EVALUATION OF SOCIO-ECONOMIC IMPACTS OF STONE QUARRYING: Implications for mitigation.

A Case of Nakyerongosa parish, Kakiri Sub County, Wakiso district.

BY

HENRY ERIC MAGEZI

BU/UG/2010/242

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL ECONOMICS

A DISSERTATION SUBMITTED TO THE FACULTY OF NATURAL RESOURCE AND ENVIRONMENTAL SCIENCES FOR THE PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE AWARD OF A BACHELOR OF SCIENCE IN NATURAL RESOURCE ECONOMICS OF BUSITEMA UNIVERSITY.

2013

DEDICATION

I dedicate this dissertation to my young sister Miriam Julie Kirabo.

God bless you as you pursue all your reveries.

DECLARATION

I hereby declare that the work in this dissertation is my own original work arrived at through literature review and field work under the guidance of my supervisor and the help of the informants. To the best of my knowledge, it has never been submitted for any academic award in any other university or higher institute of learning.

In all cases where other people's ideas were used, they have been duly acknowledged by complete references.

Signature.....

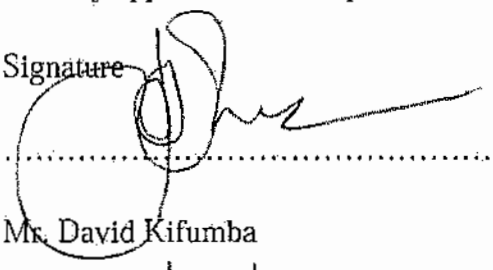
Name of Student: Henry Eric Magezi

Date.....1ST / JULY / 2013.....

APPROVAL

This work has been thoroughly supervised and approved to have fulfilled the requirement leading to the award of a Bachelor of Science in Natural Resource Economics of Busitema University. Therefore, this dissertation has been submitted for examination with my approval as the supervisor.

Signature



.....

Mr. David Kifumba

Date.....1/7/2013.....

TABLE OF CONTENTS

ACKNOWLEDGEMENT

It was not my ability or my capacity neither was it my potential to carry out the research successfully, nor my knowledge to prepare this dissertation systematically but the total will and mercy of the Divine Creator who granted me life, wisdom and knowledge.

I wish to express my heartfelt appreciation to my Supervisor, Mr. David Kifumba whose kindness and parental judgment did not render this work impoverished, but rather he carefully scrutinized it to suit the academic requirements. Thank you very much for your intellectual and Scholarly input. I am also grateful to staff members at the Department of Natural Resources and Environmental Sciences, Namasagali Campus, Busitema University for all the support they made to substantiate this work.

I am deeply indebted to Mrs. Idah Lubwama the former DEO of Wakiso District, Paul Kitakule, and Alice Nakiwala for their support that has always been at my disposal. Your assistance in all aspects will always be appreciated.

I would like to thank Wakiso district officials, Mr. Esau Mpoza, the Senior Environmental Officer and Mrs. Rebecca Ssabaganzi the Natural Resource Officer for their support and technical guidance, also the entire Nakyerongosa community. I also acknowledge the assistance of the head of personnel Spencon Services Ltd stone crusher and quarry-Kakiri. I am also thankful to the community leaders especially to the L.C I Chairman Mr. Byekwaso. They made the fieldwork a success and provided me with relevant information which has enabled me to compile this work.

I am greatly indebted to my parents and relatives and with sincere gratitude, I acknowledge especially my mother for the moral, material, financial and spiritual support she rendered me before, during and after the course, my sisters and brothers who have always stood by side to support and encourage me.

To my friends, Noah Kyabadde, Martha Kateme, Ronald Kakande, Marvin Busulwa, Joseph Mutyaba, and Joel Sserwada, I say may God bless you. Also in special way, I thank my classmates and the entire Christian union of Namasagali campus Busitema University. Thank you for the moral support and a shoulder to lean on.

TO ALL, I SAY; MAY YOU BE BLESSED!

LIST OF FIGURES

LIST OF PLATES

LIST OF TABLES

LIST OF ABBREVIATIONS

CBOs	Community Based Organisations
CSR	Corporate Social Responsibility
CO_2	Carbon dioxide gas
DEC	District Environmental Committee
DFID	Department for International Development
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization
FGDs	Focus Group Discussions
GoU	Government of Uganda
GDP	Gross Domestic Product
IFAD	International Fund for Agricultural Development
LC1	Local Council one
MMED	Ministry of Energy and Mineral Development
NEMA	National Environmental Management Authority
NGO	Non-Governmental organization
PECs	Parish Environmental Committees
SECs	Sub County Environmental Committees
SOER	State of Environment Report
VECs	Village Environmental Committees
1 USD =	2,575 Ug. Shillings

OPERATIONAL DEFINITIONS

CSR is a process in which corporations take responsibility for the social, ecological and economic consequences of their actions – throughout their product and service delivery chains – making themselves accountable, and engaging in a dialogue with all those involved' (CSR Frame of reference, Dutch CSR Platform, July 2003.).

Environment is the totality of man and his associated surroundings including the biotic (living world), abiotic/physical environment and the socio-economic/cultural aspects.

In this study, environment is viewed as an integration of the ecological resources, natural resources, environmental resources and the prevalent socio-economic and cultural activities that are impacted by projects and also which do impact on the entire environment.

Implication this is interchangeably used with the term effect. In this study implication is used to mean the consequences of the impacts of stone quarrying activities in the study area.

Livelihood dictionary form, this is defined as means of support. However livelihood in the context of the study is used to mean the general living of the people in the study area.

Quarrying site in the study, it is the actual area where the blasting and crushing takes place.

Quarrying zone this is used to mean the area around the quarrying site. In this case the quarrying zone is a radius of 300 meters around the site.
People in this area are the only ones legible to compensation in case of any damage.

Representative committees selected group of community members to monitor and check the damages incurred every after a blasting. This committee is responsible for writing a report that is also supposed to be copied to the town council about how the blasting was.

ABSTRACT

Quarrying, the open or surface excavation of rock from its natural state to be used for various purposes is among the primary causes and sources of environmental degradation. This is mainly due to the unregulated operations of the commercial activities by few unscrupulous entities at the cost of our precious and irreversible ecosystems and natural resources in the absence of proper monitoring and implementation of relevant laws by the concerned regulatory agencies.

Stone quarrying is a huge supporter of local economic development as using the extracted material enhances trade and development. However quarrying a short-term activity with long term effects comes along with the promises of wealth and jobs but it brings high environmental costs.

The general objective of the study was to generate information on current socio - economic impacts of activities associated with stone quarrying on the livelihoods and health of the communities in Wakiso District.

The study unearthed the implications of the impacts that stone quarrying has on social, economic, physical & political spheres of environment.in Kakiri, Wakiso District.

The study relied on information collected qualitatively through individual and group interviews coupled with personal observations in addition to documented data from published and unpublished articles.

Findings reveal that the activity in the area has led to a small scale ecological debt as the extraction of the stone resource is destroying peoples' ability to survive and the trade of this resource is also ecologically unbalanced; as these natural goods are exploited and traded without taking responsibility for the social, cultural and environmental damage to the community from which the resource is exploited.

Therefore, adoption of three-circle approach; Technology-Economics-Environment should be emphasized for sustainable stone quarrying. Here the developers should improve on the level of technology used in blasting so as to increase on the economic gains as well as conserving the environment.

Keywords: *Stone quarrying, Environment, implications.*

CHAPTER ONE

1.0. INTRODUCTION

1.1. Background

1.1.1. Introduction

The increased levels of urbanization in developing countries have triggered a lot of construction ranging from construction of roads to develop the transport sector to setting up of industries to support the manufacturing and processing sector. Kondolf (1994), notes that mining of natural aggregates, including both sand and gravel and crushed rock, represents the main source of construction aggregates used throughout the world.

However, operations of mining, whether small- or large- scale, are inherently disruptive to the environment (Makweba & Ndonde, 1996). Mining of aggregate frequently generates land use conflicts in populated areas due to its negative externalities including noise, dust, truck traffic, pollution and visually unpleasant landscapes (Willis & Garrod, 1999). Competing land uses including farming, in areas where highly productive farmland is scarce and where post-mining restoration may not be feasible increases probability of conflict occurrence. Ross (2001) observes that the consequences of this, is underdevelopment.

In Uganda, commercial gravel extraction to supply aggregate to the construction industry has been on the increase in recent years. Although there is some informal stone quarrying practices, the majority of such activities are carried out on large scale by well-established developers. Products are increasingly demanded for industrial, domestic, agricultural and other purposes so as to satisfy the needs of the rapidly growing population.

Quarrying operations generally involve removal of over burden, drilling, blasting and crushing of rock materials which potentially has adverse impacts on the natural environment, society and cultural heritage, the health and safety of mine workers, and communities based in close proximity to operations (Moody & Panos, 1997) and dislocation (Akabzaa, 2000).

However, although people in general are familiar with the need and importance of stone quarrying for construction material, the awareness of the negative impact this has on vegetation, biodiversity and food security may not be as commonly known. Despite these impacts stone

REFERENCES

Acción Ecológica (1999), **No more plunder, they owe us the ecological Debt!** http://www.duedaecologica.org

Acción Ecológica (2000), **Trade, Climate change and the Ecological debt.** http://www.duedaecologica.org.

Agenda 21, (1997). **Natural resources aspect of sustainable development in Iceland.** Retrieved on 2/ 01/2013

Akabzaa, T.M. (2000). **Boom and Dislocation: The environmental and social impacts of mining in the Wassa West District of Ghana. Accra**: Third World Network – Africa.

Alloway, B. J. and Ayres, D.C. (1995).**Chemical Principles of Environmental Pollution.** Blackie Academic and Professional, London. Pg. 250-290.

Anita Kigonya and Moses Muhumuza (2008), **EIS for the proposed Nalumunye stone quarry plant.** Omega construction.

Areola, O (1991). **Ecology of Natural Resources in Nigeria.** Avebury Academic Publishing Group, Aldershot, England. Pp. 178-196.

Bianca Ambrose-Oji, Patrick Riruyo and Fergus L. Sinclair. **Livelihood impacts of quarrying and the restoration of quarry sites in Kota and Bundi Districts of Rajasthan, India.** CAZS-NR and School of the Environment and Natural Resources Bangor University

Daily monitor. www.monitor.co.ug/news/national/-/688334/1251376/-/bi40a42/-/index.index.html (20/5/2013)

Deblonde, M. (2001), **Economics as a Political Muse. Philosophical Reflections on the Relevance of Economics for Ecological Policy.** Kluwer Academic Publishers.

Deborah, S. (1996). **Breathtaking: premature Mortality due to Particulate air pollution in 239America Cities.** Natural Resources Defense Council, New York. Pp. 14 – 15.

DGSM, (2003), **Sectoral Environmental and Social Assessment for the Mineral Sector Development Technical Assistance Project.** http://www.energyandminerals.go.ug/SESA_MSDTA03.pdf.

Dillon, J. (2001), **the History of the Ecological Debt Movement.** Paper for the Conference' Globalization, Ecological Debt, Climate Change and Sustainability', Republic of Benin, November 27-30, 2001.

Donoso Aurora (2002), **an Alliance to Stop the Destruction of Southern Peoples Livelihoods and Sustainability.** Speech delivered at the Indonesian Peoples' Forum.

Douglas, D. (1996). **Health effects of Acid Aerosols on North America Children: Respiratory symptom.** Environmental Health Perspectives, Vol. 104, No. 5 P 503.

Dreschler, B. (2001) **Small scale mining and sustainable Development within the SADC Region.** MMSD Research Topic 1. http://www.iisd.org/natres/mining/#edn2

Enger, E.D and Smith, B.F (2002). **Environmental Science: A study of Interrelationship (8th edition)**, McGraw-Hill Higher Education, New York Pp372-377.

Erik Paredis, Gert Goeminne, Wouter Vanhove, Frank Maes, Jesse Lambrecht. **The Concept of Ecological Debt: its Meaning and Applicability in International Policy**. Gent Academia Press, 2008, XX + 280 p.

Esteves, A.M. (2008) **Evaluating community investments in the mining sector using multi-criteria decision analysis to integrate SIA with business planning.** Environmental Impact Assessment Review 28: 338- 348.

Florich Quarry Company irk Kakiri residents/Uganda radio network. Ugandaradionetwork.com/a/story.php?s=34796 (20/5/2013)

Government of Uganda (1995). **The Constitution of the Republic of Uganda**, UPPC, Entebbe, Uganda.

Haberi, H., Erb, K.H, Krausmann, F. (2001) **How to calculate and interpret ecological footprints for long periods of time: the case of Austria** 1926-1995. In Ecological Economics 38, (2001), 25-45.

Heath, M.J., Merefield, J.R. & Paithankar, A.G. (1993). **Environmental impact of mining on tropical forest**. Mining Environmental Management, 37, 14–16.

IPCC (1990), **IPCC First Assessment Report**. http://www.ipcc.ch/pub/reports.htm.

Jenkins (1996), **democratizing the global economy by ecologicalising economics**: the example of global warming. In Ecological Economics 16, (1996), 227-238.

Jenkins, H. & Obara LJ. 2006. **Corporate social responsibility in mining industry- the risk of community dependency.**

Kondolf, G.M. (1994). **Geomorphic and environmental effects of in stream gravel mining, Landscape and Urban Planning**, 28. 225–243.

Loh, J. (2002), **Living Planet Report**. World Wild Fund for Nature, Giand.

Magezi, S.A.K (2008), **Urban Air Pollution Potentials with Emphasis on tropics**. University of Reading

Makweba, M.M. & Ndonde, P.B. (1996). **The mineral sector and the national environmental policy.** In: M.J. Mwandosya et al (Eds.), Proceedings of the workshop on the national environ- mental policy for Tanzania (Dar es Salaam, Tanzania), 1994; 1996. (pp. 164–173).

Martin Shuttleworth (2008), **Ethics in research, purpose of research**. Experiment-Resources.com (2008)

Martinez-Alier J. (2002), **The Environmentalism of the Poor**: A study of Ecological Conflicts and Valuation, Edward Elgar Pub.

MMED (2001). **The Mineral Policy of Uganda** Kampala: Uganda.

Moody, R. & Panos, S.P (1997). **Environmental assessment of mining projects.** http://www.worldbank.org/mining.xls.

National Environment Act cap 153

Natural Resources Defense Council- NRDC (1996), **Air Pollution In: Our Children at Risk – The 5 Worst Environmental Threats to their Health.** www.nrdc.org/health/kids/ocar/

NEMA, (1996) **State of the Environment Report for Uganda**, Kampala: Uganda.

NEMA, Guidelines for Environment (2005), **State of Environment Report for Uganda**

Oguntoke Olusegun; Aboaba Adeniyi and Gbadebo T. Adeola, 2009 **Impact of Granite Quarrying on the Health of Workers and Nearby Residents in Abeokuta Ogun State, Nigeria.** Ethiopian Journal of Environmental Studies and Management Vol.2 No.1

Omosanya K.O and Ajibade O.M (2011), **Environmental impact of quarrying on Otere village, odeda, southwestern Nigeria** Ozean Journal of Applied Sciences 4(1), ISSN 1943-2429.

Opschoor H. (1995), **Krapte aan milieugebruiksruimte.** In Oefeningen in duurzaamhied: perspectieven naar 2040. (1995), Uitgeverij Jan Van Arkel, Utrecht, 12-22.

Potter, R. B., Binns T., Elliot, J. A. and Smith, D. (1999) **Geographies of Development London:** Longman.

Rochol M. (2001), **from environmental space to Ecological Debt; A European Perspective** Speech delivered at the Conference' Globalization, Ecological Debt, Climate Change and Sustainability', Republic of Benin, November 27-30, 2001, 8 pp.

Ross, M. (2001), **Extractive resources and the poor**, Boston: Oxfam America Report.

Salvato, J. A. (1992). **Environmental Engineering and Sanitation, 4th Edition** – John Wiley and Sons Incorporated. Pg. 767- 806

Shah R. (2000), **International Frameworks of Environmental Statistics and Indicators**. paper for the Inception Workshop on the Institutional Strengthening and Collection of Environmental Statistics 25-28 April 2000, Samarkand, Uzbekistan.

Stephen A. K. Magezi, David Ogaram, Gertrude. B. Magezi (2009). **Environmental Audit Report for kiryamuli kigoogwa quarry, Wakiso district.**

Swaziland Greenstone Quarry, **Environmental Impact Assessment and Comprehensive Mitigation Plan.** Description of Mitigation and compensation Measures.

The 2002 **Population and Housing Census Analytical Report for Wakiso District**

UNEP (1991), **Urban air Pollution.** In: Environment Library, No. 4, Nairobi: UNEP.

USEPA (1996), **Review of National Ambient Air Quality standards for Particulate Matter**: Policy Assessment of scientific and Technician information, Report No. EPA-452/R-96-013 (USEPA, Washington D.C) Pp. V-20 -V-24, V- 27, V-28 & V-71

Veiga, M.M. & Beinhoff, C. (1997), UNECA centers: **A solution to reduce mercury pollution from artisanal gold mining activities.** UNEP Industry and Environment, 20, 49–52.

Wakiso District 2010 **Department of Environment and Wetland, State of Department Report**

Wakiso District State of Environment Report, (2004)

Warhurst, A. (1994). **Environmental Degradation from Mining and Mineral Processing in Developing Countries**: Corporate Responses and National Policies. Paris: Development Centre, OECD.

Warhurst, A. (1999). **Environmental Regulation, Innovation, and Sustainable Development.** In Warhurst, A. (Ed.), Mining and the Environment: Case Studies from the Americas. Ottawa: International Development Research Centre.

Willis, K.G. & Garrod, D. (1999). **Externalities from extraction of aggregates regulation by tax or land-use controls.** Resources Policy, 25, 77–153.