ECONOMIC ASSESSMENT OF THE CROPPING FARMING PRACTICES IN WETLANDS, CASE OF LWERE WETLAND OPWATETA SUB-COUNTY PALLISA DISTRICT EASTERN UGANDA

BY



OTWAL SABASTIAN BU/UP/2012/2036

THIS IS DONE IN THE PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE AWARD OF BACHELOR OF SCIENCE IN NATURAL RESOURCE ECONOMICS OF BUSITEMA UNIVERSITY

MAY 2016

DECLARATION

I, OTWAL SABASTIAN, do here declare that this research report is my own work and efforts and has never been submitted for a bachelor's course in any other university. I therefore take full responsibility for any errors that may arise in this work as a result of omission or otherwise.

Signature Date 30/26/2016

OTWAL SABASTIAN

BU/UP/2012/2036

APPROVAL

This is to certify that OTWAL SABASTIAN, did research and this report is a true representation, of the findings under my supervision. I am therefore recommending that this report be submitted to the Faculty of Natural Resources and Environmental Sciences of Busitema University

Signature Date 05 07/2016

SENIOR LECTURER,

MS. GIMBO REBECCA

(SUPERVISER)

DEDICATION

This research report is dedicated to my family people MR. Otwal John Chrijositom and MRS. Annyu Stella and my brother Mr. Opoloto Herbert, my loving sisters, Ms. Otwal Akia Barburh and Ms. Karetu Zitta

I credit the efforts of my beloved ones, Ms. Driciru Victoria, Mr. Olupoto Anthony

ACKNOWLEDGEMENTS

Many people have contributed in various ways to the completion of this dissertation. Foremost, I wish to express my sincere gratitude to my caring supervisor MS: GIMBO REBECCA for her encouragement and willingness to offer time for guidance and corrections where necessary. Her contribution towards the completion of this dissertation is priceless

At the faculty of natural resources and environment sciences where I studied I thank all my professional lecturers and colleagues of B.SC.NRE for the team spirit that encouraged me to move forward to this level

I acknowledge the outstanding role of my parents, they patience, love and prayers throughout these year are invaluable.

The significant role played by Kapuwai Environment Conservation Initiative (KECI), in contribution to the protection and enhancement of the environmental resources for wealthy creation and sustainable management of wild resources among its esteemed members and stakeholders agencies incredible, thanks for the good work done.

TABLE OF CONTENTS

DECLARATION	. i
APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	įν
TABLE OF CONTENTS	٧
LIST OF FIGURESv	iii
GLOSSARY OF ACRONYMS	ix
ABSTRACT	х
CHAPTER ONE: GENERAL INTRODUCTION	1
1.0: Introduction	1
1.1: Background of the study	1
1.2: Problem statement	3
1.3: Objectives of the study	3
1.3.1: General objective	3
1.3.2: Specific objectives	.3
1.3.3: Hypothesis	3
1.3.4: Research questions	3
1.4: Conceptual framework	4
1.5: Significance of the study	5
1.6: Justification of the study	5
1.7: The Study scope	5
1.7.1: Time scope	5
1.7.2: Geographical scope	5
1.8: Limitations of the study	6
1.9: Definition of key concepts	6
CHAPTER TWO: LITERATURE REVIEW	7
2:1: Introduction	7
2.2: Wetland extent and distribution	7
2.3: Wetlands and human well-being	8
2.2.1. Franches Coming	_

2.4: Wetlands' contribution to water resources	9
2.5: Value of Wetland Services	9
2.6: Agriculture in Wetlands	10
2.6.1: Contribution to livelihoods	10
2.6.2: Wetland degradation as a consequence of agriculture	11
2.7: Wetland Values and economic trade-Offs: Maintaining a range of Services	12
CHAPTER THREE: RESEARCH METHODOLOGY	14
3.1: Introduction.	14
3.2: Area of Study	14
3.3: Sample size and sampling procedure	
3.3.1: Sample size	,
3.4: Data types and collection methods	15
3.5: Data collection methods	16
3.5.1: Questionnaires	16
3.5.2: Interviews	16
3.5.3: Observation	16
3.6: Data validity and reliability	16
3.7: Validity and reliability of data collection instruments	17
3.8: Data processing and analysis	17
3.9: Ethical considerations	
CHAPTER FOUR: PERSENTATION AND DISCUSSION OF THE RESULTS	18
4.0: Introduction	18
4.1: Characteristics of the respondents	18
4.1.0: The location of the respondents	18
4.1.1: The gender of the respondents	19
4.1.2: The education levels of the respondents	,20
4.1.3: The length of stay of respondents a round Lwere wetland	21
4.2: The major crop farming practices carried out in the Wetland	22
4.2.1: The major crops grown in the wetland	22
4.2.2: The major sources of incomes	23
4.2.3. The land acreage under crop cultivation	24
4.3: The effects and economics of major crop farming practices in the Wetland	25

	4.3.0; The effects of crop farming in lwere wetland	25
	4.3.1: The changes in the state of the wetland	25
	4.3.2: The challenges faced while growing crops in the wetland	28
	4.3.3: The benefits from crop farming practices	29
	4.3.4: The main benefits derived from the wetland for livelihoods	30
	4.4: The total seasonal production costs, output bags, average market price, gross seasonal incomes net seasonal financial incomes of major crops grown (rice, maize, beans, cassava, cotton) in livere	
	4.5: Cost Benefit Analysis of the majorly cropping farming practices in the wetland	
	HAPTER 5: CONCLUSIONS AND RECOMMENDATIONS	
	5:1: CONCLUSIONS	
	5.2: RECOMMENDATIONS	
	5.3: The areas of further research	
RI	EFERENCES	36
	PPENDENCES	
	Appendix 1: The data collection tool questionnaire	
	Appendix 2: The man showing the study area	

LIST OF FIGURES

Figure 1: conceptual framework showing linkages between factors (variables)	4
Figure 2: Summary of the influence of wetland ecosystems on human livelihoods	
Figure 3: Ecosystem services provided by, or derived from, wetlands (MEA 2005)	
Figure 4: Satellite image from Google earth maps showing the study area	
Figure 5: A bar graph showing location of respondents.	18
Figure 6: A pie chart showing the dominate gender in wetland agriculture	
Figure 7: Bar graph showing education level of respondents	20
Figure 8: A bar graph showing length of stay of respondents around Lwere wetland	21
Figure 10: A pie-chart showing the percentage representation of major crops grown in Lwere wetland	
Figure 9: A pie-chart showing the percentage representation of major sources of incomes of the	
respondents	23
Figure 11: A bar-graph showing the percentage land acreage under crop cultivation	24
Figure 12: A bar-graph showing correspondents' view of changes in soils status of wetland	.,25
Figure 13: Bar-graph showing changes in water status in the wetlands	26
Figure 14: Bar-graph showing changes in the vegetation cover in the wetland	27
Figure 15: A pie-chart showing the percentage representation of challenges faced in the wetland	28
Figure 16: A bar graph showing major benefits from crop farming	., 29
Figure 17: A pie-chart showing benefits derived from the wetland	30
LIST OF TABLES	
Table 1: showing the average total production costs, output bags and financial benefits of major crops	

GLOSSARY OF ACRONYMS

C.A.W.M.A Comprehensive Assessment of Water Management in Agriculture

CFP Cropping Farming Practices

DSOER District State of Environment Report

E.S Ecosystem Services

FAO Food and Agriculture Organization

IUCN International Union for Conservation of Nature

IWRM Integrated Water Resources Management

N.W.P National Wetland Policy

NEMA National Environment Management Authority

PEAP Poverty Eradication Action Plan

R.C Ramsar Convention

SBA System Based Approach

WMD Water Management Department

ABSTRACT

Wetlands contribute in diverse ways to the livelihoods of millions of people. They are often inextricably linked to agricultural production systems. In many places, growing population, in conjunction with efforts to increase food security, is escalating pressure to expand agriculture within wetlands. The environmental impact of wetland agriculture can have profound social and economic repercussions for people dependent on ecosystem services other than those provided directly by agriculture. If wetlands are not used sustainably, the functions which support agriculture, as well as other food security and ecosystem services, including water-related services, will be undermined.

Currently the basis for making decisions on the extent to which and how, wetlands can be sustainably used for agriculture is weak. There is a dearth of knowledge on the best agricultural cropping practices to be applied within different types of wetlands, and lack of understanding on how to establish appropriate management arrangements, that will adequately safeguard important ecosystem services are un-established.

Often, economics of different cropping framing practices in wetlands is seen as greatest threat to their degradation, due to limited accruing short coming financial benefits, however, wetland policies are underpinned by a conservationist perspective that regards agriculture simply as a threat and disregards its important contribution to livelihoods. Comparative economic assessment between the different cropping farming practices in wetlands was performed to identify the best option which is a "skylight" to farmers' livelihoods and environmental sustainability

The findings highlights the value of wetland agriculture for poverty reduction as well as the need for more systematic planning that takes into account need for community based management approaches to ensure the intergenerational benefits from the wetland.

CHAPTER ONE: GENERAL INTRODUCTION

1.0: Introduction

This chapter contains background of the study, problem statement, objectives, hypotheses, research questions, conceptual framework and the scope

1.1: Background of the study

Over the history of the universe wetlands are well known as "kidneys" of the world landscape because of the hydrological and chemical cycle functions they perform, and are biological "super markets" because of the food webs and rich biodiversity they support (Ellison, 2004). Thus wetlands are areas permanently or seasonally flooded by water where plants and animals have become adopted (The National Environment Act, Cap 153 under Section2) or. Areas of marsh, fen, peat land, or water whether natural or artificial, permanent or seasonal with water that is static or flowing, fresh, salty, including marine water of low tide less 6 meters" (Ramsar conversion, 1971). There by playing an important role in human development and many great civilizations (e.g. the Maya, Inca and Aztec in Latin America, the Khmer in Asia, the Marsh Arabs in Mesopotamia and those of the Nile and Niger in Africa)

Wetlands play an important role in maintaining environmental quality, sustaining livelihoods, supporting biodiversity, and regulating services that sustain agriculture (Falkenmark, Finlayson, & Gordon, 2007). In drier regions, wetlands are the only sites where people can get water, collect food and other basic supplies (NEMA, 2012; Mwakubo & Obare, 2009). In Uganda, over 50% of the total wetlands are under some form of human use to provide materials for domestic use but also generate some cash through collection and sale of roofing materials, fodder, water, raw materials for crafts, and from activities such as beekeeping, fishing, hunting and direct cultivation of food (Maclean, Tinch, Hassall, & Boar, 2003). This employs at least 2.7 million people (nearly 10% of the total population) (WMD, 2009; GoU, 2010). As a snapshot, wetland resources generate an estimated US\$432 per year to an average participating Ugandan household (Turyahabwe et al., 2013).

However, human use of wetlands is bound to alter wetland cover, if not well planned. A rapid change in wetland cover has been witnessed in Uganda over the recent decades, accelerated by pressure for industrial expansion, especially in urban areas and the increasing annual population growth rate, estimated at 3.7% by 2012 (UBOS, 2012). Consequently, Uganda has lost about

REFERENCES

Adaptive Water Resource Management in the South Indian Bhavani Project Command Area. Mats Lannerstad and David Molden, 2009.

CA (Comprehensive Assessment of Water Management in Agriculture). 2007. Water for food, water for life: A comprehensive assessment of water management in agriculture. London:

Earthscan; Colombo, Sri Lanka:International Water Management Institute (IWMI), 645p.

Economic Gains of Improving Soil Fertility and Water Holding Capacity with Clay Application:

Emerton, L. 2005. Values and rewards: Counting and capturing ecosystem water services for sustainable development. IUCN Water, Nature and Economics Technical Paper No. 1. Gland,

Emerton, L.; Bos, E. 2004. Value. Counting ecosystems as an economic part of water. Gland, Switzerland; Cambridge, UK: IUCN, 88p.

Falkenmark, M.; Finlayson, C.M.; Gordon, L.J. 2007. Agriculture, water and ecosystems: Avoiding the costs of going too far. In: Water for food, water for life: Comprehensive assessment of water management in agriculture, ed. Molden, D. London: Earthscan; Colombo, Sri Lanka: International Water Management Institute

Implementing Integrated River Basin Management: Lessons from the Red River Basin, Vietnam. François Molle and Chu Thai Hoanh. 2009.

IUCN. 1999. Wetlands and Climate Change: Exploring Collaboration between the Convention on Wetlands and the UN Convention on Climate Changehttp://www.ramsar.org/key_unfecc_bkgd.htm#5

IUCN. 2001. Assessment of the Economic Value of Wetlands of Pallisa District in Eastern Uganda. Kampala.

Kaggwa, R., Hogan, R., and Hall, B. 2009 Enhancing Wetlands' Contribution to Growth, Employment and Prosperity (UNDP/NEMA/UNEP Poverty Environment Initiative, Uganda.)

McCartney, M.P.; Masiyandima, M.; Houghton-Carr, H.A. 2005. Working wetlands: Classifying wetland potential for agriculture. Colombo, Sri Lanka: International Water Management Institute. 40p. (IWMI Research Report 90)

Ministry of Finance, Planning and Economic Development, Government of Uganda. 2004. Poverty Eradication Action Plan 2004/05–2007/08. Kampala, Uganda.

Ministry of Water and Environment, Ministerial Policy Statement for the Financial Year 2008/2009

Ministry of Water, Lands and Environment, Government of Uganda. 1999. Wetlands Inspection Division, End of Phase III Report, Kampala.

Mugisha AH Twenty years of wetland conservation in Uganda: Have Uganda's wetlands become wastelands again? A public talk at Uganda Museum, Kampala to commemorate the World Wetlands Day with a theme: "Wetlands for forests". National Environment Management Authority (NEMA), Kampala

National Environment Management Authority (2012), State of the Environment Report for Uganda, 1012, 2010, 2002

NFA, 2008. National Biomass Study Report. Kampala, Uganda.

Olupot, W., Mugabe, H. and Plumtre, A.J. 2009. 'Species Conservation in Human Dominated Landscapes: A Case of Crown Crane Breeding and Distribution Outside Protected Areas in Uganda' African Journal.

Ramsar Convention Secretariat (2007), National wetlands policies: Developing and implementing national wetland policies. Ramsar handbooks for the wise Use of wetlands 3rded. 2, Ramsar Convention Secretariat, Gland, Switzerland

Schuyt, K. 2005. Economic consequences of wetland degradation for local populations in Africa. Ecological Economics 53: 177-190.

Schuyt, K.; Brander, L. 2004. The economic values of the world's wetlands. Gland, Switzerland: World Wide Fund for Nature (WWF).

The constitution of republic of Uganda. The National Environment Act, Cap 153 under Section2

The District State of the Environment Report. (DSOER, 2004-Pallisa)

The Impact of Soil Remediation Research in Northeast Thailand. Rathinasamy Maria Saleth, Arlene Inocencio, Andrew Noble and SawaengRuaysoongnern. 2009.

Wetlands, Agriculture and Poverty Reduction. Matthew McCartney, Lisa-Maria Rebelo, SonaliSenaratnaSellamuttu and Sanjiv de Silva. 2010.