THE EFFECT OF DISASTER ON FOOD SECURITY IN BUMBO SUBCOUNTY NAMISINDWA DISTRICT

DENIS WAMUKOTA

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DECLARATION

I WAMUKOTA DENIS, hereby declare that this research report is my own original work and it has never been used to any institution of learning or university for the academic award of a degree.

Signature  Date: 30th July, 2024.

APPROVAL

This research report on atopic, ”Disaster and food security in Bumbo Sub County ,Namisindwa District has been written under my supervision as the university supervisor and is now ready for submission for the award of bachelor’s degree in public administration and management with my approval.

Signature  **Date**: 30th July, 2024.

Name: MR. WATUWA ANTHONY

(UNIVERSITY SUPERVISOR)

DEDICATION

I dedicate this research report to my wife **Nelima Special** for her continued support towards my Academics.

ACKNOWLEDGEMENT

I thank the almighty God for the life that he has granted onto me from my primary up to now.

I would like to acknowledge my supervisor **MR WATUWA ANTHONY**for his guidance, patience and effort that has led to comfortibility in writing my report.

I also acknowledge my family members for their tireless support during my academic progress and entire life as well, I strongly say**, "may God bless them"**

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ABSTRACT

The study set out to determine effect of disaster on food security in Bumbo Sub-County, Namisindwa District .The study was guided by the three objectives which included determining the effect of Wetland on food security in Bumbo Sub-County, Namisindwa District, establishing the effect of high temperature on food security Bumbo Sub-County, Namisindwa District and establishing the effect of high population on food security in Bumbo Sub-County, Namisindwa District.

The study used a case study strategy which was Bumbo sub-county,Namisindwa district and it also used descriptive research dsign.to achieve the set objectives the study used random sampling and purposive sampling in sample selection .A sample of 63 respondents was selected from the population of 76 who comprised of sub county chief,LC IIIaccountant,production department, community based department, administration,health department and DSC. The information was obtained by the use of questionnaires and interview guide.

The study revealed information about the effect of wetlands on food security ,it was found that wetlands encourage growing of crops like yams ,rice and others, they also get fish from wetlands which act as source of food supplement ,they get water for irrigation during dry season to water their crops, wet lands act as water catchment area which has enabled us to grow vegetables.in addition about the effect of high temperature on food security it was revealed that high temperature have led to wide spread of hunger and starvation among people, high temperature have led to planting of drought resistant crops in order to cope up with the situation, high temperatures have led to drying of their crops hence famine ,high temperatures affect the health of crops and harvest is always little or nothing at all and high temperatures have affected water table making it hard for crops and other plants to accesswater. Besides about the effect of high population on food security it was realized that it hasresulted into soil infertility due to over cultivation,they are experiencing global warming which is as a result of distraction of ozonelayers, there are many plastic materials dumped everywhere which act as water lodging areas and water does not reach underneath the soil and crops are drying because of lack of mineral nutrients in the soil.

in conclusion ,disaster impacts a lot on food security in terms of high temperatures ,high population and wetlands which provide water for irrigation ,growing of drought resistant crops, distraction of

ozone layers, drying of crops, fish population is also affected and the harvest of rice is always poor.

The researcher recommends that Bumbo Sub county authorities should encourage people to practice irrigation during dry season, family planning, practice afforestation,and application of fertilizers to increase on crop yield.

CHAPTER ONE

1.0Introduction

This chapter presents the introduction to the topic under study, the general background to the study, the statement of the problem, objectives of the study, research questions and significance of the study as well as the conceptual framework.

1.1 **Background of the study**.

The world food summit of (2016)defined food security as existing "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". Commonly, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences.

Hollaender ,M,(2010),observed that in Nigeria ,the ministry of agriculture has estimated that 65% population is food insecure despite the fact that more than half of all employmentsdepend on agriculture ,reason being that 90% of the produces comes from small rain-fd farms of few hectares,constrained by poor infrastructure, drought /flooding ,pests and little access credit.

Many of the farmers are unable to meet their subsistence requirements,thus,exposing them and their families to volatile prices in the markets,poverty and hunger .according to Hoddinott,(2009),stated that farmers in Nigeria are not un aware of the disasterscenarios in their routine activities.in the north,where bulk of the food crops and livestock are produced,the farmers describe it as conditions of drought and desiccation which has led to shortened lengths of rainy season. Keil,and Zeller (2011),noted that it could not be possible to cultivate same crop types as in the last 30-50 years.for instance ,while 30-50 years ago,they knew only of millet,sorghum,white yam ,cotton and ground nuts ,newvarieties of both food and cash crops including tomato,rice,pepper,sweet potatoes and cassava have now been introduced. Often this 'hybridized 'seeds are alien and several indigenous seeds that are resistant to local pests,diseases and vagaries of the weather are threatened .this is further to increased costs of production due to the need for additional agrochemicals and other pesticides.

Food security exists when all people ,at all times ,have physical and economic access to sufficient,safe and nutritious food that meets their dietary needs and food preferences for inactive and healthy life"(world food summit,1996).food security is defined as 'a situation when all people ,at all times ,have physical ,social,and economic access to sufficient, safe and

nutritious food that meets their deityneeds and food preferences for an active and healthy life'(FAO2002).more specifically,the four dimensions of food security include;food availability;stability of food supplies; access to food utilization

Dev, and Sharma (2010),Uganda faces many development challenges, among them food insecurity and adult and child malnutrition. Uganda is among the last well-nourished countries in the world .in 2005,the united nation world food programme conducted a comprehensive food security and vulnerability analysis (CFSVA)in Uganda which showed that 6percent of households were food insecure and 21% were moderately food insecure and at risk of becoming food insecure if conditions deteriorated (mckinney,2009).According to Von Grebmer,Etal.(2011),Uganda has a global hungerindex (GHI)score of 16.7,placing it 42nd out of 81 countries ranked in 2011;its hunger situation considered serious. malnutrition accounts for 40% of all child deaths in Uganda (bridge,etal.,2006)and the prevalence of childhood anemia exceeds 70%(WFP,2011)Uganda's food security situation is complicated by the presence of more than 150,000 refugees from neighboring countries ,many of whom lack the means of procedure or access food.

Agriculture is the backbone of the Uganda's economy and the livelihood of many people. However,most of the agriculture in Uganda depends on rainfall and therefore inherently sensitive to climate conditions. This makes agriculture one of the most vulnerable sectors to the risks and impacts of disaster and variability. The IPCC(2007) projects that crop yields from rain-fed agriculture in some countries in Africa could be reduced to 50 percent by 2020 as a result of climate change. Natural resources constitute the primary source of livelihood for the majority of Ugandans and the economy of Uganda depend on exploiting its natural resources. management of these natural resources is therefore important and critical to Uganda's long term development (GOU,2007).Climate is a key determinant of the status of Uganda's natural resources,such as agriculture ,forestry ,water resources ,wild life etc.however,climate change ,which has started manifesting itself through intense and frequent extreme weather events such as droughts, floods, landslides, and heat waves, is posing a serious threat to the country's natural resources, and social and economicdevelopment (GOU, 2007).

Accordingto Goswami,and Chatterjee(2010),observed Uganda's climate is naturally variable and susceptible to flood and drought events which have had negative socio-economic impacts in the past .Human induced disaster is likely to increase average temperatures in Uganda up to

1.5cinthe next 20 years and by up to 4.3cby the 2080s.such rates of increase are unprecedented. Changes inrainfallpatterns and totalannual rainfall amounts are also expected but this are less certain than changes in rainfall may be unevenly distributed and occur as more extreme or more frequent periods of intense rainfall. Regardless of changes in rainfall,changes in temperature are likely to have significant implications for water resources,food security, natural resources management,human health, Settlements and infrastructure.

According to Anbhazhangan(2011),stated that in Uganda,as for the rest of the world,these are likely to be changes in the frequency or severity of extreme climate vents,such as heatwaves,droughts, floods and storms.in general terms, Uganda is regarded asself-sufficient in food production.In fact, achieving food self-sufficiency in food production has long been one of the major objectives of the agricultural sector.Yet agricultural and population statistics available indicates that per capita food production in 1997 was 44percent less than what it was in 1970.as an indicator of food availability, Uganda had more food available per person in 1970 than in 1997.thaat means the country's food crop production has not beenkeeping pace with increases in population.in 1970 when Uganda's population was about 9.78million,total food crop output was 14.1 million metric tons, while in 1997 with a population of about 2o.4million people,total food output was 16.5million metric tons.

According to Ahmad,Dastgir and Haseen(2011),in the 27-year period,population grew by about 109percent ,while total food production grew about 17 percent only .from these statistics, it is clear that Uganda's self –sufficiency in food production is threatened.in the 1970s when the country 's food security status was better,soils were more productive.Over the years,soil productivityhas declined, asevidenced by declining yield trends for various crops .given the low or non-use of mineral fertilizers to augment natural soil fertility,yields will continue to decline.If agricultural productivity is increased,Uganda has great potential to produce sufficient

Food not only to meet domestic demands,but also have surplus to exportto regional and international food markets.Statistics from the 1991 population census and land us indicate only 30 percent of cultivable land was under use. Harnessing this potential requires focusingonthe country'sproduction base. The rural agricultural sector,which is dominated by millions of subsistence farmers.

1.2. Statement of the problem

Government and NGOs are engaged in several efforts to ensure food security for example NAADs(2004)reports shows that farmers are supplied with maize,beans,cows and goats,

NUSAFU2(2006)also aim at ensuringfoodsecurity like supplying maize,beans,millet,and fruits likemangoes, oranges and passion fruits,operation wealth creation (2017),SAACCOs(2012)all done by the government to ensure food security in Bumbo sub countyas a whole. Besides NGOslike world food programme,Red Cross,and TASOall always offer or give food relief to people in the area to enable them overcome the challenge of food insecurity. Food insecurity is still evident or on the increase.

Related studies(Lal, and Sehgal, 2014, Nelson etal,2010,&Hertel etal 2010)on the effects of disasters on food security have been done. However, none of these studies were done in Uganda and in Bumbo SubCounty aswell.

It is therefore upon this background that the researcher was prompted to carry out research on "the effect of disaster on food security in Bumbo Sub-county,Namisindwa district"

1.3.1 General objective

The general objective of the study was to investigate the effect of disaster on food security in Bumbo Sub -County Namisindwa District.

1.3.2 Specific objective

I. To determine the effect of wetland on food security in Bumbo-Sub county,Namisindwa district

ii. To establish the effect of high temperature on food security in Bumbo sub- county Namisindwa district

iii. To establish the effect of high population on food security in Bumbo Sub-county Namisindwa district

1.4 Research questions

I .what is the effect of wetlands on food security in Bumbo sub -county Namisindwa district?

ii. What effect does high temperature have on food security in Bumbo sub -county Namisindwa district?

iii. What is the effect of high population on food security in Bumbo sub- county Namisindwa district?

1.5 Scope of the study

The scope of the study covered content scope, geographical scope andtime scope.

1.5.1 Content scope

The content scope of the study determined the effect of disaster as the independent variable and food security as the dependent variable in Bumbo sub- county Namisindwa district.

1.5.2 Geographical scope

The study was carried out in Namisindwa district local government which is located in the Eastern region of Uganda bordering the republic of Kenya. It was part of,Mbale,Manafwa and now Namisindwa district .In the year 2017,Namisindwa district became an independent local government covering 2161889km2.

1.5.3 Time scope

The time scope covered information about the topic under study for a period of

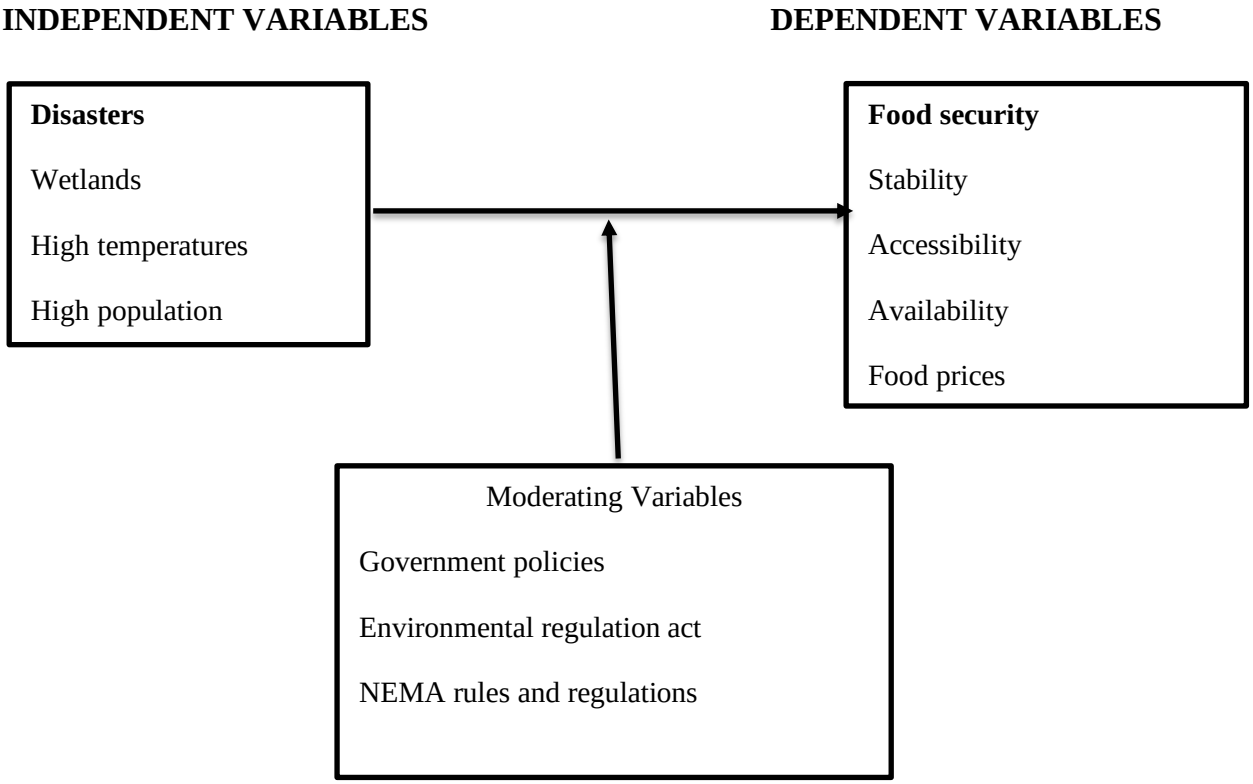
1.6 Significance of the study

I. The study may help to mitigate on the effect of climate on food security in Bumbo sub county Namisindwa District.
II. The study may also help in the upcoming sub counties, towns to know how to maintain the environment and avoid the challenge of food security.
III. The study may also help student to graduate after fulfilling the recruitment for an award of degree in Public Administration and management at UCU.
IV. The study may also help the staff at Namisindwa District know the method, means and strategies to employ in overcoming Disaster on Food security.

1.7 Conceptual frame work

This is the breakdown of the independent and dependent variable as well as the moderating Variable.

Figure 1 Conceptual Frame Work



Source: researcher's conceptualization 2024.

CHAPTER TWO
LITERATURE REVIEW

2.0 INTRODUCTION

This chapter presents related literature about the topic under study about disaster and food security.

2.1 Wetlands and food security

wood(2009)carried research on the "**impact of wetlands on food security in India"**noted that the needs of agriculture for flat ,fertile land with a ready supply of water means that wetlands are often a potentially valuable agricultural resource.in arid and semiarid regions with seasonal rainfall patterns the capacity of wetlands to retain moisture for long periods,some times throughout the year and even during droughts ,means that they are of particularimportance for small scale agriculture,both cultivation and grazing .in recent decades, agricultural use of wetlands has increased significance in many developing countries ,particularly in Africa, where they are perceived by some as the '**new frontier** ' for agriculture.

Asha,Gopinath,and Bhat(2012), in their study of the "effects of disaster on rain fed agriculture,ground water recharge is an important wetland function in some places.For example, the Hadejia-Nguru wetlands in northern Nigeria play a major role in recharging aquifers which provide domesticwater supplies to approximately one million people as well as supplying water for agriculture. Furthermore, according to Kadlec,(2016) wetlands can be very effective at improving water quality .this is achieved through processes of sedimentation,filtration,physical and chemical immobilization, microbial interactions and uptake by vegetation.

Straford Etal.(2014),studied on the "effects of wetland on food security in Ethiopia"they found out that wetlands can be very important in the treatment of polluted water,particularly that originating from dispersed sources ,as is common in agricultural landscapes.However, their capacities are variable because of dynamic production /growth and metabolic processes within them. furthermore, if chemicals loading exceeds the physiological tolerances(often un known)of key microbial and plant species,environmental degradation is likely to occur and pollution removal is disminished.In addition, Ahmad,Datgir,and Haseen(2011),they carried

Out research on the 'effect of disaster on agriculture and food security in India 'they found out that crop production can be rain fed or irrigated. Irrigation can be delivered through surface water application via spraying or flooding of fields or through mist, microjet andmicro drip irrigation

systems.in many arid parts of the world, farmers use traditional practices as well as modern technology to carefully manage soil moisture content in their fields to ensure adequate water for their crops

kaul,s .,and G.Ram(2009)effect of global warming on production of Jowar in India,(special issue:sustainable agriculture on the context of climate change)they stated that rice paddies at the Kabukurinuma wetland in japan are farmed organically and also managed so as to attract wintering water birds .in winter and post-harvest ,the rice fields are left flooded for wild birds to winter in the site ;later thenutrient-rich soil from droppings is used as natural fertilizer for the wild rice ,in addition to controlling weeds and pests.in relation according to bolt(2005),argued that the marshes of the contentin and basin in France are flooded in winter and provide a huge area for fish and water birds .when they dry in spring, local farmers release the cattle on the rich pasture land .the surrounding higher meadows are used for hay making.

This sustainable way of dairy farming evolved in medieval times and still suits modern agricultural needs.

Asian development bank(ADB) (2012), 'food security and poverty in Asia and the pacific: key challenge and policy issues 'pointed out that the oasis De Ouled said in Asia is a rare human-made wetland created on the vestiges of 'a fossil 'wadi where a traditional 'Fouggra 'System has been constructed for the capture and distribution of ground water .the water ,distributed in little open air channels within the tradition of an ancestral social organization, is shared out equitably to individual gardens for the cultivation of palms ,cereals and fruits. The site is also important for migratory birds and includes important archeological remains of "ksars" (fortresses)from the 14^{th}century.

Bamford,(2009), said that the cuatrocienegas wildlife protection area in the Chihuahua desert in Mexico is a complex of streams,marshes,and lakes where a local conservation network has joined forces with the users of water from the wetland for agriculture. Through this cooperation new crops have been introduced such as the nopal,a vegetable that has replaced traditional crops with higher water requirements. This has generated higher income for farmersand reduced the water needs from the wetland .also according to Barnes,(2005), said that in the Laguna De La Concha in Colombia,farming families have given up unsustainable practices such as charcoal production in

favor of more sustainable activities .the use of agrochemicals has declined and new production techniques involving composting, corporation and earthworm breeding have reduced soil degradation.

The literature reviewed above (wood,2009;Asha,Gopinath ,and Bhat,2012;kadlec,2016;strafoerd etal,2014;ahamed ,Dastgir,and Hasen,2011,Kaul,and Ram,2009,bolt 2005,Asian development bank,2012,Bamford 2009,and Barmes 2005).it study revealed that the related studies on the effort of wetlands on food security was done in other countries but no empirical research has been carried out on the same Bumbo sub county ,Namisindwa district hence prompting the researcher to carry out research on the effect of wetlands and food security in Namisindwa town council

2.2. High temperature and food security.

Dev,s.m,and A.N Shama(2010), 'food security in Australia ;performance ,challenges and policies' they found out that food insecurity is closely tied to poverty ;globally about 25 to 30 percent of poor people, measured using a $1to $2perday standard ,live in urban areas.most poor countries have a larger fraction of people living in rural areas and poverty rates tend to be higher in rural settings (by slight margins in south Asia and Africa ,and by large margins in china).in latin America ,poverty is more skewed to urban areas ,with roughly two thirds of the poor in urban areas ,a proportion thus has been growing in the past decade (medium evidence ,medium agreement).rural areas will continue to have the majority of poor people for at least the next few decades ,even as population growth is higher in urban areas.

Hundal ,S.S.,andPrabhyot Kaur (2007), 'climatic variability and its effect on cereal productivity in Indian Punjab 'model results confirm the importance of known key physiological processes ,such as the shortening of the time to maturity of a crop with increasing mean temperature ,decline in grains set when high temperatures occur during flowering ,and increased water stress at high temperatures throughout the growing cycle .temperature responses are generally well understood for temperatures up to the optimum temperature for cropdevelopment.

The impacts of prolonged periods of temperature beyond the optimum for development are not as well understood .for exampletemperatures about 34c after flowering appear torapidly sped senescence inwheat, but many crops model to represent this process.

Lal,and Sehgal (2008) ‘effect of increasing temperature on yield of some winter crops in north west India ‘noted that crop model can be used to quantify a biotic stresses such as these although only by hypothesizing that the functional responses to weather derived from experiments are valid at regional scales .Thus,whilst many fundamental bio-physical processes are understood at the plant or field scale ,it remains difficult to quantify the extent to which this mechanism are responsible for the observed regional scale statical analyses and process based model show clear negative impacts of temperature above 30-34c on crop yields (depending on the crop and region).

Kar,and M.kar (2008),carried out research on the ‘environmentand changing agricultural practices,’ depending on differences in baseline climate, management and soil ,and the duration and timing of crop exposure to various conditions .for example ,rice yields in china have been found to be positively correlated with temperature in some regions and negativelycorbeled in others. The tradeoffs that occur in determining yield are therefore region specific .this difference may be due to positive correlation between temperature and solar radiation in the former case ,and negative correlation between temperature and water stress in latter case.similarly ,although studies find a positive effect of day time temperatures exceeding 33c some statistical studies find a positive effect of day time warming on yields because these extremes are not reached frequently enough to effect yields.

Saxen and N.Chauhan(2011), ‘effect of disaster on crop productivity ‘they found out that the response of crop yields to disaster in the dry lands of east Africa is insensitive to increases in rainfall, since wetter climates are associated with warm temperatures that act to reduce yields .

since precipitation exhibits more spatial variability than temperature ,temporal variations in the spatial average of precipitation tend to diminish as the spatial domain widens.as a resultprecipitation becomes less important to a predictor of crop yields at broad scales(lobelland field ,2007;li etal.,2010)similarly projected changes in precipitation from climate models tend to more spatially variable than temperature, leading to the greater importance of projected as the spatial scale of analysis grows wider (Lobell and Burke,2008).

Hawkins et al, (2012) stated that there is also evidence that where irrigation increases overtime the effect of temperature on yields starts to dominate over that of precipitation. The effect of drought on crop yield is more is a more topic research than the effect of floods. Maize and tropical rice are

less affected at this temperature, but significantly affected with warming of 3-50c.these data confirm AR4 had findings that even slight warming will decrease yields in a low altitude regions(medium evidence, high agreement) however, whilst AR4 had few indications of yield reductions at less than 20c of local warming, the new analysis has, in the absence of incremental adaption, more yield decreases than increase at all temperature. Hence, whilst AR4 concluded with medium confidence that in mid to high altitude regions moderate warming will raise crop yields, new knowledgesuggest that temperature wheat yields decreases are about as likely as not for moderate warming.

A recent global crop model inter comparison for rice, wheat and maize shows similar results to those presented here, although with less impacts on temperate rice yields (Rosenzweig et al 2013). That study also showed that crop models without explicit nitrogen stress fail to capture the expected response. Quantitativeassessment of yield changes can be found in section 7.4.

Across the globe, regional variability which has not been summarized in meta-analysis except in contributing to the spread of data will be important in determining how disaster affects particular agriculture systems.

East burn et al, (2011), As a world-wide average, yield loss in major crop spicies due to animal pests and (non-virus) pathogens.in the absence of any physical, biological or chemical crop protection has been estimated at 18% and 16% respectively. Disaster will alter potential losses to many pests and diseases. Changes in temperature cab result in geographical shifts through changes in seasonal extremes and thus for example overwinding and summer survival.co2 and ozone can either increase or decrease plant disease and can exhibit important interactions.

Change in climate are expected to affect the geographic range of specific species of insects and disease for a given crop growing region. For example Cannon (1998) has suggested that migratory insects could colonize crops over a large range in response to temperature increase with subsequent reductions in yield. Disaster may also be factor in extending the northward migration of agronomic and invasive weeds in North America(Ziska et al, 20211).

Weed species also possess characteristics that are associated with a long-distance seed dispersal, and it has been suggested (Hellman et al. 2008) that they may migrate rapidly with increasing

surface temperature. Predator and insect herbivore's respond differently to increasing temperature leading to possible reductions in insect and diseaseoccurrence can go down as well as up.

Overall,over ability to predict co2/disaster impacts on pathogen biology and subsequent changes on yield is limited because, with few exceptions (Savary et al., 2011).

Elevatedcarbon dioxide can reduce yield losses due to weeds for carbon three crops (soybean, wheat and rice), since many agricultural weeds are carbon four spices and carbon three pathway,in general, shows a stronger response to rising carbon dioxidelevels. However, both carbon three and carbon four weed species occur in agriculture and there is a wide range of response among these species to recent and projected carbon dioxide levels (Ziska 2010). For example, in the United States, every crop on average, competes with an assemblage of 8-10 weed species(bridges, 1992). Carbondioxide and climate can also affect weed demographic. For example, with field grown soybean, elevated carbon dioxide per as appeared to be a factor in increasing the relative proportion of carbon dioxide three to carbon dioxide four weedy species with subsequent reductions in soybean yields(Ziska and Goins,2006).

Ziska,(2010).for rice and barnyard grass carbondioxide four, increasing carbondioxide favored rice, but if both temperature and carbondioxide increased simultaneously, the carbondioxide four weed was favored, primarily because higher temperatures resulted in increased seed yield loss for rice. For weeds that share physiological, morphological or phonological traits with the crop, including those weeds that are wild relatives of domesticated crop species,(often amongst the worst weeds may be greater under elevated carbondioxide.

The literature reviewed above(Dev, and sharma,2010;hundal and prabhjyot-kaur,2007:Lal,and Sehgal,2008; Kar, and Kar, 2008;saxena, and Chauhan, 2011;Hawkins et al, 2012;eastburn et al 2011;ziska et all 2011; Hellman et all,2008lsavary et al ,2011;ziska and coins 2006; and Ziska, 2010).revealed that related studies on the effect 0f high temperature on food security was carried out in other countries but not in Namisindwa district.it is upon this background that the researcher was prompted tocarry out research on the same topic in Namisindwa district.

2.3 High population and food security

Macfadyen,(2007), carried out research on the "effect of high population on environment'', they pointed out that virgin plastic polymers are rarely used by themselves and typically the polymer

resins are mixed with various additives to improve performance. These additives include inorganic filters such as carbon and silica that reinforce the material, plasticizers to render the material pliable, thermal and ultraviolet stabilizers, flame retardants and colorings. Many such additives are used in substantial quantities and in a wide range of products. Some additive chemicals are potentially toxic (such as phthalates and bisphenol A, BPA) having adverse effects in animal or human population.

Thompson, (2008), said that substantial quantities of plastic have accumulated in the natural environment and in landfills. Around 10 per cent by weight of the municipal waste stream is plastic and this will be considered later in. discarded plastic also contaminates a wide range of natural terrestrial, freshwater and marine habitats,with newspaper accounts of plastic debris on even some of the highest mountains. There are some data on littering in the urban environment (forexample compiled by EnCams in the UK) However,by comparison with the marine environment, there is a distinct lack of ta on the accumulation of plastic debris in natural terrestrial and freshwater habitats. There are accounts of inadvertent contamination of soils with small plastic fragments as a consequence of spreading sewage sludge 8(Richard 2005).

Hauser, (2009), realized that anthropogenic global change and plant constraints many of these3 constraints are undergoing large, rapid changes because of human actions. Recent human activities have more than doubled the preindustrial rate of supply of N to terrestrial ecosystems (7).Nitrogen had a preindustrial terrestrial cycle that involved the annual fixation of about 90 to 140Tg (Telagrams) of Nyyr(1,7), with additional 10Tg of Nyyr provided by atmospheric N fixation via lighting. Industrial N fixation for fertilizers currently totals about 88Tgyyr.about 20Tgyyr of N is fixed during the combustion of fossil fuels, and about 40Tgyy of N is fixed by legume crops.in addition, land clearing, biomas burning and other human activities mobilize and release about an additional 70Tg of Nyyr. The projected expansion of global population to about 9 billion people by year 2050 and shifts todiets higher in animal protein suggest that , by 2050, global food production will be double its current rate (19). If so, anthropogenic terrestrial N inputs in 2050 would be about three to four times the preindustrial rate(16,19).much of this N would enter rivers and be carried to near-shore marine ecosystem.

Cagatay,(1998),carried out research on the “effect of gender and poverty’, united nations development programme, social development and poverty elimination,pointed out that physical

disturbances also limit terrestrial plant communities and sessile(benthic) freshwater and marine plant communities. For many terrestrial ecosystems, fire frequency has been a major constraint, as have been such physical disturbances as wind storms, landslides, mudslides,avalances, /clearing caused by gopher or other animals9,disturbances caused by hooves and wallows.

Olehlmann et al.(2009),they carried out their research on the "effect of plastics on environment" more work will be needed to establish the full environmental relevance of plastic in the transport of contaminants to organisms living in the natural environment, and the extent to which these chemicals could then be transported along food chains. However, there is already clear evidence that chemicals associated with plastic are potentially harmful to wildlife. 9Data that have principally been collected using laboratory exposures are summarized. Defra (2008), noted that resource limitation. Plants require NPK, K, Ca,Mg,S, trace metal,carbondioxide, water light and other resources. Depending on the habitat and species, any one or several of these may be limiting. The most commonly limiting resources terrestrial habitats are NP and water(24,41-44). Nlimitation is common because the parent materials in which soils form contains almost no N rather, the chemically stable form of nitrogen is atmospheric N2, which is usable only by N-fixing plants via microbial symbionts. In addition according to Defra (2007), carried out research on the "effect of population on non-nitrogen fixing plants". They observed that non-nitrogen fixing plants obtain N as nitrate, ammonium or organic N. Some soils are either initially low in other mineral elements, especially phosphorous and calcium or become low in these after millennia of leaching. The park grass plots of Rothamsted, England have joint limitation by NPK and early rain fall(43,44). The greatest changes in plant community biomass, composition and diversity came from N addition in the grasslands of both Rothamsted and cedar creek, Minnesota(45-47).water is a limiting factor in many terrestrial habitats, as can be the atmospheric concentration of carbondioxide. Light may also be limiting, especially on productive so8ils in areas with low disturbance and low grazing rates.

The above literature carried out by; (macfadyen, 2007; Thompson, 2008; Richards, 2005; Hauser, 2009; Cagatay, 2008; Olehlmann et al, 2009; and Defra 2008). Suggest that related studies on the "effect of high population on food security have been done in other countries but not in Bumbo subcounty, Namisindwa district".

CHAPTER THREE
METHODOLOGY

3.0. INTRODUCTION

Thischapter covers the background against which data was collected. It discussed the research design, study population, sampling and study variables, source of data collection method and instruments data processing; analysis and presentation and limitations of the study.

3.1. Research design

The researcher used a cross sectional survey design basing on the use of qualitative and quantitative approaches which were adopted to establish the effect of disaster on food security in Bumbo sub-county, Namisindwa district. This design was used for profiling; defining, segmentation, estimating, predicting and examining associative relationships across sectional studies easily provides a quick snap shot of what is going on with the variables for the research problem.

3.2 .study population

The study involved a population of 76 which consisted of 1 subcounty chief, 1 lc111, 30 farmers, 8 community based officials, 3 works and technical services staff, 3 education, 3 natural resource, finance offricials,8 administration staff,10 health officers and 1 district service commissioner.

3.3 .sampling procedure

3.3.1. Sample size

Krejuce and Margon table (1970), the study involved a sample of 63 respondents who comprised of 1 subcounty chief, 1 lc111, 1 accountant, 25 farmers, 07 community based department, 02 works and technical services, 02 education, 02 natural resource, 06 finance department, 07 administration, 08 health and 1 DSc member.

Table 3.1: showing the sample size

Respondents	**Target population**	**Sample size**	**Sampling method**
Sub-county chief	1	1	Purposive sampling
LCIII	1	1	Purposive sampling
Accountant	1	1	Purposive sampling
Farmers	30	25	Simple random sampling
Community based officials	8	07	Simple random sampling
Works and technical services	03	02	Purposive sampling
Education staff	03	02	Purposive sampling
Natural resource staff	03	02	Purposive sampling
Finance officials	07	06	Simple random sampling
Administration staff	08	07	Simple random sampling
Health officials	10	08	Simple random sampling
District service commission member	1	1	Purposive sampling
TOTAL	**76**	**63**	

Krejuceand Margon table (1970)

3.3.2 Sampling technique

3.3.2.1 Purposive sampling

Jackson, (2002) noted that the study used purposive sampling technique targeting the various key informants with experience of the subcounty chief, LCIII, accountant, works and technical services staff, education staff, natural resources staff and district service commission member, this was because it offered the respondents time to the questions at their own time and approaching their offices at convenient periods only.

3.3.2.2. Simple random sampling

The technique ensured that all respondents had equal chances of being selected and it minimized on biasness in sample selection. It was used in selecting a sample of production department, community based department, finance department, administration and health department.(Namisindwa district local government chart 2010)

3.4. Study variables

The independent variables was climate change. The dependent variable was food security.

3.5. Source of data

Two sources of data were used for purpose of research. These were primary and secondary data.

3.5.1. Secondary data collection

Ruston (2001) defines secondary data as that kind of data that is available, already reported by some other scholars. Secondary data included policy documents and obstructs of the various scholars related to the topic of discussion in question. Secondary data for this study was got from source of food records, published research reports and this was because it was readily available and easier to comprehend as it is comprised of extensively researched work.

3.5.2 Primary data collection

According to Roston(2001**)** primary data is that kind of data that has never been reported anywhere short coming of secondary data sources such as out datedness and inadequacy in terms of coverage necessitated that use of primary source for first data. Self-administered questionnaire were used and this enabled the researcher to cover a larger population quickly and at a reasonable cost.

3.6 Research methodology

3.6.1.Questionnaires

Jackson, (2002),stated that a questionnaire is a reformulated written set of questions to which respondents record their answers. The questionnaire was used on the basis that the variables under study couldnot be observed for instance the views, the opinions perception and feelings of the respondents.it was used while selecting sub-county chief, LCIII, accountant and other respondents, this was because it covered a wide information within the shortest time and on large population without necessary requiring the presence of the researcher, besides the respondents can read and write. However, it was only applied to respondents who could read and write leaving out those that cannot read and write yet they were resourceful in research under topic of the study.in addition, it was costly because it involved printing research questions and travelling to different places.

3.6.2.Interviews

An interview is a dialogue between interviewer and the interviee.it was an organized conversation that aimed at gathering data about a particular topic. The researcher used this method while obtaining data from the respondents about the effect of disaster on food security in this case. This

interview was applied during the selection of respondents from different departments like production ,community , finance department among others, this was because the tool provided first hand and vital information which other tool could not provide like clarity, feelings and expression, its provided immediate answers to the questions and corrections of errors or mistakes was possible. On the other hand the tool was costly, time consuming, some behaviors or characteristics of the respondents may go un-noticed, and some vital information may not be given for security reasons,(Gronhaun, and 2005).

3.7 Research instrument

The instrument was used to obtain information about the disaster and food security in Bumbo sub-county, Namisindwa district.

3.7.1.Interview guide

The interview guide was used to obtain information from the respondents like feelings,opinions,response, historical data and related information about the topic under study and the research objectives.

3.7.2.Questionnaire

The questions were closed ended to allow respondents input their own opinions without any influence from the researcher which led to fruitful report .the respondents responded to questions strongly like I strongly agree,totally agree,strongly disagree etc. this was done at their will without any influence.

3.8. Data analysis

After data collection, the researcher proceeded to analysis the data using SPSS and thereafter went on by coding,editing,checking and analyzing. The data was given the second eye to ensure accuracy, reliability, consistency and completeness. The researcher ensured that there is validity and reliability of the mentioned research instruments through field pre-test and guidelines by the lecturers. The researcher used both qualitative and quantitative data analysis techniques.

3.8.1. Quantitative data analysis

The collected data was entered into a computer program (using particularly the statistical package for social scientist) for easy analysis and interpretation of results obtained. The data was then analyzed using both statistical and narrative methods.

3.9. Validity and reliability

3.9.1. Validity

Sekaran (2003) defines validity as the accuracy and meaningfulness of interferences which are based on research results. To ensure validity, the questionnaires were developed and given to research supervisor to score the relevance of each question in providing answers to the study.

The questions were pre-tested of potential population of the study and colleagues to establish face validity, content validity and measurement validity.

Face validity this was used while carrying out interviews with the respondents to test its applicability.

Content validity, this aimed at testing the quality of the content to collect during the field study to check on its accuracy and reliability.

3.9.2 Reliability

Reliability is an instrument which was used to describe the overall consistency of a measure. A measure is said to have high reliability if it produces similar results under consistence conditions (Neil, 2009). The issue of reliability ensured through the appropriate random sampling and a purposive sampling technique as another indication of reliability in this study. Also the study included supervisors' comments and advice on the effect of disaster on foo security.

3.10. Research procedure

Upon obtaining an introduction letter from the head of department social science Uganda Christian UniversityMbaleUniversity College to Namisindwa district local government, the researcher contacted the different respondents to understand their time tables and thereafter will make an arrangement of meeting them to deliver the questionnaires at their places ofconvenience. The researcher personally delivers them to the respondents to ensure maximum monitoring and response.

3.11. Ethical consideration

The researcher respected the dignity of the respondents and treated the information given by them with the uttermost confidentiality and for theresearch purpose only. The researcher was keen not to ask provocative questions to the respondents especially questions concerning private life and even those which degrade somebody's dignity.

Permission was sought from the respondents before approaching their home and working premises and at their convenient times only. Issues of bribes, undue influence and cohesion was to be strongly avoided by the researcher.False and misleading information was critically subjected to validity test to check on the errors rate in the research.

CHAPTER FOUR
PRESENTATIONS, ANALYSIS AND INTERPRETATION OF FINDINGS

4.0. Introduction

This chapter presents the findings of the study, data presentation and analysis of the different responses to some key questions was done in this chapter following the 5 point LikertScale of strongly agree(SA), Agree(A), Uncertain(U) ,Disagree(D), Strongly and Disagree(SD)

4.1. Demographic data

This section shows the gender of therespondent, material status, age brackets and education attained as explained below;

Table 4.1.sex of respondents

Response	Frequency	Percent
Male	33	52
Female	30	48
TOTAL	63	100

Source:Primary data,(2023)

Majority were male being repre4sented by 52 %(33), followed by 48 %(30) being female. This was an indication that most of the respondents were male as opposite to their counterparts the female a difference of 4% response.This was because they mainly engage in family activities, like cultivation, animal rearing and other affairs two meet their daily living and family basic necessities of life.

4.1.2 Age of respondents

These section of respondents were asked to state their age since their birthday to date as explained below;

Table 4.2: Age of respondents

Response	Frequency	Percent
Under 25 years	7	11
25-30 years	31	49
31-35 years	14	22
36-40 years	4	7
Above 40 years	7	11
TOTAL	**63**	**100.0**

Source: Primary data, (2023)

From the field findings in table 4.2, 49% of the respondent's bas the majority were between the ages of 25-30years, 22% 0f the respondents being between 31-35years, 11% of the respondents were under 25 and above 40 years, 36-40 years had 7% response at the last. This implies that most of the respondents were within the age group of 25-30 years this because they were the majority during the time of carrying out research and were engaged to participate.

4.1.3. Marital status of the respondents

The section covered the marital status of the respondents as explained below

Table 4.3: Maritalstatus of respondents

Response	Frequency	Percent
Single	19	30
Married	33	52
Divorced	6	10
Separated	5	8
TOTAL	**63**	**100**

Source: Primary data 2017

Findings in table 4.3, 33(52%) of the respondents were married, 19(30%) of the respondents were single, 6(10%) of the respondents had divorced and 5(8%) of the respondents separated. This implied that majority of the respondents were married who struggle hard to look after their children and owns basic needs**.**

4.1.4. Academic qualification of the respondents

Table 4.4: Shows the academic qualifications of the respondents

Response	**Frequency**	**Percent**
Certificate	14	22
Diploma	34	54
Degree	15	24
Masters	0	0
Total	**63**	**100**

Source: Primary data 2017

According to table 4.4, 34(54%) of the respondents were diploma holders, 15(24%) of respondents were degree holders, 14(22%) of the respondents were certificate holders, and masters had 0% response. This implied that most of the respondents had appropriate qualifications for adequate conceptualization of the concepts under study.hoevever, they should go for further studies as this may equip them with more knowledge and skills for better service delivery.

4.2. The effect of wetland on food security

This was the first object under study and the responses obtained are analyzed below

Table 4.6: Showing effect of wetland on food security

Statement	**SA**		**A**		**U**		**D**		**SD**	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
We get water for irrigation during dry season to water our crops	30	50	23	38.3	0	0	0	0	2	3
We get fish from wetlands which act as sauce and food supplement	17	28	31	52	6	10	0	0	6	10

Wetlands have attractedrainfall areas for rain water which has enabled to grow our crops throughout the period	6	13	14	23	8	13	10	17	20	33
Wetlands encourage growing of crops like yams, rice and others which are useful during dry season	24	40	12	20	7	12	12	20	5	8
Wetlands act as water catchment area that enables us to grow vegetables, sugarcane and the like	9	15	16	27	17	28	4	7	14	23

Source: primary data, (2023)

From the above table 4.6, revealed that 88.3%(50+38.3) of the respondent strongly agreed that they get water for irrigation during dry season to water their crop, 8% of the respondent were undecided with the statement, and 5% strongly disagreed with the statement. This implied that majority of the respondent get water from the wetland to irrigate their crops during dry season which ensures constant supply of food in the area.

In addition, 80%(28+52) of the respondents agreed that they get fish from wetlands which act as source and food supliment,10% of the respondents were un decided as well as strongly disagreed with the statement.

Further, 50 %(17+33) of the respondents disagreed that wetlands does not attract rainfall in areas, 36 %(13+23) 0f the respondents agreed with the statement and 13% of the respondents were undecided with the statement.

About wetlands, encourage growing of crops like yams, rice and others which are useful during dry season, 60 %(40+20) agreed,28 %(20+8) disagreed and 12% wereundecided. Besides about wetlands act as water catchment area which enables the growing of vegetables, sugar cane and like, 45% strongly agreed.30% strongly disagreed and 28% were undecided with the statement. According to wood(2009) noted that needs of agriculture for flat , fertile land with a ready supply of water mean that wetlands are often potentially valuable agriculture resource.

In arid and semiarid regions with seasonal rainfall patterns the capacity of wetlands to retain moisture for long periods, sometimes throughout the year and even during droughts, means that they are of particular importance for small scale agriculture in both cultivation and grazing. In the recent decades, agricultural use of wetlands has increased significantly in many developing countries, particularly in Africa, where they are perched by some as the “new frontier” for agriculture.

In summary, it was found out that from the above table 4.6, revealed that 88.3%(50+38.3) of the respondents strongly agreed that they get water for irrigation during try season to water their crops, 8% 0f the respondents were undecided with the statement and 3% strongly disagreed with the statement. This implied that majority of the respondents get water from wetland to irrigate their crops during dry season which ensures constantsupply of food in the area.

In addition, 80 %(28+52) of the respondents agreed that they get fish from wetlands which acts as sauce and food supplement.Furthermore, 50 %(17+33) of the respondents disagreed that wetlands do not attract rainfall in their areas. About wetlands encourage growing of crops like yams, rice and others which are usefulduring dry season.60% (40+20) of the respondents agreed .besides about wetlands act as water catchment area which enables the growing of vegetables, sugar-cane and like, 45% 0f the respondents strongly agreed.

4.3. The effect of high temperature on food security

The section was the second objective under the study and the response obtained is explained below;

Table 4.7: showing the effect of high temperature on food security

Statement	**SA**		**A**		**U**		**D**		**SD**	
	f	**%**	**f**	**%**	**F**	**%**	**f**	**%**	**f**	**%**
High temperatures have led to drying of our crops hence famine	18	30	26	43	3	5	9	15	4	7
High temperatures have affected water table making it hard for our crops and other plants to access water	18	30	32	53	4	7	4	7	2	3
High temperature has made us to plant drought resistant crops in order to cope up with the situation	28	47	25	42	3	5	2	3	2	3
High temperatures affects the health of our crops and harvest is always small or nothing at all sometimes	32	53	0	0	0	0	18	30	10	17
High temperatures have led to wide spread of hunger and starvation among our people high temperatures have led to	21	35	10	15	7	12	19	32	2	3
High temperatures have led to drying of our crops that has resulted in famine	15	25	15	25	5	8	22	37	3	5

Source: Primary data, (2023)

The findings in the table 4.7 above revealed that 73%(30+43) of respondents agreed with the statement,22%(15+7) disagreed while 5% of them were undecided with the statement as either high temperature leads to drying of crops hence famine or not.

Furthermore, about high temperatures affect water table making it hard for crops and other plants to access water, it was found out that 83%(30+53) of the respondents strongly agreed, 10%(3+7) disagreed and 7% were undecided with the statement.

In addition, 89%(47+42) of respondentsstrongly agreed while 6% (3+3) disagreed and 5% went undecided with the statement that high temperature had made them to plant drought resistant crops in order to cope up with the situation or not. This therefore implied that high temperatures made majority of the respondents to plant drought resistant crops to cope up with the situation.

About high temperatures affects the health of crops and harvest is always small or nothing at all, 53% strongly agreed while 47 strongly disagreed and 0% were undecided. This indicated that high temperatures affect the health of crops and harvest always is small or nothing at all.

Further still, high temperatures lead to wide spread of hunger and starvation among the people, 50%(35+15) strongly agreed while 35% strongly disagreed and 12% were undecided with the statement that high temperatures lead to widespread hunger and starvation among the people.

Finally 50%(25+25)agreed,42%(37+5) disagreed strongly and 8% of the respondents were undecided. This implied that high temperatures lead to drying of crops and hence famine or hunger. According to Sharma (2010) stated that the overall relationship between whether and yields is often crop and the region specifically depending on differences in baseline climate, management and soil, and the duration or timing of crop exposure to various coditions.For example, rice yields in china have been found correlated with temperature in some regions and negatively correlated in others. The trade-offs that occur in deterring yield are therefore region specific. This difference may be due to positive correlation between temperature and solar radiations in the former case and negative correlation between temperature and water trees in the latter case.

Similarly, although studies consistently show spikelet sterility in rice for day time temperatures exceeding 33oC, some statistical studies find a positive effect of day time warming of yields because these extremes are not reached frequency enough to affect yields.

The findings revealed that 73%(30+43) of the respondents agreed with the statement that high temperatures led to drying of crops and hence famine. Furthermore, about high temperature affects water table making it hard for crops and other plants to access water. It was found out that 83%(30+53) 0f the respondents agreed strongly.in addition, 89%(47+42) agreed theyplant drought resistant crops in order to cope up with the situation. About high temperatures still affect the health of crops and harvest is always small or nothing at all.53% of the respondents strongly agreed. Besides about high temperatures leading to wide spread hunger and starvation among people,

50%(35+15) of the respondents strongly agreed. And finally, 50%(25+25) agreed that high temperatures lead to drying of crops hence hunger and famine.

4.4. The effect of high population on food security

This was the third objective of the understudy and it was achieved through research questions.

Table 4.8:Showing the effect of high population on food security

Statement	**SA**		**A**		**U**		**D**		**SD**	
	F	**%**	**f**	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Has resulted into soil infertility due to over cultivation	18	30	26	43	3	5	9	15	4	7
Our crops are drying up because of lack of mineral nutrients in the soil	18	30	32	53	4	7	4	7	2	3
There are very many plastic materials dumped everywhere that act as water lodging area and water does not reach the under earth of the soil	28	47	25	42	3	5	2	3	2	3
Deforestation is alarming and large number of tree species have been varnished	32	53	0	0	0	0	18	30	18	30
We are experiencing global warming which is as a result of distraction of ozone layers	21	35	10	15	7	12	19	32	10	15

Source: Primary data,(2023*)*

From field study in table 4.8,73%(40+43) of the respondents strongly agreed that high population had resulted into soil infertility due to over cultivation, 22%(15+7) disagreed and 5% were undecided as either high population result into soil infertility due to over cultivation or not.

Furthermore, 83 %(53+30) of the respondents strongly agreed, 10 %(7+3) disagreed strongly while 7% were undecided. This implied that crops dry because of lack of mineral nutrients in the soil attributed to high population.

About the same, there are many plastic materials dumped everywhere which act as water lodging areas and water does not reach under earth the soil,89%(47+42) strongly agreed 6% disagreed while 5% were undecided. This was an indication that there many plastic materials dumped everywhere which acted as water lodging areas and water does not reach underneath soil.

The finding further revealed that deforestation was alarming and large number of spices had been varnish as 53%(17+30) strongly agreed, 47%(17+30) disagreed and 0% were undecided. This implied that deforestation wasalarming and large number of species were varnished due to high population.

Finally,50%(35+15) agreed, 35%(32+3) disagreed and 12% were undecided. This showed that majority of respondents were experiencing global warming which had resulted into distraction of ozone layers .According to Hauser(2009), realized that anthropogenic global change and plant constraints are undergoing large, rapid changes because of human activities. Recent human activities have more than doubled the preindustrial rate of supply of N to terrestrial ecosystem (7). Nitrogen had a preindustrial terrestrialcycle that involved the annual fixation of about 90 to 140Tg(teragrammes) of Nyyr(1,7), with an additional 10Tg of Nyyr provided by atmospheric N fixation via lightening. Industrial N fixation for fertilizer currently totals about 88Tgyyr. About 20Tgyyr of Nis fixed during combustion of fossils fuel and about 40Tgyyr of N is fixed by legume crops.in addition, land clearingbiomass burning and human activities mobilize and release about an additional 70Tg of Nyyr.The projected expansion of global population to about 9 billion people by year 2050 and shifts to diets higher in normal protein suggest that by 2050, global food production will be double the current rate(19). If so, anthropogenic terrestrial N inputs in 2050 would be about three to four times the preindustrial rate (16, 19). Much of this N would enter rivers

and be carried to near-shore marine ecosystems would also be deposited atmospherically on a non-agricultural terrestrial ecosystems.

It can be summarized from field study that 73%(30+43) of the respondents strongly agreed that high population had resulted into soil infertility due to over cultivation.in addition, 83%(53+30) of the respondents strongly agreed that crops dry because of lack of mineral nutrients in the soil attributed to high population. In addition, there are many plastic materials dumped everywhere which act as water lodging area and water does not reach underneath of the soil.

The finding further reveals that deforestation was alarming and large number of species had been varnished as 53% of the respondents strongly agreed. Finally 50%(35+15) agreed that majority of the respondents were experiencing global warming which had resulted into distraction of ozone layers.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMANDATIONS

5.0. Introduction

This chapter presents the summary of the findings, conclusions based on the findings and recommendations based on the conclusions.

5.1. Summary of Findings

5.1.1. The effect of wetlands on food security

It was observed that wetlands encourage growing of crops like yams, rice and others, they get fish from wetlands which act as sauce and food supplements, they get water forirrigation during dry season to water their crops, wetlands act as water catchment area which has enabled us to grow vegetables, sugarcane and like and wetlands attract rainfall which enable the growing of crops throughout the period.

5.1.2. The effect of high temperature on food security

It was found out that high temperatures have led to hunger and starvation among the people, high temperatures have made us to plant drought resistant crops in order to cope up with the situation, high temperatures have led to drying of our crops and harvest is always small or nothing at all and high temperatures have affected water table making it hard for crops and other plants to access water.

5.1.3. The effect of high population on food security

It can be revealed that it has been resulted not soil infertility due to over cultivation. They are experiencing global warming which is as a result of distraction of ozone layers, there are many plastics materials dumped everywhere that ac as water lodging areas and water cannot reach the underneath the soil, crops are drying because of lack of mineral nutrients in the soil and deforestation is alarming and a large number of tree species have been varnished.

5.2. Conclusion

5.2.1.The effect of wetlands on food security

From the findings, it was found out that respondents get water from wetlands to irrigate their crops during dry season which ensures constant supply of food in the area.

In addition, the study also revealed that respondents get fish from wetlands which act as sauce and food supplement, wetlands attract rainfall in area which is useful for crop growth and production.Besides, wetlands encourage growing of crops like yams, sugar cane, rice and others which are useful during dry season.

5.2.2. The effect of high temperature on food security

The finding revealed that high temperature led to drying of crops and hence famine and reduction in water table making it hard for crops and other plants to access water.in addition, it was also found out that farmers plant drought resistant crops in order to cope up with the situation.

Furthermore, high temperature affect the health of crops and harvest has always been very low or nothing at all, this has led to widespread hunger and starvation among people.

5.2.3. The effect of high population on food security

From field study, it revealed that high population had resulted into soil infertility due to over cultivation and crops dry because of lack of mineral nutrients in the soil attributed to high population.

In addition, there were many plastic materials that were dumped everywhere which acted as water lodging areas and water could not reach the underneath soil, deforestation was alarming and large number of tree species had varnished as a result of charcoal burning.

5.3. Recommendations

5.3.1. The effect of wetlands on food security

The researcher recommends that government should put in place policies that prohibits people from encroaching on wetlands as this may maintain water level.

The researcher also recommends that irrigation scheme should be practiced among farmers to ensure constant supply of water during dry season.

5.3.2. The effect of high temperature on food security

The researcher recommends that community and local authorities should practice forestation to minimize on high temperatures.

The researcher recommends that the local authority should arrest and imprison people who cut down trees to act as an example to others.

The researcher recommends that the government official should mobilize and sensitize people on the importance of afforestation.

5.3.3 The effect of high population on food security.

The researcher recommends that government and other NGOs should encourage family planning programmes among people in order to reduce on ever increasing population.

The researcher recommends that government should award families with less population to encourage people to produce few children.

The researcher recommends that government should put in place policies to restrict people from producing bigger numbers of children.

5.4. Areas of further Research.

The researcher carried out research on the effects of disaster on food security in Bumbo Sub County, Namisindwa district. Therefore more research should be carried out on;

i. The effects of disaster on Food security and health of the population.
ii. The effects of high population Density on Natural resources.

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APPENDIX 1

QUESTIONAIRE

Dear respondent,

My Name is **WAMUKOTA DENIS REG NO S22/MUC/BPAM/058**, I am a student of Uganda Christian University Mbale University Collage perusing Bachelor's Degree in Public Administration and Management, I would like to collect data on the Topic "disaster and food security case study Bumbo sub-county Namisindwa District"

This will be targeting mostly famers because they are the most affected and have enough knowledge about the topic of the study.

All responses to the questions will be kept confidential and your participation will be highly appreciated.

SECTION A

Instructions.

Please tick where application

For those questions with no suggestions given please write in the blank spaces provided.

BACKGROUND INFORMATION

1. SEX I) M ☐ II) F ☐
2. AGE BRACKET
   - i) Under 25yrs ☐
   - ii) 25-30yrs ☐
   - iii) 31-35yrs ☐
   - iv) 36-40yrs ☐
   - v) Above 40yrs ☐

3. Marital Status
   - i) Single ☐
   - ii) Married ☐

iii) Divorced ☐

iv) Separated ☐

4. Academic qualifications.

i) Certificate ☐

ii) Diploma ☐

iii) Degree ☐

iv) Tertiary ☐

SECTION B

For each of the following statements, please indicate (by ticking) the extent to which you agree with, using the following scale (*strongly agree, 5, Agree, 4, Undecided, 3, disagree. 2, strongly disagree, 1.)*

WETLANDS AND FOOD SECURITY

SN	STATEMENT	1	2	3	4	5
1	We get water for irrigation during dry season to water our crops.					
2	We get fish from wetlands which act as sauce and food supplement.					
3	Wetlands has attracted rainfall areas for rain water which has enabled us to grow our crops throughout the period.					
4	Wetlands encourage growing of crops like yams, rice and others which are useful during dry season					
5	Wetlands act as water catchment area which enables us to grow vegetables, sugar canes etc.					

SECTION C

HIGH TEMPERATURES AND FOOD SECURITY.

SN	**Statement**	**1**	**2**	**3**	**4**	**5**
1	High temperatures have led to drying of our crops hence famine					
2	high temperatures have affected water table making it hard for our crops and other plants to access water					
3	High temperatures have made us to plant drought resistant crops in order to cope up with the situation.					

4	High temperatures affects the health of our crops and harvest is always small or nothing at all.					
5	High temperatures have led to wide spread of hunger and starvation among our people.					

SECTION D

HIGH POPULATION AND FOOD SECURITY

SN	**Statement**	**1**	**2**	**3**	**4**	**5**
1	Has resulted into soil infertility due to soil cultivation					
2	Our crops are drying because of lack of mineral nutrients in the soil					
3	There are many plastic materials damped everywhere which act as water logging areas and water does not reach the reach underneath the soil					
4	Deforestation is alarming and large number of species has varnished.					
5	we are experiencing global warming as a result of destruction of Ozone layer					

APPENDIX II

INTERVIEW GUIDE

1. Does high temperatures led to drying of crops hence famine? Yes or No if No Explain……?
2. Do you get water for irrigation during dry season to water your crops? Yes or No if No why…….?
3. Do wetlands attract rainfall which enables the growth of crops throughout the period Yes or No, if No explain……?
4. Deforestation is alarming and large number of tree species has varnished or extinct. Yes or No if No why……...?

APPENDIX III: RESEARCH INTRODUCTORY LETTER

UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa
MBALE UNIVERSITY COLLEGE

Office of the Academic Registrar

To SUB - COUNTY
CHIEF BUMBO S/C

S A S
BUMBO SUB- COUNTY
0 8 APR 2024
P.O. BOX 235, NAMISINDWA
DISTRICT LOCAL GOV'T

Received by
SAS Rkusbe

Dear Sir/Madam,

Re: Academic Research

Christian greetings!

We are honored to introduce to you Mr. Mrs. /Miss. WAMUKOTA DENIS
Of Registration Number; S22/MUC/BPAM/058 pursuing a Masters' Degree/Postgraduate Diploma / Bachelor's Degree ....
He/ she is required to carry out an academic research on the topic
EFFECT OF DISASTER ON FOOD SECURITY

and thereafter produce a well bound hard cover research report (**MAROON**) in color for undergraduate and three (**BLACK**) copies for Postgraduate students as a University requirement for the award of a degree/diploma in the academic discipline that he / she is pursuing.

We shall be grateful for the help you may offer to him or her accordingly.

Thank you.

Yours faithfully,

26 MAR 2024

Mr. Akampurira Timothy
Academic Registrar