

BUSITEMA UNIVERSITY.

FACULTY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES. DEPARTMENT OF NATURAL RESOURCE ECONOMICS.

BARRIERS TO CLIMATE CHANGE ADAPTATION AMONG CROP FARMERS IN KAMULI DISTRICT.A CASE OF NAMASAGALI SUB COUNTY.

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A RESEARCH REPORT SUBMITTED TO THE FACULTY OF NATURAL RESOURCES AND ENVIRONMENTAL SCIENCES IN PARTIAL FULLFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A DEGREE IN BACHELORS OF SCIENCE IN NATURAL RESOURCE ECONOMICS OF BUSITEMA UNIVERSITY.

MAY, 2023

DECLARATION.

I LULE MOSES hereby declare that this research report submitted to the Faculty of Natural Resources and Environmental Sciences is my original work. I affirm that it has never been submitted for an award of a degree or any other academic qualification in any university or academic institution.

| SIGNATURE DATE | |
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APPROVAL.

This is to certify that this research report titled "Barriers to Climate Change adaptation among crop farmers in Namasagali sub county" is the original work for Lule Moses BU/UG/2019/0072 and it has been done under my supervision.

| Signature |
|---------------------|
| Mr. Kakungulu Moses |
| DATE// |

DEDICATION

I dedicate this report to my parents Mr. Kayongo Charles and Ms Najjuma Ketty who have always been providing me with assistance required in my academic journey.

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TABLE OF CONTENTS

| DECLARATION | i |
|---|------|
| APPROVAL | ii |
| DEDICATION | iii |
| ACKNOWLEDGEMENT | iv |
| LIST OF FIGURES. | viii |
| LIST OF TABLES. | viii |
| LIST OF ACRONYMS/ ABBREVIATIONS | x |
| ABSTRACT | xi |
| CHAPTER ONE: | 1 |
| GENERAL INTRODUCTION | 1 |
| 1.1. Introduction. | 1 |
| 1.2. Background of the Study. | 1 |
| 1.3. Problem statement. | 2 |
| 1.4. Objectives of the study | 3 |
| 1.4.1. Main objective of the study | 3 |
| 1.4.2. Specific objectives of the study | 3 |
| 1.5. Research questions. | 3 |
| 1.6. The Scope of the Study. | 4 |
| 1.6.1. Geographical scope. | 4 |
| 1.6.2. Content scope. | 4 |
| 1.6.3. Time scope. | 4 |
| 1.7. Conceptual framework. | 4 |
| 1.8. Justification of the study | 5 |
| 1.9. Significance of the study. | 6 |
| 1.10. Operational definitions of key terms and concepts | 6 |
| CHAPTER TWO: | 7 |
| LITERATURE REVIEW. | 7 |
| 2.1 Introduction | 7 |

| 2.2. Theoretical literature review. | 7 |
|--|------|
| 2.3. Empirical literature review. | 8 |
| 2.3.1. Effects of climate change on crop farmers. | 8 |
| 2.3.2. Climate change adaptation strategies | 9 |
| 2.3. Rationale behind climate change adaptation strategies employed by crop farmers | 11 |
| 2.4. Factors that hinder the implementation of climate change adaptation measures among of | crop |
| farmers. 11 | |
| CHAPTER THREE: | 15 |
| RESEARCH METHODOLOGY | 15 |
| 3.1. Introduction. | 15 |
| 3.2. Area of study. | 15 |
| 3.3. Research design. | 16 |
| 3.3. Sample size and sampling procedure. | 16 |
| 3.3.1. Sampling procedure | 16 |
| 3.3.2. Sample size determination. | |
| 3.5. Data types and data collection methods | 17 |
| 3.6. Data collection methods. | 17 |
| 3.6.1. Questionnaires | 17 |
| 3.6.2. Interview. | 18 |
| 3.6.3. Observation. | 18 |
| 3.7. Data analysis. | 18 |
| 3.8. Ethical considerations. | 18 |
| 3.9. Limitations and delimitations of the study. | 18 |
| CHAPTER FOUR: | 20 |
| SUMMARY OF THE FINDINGS, PRESENTATION AND DISCUSSION OF FINDINGS. | . 20 |
| 4.1. Introduction. | 20 |
| 4.2. Socioeconomic characteristics of the respondents | 20 |
| 4.3. Whether respondents have ever heard about climate change | 27 |

| 4.4. Perception of farmers about the effects of climate change on crop production | 28 |
|---|------|
| 4.5. Climate change adaptation strategies applied by farmers. | 33 |
| 4.6. Rationale behind climate change adaptation strategies employed by crop farmers | 37 |
| 4.7. Factors that hinder the implementation of climate change adaptation measures among | crop |
| farmers. 40 | |
| 4.8. Managing the challenges regarding the implementation of climate change adapts | |
| strategies. | 44 |
| CHAPTER FIVE. | 45 |
| SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS | 45 |
| 5.1. Introduction. | 45 |
| 5.2. Summary of the findings | 45 |
| 5.3. Conclusions of the study | 45 |
| 5.4. Policy recommendations | 46 |
| 5.3. Areas of further research. | 47 |
| REFERENCES. | 48 |
| ADDENINY | 50 |

LIST OF FIGURES.

| Figure 1.7: Conceptual framework of the study | 5 |
|---|----|
| Figure 2.2: Schematic representation of some core concepts of the action theory of adaptation | 7 |
| Figure 3.2: Study map showing area of study. | 15 |
| Figure.4.2.2. Level of education of respondents. | |
| Figure 4.2.3. Main occupation. | |
| Figure. 4.2.4. Marital status of respondents. | |
| Figure. 4.2.5. Household size of the respondents. | |
| Figure 4.2.7. Tribe of respondents. | |
| Figure 4.2.8. Time stayed in the area. | |
| Figure. 4.3. Main source of information. | |
| Figure 4.4.1. Climate change is a serious problem. | |
| Figure 4.4.4 Climate change has contributed to loss of soil fertility. | |
| Figure 4.4.6. Climate change has increased crop pests and disease prevalence. | |
| Figure 4.4.7. Altering planting seasons due to climate change | |
| Figure 4.5. Climate change adaptation strategies employed. | |
| Figure 4.6. Ever been trained on climate change adaptation strategies | |
| Figure 4.9. The source of information about climate change. | |
| Figure 4.10.1. Awareness of the existing climate change adaptation strategies. | |
| Figure 4.10.1. Awareness of the existing climate change adaptation strategies. | |
| Figure 4.10.2. Awareness of the existing chinate change adaptation strategies. Figure 4.10.3. Responsibility of people to protect crops. | |
| Figure 4.6.1. Farmer can do something to reduce effects of climate change. | |
| Figure 4.6.2. Poor farming practices have contributed to climate change. | |
| Figure 4.7. Showing management of challenges. | |
| Figure 1 showing mulched gardens of tomatoes and maize. | |
| Figure 2 showing planted trees together with crops | |
| Figure 3 showing cultivated pieces of land waiting for rains. | |
| Figure 4 showing plastic tanks used for keeping water for watering | |
| LIST OF TABLES. | |
| Table. 4.1. Gender of household head. | 20 |
| Table. 4.1.6 Age bracket of respondents | 25 |
| Table 4.2. Whether respondents have ever heard about climate change | 27 |
| Table. 4.4.5. Climate change has contributed to reduced crop yields | 31 |
| Table 4.8. Access to information on climate change. | 36 |
| Table 4.10.4. Responsibility of government to protect crops. | 40 |
| Table 4.11.3. Limited financial services have contributed to climate change | 42 |

| Table 4.11.4. Fragmented pieces of land have made it difficult to adapt to climate change | 42 |
|---|----|
| Table 4.11.5. Lack of extension services contribution to climate change. | 43 |
| Table 4.11.6. Government's response to reduce effects of climate change | 43 |

LIST OF ACRONYMS/ ABBREVIATIONS.

DLG: District Local Government.

IFAD: International fund for Agricultural Development.

IPCC: Intergovernmental panel on climate change.

MAAIF: Ministry of Agriculture Animal industry and Fisheries.

MWE: Ministry of Water and Environment.

OECD: The Organization for Economic Co-operation and Development.

UNFCCC: United Nations Forum Convention on Climate change.

USGCRP: U.S. Global Change Research Program.

ABSTRACT.

The study is about barriers to climate change adaptation among crop farmers. A case study of Namasagali Sub County. The research main objective was to assess the barriers to climate change adaptation among crop farmers. The study used a cross sectional research design with a combination of both qualitative and quantitative approaches. Data was collected using a structured questionnaire, interview guide and observation. Simple random sampling techniques were used to select 60 households located in Namasagali Sub County Kamuli district. The data was analysed using EXCEL.

The results from the study reveal that climate change is a serious problem in the area. The findings also indicate that farmers frequently worry about climate change. The results also indicate that in order to reduce the effects of climate change such as reduced crop yields, increased crop pests and disease prevalence, crop farmers have adopted various climate change adaptation strategies such as planting resistant crops, mixed cropping, planting improved crop varieties and others.

However, results indicate that majority of the people in the area have not been trained in these strategies and thus they are not aware of the existing climate change adaptation strategies.

Furthermore, the results indicate that lack of financial resources, limited extension services, limited knowledge on climate change adaptation strategies are some of the barriers to climate change adaptation in the area.

Therefore basing on the findings, I recommend that the government should promote extension services in various parts of the country especially the rural areas, support different farmer groups, and provide training on various climate change adaptation strategies. This will enable people reduce effects of climate change to their major source of livelihood and improve their standards of living and wellbeing of the community at large.

CHAPTER ONE:

GENERAL INTRODUCTION.

1.1. Introduction.

This chapter presents the background to the study, problem statement, objectives, and research questions, conceptual framework, justification and scope of the study.

1.2. Background of the Study.

United Nations Forum Convention on Climate change (UNFCCC) (2014) article 1 defines Climate change as the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere.

The equatorial and southern parts of eastern Africa have experienced a significant increase in temperature since the beginning of the early 1980s. The average annual temperature in Uganda has increased by 1.3 degrees Celsius since 1960, while the average number of 'hot' days and 'hot' nights per year in Uganda have increased since 1960 (McSweeney et al, 2010). Recent reports from the Famine Early Warning Systems Network (FEWS NET) indicate that there has been an increase in seasonal mean temperature in many areas of Uganda over the last 50 years (IPCC, 2014). In Uganda, the evidences of Climate change are heavy rains, flooding, landslides, drought, disease outbreaks and epidemics like malaria as well as lightning strikes.

Agriculture has been considered one of the most susceptible sectors to the adverse influence of climate change. It is evident that climate change bears a direct effect on agricultural output. In other words, agriculture is inherently sensitive to climatic change (Banna et al., 2016, Edame et al., 2011, IPCC, 2007). Farmers in developing nations are more vulnerable and confronting many difficulties dealing with climate change issues that put massive pressure on them (IPCC, 2007, Verchot et al., 2007).

Throughout human history, farmers have adapted to changing environment, social and economic conditions. (kurukulasuriya and Rosenthal,2013). Adaptation refers to the adjustments of practices, processes, and systems of land use and technology implementation to enhance resilience or reduce vulnerability to the changing climate and to maximize benefits by utilizing existing opportunities. (Masud, M.M. et al, 2017).

REFERENCES.

Khanal, U.; Wilson, C.(2019). Derivation of a climate adaptation index and assessing determinants and barriers to adaptation among farming households in Nepal. Environ. Sci. Policy.

Altieri, M.A.; Nicholls, C.I. (2017). The adaptation and mitigation potential of traditional agriculture in a changing climate. Clim. Chang., 140, 33–45.

Masud, M.M.; Azam, M.N.; Mohiuddin, M.; Banna, H.; Akhtar, R.; Alam, A.S.A.F.; Begum, H.(2017) Adaptation barriers and strategies towards climate change: Challenges in the agricultural sector. J. Clean. Prod., 156, 698–706.

Fahad, S.; Wang, J. (2018). Farmers' risk perception, vulnerability, and adaptation to climate change in rural Pakistan. Land Use Policy.

Simonet, G.; Leseur (2019). A. Barriers and drivers to adaptation to climate change- a field study of ten French local authorities. Clim. Chang.

Moser, S.; Ekstrom, J.A. (2010). A framework to diagnose barriers to climate change adaptation. Proc. Natl. Acad. Sci. USA.

Adger, W. N., S. Dessai, M. Goulden, M. Hulme, I. Lorenzoni, D. Nelson, L. Naess, J. Wolf, and A. Wreford. 2009. Are there social limits to adaptation to climate change? *Climatic Change*.

Ekstrom, J. A. and Moser, S. C. (2014). Identifying and overcoming barriers in urban climate ad-aptation: Case study findings from the San Francisco Bay Area, California, USA. *Urban Climate*, 9. 54–74. DOI:10.1016/j.uclim.2014.06.002.

Weyrich, P. (2016). *Barriers to Climate Change Adaptation in Urban Areas in Germany*. 26. Cli-mate Service Center Germany.

Moser, S. C., & Ekstrom, J. A. (2010). A framework to diagnose barriers to climate change adaptation. Proceedings of the National Academy of Sciences, 107(51), 22026-22031.

Eisenack, K., Moser, S. C., Hoffmann, E., Klein, R. J. T., Oberlack, C., Pechan, A., Rotter, M. and Termeer, C. J. A. M. (2014). Explaining and overcoming barriers to climate change adaptation. *Nature Climate Change*, 4(10). 867–72. ss DOI:10.1038/nclimate2350.

McGuire, C. (2018) Examining legal and regulatory barriers to climate change adaptation in the coastal zone of the United States, Cogent Environmental Science, 4:1, 1491096

Klein, R. J. T., Midgley, G. F., Preston, B. L., Alam, M., Berkhout, F. G. H., Dow, K. and Shaw, M. R. (2014). Adaptation opportunities, constraints, and limits. In *Climate Change 2014: Impacts, Ad-aptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.* C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, et al. (eds.). Cambridge University Press, Cambridge U.K. and New York NY USA. 899–943.