BUSITEMA UNIVERSITY

FACULTY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES

DEPARTMENT OF NATURAL RESOURCE ECONOMICS

ASSESSMENT OF LAND DEGRADATION USING THE NORMALISED DIFFERENCE VEGETATION INDEX (NDVI) A CASE OF LUWERO DISTRICT

By

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DECLARATION

I hereby declare that the work presented in this research report is original and has not been submitted to any university or any other institution of higher learning for any academic award.

Signature…….. Date 22nd/07/2018

SEMBATYA REAGAN

APPROVAL

This is to certify that this research report submitted by Sembatya Reagan BU/UG/2015/2146 has been done and completed under my supervision. Therefore I recommend it for submission to the faculty of Natural Resources and Environmental Sciences, Department of Natural Resource Economics, Busitema University.

SUPERVISOR

..... DATE ... 24/08/2018

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DEDICATION

I dedicate this piece of work to my dear Father, Mum Mrs. Nabukeera Scovia, my brothers and sisters (Sekiganda Joas, Namwanga Marion, Nakato Miracle and Babirye Mercy), and my uncles Mr. Kamoga Daniel and all the family members who tirelessly provided me with financial and moral support just for the purpose of seeing me excel in life. Also to my dear friends Magoba Tracy Deborah and Tugabirwe sumaiya for the day to day support and to the rest of my classmates. May the almighty God bless you abundantly.

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LISTS OFACRONYMS/ABBREVIATIONS

ERDAS	Earth Resource Data Analysis System
ETM+	Enhanced Thematic Mapper
FAO	Food and Agriculture Organization
GIS	Geographic Information System
GLASOD	Global Assessment of Human-induced Soil Degradation
GOU	Government of Uganda
GPS	Global Positioning System
Km^2	Square kilometer
NDVI	Normalized Differencing Vegetation Index
NEAP	National Environmental Action Plan
NEMA	National Environmental Management Authority
NIR	Near infrared
NMSA	National Meteorological System Agency
TIN	Triangulated Irregular Network
TM	Thematic Mapper
UNEP	United Nations Environmental Programme
UNESCO	United Nations Education, Science, Culture organization
USLE	Universal Soil Loss Equation
UTM	Universal Transverse Mercator
WGS	World Geodetic Survey
UNCCD	United Nations Convention to Combat Desertification

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ABSTRACT

This study is aimed at assessment of land degradation using the normalized difference vegetation index (NDVI) a case of Luwero district.

Accordingly, classes classified as intensively cultivated and degraded / barren lands were expanding in a real coverage at the expense of others. However, moderately cultivated, wood and grazing lands of the study area became reduced in size in the time span of 2001 to 2015.

On the other hand, NDVI images analysis comparison also done to look into the vegetation/ land cover degradation or change between 1995 and 2017 images, its result implies a decline in land cover taking the standard deviation variation in to account.

CHAPTER ONE: GENERAL INTRODUCTION

1.0 Introduction

This chapter discusses the background to the study and the general situation of land degradation in Uganda, problem statement, research objectives, research questions and conceptual framework.

1.1 Background of the study

Land is a complex resource composed primarily of soil, water and biodiversity. The product of their interactions, ecosystem goods and services, is the foundation for sustainable livelihoods, social cohesion and economic growth. Communities and countries can no longer afford to waste this valuable resource.

Land degradation refers to any reduction or loss in the biological or economic productive capacity of the land resource base. It is generally caused by human activities, exacerbated by natural processes, often magnified by and closely intertwined with climate change and biodiversity loss. FAO defines Land degradation as the reduction in the capacity of the land to provide ecosystem goods and services and assure its functions over a period of time for its beneficiaries.

It is obvious that soils usually take a long time to form, perhaps up to 400 years for 10mm and under extreme conditions 100 years for 1mm. It can take 3000- 12000 years to produce a significant depth of mature soil for forming (Waugh, 1995). However, degradation of soil has been caused mainly by water logging and compaction, erosion, acidification, salinazation and sodification and the accumulation of heavy metals and other inorganic contaminants would limit the productivity of the soil.

Land degradation has affected some 1900 million hectares of land word-wide. In Africa an estimated 500 million hectares of land have been affected by soil degradation, including 65% of the region's agricultural land. The rate at which arable land is being lost is increasing and is currently 30-35 times the historical rate. The loss of potential productivity due to soil erosion worldwide is estimated to be equivalent to some 20 million tons of grain per year. And this is happening worldwide, not just in Africa or Asia (UNEP, Global Environment Outlook - 2000. http://www.unep.org/geo2000, 1999)

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