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**EFFECTS OF CHARCOAL PRODUCTION PROCESSES ON GENDER
FOCUSED TASKS OF PRODUCERS: A CASE STUDY OF WAKYATO
SUB-COUNTY, NAKASEKE DISTRICT IN UGANDA.**

BY

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SEPTEMBER, 2017

DECLARATION

I Sekagya Moses hereby certify that this dissertation is a result of my original research work and I present it without any reservations for external examination.

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APPROVAL

The research work culminating into this dissertation was conducted under my guidance and supervision.

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DEDICATION

I dedicate this book to the family of the late Robert Kasiirivu of Nakaseke for their great contribution towards this noble course. May the blessings of God keep you now and forever more amen.

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Table of Contents	
DECLARATION	i
APPROVAL	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT	iv
Table of Contents.....	v
List of Tables	viii
List of Figures.....	ix
LIST OF MAPS	x
LIST OF PLATES	xj
APPENDICES	xii
List of Acronyms	xiii
ABSTRACT.....	xiv
CHAPTER ONE: INTRODUCTION	1
1.1 BACKGROUND	1
1.2 STATEMENT OF THE PROBLEM:	3
1.3 Justification of the Study	4
1.3 Objectives	4
1.3.1 Overall Objective	4
1.3.2 Specific Objectives	4
1.3.3 Research Questions	4
1.4 Significance of the Study	5
1.5 The Conceptual Framework: the Driving Forces-Pressures-State-Impacts-Responses (DPSIR) framework	6
1.6 The Scope of the Study	7
1.6.1 Content Scope.....	7
1.6.2 Geographical Scope of the Study	7
1.6.3 Time Scope.....	7
2.0 CHAPTER TWO: LITERATURE REVIEW	8
2.1 Gender and Energy Concerns	8
2.2.1 Charcoal Production Processes.....	14
2.2.2 The Contribution of Charcoal Production	16
2.2.3 Environmental and Social effects of Charcoal Production	18
3.0 CHAPTER THREE: MATERIALS AND METHODS	26

3.1	Introduction	26
3.2	Description of the study area	26
3.2.1	Location	26
3.2.2	Topography	26
3.2.3	Climate	27
3.2.4	Vegetation	27
3.3	Research design	28
3.5	Sample size and Sampling Strategy	30
3.6	Data collection (methods and tools)	31
3.7	Data management and analysis	31
3.8	Research Instruments	32
CHAPTER FOUR: PRESENTATION OF RESULTS AND THEIR DISCUSSIONS		33
4.1.0	Demographic and social composition of the Research	33
4.1.1	Sex and Marital status among respondents	33
4.1.2	Analysis of Marital status and education among respondents	34
4.1.3	Occupation among respondents	35
4.2.1	Household gender focused tasks of females charcoal producers	37
4.2.2	Number of meals cooked in a household	38
4.3.0	Participation in charcoal production	39
4.3.1	District of origin	39
4.3.2	Charcoal Production methods used in Wakyato Sub-county	40
4.3.3	Number of people participating in charcoal production in the household	42
4.3.4	Tasks undertaken by females and males in charcoal production	43
4.3.5	Reasons for participation	45
4.4.0	How charcoal production affects Gender focused tasks/roles	46
4.4.1	Daily time spent by males in charcoal production activities	46
4.4.2	Daily time spent by females in charcoal production activities	47
4.4.3	Distance moved to source of wood for charcoal production among respondents	48
4.5.0	Financial challenges faced in charcoal production	50
4.5.1	Income status among respondents	50
4.5.2	Health challenges associated with charcoal production	52
4.6.0	Social cultural and traditional aspects in charcoal production	53
4.6.1	Traditional and cultural beliefs associated with charcoal production	53

The relationship between female participation in charcoal production processes and distance to the source of wood and daily time women spend in charcoal production	53
4.7.0.....	53
4.8.0 Charcoal production and regulation challenges at District, Sub-county, Parish/community level	54
5.0 CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS	56
5.1 Conclusion.....	56
5.2 Recommendations	56
REFERENCES	59
APPENDICES	66

List of Tables

Table 1: Sex composition and Marital Status among.....	33
Table 2: Marital status and education levels among respondents.....	34
Table 4: Number of meals cooked in the household.....	38
Table 5: Household member's participation in charcoal production	42
Table 7: Daily time spent by males in the charcoal value chain.....	46
Table 8: Daily time spent by females in the charcoal value chain.....	47
Table 9: Distance moved to and fro the source of wood for charcoal production	48
Table 10: Monthly income among charcoal producers.....	50
Table 11A Correlation Matrix of relationship between participation, source of hired labour, distance moved and time spent.	54

List of Figures

Figure 1: Diagrammatic illustration of the DPSIR Framework 6
Figure 2: Steps in the Research Design 29
Figure 3 Primary income earners' occupation among respondents 35
Figure 4: Activities in the Charcoal Value Chain in the Study Area 43

LIST OF MAPS

Map 1: MAP OF NAKASEKE DISTRICT.....28

LIST OF PLATES

Plate 1: Some of the Gender focused tasks of women in charcoal production.....	61
Plate 2: Land degradation challenges of charcoal production	61
Plate 3: Traditional earth mound kilns of charcoal production.....	62
Plate 4: Charcoal packed in bags for transport	64
Plate 5: Common means of transport for charcoal in the district.....	65

APPENDICES

Appendix 1: Activity and time schedule for the research 66
Appendix 2: Household Questionnaire 67
Appendix 3: Focus Group Discussion Questionnaire 77
Appendix 4: Key Informant Questionnaire..... 82

List of Acronyms

CO	Carbon monoxide
CO ₂	Carbon dioxide
CSD	Commission on Sustainable Development
CVC	Charcoal Value Chain
FAO	Food and Agricultural Organisation
FGDs	Focus Group Discussions
FTA	Forests Trees and Agro forestry
GCP	Green Charcoal Project
IFR	International Forestry Review
LPG	Liquefied Petroleum Gas
MAAIF	Ministry of Agriculture Animal Industry and Fisheries
MEMD	Ministry of Energy and Mineral Development
MDG	Millennium Development Goal
NAMA	Nationally Appropriate Mitigation Action
NTFPs	Non Timber Forest Products
PM	Particulate Matter
R&D	Research and Development
SDGs	Sustainable Development Goals
SSA	Sub-Saharan Africa
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
VOC	Volatile Organic Compounds
WFP	World Food Programme

ABSTRACT

Due to lack of affordable and convenient modern energy sources for cooking and heating, domestic consumers of cooking fuels especially in low income countries have increasingly switched to charcoal. This is mainly in urban areas. In cases where there is lack of affordability for other fuel types, a switch to fossil fuels is unlikely under business as usual. The production of charcoal in Uganda is overwhelmingly dominated by the “informal sector” in which small scale producers use traditional inefficient technologies. Wood is always sourced from natural forests and private land and oftentimes harvested illegally, despite forest management systems in place.

The lack of a specific regulation in the charcoal industry in Uganda coupled with weak enforcement and disjointed forest policies, has precipitated increased rates of deforestation from charcoal production even in protected areas. The low replanting rates and poor land management practices together with the volatile land tenure system besides the lack of resources are the major reasons for such trends that have been identified across the country. This has resulted into over exploitation of resources and safety hazards yet no studies have investigated in-depth how charcoal production activities affect the individual charcoal producer, their households and the community where they live.

This study was conducted in Nakaseke District with an overall objective of “analyzing the extent to which the gender focused tasks and responsibilities of charcoal producers are affected by the charcoal production processes”. The specific objectives of the study included examining the type of gender tasks performed by charcoal producers; examining how productive tasks undertaken by charcoal producers influence the intensity of charcoal production and analyzing the extent to which the demands of male and female charcoal producers influence production of charcoal in ways that involve different tasks.

The research used a mixed method approach employing both qualitative and quantitative methods. The qualitative was in the form of individual household questionnaire interviews, Key Informant interviews and FGDs. This was intended to collect as much primary data as possible and allowed for a free-flow of question-and-answer style, widening the breadth of information gathered. The quantitative approach brought out the relationships between the dependent and independent variables. This helped the research to analyze the relationship between the gender focused tasks and participation charcoal production.

The major findings showed that there are remarkable effects of charcoal production processes on gender tasks performed by charcoal producers. Seventy percent (70%) of the respondents came from outside Nakaseke District majority of whom were men who had left their wives and children behind in their districts of origin. These spend more than three months without going back home. They leave all the burden and responsibility of raising children to women. Both male and female spend more time in charcoal production and less time is spent on other household chores. This negatively affects their reproductive responsibilities.

The research recommends that policy and decision makers should come out with a clear/ stand out policy governing and regulating activities in the charcoal value chain paying sufficient attention to their implications on environmental sustainability.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

In sub-Saharan Africa (SSA), wood-based fuels account for over 80% of primary energy supply and more than 90% of the population rely on firewood and charcoal (IFR, 2010). Approximately 3 billion people worldwide rely primarily on wood for cooking, residential heating and hot water (UNIDO, 2013). In many places, particularly in Africa, it is women and girls who are the main collectors of fuelwood (Sunderland *et al.*, 2014). In some places, they walk long distances and spend many hours under highly perilous conditions. Many times this happens where accessibility to resources near the home is affected by deforestation, natural disasters or conflict (WFP, 2012).

Biomass is the predominant type of energy used in Uganda, accounting for 94% of the total energy consumption in the country (MEMD, 2014). Charcoal is mainly used in the urban areas while firewood, agro-residues and wood wastes are widely used in the rural areas of Uganda. Firewood is used mainly on three-stone fire places in rural households and in food preparation by commercial vendors in urban areas. Only about 10% of all households use efficient stoves (MEMD, 2014).

For the conversion of firewood into charcoal, earth mounds and pits are used as charcoal kilns. These have a wood conversion efficiency of 10 to 12% on weight-out to weight-in basis. This implies that about 9 kg of wood are needed to produce 1 kg of charcoal, which translates into 22% efficiency on an energy output to energy input basis (MEMD, 2014).

Most of Uganda's charcoal producers source wood from private farms owned either individually, while the rest is from government land in forest reserves. Most of these charcoal sources are woody savannah, found mostly in rangelands and cattle corridor districts of Nakaseke, Kiryandongo, Nakasonkola, Kyankwanzi, Kiboga, Kaliro, etc, which covers over 51% of the country's area (MAAIF, 2008). These areas are generally characterized by low but highly variable precipitation which in turn affects primary productivity and nutrient recycling.

A key issue in the use of a particular energy type is the environmental impact and the sustainability of energy resources in relation to the climate impact over the lifecycle of energy supply. Apart from leading to land degradation, charcoal production is often associated with

REFERENCES

- Brieland J. 2015.** *Social and environmental impacts of charcoal production in Liberia.*
- Catherine H.2011.** *Enabling Rural Women's Economic Empowerment: Institutions, Opportunities, and Participation.*
- Charan J. 2013.** *How to calculate sample size for different study designs in medical research*
- Delahunty A. P. 2012.** *Gender Equity, Charcoal and the Value Chain in Western Kenya.*
- FAO. 2007.** *Gender and Development Plan of Action.*
- FAO. 2013.** *Forests, food security and gender: linkages, disparities and priorities for action.*
- FAO. 2015.** *Women in Forestry; Challenges and opportunities.*
- International Forestry Review. 2010.** *Profits and margins along Uganda's charcoal value chain.* Vol.12 (3)
- John W. C. 2008.** *Mixed Methods Research.* University of Pretoria.
- Khamati-Njenga B and Clancy J. 2006.** *Concepts and Issues in Gender and Energy.*
- MAAIF, 2008:** *Mainstreaming Dry-land issues in development planning processes.*
- MEMD. 2006.** *The Renewable Energy Policy for Uganda*
- MEMD. 2016.** *National Charcoal Survey for Uganda*
- Mukasa B, Kabonesa C and Adrienne M. 2010.** *Gender and Diversity Situational Analysis: AVA and GLCI Projects Uganda Country Report.*
- Mueller N. 2012.** *Low GHG production of charcoal*
- Mutua E, Njuki J and Waithanji E. 2014.** *Review of gender and value chain analysis, development and evaluation toolkits.* International Livestock Research Institute (ILRI):
- Nakaseke, 2012- 2917:** *District Environment Action Plan (DEAP)*
- Nakaseke, 2005- 2008.** *District Development Plan*
- Nakaseke, 2015- 2016:** *Green Charcoal Project.* Mid- term Report
- Nang'ole E. Dagmar M. and Franzel S. 2011.** *Review of guidelines and manuals for value chain analysis for agricultural and forest products.* ICRAF Occasional Paper No. 17. Nairobi: World Agro-forestry Centre.
- NEMA.2012.** *National State of Environment Report for Uganda.*
- Neufeldt H, Kate L, Fuller J, Miyuki I, and Dobie P, 2015:** *From transition fuel to viable energy source: improving sustainability in the Sub-Saharan charcoal sector.* ICRAF Working Paper No. 196. Nairobi, World Agro-forestry Centre.
- Phosiso S and Gumbo D. 2014.** *Women and charcoal value chains of Eastern and Southern Africa.*

- Paolo O. C and Phosiso S. 2015.** *The socioeconomic and environmental impacts of wood energy value chains in Sub-Saharan Africa: a systematic map protocol*
- Sepp S.** Analysis of charcoal value chains - general considerations; Eco Consulting Group - Germany GTZ
- Shively G, Jagger P, Sserunkuuma D, Arinaitwe A and Chibwana C. 2010.** *International Forestry Review: Profits and margins along Uganda's charcoal value chain*, Vol. 12(3).
- UNEP. 2013.** *Emissions reduction profile: Senegal*.
- UN Women Watch:**[http://www.un.org/womenwatch/feature/climate change/Women, Gender Equality and Climate Change](http://www.un.org/womenwatch/feature/climate%20change/Women,%20Gender%20Equality%20and%20Climate%20Change).
- UNDP. 2013.** *Nationally Appropriate Mitigation Action*. Study on sustainable charcoal in Uganda.
- UNIDO. 2013.** *Sustainable Energy for All: the gender dimensions*.
- Verina J. I, Merel H, Marlène E and Phosiso S. 2016:** *Gender and Forest, Tree and Agro-forestry Value Chains; Evidence from Literature*.
- Vos J and Vis M. 2010.** *Making charcoal production in Sub-Sahara Africa sustainable*
- World Bank. 2013.** *Integrating Gender into Poverty and Social Impact Analysis*
- Yianna L and Grazia P. 2006.** *Energy and Gender issues in Rural Sustainable Development*