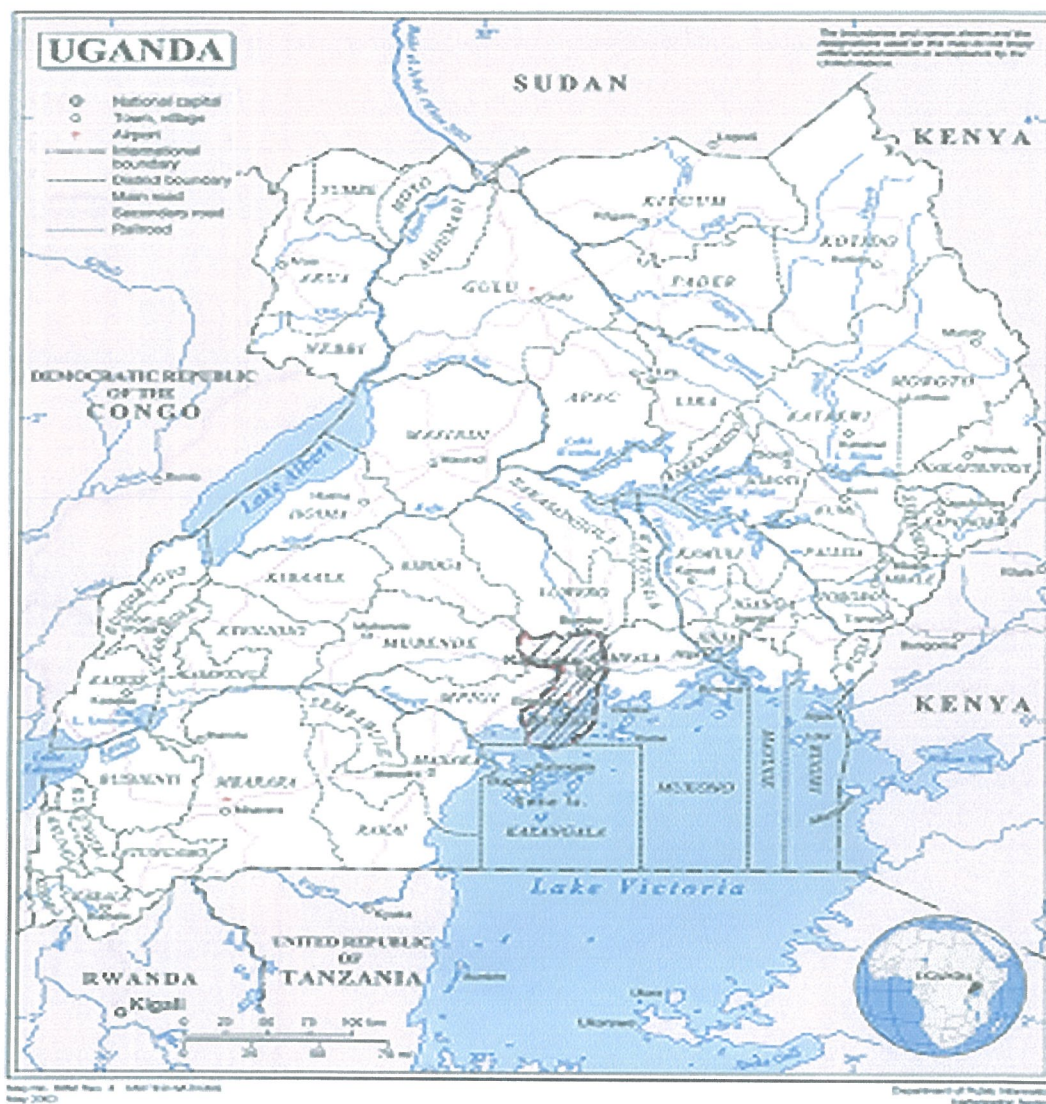
Table. 1  
Wetlands of the Lake Victoria Drainage System.

Wetland Name	Sub-counties Covered	Area Sq.km	Type
Kachindo	Katabi, Ssisa	5.2	
Kalandazi	Ssisa, Kasanje	5.4	Permanent
Kanyamusango	Entebbe municipality	2.0	Permanent
Kasa - Mabamba	Kasanje	55.1	Permanent
Kasanga	Kasanje	13.9	Permanent
Kisubi Gogonya	Katabi	2.3	Permanent
Lufuka	Makindye	1.7	Permanent
Lumpewo	Ssisa, Makindye	7.9	Permanent
Makokobe	Kasanje	28.4	Permanent
Mugumba River	Ssisa	3.6	Permanent

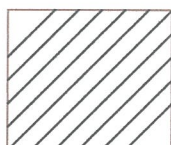
**Source:** *Wakiso District State of Environment Report, (2004)*

Map.1  
MAP OF UGANDA SHOWING WAKISO DISTRICT

### MAP OF UGANDA SHOWING WAKISO DISTRICT



KEY:



WAKISO DISTRICT

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

According to Byrnes et. al. (2004) physical process and biological data were collected and analyzed at five sand resource areas off shore Alabama to address environmental Concerns raised by potential sand dredging for beach replenishment. Near shore wave and sediment transport patterns were modeled for existing and post dredging conditions with barrow site sand volumes ranging from 1.7 to  $8.4 \times 10^6 \text{m}^3$ . Wave transformation modeling indicated that minor changes would occur to wave fields under typical seasonal conditions and sand extraction sceneries.

Localized sea floor changes at barrow sites are expected to result in negligible impacts to the prevailing wave climate excavation alternatives at barrow sites off shore Alabama, maximum variation in annual littoral transport between existing conditions and past dredging configurations was approximately 8 to 10%

Increase or decrease in long shore transport rates associated with sand mining at each resource area amounts to about 1 to 2% of net littoral drift, distributed over an approximate 10km stretch of shoreline. Because barrow site geometric and excavation depths are similar to natural ridge and topographic characteristics on the Alabama outer continental shelf, infilling rates and sediment types are expected to reflect natural variations with in sand resource areas. (Mark, 2004)

Impacts to the hectic community are expected from physical removal of sediments and faunal abundance and diversity may recover within 1 to 3 years, but recovery of species composition may take longer. Western areas

can be expected to recover more quickly than Eastern areas because of opportunistic life history characteristic of numerically dominant infant west of Mobile Bay (Snyder, 2004)

Sand excavation is associated with serious deforestation. This may result into climatic change, with its anticipated rise in more violent, damaging storm and flash floods, which pose a new threat (UNEP, 2002).

## CHAPTER THREE

### 3.0 METHODOLOGY

#### 3.1 Target population

The target population of this study was a sand mining village in Katabi sub-county. This comprised of 50 people. The basis for the choice was that it is where the environmental consequences of sand mining on the people around the Lake Victoria shores are seriously experienced.

Furthermore, the sub-county was selected because of the diverse socio-economic activities, which are practiced, with little concern paid to environmental consequences. The social-economic activities in this sub-county include: sand mining, brick making, grazing, food production, fishing and trading among others.

#### 3.2 Research design

The study consisted of a survey of sand mining activities where both qualitative and quantitative data were collected.

**Qualitative data** was obtained by administering semi-structured questionnaires to a sample of respondents selected at random in the sub-county. Field visits were done by visiting various categories of people, who included the local communities and leaders, the miners, truck drivers and many others.

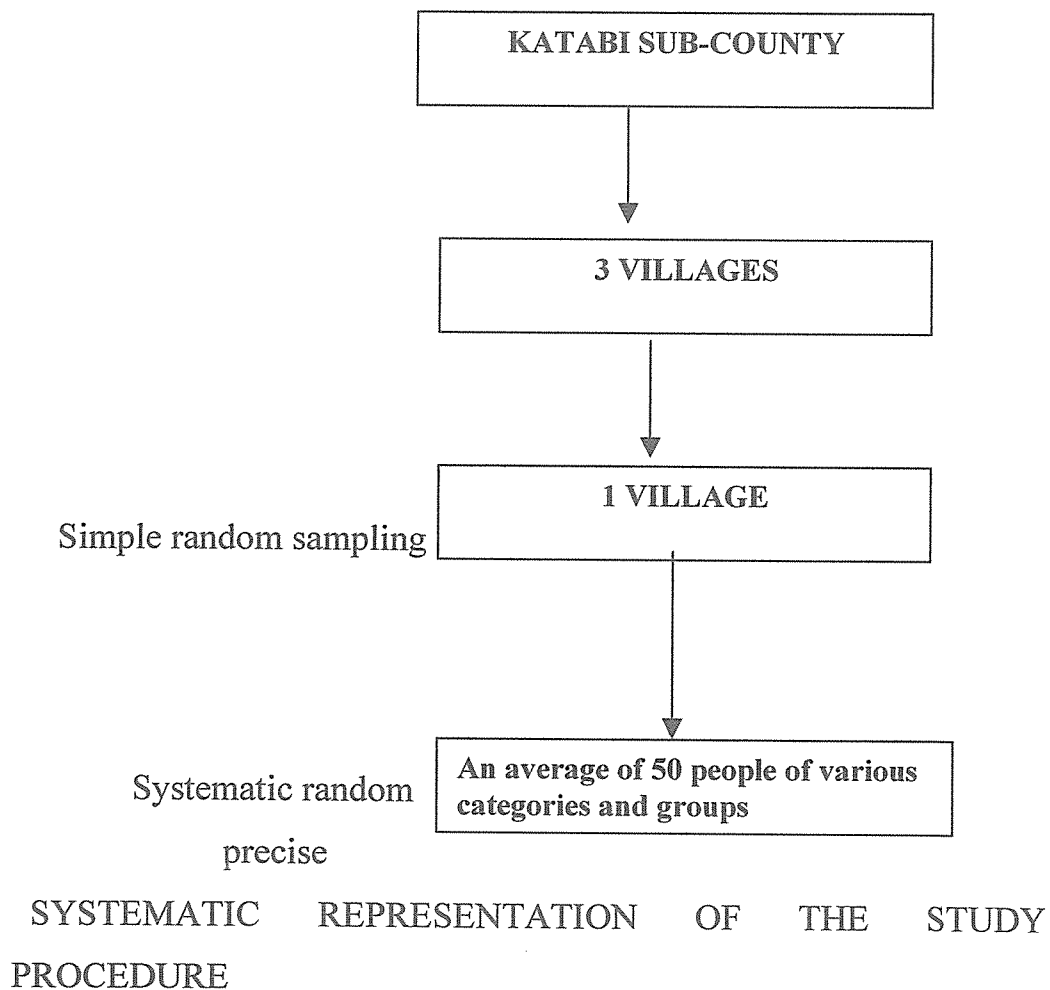
Data was collected on sand mining consequences and its importance towards the construction industry in the country.

**Quantitative data** was collected and used to provide fundamental information about the study, and it was also used to fill the gaps where primary data was lacking.

### 3.3 Sampling procedure

One village was randomly selected from the whole of the sub-county. Noting down on paper the various mining sites in the district on the lakeshores, and then drawing raffles until the particular village with the specific researcher's interest accomplished the random selection.

Fig. 1



## CHAPTER FOUR

### 4.0 RESULTS AND DISCUSSION

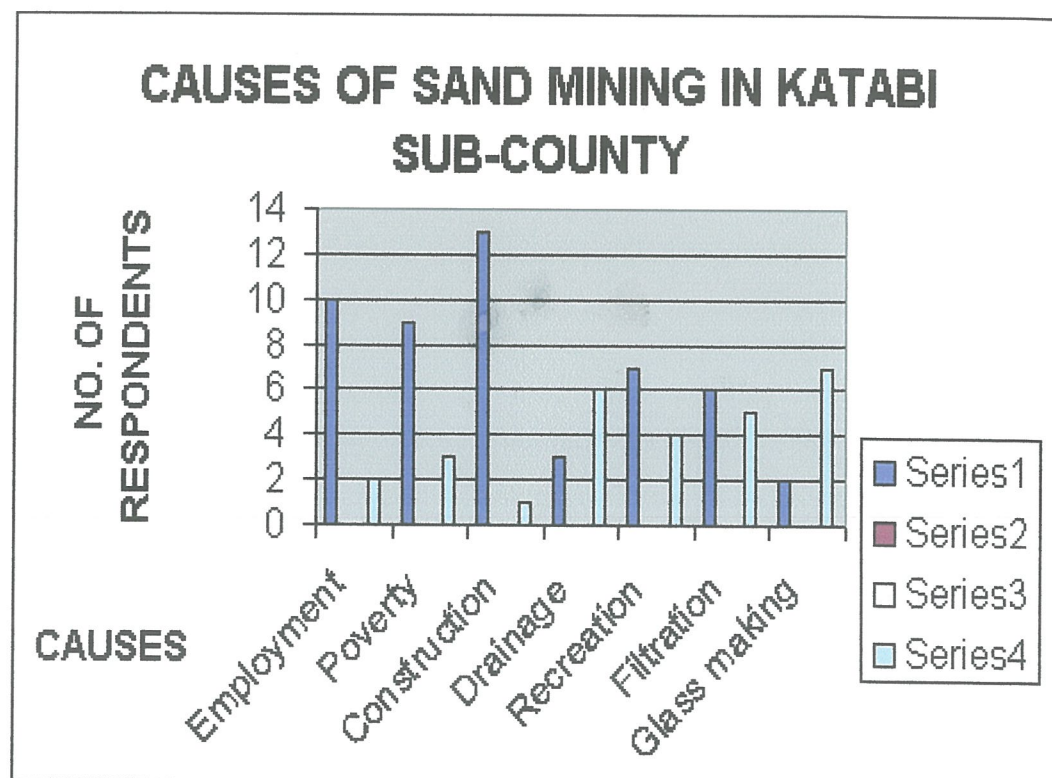
**Table. 2**

#### CAUSES OF SAND MINING IN KATABI SUB-COUNTY

CAUSE	NO. OF RESPONDENTS	RANK
Employment	10	2
Poverty	9	3
Construction	13	1
Drainage	3	6
Recreation	7	4
Filtration	6	5
Glass making	2	7
Total	50	

*SOURCE: From the field by the researcher*

**Fig. 1**



*SOURCE: Derived from the table 2 above*

## 4.1 REASONS FOR SAND MINING

### Employment

The population in the area where sand mining activities are carried out benefit greatly through provision of employment in large scale industries where they earn a living, earning directly from the abundantly occurrently materials operated by small firms. A lot of revenue is generated from both the industry and individuals, which is a beneficial to the nation at large. Many youth in this area are unemployed, and so they have resorted to sand mining to earn a living.



*Fig. 2: Employment opportunity enhances sand mining: Youths of Katabi sub-county providing labour.*

## **Poverty**

Poverty is multi-dimensional and its experienced differently among the rural and urban areas as well as the various segments of society like the youth, children, disabled, elderly, pastoral, miners, fish or farming communities. Wakiso district presents a sharp contrast between the urban and the rural, with some parts of the rural countryside being described as extremely poor backward or forgotten.

Most of the poor categories of people are found in areas with poor road network and have poor housing conditions. They face a problem of physical and financial inability to access social services such as health and education, this forces them to derive their livelihoods from the natural resource base, where by, poor people interact with the land/ soils, water, forests, wetlands and other resources, affecting their state and in turn getting affected by the consequences of their actions on the environment

## **Construction**

Today, the demand for sand in the country is so high unlike in the past, for various purposes in the construction industry.

Sand suitable for building, and concrete making becomes more difficult to find away from the shores of the larger lakes. They are almost non-existent and have to be transported many miles to the construction sites. This is because clean sandy sediments are not formed on the swampier drainage courses, which cover larger parts of Uganda.

In Wakiso, one of the districts in Buganda, away from the lake shores, sands are difficult to find and where they exist, they are seldom clay free. According to one of respondents, Katabi and Ssisa Sub-counties

in this district are having the best sand for construction because it is normally clay free.



*Fig.3: A lot of sand is needed for construction: A construction site at Kasanga, Kampala.*

#### **Recreation purpose**

Sand is also harvested for recreation purposes, especially in hotels that are situated along Lake Victoria, Example of such hotels include: Botanical Beach Hotel and Lido Beach Hotel, both of which are in Entebbe Municipality; and Ssesse Gateway Beach Hotel, which is next to the mining area. It is common today that sporting activities, relaxation and hospitality facilities are part of human programs and they normally attract many people especially the youth, from within and around the area. Several tonnes of sand are mined from Katabi Sub-County because it is close to sporting facilities.

### **Drainage Improvement**

Sand is also mined due to the need to improve drainage in the soil. Large amounts of sand are harvested and placed in areas that are seriously experiencing water logging to increase porosity especially areas that have a large percentage of clay soils. Normally clay soils do not have easy water penetration to the lower layers of soils to support plant growth, and are hence unproductive. However, a significant amount of sand is added to them, soil air spaces are created thereby improving drainage. This increases plant productivity and soil microorganism performance in the soil.

### **Water filtration process**

Sand is also mined for filtration in the tertiary stage. After flocculation, in the clarification stage, the filtrate may still be containing pathogenic substances. At the tertiary stag, these tiny pathogenic substances that include protozoa, bacteria and virus are removed, through the rapid gravity sand filtration process. This filtration process, involves asset of different layers of sand gravel and stone. Fine sand which has an average grain size of 0.6mm forms the top layer, which is systematically followed downward by course sand, gravel and stones which have 1.8mm, 2.5mm and 4.5mm average grain sizes respectively.

T he pathogens are adsorbed by the sand particles, since the sand surface is a hostile environment to these pathogens, they will simply die, maggot like shrimps are also retained by the sand.

### **Glass making**

Sand is also harvested by many glass-manufacturing industries for making glasses and bottles.

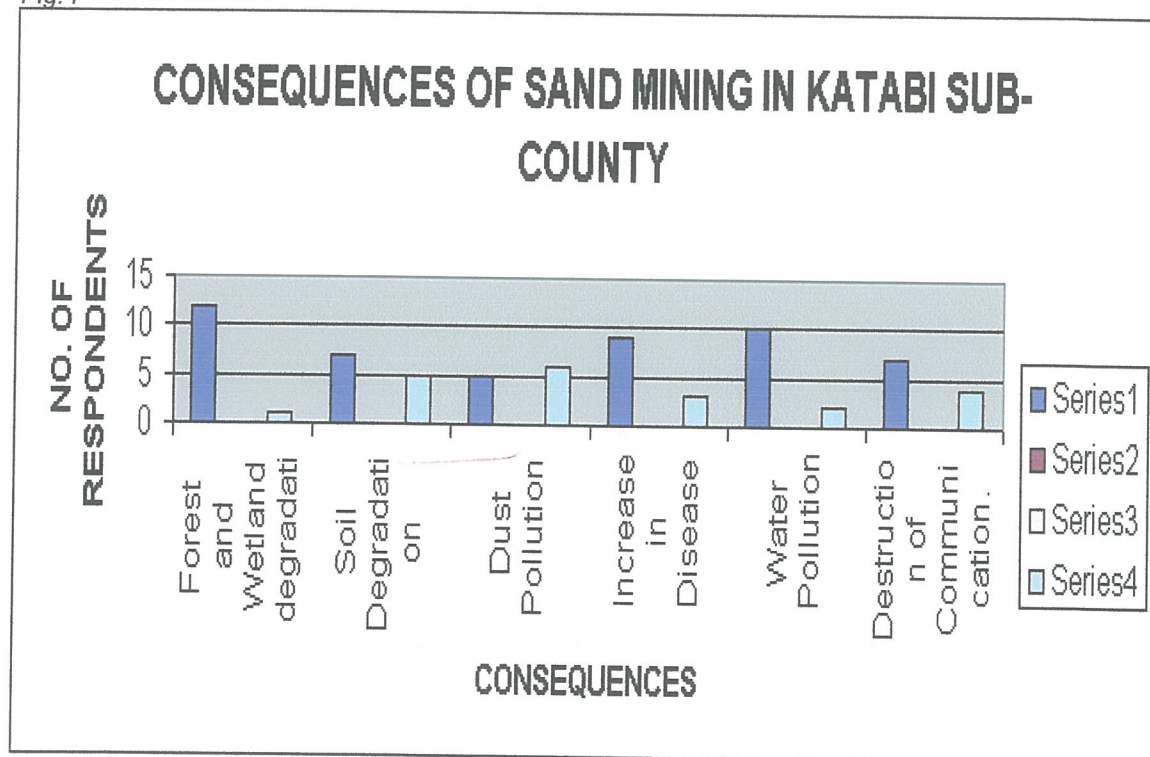
## 4.2 CONSEQUENCES OF SAND MINING IN KATABI SUB-COUNTY

**Table. 3**

CONSEQUENCES	NO. OF RESPONSE	RANK
Forest and Wetland degradation	12	1
Soil Degradation	7	5
Dust Pollution	5	6
Increase in Disease	9	3
Water Pollution	10	2
Destruction of Communication.	7	4
Total	50	

*SOURCE: From the field by the researcher.*

*Fig. 4*



*SOURCE: Derived from the table.3 above*

### **Soil degradation**

Physical degradation occurs when heaps of sand are left behind. There are always heaps of sand (plasita) left behind along the shores of the lake and this encourages water and wind erosion. Wind erosion occurs during the rainy season. Similarly, heavy trucks that collect this sand cause serious soil compaction, hence rendering the soil unproductive and this brings about soil degradation



*Fig.5: Heaps of sand left behind causes erosion*

### **Forest and wetland degradation**

As the rate of sand mining activities continues. Extensive sand digging near the lake seriously involves uprooting of forests, which leads to the loss biodiversity; seeds and seedlings that may cause complete loss of forests like Kawaga Forest. This has also resulted into the extinction of very valuable tree species and reduction in numbers and quality of existing timber of deforestation species. The miners encroaching on the vegetation cut it down to expand fresh grounds for pure sand. Generally, there is habitat destruction.

Because many living organism take wetlands as a home to them and so, once these places are degraded, many animals will either be forced to migrate or even to be extinct. Sand mining activities in katabi Sub-County actually portray a serious reduction in the country's natural endowment.



*Fig. 6: Sand mining activities lead to deforestation*

Wetland forests also play a vital role in rainfall formation, so once they are degraded, desertification is bound to occur in the area.

### **Dust pollution**

The dust generated during the sand mining causes the problem of poor visibility other road users. This has made the area prone to accidents. Similarly, dust that rises in the atmosphere leads to acquiring serious respiratory diseases among the people in this area like pneumonia and tuberculosis, which have also claimed lives of the people in Katabi.

Table.4

**Table 4**

**Pneumonia and Tuberculosis cases as reported in Entebbe General Hospital 5 Years back.**

Years	Pneumonia and Tuberculosis	Age groups	Out Patients	Admitted in Hospital	Died
2000	Pneumonia	0-4	634	212	17
		5-Above	807	149	22
	Tuberculosis	0-4	7	15	2
		5-Above	163	81	23
2001	Pneumonia	0-4	1155	230	3
		5-Above	1568	172	9
	Tuberculosis	0-4	7	10	0
		5-Above	115	132	9
2002	Pneumonia	0-4	1566	81	4
		5-Above	1948	99	4
	Tuberculosis	0-4	5	148	8
		5-Above	134	143	24
2003	Pneumonia	0-4	1734	387	18
		5-Above	2057	296	10
	Tuberculosis	0-4	4	2	2
		5-Above	198	175	22
2004	Pneumonia	0-4	1555	489	16
		5-Above	2415	392	19
	Tuberculosis	0-4	8	1	0
		5-Above	142	172	10

*Source: Health Unit Data Base. Wakiso District Council. Entebbe Hospital General Wing (2005).*



*Fig. 7: Sand collecting trucks bring about dust pollution.*

#### **Increase in diseases**

The stagnant water, which collects in the ponds after excavation of sand, acts as a breeding ground for mosquitoes and other disease causing organisms. This has increased the rate of water diseases, and diseases like malaria.

This has resulted into the death of many children and the elderly in this area. Serious malaria cases are reported daily from Entebbe municipality and from neighbouring sub-counties such as Katabi and Ssisa, and such cases are mostly reported during the wet seasons (Muwanga, resident)

**Table.5****Malaria cases as reported in Entebbe General Hospital (5 years)**

Years	Age group	Out patients	Admitted in hospital	Died
2000	0-4	2049	731	4
	5-Above	3933	776	24
2001	0-4	2652	389	21
	5- Above	3669	516	8
2002	0-4	2733	583	38
	5-Above	4083	1515	35
2003	0-4	3365	806	37
	5-Above	4925	1025	50
2004	0-4	5271	1168	26
	5Above	8440	857	42

*SOURCE: Wakiso District Council, Entebbe Hospital General Wing (2005)*



*Fig. 8: Ditches and gorges left behind mosquito breeding grounds during the rainy season.*

### **Water pollution**

Sand mined at the fringes of Lake Victoria has promoted serious water pollution as result of water siltation. This has led to decline in performance of aquatic life. Pollution has occurred in form of plant roots, branches, grass, polythene, and human feaces that are swept into the lake by either wind or even running water. No latrine was within the mining site vicinity.



*Fig. 9: Polluted water due to sand mining activities*

#### **Destruction of communication.**

Various communication systems such as road networks have deteriorated due to heavy moving trucks, which have created potholes and gorges. Similarly, during mining, large ditches where sand has been mined cause accidents that may eventually claim the lives of people.



*Fig.10: Destruction of communication systems y heavy trucks*

### **4.3 MEASURES PUT IN PLACE TO COMBAT DEGRADATION DUE TO SAND MINING**

### **Planting of trees**

Reforestation has been carried out in some areas, which have experienced serious deforestation in recent years. Nursery seedlings, especially wetland trees, have been put in areas where they had been originally cut.



*Fig. 11: A forestation reduces the consequences of sand mining*

### **By-laws**

Various by-laws and regulations have been reviewed to regulate sand mining activities. This has been in form of revising the Mining Act by the Parliament. The Mining Act, Cap. 248, provides for the use of water, soil and trees for mining. This review has also strengthened the enforcement mechanism. People have reconsidered this Act and in one way or another reduced the rates of over mining in this area.

### **Refilling excavated holes**

Many, although not all, once open and exposed ditches and gorges that were a menace to communication have been refilled with

either sand or murram. This has reduced the dangers that hinder communication systems or at times lead to the loss of human lives.



***Fig. 12: Refilling excavated holes***

#### **Provision of loans to the people**

Using the Poverty Alleviation Fund (PAF), Wakiso District Agricultural Sector has excelled in the 216 banana, beans and maize demonstration farms. One hundred eighty sessions training have accomplished positive results, with Katabi sub-county hosting one of them.

Some former sand miners have formed farmer groups, which have benefited from PMA activities through training in safe use of agrochemicals. Over 41000 plantlets of coffee have been distributed to 16 sub counties under the coffee-replanting programme, which is funded by UCDA. By June 2002, the district had expected to receive a total of 350000 plantlets. These activities were intended to divert many people from shores like sand mining and take up agriculture as an alternative.

## **CHAPTER FIVE**

### **5.0 CONCLUSIONS AND RECOMMENDATION**

#### **5.1 CONCLUSION**

Based on the factors causing environmental degradation due to activities of sand mining in Katabi sub-county, the dangers of uncontrolled sand harvesting have been appreciated and understood. Sand mining activities should not at any one time be taken lightly because they degrade the environment if the government and the community where they are being carried out do not monitor them.

#### **5.2 RECOMMENDATIONS**

##### **Environmental Impact Assessment (EIA)**

It is very important that an EIA is carried out in areas where there is a potential sand mineral before it is mined. Once mining has occurred before an EIA is carried out, then an Environmental Audit should be applied to tell the trends of the activity, i.e., if the activity is detrimental to the environment, then it should be discouraged or otherwise left to proceed. This can be monitored and evaluated by agencies like NEMA.

##### **Gazetting specific areas**

Demarcating specific boundaries along lakeshores can also be in conserving the environment against mining activities. Many areas that may seem unattended to by the authorities concerned normally offer a flat ground for many mining activities to go on unnoticed.

Therefore, these areas need to be properly gazetted against any intrusion that may seem hazardous to the environment.

However, mining of some minerals around the wetlands of Lake Victoria should be restricted to a few areas (UNEP, 2002).

### **Community Appraisal**

Local communities should always be involved in managing their natural environment. Community appraisals create sense of ownership and belonging in members. Here, people learn to appreciate environmental management and condemn any malpractices on the environment, because they are the users and the sufferers in case any thing goes wrong on their environment.

### **Sustainable harvest**

Sand mining is not bad, but it should be monitored, evaluated and regulated so as to meet the needs of the present and future generations. Specific measures should be designed on the rates and tonnage harvested, either monthly or annually.

## BIBLIOGRAPHY

Saigo 2000. Environmental Science. A global concern 6<sup>th</sup> Edition.

District State of Environment Report Mpigi District (1997)

Nathan G. 2003. Wetland Research in the Lake Victoria Basin, Kenya Part. Lake Victoria Research (Vic Res) initiative.

Ngerageza E. 2005. Effects on local sand quarrying. The New Vision Publication. Monday, April 11, 2005.

Gafabusa 2003. The causes and consequences of land slide on the lower slopes of Rwenzori Mountains. A case study of Kasitu Sub-county, Bundibugyo District.

Mark Byrnes, Richard Hammer, Tim Thibaut, David Snyder. 2004. Physical and Biological effects of sand mining off shore Alabama, USA Journal of Coastal Research: Vol. 20, No. 1 Pp 6-24.

Carlos P. 1999. Black well's concise Encyclopedia of Energy.

Prabhakan V.K 2000. Environmental Pollution and Awareness, in 21<sup>st</sup> Century. Vol. 49. Animal Publications. Put Ltd New Delhi.

Wakiso District Development Review 2002. Facts and Figures about Wakiso. The New Vision (May6, 2002) the New Vision publications.

Wakiso District state of Environment Report, (2004)

Appendix. QUESTIONNAIRE

KAMPALA INTERNATIONAL UNIVERSITY, FACULTY OF SOCIAL  
SCIENCE AND LAW/DEP'T OF ENVIRONMENTAL STUDIES.

ENVIROMENTAL CONSEQUENCES OF SAND MINING ON THE  
SHORES OF LAKE VICTORIA: A CASE STUDY OF KATABI SUB-  
COUNTY, KAYIRIRA VILLAGE, WAKISO DISTRICT.

PART ONE

DATE:..... LOCATION.....

ZONE:.....SUB-COUNTY.....

COUNTY:.....

A. Existing Sand mining activity, management system /socio-economics  
background

1. Name:.....

2. Gender:

Male/Female.....

.....

3. Marital status:

1) Single

11) Married

111) Divorced

1V)

Others

(Specify).....

4. Education and background

i) Primary

ii) Doctor

iii). Tertiary

iv) Other  
(Specify).....

5. Occupation/ Profession

i) Student

ii) Doctor

iii) Teacher

iv) Miner

v) Others  
(Specify).....

PART TWO

6. Are you aware of the sand mining activity in your sub- county?

.....  
.....

7. If No, Why?

.....  
.....

8. If yes, for how long have you observed it going on?

.....  
.....

9. Are you in any way involved in this mining activity in your  
sub- county? Yes/No

.....

10.If No, Specify why?

.....  
.....

11.Which people are directly involved in sand mining in this area?

(Men/ Women/ Youth / All) Specify.

12. Why this group people?.....

13.Are there any other economic activities carried out in this area besides sand mining?

.....

14.If they are, there, mention a few of them

.....

15. Are the people who carry out this sand mining activity residents of this sub- county?

16. If No, where do they come from?

17. Do these people understand the environmental Consequences that can be (or have been) brought by sand mining? Yes/ No

18.If No Why?

19. How much is harvested on a daily basis?

20. Where is this mostly taken?

.....

.....

21. Which type of sand is commonly demanded by the users?

.....

.....

PART THREE

22 (i). What are your responsibilities in controlling sand mining?

.....  
.....

(ii) How do you perform these roles?

.....  
.....

(iii) How many of you are in this management?

.....  
.....

(iv) Are all of you skilled in controlling the rates at which sand is mined?

.....  
.....

(v) If No, how do you perform your roles then?

.....  
.....

23. Do you normally have enough training on sand mining activities?

.....  
.....

24. If No, why are you not skilled then?

.....  
.....

25. Would you tell me how you manage these activities in this area?

.....  
.....

26 .Do the people welcome your contributions?

.....  
.....

27. (i) Are there some initiatives in form of assistance that may have been offered by the government in controlling sand mining ? Yes/ No

.....  
.....

(ii) If Yes, what has (and how has it) been done

.....  
.....

(iii) If No, why hasn't something been done?

.....  
.....

28. What would you like to be done to control environmental degradation brought about by sand mining?

.....  
.....

THANK YOU

## Faculty of Social Sciences and Law

To: THE LOCAL

AUTHORITY OF KATABI

SUB-COUNTY KAYIRIDA

VILLAGE - WAKISO DISTRICT

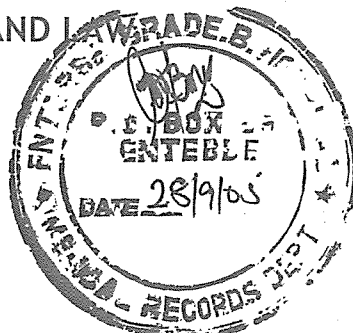
This is to introduce to you Mr. /Miss LUUTU IVAN

who is a bona fide student of Kampala International University,  
He/She is working on a research project, which is a partial  
requirement for the award of a degree.

I hereby kindly request you in the name of the University to accord  
him/her all the necessary assistance required for this work.

Thank you very much in advance

  
Prof. A.G.G. Gingyera-Pinyewa  
DEAN FACULTY OF SOCIAL SCIENCES AND LAW



OF WARISO DISTRICT

