

**BUSITEMA UNIVERSITY**

**Faculty of Natural Resources and Environmental Sciences**

**VULNERABILITY AND ADAPTATION TO CLIMATE CHANGE**

**A case of farmers in Namasagali Sub County, Kamuli district**

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A research report submitted to the Faculty of Natural Resources and Environmental Sciences in partial fulfillment of the requirements for the award of a bachelor of science Degree in Natural Resources and Environmental Economics of Busitema University

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**DECLARATION**

I, MUNYAGWA FRANK, do declare that the work for this study presented herein is original, except where it is acknowledged and has not been submitted for any other degree award to any other University.

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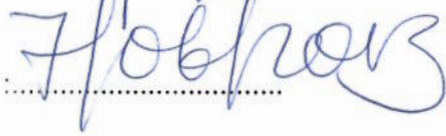
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## APPROVAL

This is to certify that this research was carried out under my supervision and approved as Student's original work.

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## DEDICATION

This book is dedicated to my beloved Mother, Miss Babirye Teopista, My Father, Mr Ssagala Francis, and my dear Brothers and Sisters whose encouragement and selfless sacrifice enabled me to obtain University Education.

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## LIST OF ACRONYMS

|        |  |
|--------|--|
| DFID   | Department for International issues of Development             |
| EACCCP | East African Community Climate Change policy                   |
| GDP    | Gross Domestic Product   |
| IPCC   | Inter-government Panel on Climate Change                       |
| NEMA   | National Environment Management Authority                      |
| NGOs   | Non Government Organisations                                   |
| NIDOS  | Network of International Development Organisations in Scotland |
| UBOS   | Uganda Bureau of Statistics                                    |
| UN     | United Nations   |
| UNAPA  | Uganda National Adaptation plan of Action                      |
| UNDP   | United Nations Development Program                             |
| UNFCCC | United Nations Framework Convention on Climate Change          |
| USA    | United States of America                                       |
| VEDCO  | Volunteer Efforts for Development Concerns                     |



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## ABSTRACT

Agriculture is one of the sectors most vulnerable to climate change impact. The impact is even stronger in Africa Uganda inclusive, where agriculture is truly important for the daily subsistence, and where adaptive capacity is low yet the sector entirely depends on climate conditions. It is therefore very important to increase the understanding of the actual climate change dynamics on agricultural activities and on the societies at the local levels. This study uses Namasagali Sub County, as a case study and seeks to understand the vulnerability and adaptation mechanisms applied by farmers to cope up with climate change. It also answers the questions; how do climate changes affect farmers, who are most vulnerable groups to the events, which are the farmers' adaptation strategies and what are the factors that constrain farmer's adaptation strategies to climate change. The study uses semi-structured interview guide to gather data from local farmers, and secondary data from published sources and internet, and systematically analyzes this material both using qualitative and quantitative analysis. The result shows that though all households in the Sub County are vulnerable to climatic crisis, the problem is more acute for the cultivator, children, men, large sized families and tenants. To cope with climate change impacts, farmers use off-farm employment, saving, on-farm diversification, changing growth season, livestock mobility, livestock sell, and social interconnectedness as their coping strategies. Government and NGOs such as VEDCO also provide support in form of seeds and other crop varieties to the farmers. The study shows that the existing local and institutional strategies are not sufficient and sustainable to cope with climatic stresses. Farmers' adaptability is constrained by unavailability and expensiveness of agricultural inputs, landlessness, unemployment, pests and diseases to crops and animals and water shortages in the Sub County. The study suggests a persistent need to address these challenges both from short and long-term policy perspective by the farmers, government and institutions.

## CHAPTER ONE: INTRODUCTION

### 1.1 Back ground to the study

Rising fossil fuel burning and land use changes have emitted, and are continuing to emit, increasing quantities of greenhouse gases into the Earth's atmosphere. These greenhouse gases include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrogen dioxide (N<sub>2</sub>O), and a rise in these gases has caused a rise in the amount of heat from the sun withheld in the Earth's atmosphere, heat that would normally be radiated back into space. This increase in heat has led to the greenhouse effect, resulting in climate change. The main characteristics of climate change are increases in average global temperature (global warming); changes in cloud cover and precipitation particularly over land; melting of ice caps and glaciers and reduced snow cover; and increases in ocean temperatures and ocean acidity – due to seawater absorbing heat and carbon dioxide from the atmosphere. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2007) dispelled many uncertainties about climate change. Warming of the climate system is now unequivocal. It is now clear that global warming is mostly due to man-made emissions of greenhouse gases (mostly CO<sub>2</sub>). Over the last century, atmospheric concentrations of carbon dioxide increased from a pre-industrial value of 278 parts per million to 379 parts per million in 2005, and the average global temperature rose by 0.74°C. According to scientists, this is the largest and fastest warming trend that they have been able to discern in the history of the Earth. An increasing rate of warming has particularly taken place over the last 25 years, and 11 of the 12 warmest years on record have occurred in the past 12 years. The IPCC Report gives detailed projections for the 21st century and these show that global warming will continue and accelerate. The best estimates indicate that the Earth could warm by 3°C by 2100. Even if countries reduce their greenhouse gas emissions, the Earth will continue to warm. Predictions by 2100 range from a minimum of 1.8°C to as much as 4°C rise in global average temperatures (UNFCCC, 2007). As a result of global warming, the type, frequency and intensity of extreme events, such as tropical cyclones (including hurricanes and typhoons), floods, droughts and heavy precipitation events, are expected to rise even with relatively small average temperature increases. Changes in some types of extreme events have already been observed, for example, increases in the frequency and intensity of heat waves and heavy precipitation events (Meehl et al. 2007).

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