

**ASSESSING THE IMPACT OF CHARCOAL PRODUCTION  
ON THE SHEA NUT TREE VEGETATION COVER IN  
KAPELEBYONG DISTRICT, EASTERN UGANDA**



**THESIS**

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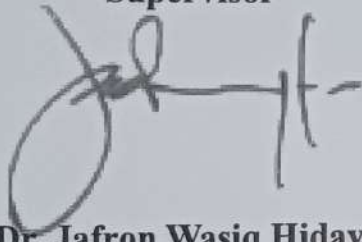
**ENVIRONMENTAL SCIENCE MASTER STUDY PROGRAM  
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SEMARANG  
2023**

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**ASSESSING THE IMPACT OF CHARCOAL PRODUCTION ON THE  
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DISTRICT, EASTERN UGANDA**

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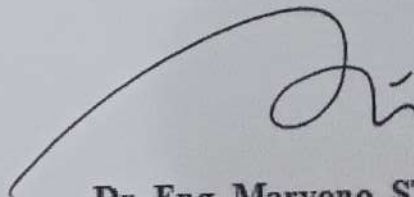
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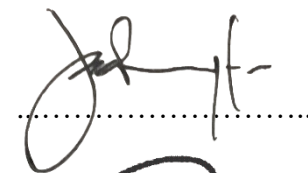
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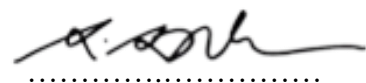
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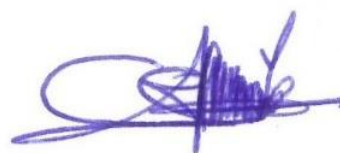
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## DECLARATION

I, Esagu John Calvin here by certify that this work entitled as Assessing The Impact Of Charcoal Production On The Shea Nut Tree Vegetation Cover In Kapelebyong District, Eastern Uganda is truly an original work that I made myself and as a scientific work this thesis has never been submitted in any university or tertiary institution except as a fulfillment of the requirements to obtain a master degree (S-2) at Diponegoro University. To the best of my knowledge and belief, it does not include any previously published or written works by any other authors, except where due reference has been made in the text. Additionally, I certify that no portion of this work will ever again be used without the prior consent of Diponegoro University and, as applicable, any partner institution responsible for the joint awarding of this degree in my name for any other degree or diploma at any university or tertiary institution. If at a later date it is found that all or part of this thesis is not a result of my own work or plagiarism in certain parts, I agree to received the sanction of revocation of the academic degree that I hold and other sanctions in accordance with the applicable laws and regulations.

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## TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>iii</b>
<b>THESIS APPROVAL PAGE</b> .....	<b>i</b>
<b>ENDORSEMENT PAGE</b> .....	<b>ii</b>
<b>FORWARD</b> .....	Error! Bookmark not defined.
<b>LIST OF TABLES</b> .....	<b>ix</b>
<b>LIST OF FIGURES</b> .....	<b>x</b>
<b>ACRONYMS</b> .....	<b>xi</b>
<b>ABSTRACT</b> .....	<b>xii</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background to the study .....	1
1.2 Problem Statement .....	4
1.3 Research questions.....	5
1.4 Objectives of the study.....	6
1.4.1 General objective.....	6
1.5 Significance of the Study.....	6
1.6 Scope of the study.....	7
1.7 Conceptual Framework.....	8
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	<b>9</b>
2.1 Mapping Land cover/Shea butter tree vegetation cover change overtime.....	9
2.2 Shea butter/Vegetation future change prediction.....	10
2.3 Drivers/causes of charcoal production.....	11
2.4 Mechanisms for sustainable charcoal production.....	13
<b>CHAPTER THREE: METHODOLOGY</b> .....	<b>17</b>
3.1 Description of the study area.....	17
3.1.1 Location.....	17
3.1.2 Climate.....	18
3.1.3 Topography .....	19
3.1.4 Soils.....	19
3.1.5 Drainage.....	20
3.1.6 Population and Ethnicity.....	20
3.1.7 Vegetation.....	21
3.1.8 Economic activities.....	21
3.2 Research Design.....	22

3.3	Mapping land cover change of the Shea butter tree between 2002 and 2022.....	22
3.4	Examining the underlying drivers of charcoal production in Kapelebyong .....	24
3.4.1	Research Design .....	24
3.4.2	Sample Size and Procedure .....	24
3.5	Predicting the future Shea butter tree coverage by 2032 in Kapelebyong district.....	26
3.6	Establishing mechanisms for sustainable charcoal production to enhance Shea butter tree conservation in Kapelebyong district. ....	26
3.6.1	Sample Size and Procedure .....	26
3.6.2	Data Analysis .....	27
	<b>CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS.....</b>	<b>28</b>
<b>4.1</b>	<b>PRESENTATION OF FINDINGS .....</b>	<b>28</b>
4.1.1	Mapping of the tree cover change of the Shea butter tree between 2002 and 2022.....	28
4.1.2	Examining the underlying drivers of charcoal production.....	35
4.1.2.1	Demographic characteristics of the respondents .....	35
4.1.3	Drivers of charcoal production in Kapelebyong District .....	39
4.1.4	Prediction of the future Shea Nut tree coverage by 2032.....	41
4.1.4.1	Model Validation.....	44
4.1.5	Establishing mechanisms for sustainable charcoal production .....	45
<b>4.2</b>	<b>DISCUSSION OF RESULTS .....</b>	<b>52</b>
4.2.1	Mapping of the tree cover change of the Shea butter tree between 2011 and 2022.....	52
4.2.2	Examining the underlying drivers of charcoal production in Kapelebyong District .....	53
4.2.3	Prediction of the future Shea butter tree coverage by 2033 .....	55
4.2.4	Establishing mechanisms for sustainable charcoal production .....	56
	<b>CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>57</b>
5.1	Conclusions.....	57
5.2	Recommendations.....	58
	<b>REFERENCES.....</b>	<b>59</b>
	<b>APPENDICES .....</b>	<b>63</b>
	Appendix 1: Landsat Images for Shea Nut cover mapping 2002-2022 (Objective 1). .....	63
	Appendix 2: Interview Guide for charcoal burners (Objective 2) .....	64
	Appendix 3: Reclassified Images used for prediction (Objective 3) .....	68



Appendix 4: Key Informant Interview Guide (Objective 4).....	69
Key Informant Interview Guide for Environmental Management Authorities.....	69

## LIST OF TABLES

Table 3.1. Research Schedule .....	<b>Error!</b>
<b>Bookmark not defined.</b>	
Table 4.1. Tree cover change of the Shea butter tree and other Land uses ..	29
Table 4.2. Demographic characteristics of respondents .....	35
Table 4.3. Occupational characteristics of respondents .....	37
Table 4.4. Drivers of charcoal production in Kapelebyong District .....	40
Table 4.5. Predicted vegetation cover change of the Shea Nut trees in Kapelebyong .....	41

## LIST OF FIGURES

Figure 1.1:	Conceptual framework (Source: Author).....	8
Figure 3.1:	Location of the study Area .....	18
Figure 3.3:	Shea Nut sample points used in creating training samples for image analysis	23
Figure 3.5:	Interviews held with the local community charcoal burners .....	25
Figure 3.6:	Key Informant Interview held with the senior Environmental officer .....	27
Figure 4.1:	Changes in the area coverage of the shea Nut trees between 2002 and 2022	30
Figure 4.2:	Spatial variation of the Shea Nut trees coverage over time.....	31
Figure 4.4:	Researcher standing besides trunk and piles of cut Shea tree County .....	33
Figure 4.5:	Farmlands created after shea Nut trees were cleared for charcoal burning	34
Figure 4.6:	Charcoal in black pills sold in Kapelebyong Town Council .....	38
Figure 4.7:	Drivers of charcoal production in Kapelebyong District.....	39
Figure 4.8:	Charcoal piles in Okungur Sub county .....	40
Figure 4.9:	Truck loaded with charcoal in Kapelebyong town council .....	41
Figure 4.10:	Predicted vegetation cover change of the Shea Nut trees from 2022-2032	42
Figure 4.11:	kappa model validation.....	44
Figure 4.12:	Mechanisms for sustainable charcoal production .....	45
Figure:4.13:	Nvivo Word cloud Charcoal Production mechanism rating .....	51

## ACRONYMS

DEM	: Digital Elevation Model
DMRVPI	: District Multi-Risk Vulnerability Profile for Isingiro
EP & R	: Emergency Preparedness and Recovery
EPP	: Emergency Preparedness Plan
ESIA	: Environmental and Social Impact Assessment
ESMP	: Environmental and Social Management Plan
FEMA	: Federal Emergency Management Agency.
GIS	: Geographical Information Systems
IDCRP	: Irrigation Development and Climate Resilience project
MAAIF	: Ministry of Agriculture, Animal Industry and Fisheries
MEMD	: Ministry of Energy and Mineral Development
MoFED	: Ministry of Finance and Economic Development
MoH	: Ministry of Health
MoLG	: Ministry of Local Government
MWE	: Ministry of Water and Environment
NEMA	: National Environment Management Authority
NFA	: National Forestry Authority
O&M	: Operational and Maintenance
OPM	: Office of the Prime Minister
PMF	: Probable Maximum Flood
RAP	: Resettlement Action Plan
UWA	: Uganda Wildlife Authority
UTM	: Universal Transverse Mercator
MOLUCE	: Methods of Land Use Change Evaluation

## ABSTRACT

With the ever-increasing poor population in the world today, charcoal remains one of the main source of energy mainly extracted from the Shea Nut tree to ease cooking processes and other related necessities, income generation inclusive. The valuable Shea Nut tree is however facing increasing threats from the local communities mainly due to charcoal production. This study therefore, analyses the state of the Shea Nut tree by focusing on the effect of charcoal production on the shea Nut tree vegetation cover in Kapelebyong District. A cross-sectional survey design was employed following both quantitative and qualitative data approaches. Landsat images (Landsat 5, 7TM & 8ETM) of the study area for 2002, 2012 and 2022 were classified using ArcGIS 10.8 and maximum likelihood classification was carried out to assess vegetation variation from 2002-2022. Social economic data on drivers of charcoal production was collected from a sample of 60 respondents engaged in charcoal production, MOLUCE plugin in built in QGIS 2.1 version was used to predict Shea Nut tree coverage by 2032 and key informant interviews were conducted to assess the sustainable Shea Nut tree management mechanisms. Shea Nut trees reduced by 2.3% from 2002-2012 and by 6% from 2012-2022. Therefore, basing on the periods analyzed, there was a sharp declining trend in the concentration of the shea Nut trees. The results depict that the major drivers leading to production of charcoal in the area included high demand from urban areas, need for income and unemployment. It is predicted that by 2032, the coverage of the Shea Nut tree in Kapelebyong District will have reduced to only 713 hectares (7.3%) from 1277 hectares (10.6%) of 2022. Therefore, charcoal production with other land uses like farming, and settlement have greatly resulted to Shea Nut tree deterioration. The study recommends that; use alternative energy sources should be encouraged, the local communities need to be provided with other alternative income generating activities, Government of Uganda through NFA need to enforce and strengthen the ways through which of Shea Nut trees are managed and utilized in order to minimize illegal cutting.

Keywords: Charcoal Production, Shea Nut Tree, Kapelebyong District, Eastern Uganda